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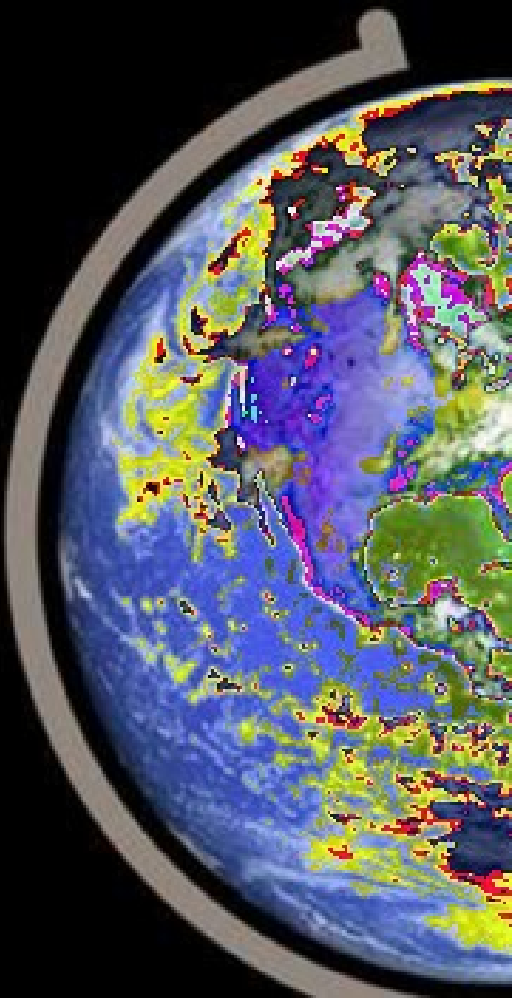

The New World of Economics

Richard B. McKenzie • Gordon Tullock

The New World of Economics

A Remake of a Classic for New Generations of Economics Students

Sixth Edition

Springer

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Original Title: New World of Economics: Explorations into the Human Experience
Original Publisher: Homewood, Ill.: Richard D. Irwin, Inc.
Original Publication Year: 1975
Original 5th edition published by McGraw-Hill College, 1994

ISBN 978-3-642-27363-6 e-ISBN 978-3-642-27364-3
DOI 10.1007/978-3-642-27364-3
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2012933772

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

The economist's stock in trade—his tools—lies in his ability to and proclivity to think about all questions in terms of alternatives. The truth judgment of the moralist, which says that something is either wholly right or wholly wrong, is foreign to him. The win-lose, yes–no discussion of politics is not within his purview. He does not recognize the either–or, the all-or-nothing situation as his own. His is not the world of the mutually exclusive. Instead, his is the world of adjustment, of coordinated conflict, of mutual gain.

James M. Buchanan
(1966, p. 168)

Preface

Economics has traditionally been defined by both its methods and its subject matter. That is to say, there are economic methods—models and statistical tests—that are based on a set of assumptions about the way people behave and interact with one another. Moreover, there is a distinct set of "tools" or "principles" economists employ in their analyses.

Economists have studied the world of "business" extensively. As may be obvious from the table of contents of this book, we believe that the economic methods that have been used to study business issues over the centuries can also be applied to many other areas of human behavior. Indeed, while we acknowledge that economics is only a partial view of human behavior, we see no practical limit to the application of economic methods to all areas of human behavior. Even a "partial view" can often offer insights that could be overlooked if economics were not employed. The test of the applicability of economic methods to areas of human (or, for that matter, animal) behavior is whether insights that stand up to empirical tests are found. We remain firmly convinced that these new applications make the study of economics more exciting, more interesting, and more relevant.

When *The New World of Economics* was first published in the 1970s, it was (would you believe?) controversial because many economists were not comfortable extending the application of economic methods to politics, sex, crime, marriage, family, divorce, riots and panics, and learning, among other topics. We heard from hostile economists who were stunned by our audaciousness.

Given its widespread use in college and university classrooms over the decades, we are pleased to say that *The New World of Economics* has changed a number of professional minds. It was the first introductory economics reader to discuss (among a host of other topics) public choice economics, the economics of marriage and family, and law and economics. Several Nobel Prizes have since been given to economists who have worked in these areas. We have also heard from economists and their students who have written to say, in effect, "Right on! About time."

Many of the subjects we have covered in *The New World* over its first five editions now have extensive scholarly literatures and have been integrated into

"conventional" or "mainstream" economics textbooks published since *The New World* first appeared. A host of other popular books have since been released that have more broadly applied economic methods, most notably *Freakonomics,* which had a long run on *The New York Times* bestseller list.[1]

Indeed, we have chosen to reissue this major revision of *The New World* because many current practicing economists are too young to remember the success and impact of its first five editions and because many professors of economics of all generations want to show their students the "new, new worlds" of economic inquiry that have emerged within the professional lifetimes of the last generation of economists. We have included a number of these "new, new" topics in this edition. However, our overall objective remains the same, namely, to show students how the principles of economics are applicable to their everyday experiences and to a variety of issues studied in other courses, not the least of which are business and social science courses that are grounded in psychology, neuroscience, and evolutionary biology.

Accordingly, we have retained many of the topics covered in the first five editions, but we have also added a heavy emphasis on pricing strategies and behavioral economics, now a burgeoning subdiscipline within economics, which is grounded on serious criticisms of conventional economics' underlying assumptions and conclusions. We review the "behavioralist" approach and its arguments, but we also point to problem areas within behavioral economics.

Most budding economists understand that businesses can become successful by developing "better mousetraps." We stress how businesses have improved the profitability of their products by careful construction of their pricing strategies to take advantage of their market positions. In any number of topics covered in the following chapters, we describe the insights of another subdiscipline—organizational economics—which has radically expanded since the first edition of *The New World* was released.

Most introductory economics textbooks are, literally, encyclopedias of just about everything known in the subject. We have always believed that the first and most important principle in economics should be economy in the principles that are taught and studied. The critical concern in education is not how much is *taught*, but how much is learned and what insights can be drawn from what is learned. Accordingly, students will probably be relieved and pleased to know that we introduce a relatively small number of principles through coverage of the various disparate topics in the chapters. However, we make those few principles work, applying them broadly, to just about every nook and cranny of human behavior. We strive to keep the analysis simple in order to make the learning process productive (incidentally, a topic which we elaborate on in Chaps. 18 and 19). An often-cited adage applies to economic education: "less is more."

The New World of Economics has been developed on the premise that economics is, at its disciplinary core, *a way of thinking*. We believe that students will *want* to read this book because of our focused emphasis on honing their thinking skills, as well as applications to interesting topics. And by the end of the book, we believe students and readers will be thinking much like economists do, all very naturally (or

as if by second nature). We have been told numerous times by students and professors alike that this book simply *works* in changing the way students see the world.

We are, of course, indebted to our many colleagues around the country who have contributed directly or indirectly to the development of chapters in this book in the form of their recommendations for improvements. We are also immensely indebted to our students; they have taught us much that is reflected in this (and past) editions. Nothing helps improve a book more than classroom use, and this book has been used, at one time or another, in most of the country's colleges and universities and in many foreign universities. Over the years, both authors have continued to extend the application of economics to an ever-expanding arena of ideas, and in redeveloping *The New World* we have drawn on our published works for other audiences.[2] We welcome students to what could be for many the educational trip of their college careers.

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Part I
The New World of Economic Thinking

In the first four chapters of this book, we seek to lay out the broad outlines of the "economic way of thinking" about everything and anything, mainly by illustrating how a very few economic concepts, principles, and lines of argument can illuminate a variety of topics. In Chap. 3, we clarify the economic way of thinking by comparing and contrasting economists' view of consumer purchases with that of psychologists [as partially represented by "Maslow's Hierarchy of Needs," which is employed in a variety of business courses (most notably marketing)]. As we move through the book, we will gradually apply the lines of argument developed in this section to more complicated and sophisticated topics. However, be assured that while the topics considered might grow in complexity and sophistication, you will find that they easily succumb to understanding. This is the case because economics is a very powerful and nimble "engine of analysis."

Chapter 1
Economic Thinking

Economics is a constantly changing discipline. This can be said about most disciplines, but it is particularly applicable to economics. At one time, around the turn of the nineteenth century, students could think of economics as being neatly contained within the sphere of commercial life. Indeed, in his long-adopted *Principles of Economics* textbook, eminent British economist Alfred Marshal defined economics as dealing with the "ordinary business of life."[1] Through the middle of the twentieth century, most courses and books on the subject traditionally revolved around such topics as money, taxes and tariffs, stocks and bonds, cost structures, forms of business organization, and the operation of the market as it pertains to the production and sale of automobiles and toothpaste.

Over the past half century, however, economists have greatly expanded their field of concern, and, as a result, the boundaries of economics as a discipline are rapidly expanding, encroaching on areas of inquiry that have historically been the exclusive domain of other social sciences. The change in direction and scope of the discipline has been so dramatic that the economists who have been involved in bringing about the change are no longer inclined to debate the issue of what is or is not economic in nature. They merely ask, "What can economics contribute to our understanding of this or that problem?"

This book reflects that expanded vision. Accordingly, we will introduce you to topics and points of discussion you may never have imagined would be included in an economics book. We will talk about family life, child rearing, dying, sex, crime, obesity, gender pay differences, a host of pricing strategists, predictably irrational consumers, politics, and many other topics.[2] We do this not because such topics add a certain flair to the book (which they do, for sure), but rather because we believe that these are extraordinarily important areas of inquiry and that economic analysis can add much to our understanding of them. In addition, we are convinced that you will learn a good deal about economics through their consideration.

In dealing with such topics, we cannot avoid coming to grips with human behavior and making it the focus of our concern. The simple reason is that

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_1,

crimes cannot be committed, children cannot be reared, sex cannot be had, and governments cannot operate without people's "behaving" in one respect or another. We argue that before we can ever hope to understand social phenomena, we must understand why people behave the way they do. To do this, we must have some perception, or model, of how behavior is motivated and organized from which the revealed actions of people can be interpreted. Economists have such a model, which has been developed and defined since the days of Adam Smith, and it is because we employ this model in our discussion, that we consider this to be a book on economics. All we intend to do here is to extend the application of this model into unconventional areas.

This is not to say, however, that economics can give a complete understanding of these problem areas. Other social scientists have long considered many of the topics included in this book, and their contributions to our understanding of human behavior cannot be overlooked. By viewing these topics strictly through the lens of economics, we must be ever mindful that we are dealing with one particular point of view, which can be complemented by many of the findings in other disciplines.

You may at times have reservations about accepting what we have to say, but that response is not necessarily unwelcome. We could easily write a book with which the reader would readily agree with almost everything written; however, we imagine that such a book might deal with only trivial issues and very well be a monumental bore. We take the view that at any given time, there are many important issues that are to some degree unsettled; we believe that learning requires not only that an individual know the settled issues but also that he be able to explore those issues over which there may be some disagreement.

You do not need to have a large reservoir of economic knowledge to understand what we have to say. We will provide you with the necessary principles on which later discussion will be founded. Furthermore, we do not intend to waste your time with a lot of esoteric theory that will never be used. We understand that you want to make as efficient use of your time as possible, and we intend to cooperate with you.

Remember, this is a book on economics! Our first principle of economics is economy in principles of economics. In our view, the mark of a good economics course, or a good economics book, is not how much is learned in the way of principles and other forms of content, but how much of the world can be understood, with how much is learned. We expect you will be able to do a lot, and understand much about the world we all inhabit, with the relatively small set of concepts, principles, and lines of arguments developed in this pages.

The principles that we do develop and the points that we make will at times be very subtle and a little tricky to handle—we cannot escape this. You may be pleasantly surprised, however, at how few the principles are and at how useful they will be in thinking about topics that are and are not included in this book. First, we need to lay the foundation, to explain how economists look at their subject and at human behavior.

The Meaning of Economics

For nearly two hundred years, economists have periodically struggled with the problem of defining economics, and it is still a live issue. At times the subject has been defined as "what economists do," as that part of human experience that involves money, or as a study of how men attempt to maximize their material well-being. Different people perceive a discipline in different ways; therefore, no one can ever claim to offer readers *the* definition of the subject. All we can hope to accomplish is to describe our own perception of the subject and in that way suggest how we will proceed.

The approach taken in this book is to define economics as a mental skill that incorporates a special view of human behavior characteristic of economists.[3] It is, in short, a thought process, or the manner in which economists approach problems, rather than an easily distinguishable group of problems that sets an economist apart from others. Sociologists and political scientists have dealt with many of the problems considered in this book, but the reader may notice that our approach to these problems is substantially different from theirs. This mental skill or approach has several distinctive characteristics that can be discussed separately as follows.

Thinking in Terms of Abstractions

First and foremost, economists are prone to think, as are all other scientists, in terms of abstractions, not in the sense that the notions are vague or nebulous, but rather in the sense that their first impulses are to reduce reality to the relationships that are important and that bring the inquiry down to manageable proportions. The ideal approach to the study of human and social phenomena would be to treat the world as we confront it. However, the world is terribly complex. At any point in time, it encompasses literally billions of bits of information and tens of thousands (if not millions) of relationships. On the other hand, the human mind has a limited capacity to handle such data; it can consider only so much at any one time. It is, therefore, literally impossible for a person to think about the world in its totality and deduce anything meaningful. As a consequence, scientists must restrict the information they do consider. They must *abstract* in the sense that they pull out from the total mass of information a limited number of relationships that they think are important and that they can handle.

This means that the analysis that then follows will lack a certain degree of realism. It must be that way because the analysis is based on abstractions that represent only a small portion of what we might call the real world. The expectation is, however, that such an approach will increase our understanding of the real world and will increase our ability to predict events in it.

In thinking about the social world around them, economists heed the principle concisely laid out by economist Kenneth Boulding: "It is a very fundamental

principle indeed that knowledge is always gained by the orderly loss of information; that is, by condensing and abstracting and indexing the great buzzing confusion of information that comes from the world around us onto a form which we can appreciate and comprehend."[4] (Take a moment and think about this. If you have difficulty understanding the world we live in, we suggest that your problem is likely to be that you are attempting to consider too much information, not too little.)

The test of a theory or model's acceptability is not solely its degree of realism but also its efficacy—that is, the model's ability to explain events in the real world and to make correct predictions. At times, the reader is likely to think to himself that our analysis is, in one respect or another, unreal or that the model we employ does not represent the "fullness of the human experience." We would agree. The supply and demand curves we will rely on extensively in this book are not "real." They are nothing more than photons that have been bounced off the pages and into your eyes. They are hardly descriptive of "real" markets. After all, they are just two lines on a graph and do not capture (and are not meant to capture) the full complexities of real-world markets. But having made such concessions, we must follow with questions drawn from our analyses (developed with or without supply and demand curves): Are our conclusions not borne out in the real world? Are our predictions not more accurate than can be obtained by other means?

There is a story of an economics professor who was lecturing on a very esoteric topic before his graduate class. In the middle of the lecture, a student interrupted, "Sir, I hate to break in, but in the real world . . ." The professor snapped back, "Mr. Waldorf, you must remember that the real world is a special case, and, therefore, we need not consider it!" Before one gets the impression that we may be taking the same view as that professor, let us emphasize that everything we say, although it may be discussed in terms of models, is directed at our understanding of the real world, and we believe that economics has a very efficient way of doing that.

Thinking About Values

The approach of the economist tends to be (but is not always) amoral. Economics is not so much concerned with what should be or how individuals should behave, as with understanding why people behave the way they do. Accordingly, our analysis is devoid of our own personal values—as much as possible. We treat each topic as something that is to be analyzed and understood, and to do that, we must avoid the temptation to judge a given form of behavior as contemptuous, immoral, good, or bad. Therefore, in the context of our analysis, the services of a prostitute are treated the same as the services of a butcher; they are neither good nor bad, but simply exist and are subject to analysis. Criminal activity is considered in a manner similar to that of legitimate enterprise, and religion is treated as a *good* (in the sense of anything that yields satisfaction to the user) that is sought after and procured.

Our reason for taking this tack is that in this book, we are not interested in telling people how they should behave or what is good or evil; we are interested in gaining

understanding of the behavior of others, given *their* values. Further, we are interested in evaluating the effects of institutional settings on human behavior and in suggesting how institutions may be rearranged to accomplish whatever objective is desired. Note that our intention is to suggest changes in institutions and not in behavior.

Like everyone else, we have our own value systems, and we could easily make recommendations regarding how people's behavior should be changed to accomplish what we, as humanists, think is right. We also recognize that you have your own values, and we in no way wish to suggest that you dispense with them. You may violently disagree with prostitution or with political corruption, and we do not quarrel with this. All we ask is that you allow us the opportunity to address the question of why such phenomena occur. In the process, you may find a solution to the problem that is more consistent with your values than the solution you may now perceive.

Furthermore, economic analysis may suggest that some value can be achieved, but that the cost would be so much as to make it undesirable. In the early part of this century, many well-intentioned Americans objected to the consumption of alcoholic beverages. They succeeded in getting the Constitution amended to prohibit the sale of alcohol. By the 1930s, most of them had given up because they discovered how difficult it was to enforce the law. If backers of prohibition had consulted economists, we are sure they would have been told that the law would be very difficult and expensive to enforce. With this advice, they might have decided not to undertake the program of moral elevation. The same considerations (involving the costs of enforcement) should, perhaps, be taken into account now in evaluating the efficacy of contemporary laws against hard drugs or pornography.

Thinking About People

The focal point of the study of economics is the individual person. It is the individual who possesses values, makes choices, and if given the freedom, takes actions. All group decisions and actions are thought of in terms of individuals' collective decisions and actions, and social goals are considered only to the extent that they reflect individuals' collective values or choices.

All too often we hear such expressions as "society disapproves of this or that," "Congress is considering legislation," or "government has made a decision to enforce a given policy." If the expressions are meant to suggest that individuals are involved, we have no qualms; if, on the other hand, the expressions are intended to suggest that these bodies have a behavior of their own that is independent of the behavior of individuals, we must take issue.

We ask how can a group act? What is group behavior if not the behavior of individuals? How can a society, as an independent organism, have a value? Where must the values come from?

Do not misinterpret us; we are interested in understanding group behavior. However, we argue that to do this, we must first understand the behavior of the individuals that make up the group. We take it as a given that only individuals can act.

Thinking About Rationality

Economists begin their analysis of human behavior with the assertion that *human beings act* and do so with a purpose. That purpose, in general terms, is to improve their lot, to change the situation from something less desired to something better, as economist Ludwig von Mises put it:

> Acting man is eager to substitute a more satisfactory state of affairs for a less satisfactory. His mind imagines conditions which suit him better, and his actions aim at bringing about this desired state. The incentive that impels a man to act is always some uneasiness. A man perfectly content with the state of affairs would have no incentive to change things. He would have neither wishes nor desires; he would be perfectly happy. He would not act; he would simply live free from care.[5]

This is the ultimate foundation of economics as a discipline and has several implications. First, in economics people are assumed to be rational in the sense that they are able to determine within limits what they want and will strive to fulfill as many of their wants as possible. People are, in other words, able to offset environmental, social, and biological forces that would otherwise determine what they do. To what extent they are able to accomplish this depends on the resources at their command and the intensity of desire to overcome forces that are obstructing the achievement of their goals.

Although these points may be taken for granted, they need to be made because not all social scientists agree with this perspective. Many will argue, at least for purposes of their theories, that a factor such as the immediate environment *determines*—not influences—human behavior. The economist, on the other hand, views factors such as the immediate environment as constraints within which the individual's preferences can operate.

The economist's assumption of rational behavior sometimes annoys people from other branches of the social studies who apparently feel that people act irrationally (or nonrationally) much of the time (if not all of the time). The actual difference here, however, may often be a matter of definition. In assuming that people behave rationally, the economist does not mean that human beings are necessarily cold, calculating machines, who always pursue selfish interest with perfect precision. Indeed the economics of information, which deals with the question of how much information people should gain before they make a decision, is one of the rapidly developing fields of economics. Thus, the prospect that people make mistakes because they are not properly informed is now very much alive in economic theory.

Furthermore, the religious hermit who lives in semistarvation to achieve oneness with God could be quite rational. The terrorists who crash planes into tall buildings

could be no less rational. They both may be using their resources in the best way they know how to fulfill their goals.

Thus, the statement that people behave rationally is not a terribly strong statement about how people behave. It merely means that people attempt to achieve their goals and that they devote at least some thought, some of the time, to how to do it. This assumption, modest though it is, turns out to permit a great deal of careful analysis.

Furthermore, people are not the only living beings who behave rationally, at least some of the time. As experimental economists have found, animals (and even ants and termites) behave rationally, at least within the bounds of their mental and physiological constraints. Ants do appear to seek to minimize the costs of their food gathering; they apparently try to minimize the travel distance and time between their food sources and their mounds. They may be dumb, but they are not irrational! On the basis of the view that man behaves rationally in this very limited sense, economists have been able to construct a very elaborate detailed theory. Of course, the fact that it is elaborate and that its basic assumptions seem sensible does not prove that it is true. In order to tell whether any given theory is true, we must compare theory with reality, either through statistical manipulation or through experiments.

Economists from Adam Smith on always have looked to the real world to test their theories. Since about 1950, with the development of modern computers, this study has become predominantly a matter of careful statistical analysis. Very recently, laboratory experiments have begun to be performed. All of these studies seem to indicate that the basic theory, founded on assumptions of rationality, is correct much of the time.

Rational behavior implies that individuals will always choose more of what they want rather than less, and less of what they do not want rather than more. For example, if the individual desires beer and pretzels and is presented with two bundles of these goods, both with the same amount of pretzels and one with more beer, the rational individual (that is, college student!) will take the bundle with the greater number of beers. If he or she does not like beer, then that is another matter. In a similar vein, if one bundle contains a greater variety of goods or goods with a higher quality than the other bundle, the individual will tend to choose that bundle with the greater variety or higher quality. For all intents and purposes, goods of differing quality can be treated as distinctly different goods.

If there is some uncertainty surrounding the available bundles, the individual will choose that bundle for which the *expected value* is greatest (after allowance for losses due to bad outcomes). People do make mistakes mainly because they have incomplete information, but this does not negate the assumption of rational behavior. We only assume that individuals' motivations are to do that which they expect will improve their stations in life, not that they always accomplishes this. There are such things as losers. But people will tend to minimize their bad outcomes, or their losses, at least within the limits of their mental resources.

Economists are often criticized for assuming that human beings are wholly materialistic, that they want only material things. The criticism is unjustified.

All we have assumed from the start of this section is that an individual has desires. These desires may be embodied in material things, such as cocktails and clothes, but we also fully recognize that human beings want things that are esthetic, intellectual, and spiritual in nature. Some people do want to read Shakespeare and Keats and to contemplate the idea of beauty. Others want to attend church and worship as they choose. Even a few may want to read this book! We have no quarrel with this (particularly with those who are interested in this book). We accept these as values with which we must deal in our analysis. They are part of the data we handle. We emphasize, however, that what we have to say regarding material things is also largely applicable to those values that are not material. We may talk in terms of goods, but what we mean are those things people value.

Thinking About Cost

Another implication of our basic position is that as far as the individual is concerned, Nirvana will never be reached. The individual will never obtain a perfect world and, as a result, must accept second best, which is to maximize utility through behavior. Individuals will undertake those things for which they can expect some net gain, or, in this sense pursue, their own self-interests. But pursuing self-interest does not mean a lack concern for fellow human beings. Among the things individuals may want is to give to others. Such behavior can yield as much pleasure as anything else, and if so, it will be done.

Why do people give gifts, say, at Christmas time? There are many motives, but we suggest that the overriding reason is that the giver gets some pleasure (gain), in one form or another, from giving. Even the Bible admonishes "it is better to give than to receive," indicating that there are gains to be had for acts of charity. Can you think of anything you have done that you did not expect would make you happier? (Remember, you have no doubt made a mistake and lost, but this is not involved in the question.)

Certainly there have been instances in which direct self-satisfaction was not the basis for your action. However, we wish only to make the point that much, but certainly not all, human action is founded on the desire of people to gain from what they do. To the extent that they behave the way we assume they do, then our predictions about their behavior should be accurate.

If we are seeking to maximize our utility, then it follows that we must make choices between relevant alternatives. It also follows that in the act of choosing to do one thing, we must forgo doing or having something else. There is no escaping this. Although often measured in terms of dollars, the cost of doing or having something is the value of one's best alternative forgone when a choice is made.

For every act, therefore, there is a cost, and this cost will determine whether (or how much) something will be done. Cost is the constraint on action. In other words, is there anything such as a free lunch? Free TV? Free love or sex? How can these things be had if choices are involved? No money may have changed hands, but

again, cost is not money. Money (or more properly, dollars) is just one means of measuring cost. To have such things, we have to give up something in the way of time, psychic benefits, or resources that may be used for other purposes.

Throughout this book, as we attempt to explain social phenomena, we will address the question of the costs and benefits of behavior. As we will see, cost is a very powerful explanatory factor in understanding behavior. Consider the following problems:

1. *Why do the poor tend to ride intercity buses and the rich tend to fly?*
   Perhaps the two groups have different educational and experience levels that result in different behavior patterns. Or, perhaps the rich, being rich, can afford such extravagances as airplane tickets. All these factors may explain part of the behavior; but we wish to stress that it may be cheaper for the poor to take a bus than to fly and cheaper for the rich to fly than to take the bus. Both rich and poor pay the same price for equal tickets; consequently, the difference in cost must lie partly in the difference in the value of the time of the rich and the poor.

   If by "rich person" we mean someone whose wage rate is very high, it follows that the rich person's time is much more valuable (in terms of wages forgone) than the poor person's time. Since it generally takes longer to take a bus than to fly, the cost of taking the bus, which includes the value of one's time, can be greater to the rich than the cost of flying. The cost of taking the bus can be lower for the poor. The poor person's time may be worth very little in terms of what he could have earned. Therefore, the total cost of a bus ride can be quite inexpensive. As a case in point, consider David Letterman, who makes millions in salary each year, and a poor man who is unemployed. Determine the total cost for each to take a bus or a plane from Washington to Chicago. You may think that Letterman has a lot of free time for sunbathing on the beach. Actually, Letterman could be making money instead of playing on the beach. He would be spending very large amounts, in terms of income forgone, for some pleasurable time at the beach. We can understand why a wealthy person might choose to spend time at the beach, but it is hard to say why that person would choose to spend valuable time riding a bus between cities. And of course, few really rich people can be found among intercity bus passengers.
2. *Why do the British use linen table napkins more often than Americans do?*
   In part, the answer may be that cultural differences have had an effect on people's choices in napkins. However, one should also realize that the British have to import virtually all of their paper or pulpwood and that paper is relatively expensive there. Paper napkins are much less costly in the United States. Furthermore, linen napkins require washing and ironing, and since wages are generally higher in the United States, the cost of using linen napkins is much greater to the Americans than to the British. Again the difference in costs provides a partial explanation.
3. *Why do some people resist cheating on their examinations?*
   Some people may fear being caught and suspended from school, which means they attribute a cost to cheating. Barring this, they may have a moral code that

opposes cheating, at least in this form. If they cheat, they would have to bear the psychic cost of going against what they consider right. This does not mean that all those with a moral code or conscience will not cheat to some degree. (Why?)

4. *Why do some men forgo asking women out on dates (and vice versa)?*
   They may be shy (or gay), or they may feel that the cost in terms of the money and time spent will be too great. They may also be reluctant to ask women out because in doing so they have to incur the risk cost of being turned down.
5. *Why are people as courteous as they are on the highways?*
   They may have a streak of kindness in their hearts, but they may also be fully aware of the very high cost they can incur if their rudeness ends in an accident.

When trying to sum up the economist's view of human behavior, we are reminded of a little ditty for which, unfortunately, we do not have the source:

Oh, little girl with your nose pressed up against
the windowpane of life,
There is no jelly doughnut.

At least, there is no jelly doughnut without a cost, which is why economists often say, "There is no such thing as a free lunch."

Thinking About the Margin of Cost

In determining how many units of a given good we will consume, we must focus on the additional cost of each additional unit. Another name for this cost concept is *marginal cost*. In other words, before we can proceed to the consumption of the next unit, we must, at each step along the way, ask how much that additional unit costs.

If we are allowed time to make choices, there is substantial reason to believe that, as a general rule, the marginal cost of successive units we provide for ourselves or others will rise. At any point where a choice must be made, we are likely to have a whole array of opportunities we can choose to forgo to do this one thing. These opportunities are likely to vary in their value to us. In making the choice to consume the first unit of a good, which opportunity will we give up? We will forgo that opportunity we value least, and we will forgo that opportunity if the value of the unit produced is greater than the value of the opportunity forgone.

Because cost (or as in this case, marginal cost) is the value of that opportunity given up, this means that the cost of the first unit is as low as possible. If we then wish to produce or consume a second unit, we will have to give up that opportunity that is second to the bottom in value. This means that the marginal cost of the second is greater than the first. Given this choice behavior, we should expect the marginal cost of successive units to rise progressively. Therefore, if we were to describe the relationship between the unit of the good provided and the marginal cost, we would expect to have a curve that is upward sloping to the right as in Fig. 1.1. In this graph, marginal cost is on the vertical axis, and the quantity of the good is on the horizontal axis. We economists refer to such a curve as the *supply*

Fig. 1.1 Increasing Marginal Cost Curve

Fig. 1.2 Constant Marginal Cost Curve

curve. Because of this relationship, we can argue that the higher the benefits (or price) received per unit, the more units of the good that we can justify providing.

In some cases, the marginal cost of providing additional units is constant—more units of the good can be provided by forgoing alternatives that are equal in value. (Can you think of such cases?) In this event, the supply curve will be horizontal. See Fig. 1.2.

There is no reason to believe that the supply curve will remain stationary over time and under all conditions. Basically, the curve is set where it is because of a given cost structure of providing the good. It follows that anything that changes this cost structure will cause the curve to shift in one direction or the other. If the cost (which means the value of alternatives) of providing the good rises, then the curve will shift upward and to the left. If the cost goes down, the curve will move downward and to the right.[6] (Can you think of changes that would change the cost structure?)

Thinking About Demand

The assumption that rational individuals maximize their utility implies that they will fully allocate income among those things wanted. When we say income, we mean full income, which includes not only what individuals can earn on a conventional job and that can be measured in terms of dollars, but also what they can earn by doing things for themselves outside of work, such as cooking meals.

How can a person not fully allocate his income? Even when a person saves, he is allocating his income and generally doing it for a purpose. That purpose may be to acquire a certain degree of security for himself or his family or to buy something he wants in the future. We might rightfully argue that by saving, the person is buying something.

The assumption also implies that the individual will continue to consume a given good until the marginal cost (*MC*) of the last unit obtained is equal to the last unit's marginal utility (*MU*). (As in the concept of marginal cost, *marginal utility,* or *benefit,* is the additional utility on each additional unit of the good.) That is to say, the individual would consume until MU = MC. If this were not the case and the marginal cost of the next unit of the good were less than the marginal utility of it (or MC < MU), the individual could increase her level of satisfaction by consuming additional units. She could get more additional satisfaction from the additional unit or units than would be forgone by not consuming something else.

Note that the marginal cost is the value of that which is forgone. If the marginal cost exceeds the marginal utility, the individual can increase his satisfaction by consuming at least one unit less. (Can you explain why?)

This so-called equi-marginal rule (MC = MU) is readily applicable to production and consumption decisions involving, say, carrots or candy, but we suggest that it has a much broader application than may be first realized. If you are a student, what rule do you follow in determining how much you study for a given course? We expect that you will follow the MC = MU rule: you will continue to study until the marginal cost of an additional minute spent studying is equal to the marginal utility gained from studying that unit of time. When the marginal utility of an additional minute of study time is greater than the marginal cost, it simply means that you would gain more by studying than doing whatever else you could do with the time. Would you, therefore, not study the additional minute?

Men's and women's clothing styles come in and out of fashion over the decades. But in determining what is acceptable to wear, what rule does one follow? Again, we argue that a person will continue to wear an outdated piece of clothing until the marginal utility of doing so is equal to the additional cost. What are the costs and benefits of wearing the latest fashion? For different people in the same situation and for the same people in different situations, the costs and benefits of fashionable clothing are different. Therefore, we would anticipate a variety of styles in clothing.

Consider a person—yourself, if you like—who is preparing to eat dinner. What rule do you use in determining how many beans you will dish onto your plate? By now, you should have it; you will add beans to your plate until the marginal cost of the additional bean is equal to the marginal utility.

No individual is really able to act in as precise a manner as these examples may imply. Each person may not have the capacity to do so, and the benefits to be gained from such precision may not be worthwhile. (Explain.) Actually, we are interested only in making the point that the rational individual will *approximate* this kind of behavior.

When considering more than one good, say, two goods such as beer and pretzels, the utility-maximizing condition of MC = MU translates into the following condition:

$$MU_b/P_b = MU_p/P_p,$$

where

MU_b = marginal utility of beer
MU_p = marginal utility of pretzels
P_b = price of beer
P_p = price of pretzels

If this is not the case and MU_p/P_p is greater than MU_b/P_b, then we can show that the person will not be maximizing his or her utility. No one really knows what a *util* of satisfaction is, but for purposes of illustration, let us assume that utils exist and that the additional satisfaction acquired from the last unit of beer (MU_b) is 30 utils, the additional satisfaction of the last unit of pretzels (MU_p) consumed is 10 utils, and that the price of beer and pretzels is \$1 each.

It follows that

$$MU_b/P_b > MU_p/P_p \text{ or } 30 \text{ utils}/\$1 > 10 \text{ utils}/\$1.$$

The individual can change his consumption behavior, consume one less unit of pretzels, and use the \$1 to consume one additional unit of beer. He would give up 10 utils of satisfaction in the consumption of pretzels, but he would gain 30 utils of satisfaction in beer. He would be better off, and he would continue to reorganize his purchases until the equality set forth above is met. (You may find this a little tricky. Do not hesitate about rereading what you have just finished. It is imperative that you understand what has been said above before going ahead to the next point.)

Now, let us suppose that the individual has fully maximized his satisfaction and that $MU_b/P_b = MU_p/P_p$. Further, suppose that MU of beer and of pretzels is 20 utils and that the price of beer falls to, say, \$0.50 and the price of pretzels remains at \$1. This means that ($MU_b/P_b > MU_p/P_p$) or (20 utils/\$0.50 > 20 utils/\$1) and that the individual can get two units of beer (40 utils) for the price of one unit of pretzels; he can gain utility by switching to more beer. Notice what we have said: if the price of beer goes down, the rational individual will buy more beer. This all falls out of our general assumption that the individual is simply out to maximize his utility.

This inverse relationship between price and quantity is extremely important in economic theory and in the analysis of this book, so important, in fact, that economists refer to it as the *law of demand*, and it adds an element of prediction to economic analysis. We can say with a great deal of confidence that if the price of a good or service falls, *ceteris paribus* (everything else held constant), people will buy more of it. The law of demand is, perhaps, the strongest predictive statement a social scientist can make regarding human behavior.[7]

The law of demand can be graphically depicted by a downward sloping curve as in Fig. 1.3. As the price for the good falls from P_2 to P_1, the quantity purchased rises from Q_1 to Q_2.

Courses in economics generally deal with the law of demand in the context of conventional goods and services such as peanut butter, detergent, and meals at a restaurant. Although we agree with such application, we wish to stress that the law

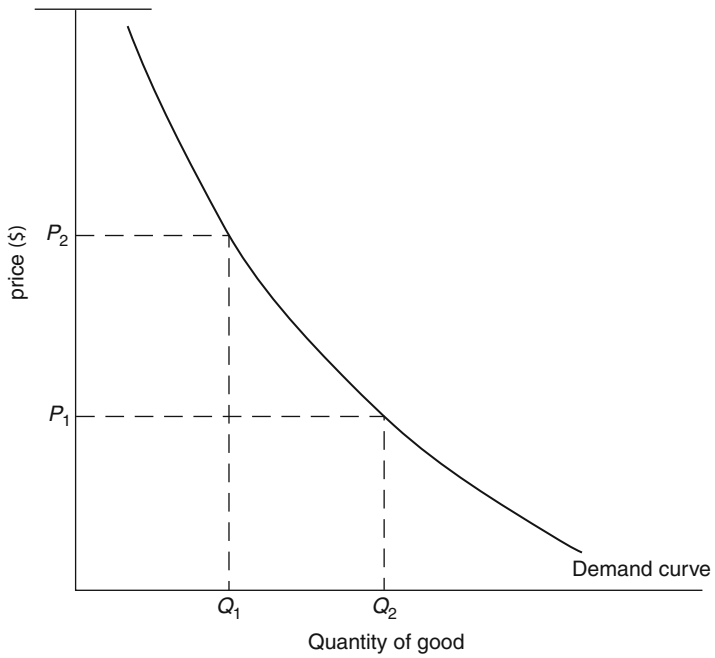

Fig. 1.3 Demand Curve

has a much broader application. In fact, we go so far as to assert that the law of demand applies to a wide range of things that people value and actively seek to procure through behavior. Consequently, we argue that the law of demand can be applicable to such "goods" as sex, honesty, dates, highway speeding, babies, and life itself! We predict that if the price of anyone of these things goes up, the quantity demanded will diminish and vice versa.

We will spend much of our time in this book discussing how the law of demand applies to areas such as these. For purposes of illustration at this point, let us consider the demand for going to church. Many people do place a value on going to church, and as strange as it may seem, there is a price to church attendance. The church may not have a box office outside its doors selling tickets, but people have to pay the price of their time, and they do understand that they are expected to contribute something to the church's operations. (How many well-established people in the community would feel comfortable taking their families to church week after week without contributing anything to the church?) Through stewardship, sermons, and visitations, the church does apply pressure, as mild as it might be, to get people to contribute. To that extent, the church extracts a price.

Suppose that the minister and the board of elders decide to raise significantly their demands on the congregation. What do you think will happen to the church's membership, holding all other things constant? The membership may be on the rise for a number of reasons, but we maintain that because of the greater price, the membership will rise by less than otherwise. In that sense, the "price" increase reduces the membership. This does not necessarily mean that people would be less religious; it may only mean that some will react to the price change and make use of other ways of expressing and reinforcing their beliefs.

Suppose we return to the days when men were expected to be the ones who asked women out on dates. (In recent decades, as many of the readers of this book can attest, this social custom has broken down to a significant degree.) Given all the attributes of a given group of women, men placed, as they do now, some value on having dates with them. In other words, they had a demand for dates. (In the event that you are concerned with the approach we are taking, we could easily reverse the example and talk about women's demand for dates. We only intend to use this situation as an example. We do not wish to judge it as being good or bad.)

Clearly, the utility-maximizing men will date women, if they can get the dates, until the marginal utility of the last date during some specified period of time is equal to the marginal cost of the date. There is an implicit price to most dates. For the man, if men are expected to bear the expense, the price is equal to the money spent on transportation, entertainment, and refreshment, plus the value of his time. (There is also a price to the woman, even when women do not pay. The question is, what does the price include?)

Suppose that during this epoch when men were expected to pay for dates, a group of women collude and decide that the humdrum dates of yesterday are no longer up to their standards. They determine to collectively require the men to spend more on them. They in effect agree to raise the price of dates. If such a collusive arrangement were to stick, what do you think would have happened to the

number of invitations issued to this group of women? No doubt it would fall. It may fall because the men would then have an incentive to substitute other women for those taking part in the cartel. Additionally, the increase in price of dates can induce some men to consume other goods such as watching Saturday night television or having a cold beer at a local tavern.

As the number of calls for dates begins to fall off, there would very likely be women who would begin to chisel on the collusive agreement by effectively lowering their demands (price). Thus, the agreement would tend to break down. Competition, as we will see on a number of occasions, will play a role in determining exactly what demands are made in areas of social interaction.

Many people value speeding in their cars. If caught speeding they may pay a fine of, say, $50. If they expect to be caught one out of every one hundred times that they speed, the price they pay per incident of time speeding averages out to $.50. Given this price, they will find a certain quantity of speeding desirable.

Suppose, now, that the fine is raised to $10,000 per speeding conviction. The average price paid per speeding incident would then rise to $100. Do you think that people would speed less as the concept of demand predicts? Suppose the number of patrolmen on the roads increases, which would hike the probability of being caught speeding. What would be the effect?

Thinking About Markets

One of the more interesting economic questions is how much of a given good will a person, or a whole lot of people, consume? We have stated in so many words our answer for the individual: an individual will continue to consume a good until the marginal cost and marginal benefit of the last unit equal one another, behavior that can be depicted graphically with the supply and demand curves we have just developed. Because both curves are price–quantity relationships, we can draw both the demand (or marginal benefit) curve and the supply (or marginal cost) curve on the same graph (Fig. 1.4). This illustration is an abstract model of human behavior, but such an abstract model can be quite revealing and useful in many contexts, which we will repeatedly demonstrate throughout this book.

For now, we need only point out that the maximizing individual will choose to produce and consume Q_1 units of this particular good. It does not matter what the good is or where the curves are positioned; the individual will choose that consumption level at the intersection of the two curves. At this point, marginal cost is equal to marginal benefit.

If the individual chooses to restrict consumption to Q_2, note that the marginal benefit, which is indicated by the demand curve and represented by MB_1, is greater than the marginal cost, which is indicated by the supply curve and is MC_1. This is true of every unit between Q_2 and Q_1. Therefore, the maximizing individual can raise his or her utility by consuming them. Beyond Q_1, the reverse is true; the

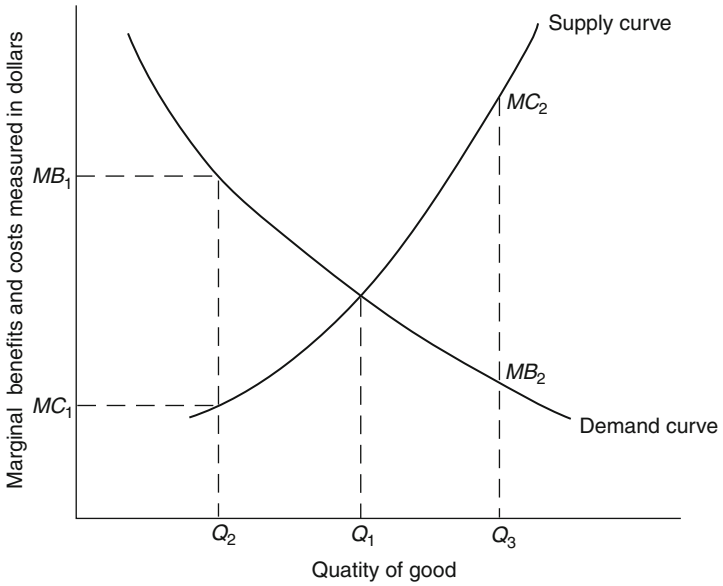

Fig. 1.4 Supply and Demand Curves

marginal cost is greater than the marginal benefit. For example, for the unit consumed at Q_3, the marginal cost is MC_2 while the marginal benefit is less, MB_2.

Implicitly, we have assumed the maximizing person is trading with himself, giving up units of one thing for more units of another. Quite often, however, people find that it is less costly to trade with someone else than to produce the good themselves. To understand a social setting in which there are many producers and consumers trading for a particular good, we need to construct a model involving a market supply curve and market demand curve. We can derive a market supply curve by adding together what all producers are willing to offer on the market at each possible price. If each individual producer is willing to offer a larger quantity at higher prices, the market supply curve, like the individuals' supply curves, will be upward sloping.[8] To obtain the market demand curve, we can add the amounts demanded by all the consumers at each and every price. Since the individuals' demand curves are downward sloping, the same will be true of the market demand curve. The market supply and demand curves are depicted in Fig. 1.5. The quantities involved in this graph are much greater than in Fig. 1.4.

In a highly competitive market situation—one in which many consumers have many sources for obtaining a given good—we will still expect the market to offer that quantity of the good (Q_1) that is at the intersection of the market supply and market demand curves. The simple reason is that if the price is P_1 and if only Q_2 units (which is fewer than Q_1) are provided on the market, there will be many more units demanded (Q_3) than will be available (Q_2). Also note that there are consumers who are willing to offer the producers a price that exceeds the P_1 of producing the

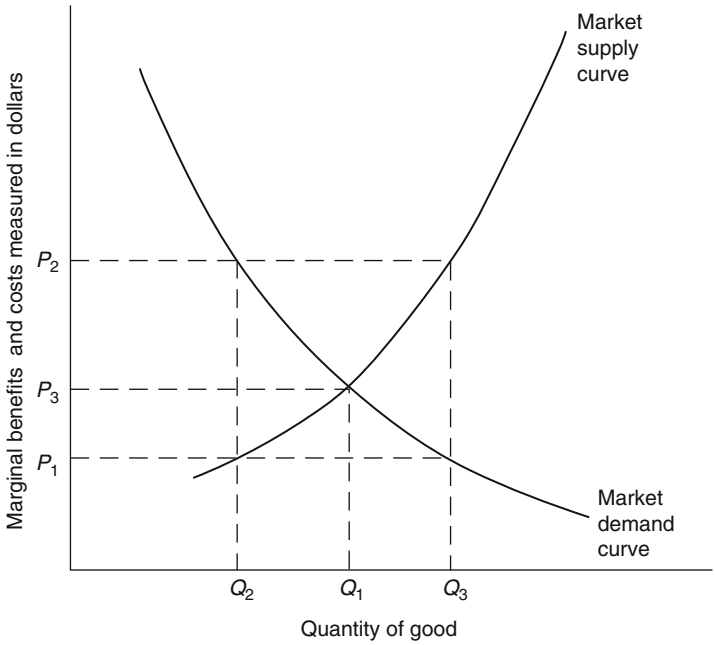

Fig. 1.5 Market Supply, Demand, and Equilibrium

additional units. These consumers, who are represented along the demand curve up and to the left of Q_3, can be expected to bid the price up, just to obtain the quantity they want.

As a result of the competitive bidding process, the suppliers can be induced to expand their production from Q_2 to Q_1. Beyond Q_1, the marginal cost of providing an additional unit is greater than what any consumer is willing to pay for it. If one producer refuses to expand production, the consumers can, since we are talking about a competitive market, turn to other producers who may be in the market or may be enticed into it by the higher price.

In a monopoly market, one in which there is only one producer of the good, the consumers do not have the option of turning to another producer (i.e., competitor). To that extent, the monopolist has control over the market: the monopolist can restrict the number of units provided and thereby demand a higher price from the consumer. By restricting output, the monopolist can reduce the total cost of production and can receive greater revenues. (Can you explain why?)

Similarly, the number of units produced and consumed will adjust toward Q_1 if the suppliers initially try to sell more than Q_1 at price P_2. Suppose they try to offer Q_3 in Fig. 1.5. The only way they can justify doing that is to charge a price higher than what consumers are willing to pay. Note that at Q_3 the marginal cost of the last unit is greater than the price the consumers are willing to pay for it. There will, as a result, be more units offered (Q_3) than will be purchased by consumers (Q_2) at the price (P_2) required for suppliers to cover their marginal cost.

Hence, the suppliers will be in a dilemma. Either they can cut production to the point that consumers will buy what is produced, or they can continue to produce more than can be sold at the price necessary to cover the cost of production. The suppliers can also produce the good and sell it at a price less than the cost incurred. Which option do you think the rational producers will choose? They will cut production back to Q_1, of course, and lower the price to P_3 in order to sell that quantity.

Economists say that a competitive market is "efficient" to the extent that the market produces where marginal cost equals marginal benefit, which is the optimizing condition of individuals explained above. This means that producers sell all of those units of a good that are worth more to consumers than to producers. It also means that all mutually beneficial trades to consumers and producers have been exhausted, which is to say that no one can gain by further trades (beyond Q_1).

Now that we have outlined the basic framework of the economist's model, we can use it to consider changes in market conditions (meaning environmental, social, or whatever). We consider such changes as we discuss most topics in this book. You name it—sex, family, organ transplants, school, politics, lying—and we will probably discuss it, either with supply and demand curves drawn out or with the curves in the back of our minds as points of analytical reference. We hope that through repeated reconsideration of market topics, you will learn a great deal not only about the topics themselves but also about the intricacies of the laws of supply and demand.

The Limits of Economic Thinking

Although we consider many diverse dimensions of human experience in this book, we do not suggest that economic analysis can be used to explain all human behavior. The interaction of individuals in a social state, with each reacting to actions of the others, is indeed very complex. Some would say that it is so complex that precious little or nothing can be gained by the scientific study of it. We, of course, dispute such a claim. On the other hand, we must approach the complex task that we have before us with full recognition of our limited ability to understand social behavior, and we should be careful that we do not exaggerate the importance of the insights we gain from our study.

Scientific insights about people's behavior achieve a degree of prominence not so much because they rank high on some absolute scale of useful knowledge but because they say a little something we may not otherwise have known. In short, these insights should always be kept in perspective; they are not, for the most part, monumental and unchanging truths but tentative statements of the way we perceive the world at this time. And they should be coveted as small nuggets because of their relative durability in the give-and-take of scientific debate.

You now know that economic analysis is founded on an assumption that people know what they want, or, what amounts to the same thing, that they have values.

People make choices consistent with the values they hold, and we can talk about the logic people follow as they seek to attain more of what they want, as we have done.

An obvious limit to economic analysis is implied in what we have just said, because much human experience is founded less on the attainment of what we want than on trying to figure out just what we want in the first place. The late University of Chicago economist Frank Knight made the point with more flair several decades ago:

> Since economics deals with human beings, the problem of its scientific treatment involves fundamental problems of the relations between man and his world. From a rational or scientific point of view, all practically real problems are problems in economics. The problem of life is to utilize resources "economically," to make them go as far as possible in the production of desired results. The general theory of economics is therefore simply the rationale of life—insofar as it has any rationale! The first question in regard to scientific economics is this question of how far life is rational, how far its problems reduce to the form of using given means to achieve given ends. Now this, we shall contend, is not very far; the scientific view of life is a limited and partial view; life is at bottom an exploration in the field of values, an attempt to discover values, rather than on the basis of knowledge of them to produce and enjoy them to the greatest possible extent. We strive to "know ourselves," to find out our real wants, more than to get what we want. This fact sets a first and most sweeping limitation to the conception of economics as a science.[9]

Economics, unfortunately, has very little to say about what people value or why they value what they do. Values are the type of basic data that must be given or assumed as a part of the analysis. Once the values or goods are defined, then the individual can be assumed to maximize the attainment of those goods.

Note that this approach leaves little room for the individual, in the course of the maximizing process, to redefine what he wants; it leaves little room for spontaneous actions that spring from raw emotions. We do not mean to suggest that economic analysis is useless, only that, as might be reasonably expected, it has its limitations. It can explain only a part of human experience, whether that experience involves crime, politics, sex, the family, education, or any other subject broached in this book. We must look to the other social sciences, philosophy, and the humanities for help in our quest for understanding human behavior. And even with this help, we will probably always conclude that there is much about human behavior that is incomprehensible.[10]

Concluding Comments

How individuals view the world and interpret the information they receive from it depends on the preconceived model each person has of it. The preceding has been a very brief outline of how economists perceive the real world. For sure, this has been an incomplete description of the economists' way of thinking; there are many more refinements that can be made.[11]

Because of this model—because of the concepts of supply and demand—the economist's first inclination is not to think in terms of absolutes, of whether

something will be done or left undone, or whether or not a goal will be sought.[12] Most things have a price at which they may be obtained, and adjustments in behavior are made according to the price (benefit) that is charged (received).

By concentrating on the general goal of utility maximization (and when talking about the firm, profit maximization) rather than on specific objectives, economists are continuously seeking out new and nonobvious alternatives and thinking in terms of the substitutability, on the margin, of specific means of reaching the general goal. Years of life are therefore viewed as a possible substitute for cigarette smoking; low-quality medical service in large quantities is one alternative to high-quality service in more limited quantities; ice cream is a possible substitute for good dental care.

Economists view the individual as fundamentally seeking ways of gaining, and consequently, whenever a person proposes a solution for any problem, economists instinctively ask, are there private interests involved? Economists are trained to separate private interests from the fabric of proposals offered as solutions for social concerns, and they are trained to pull out value judgments from arguments that are put forth as matters of logic. Economists' proclivity to think in this way sets them and their discipline apart from others. We hope that after you have read much of this book, you will reread this chapter and understand better both the benefits and limitations of economic thinking. In general, we find considerable favor with the position of Nobel Laureate Gary Becker who, in a single passage, summarized economists' view of the "economic approach":

> Indeed I have come to the conclusion that the economic approach is a comprehensive one that is applicable to *all* human behavior, be it behavior involving money prices or imputed shadow prices, repeated or infrequent decisions, large or minor decisions, emotional or mechanical ends, rich or poor persons, adults or children, brilliant or stupid persons, patients or therapists, businessmen or politicians, teachers or students.[13]

Chapter 2
Anything Worth Doing Is Not Necessarily Worth Doing Well

In 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.[1] 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

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_2,

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

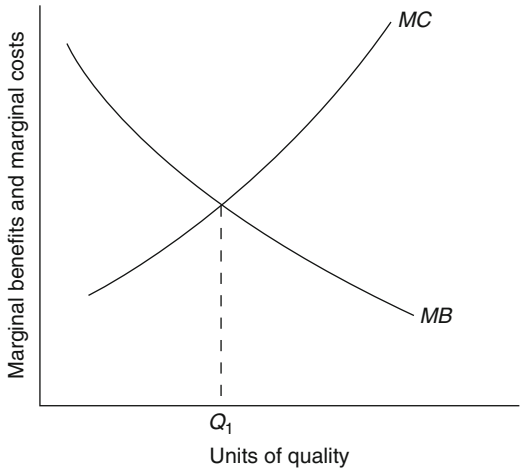

Fig. 2.1 Marginal Benefit vs. Marginal Cost

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.[2] 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.[3] 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

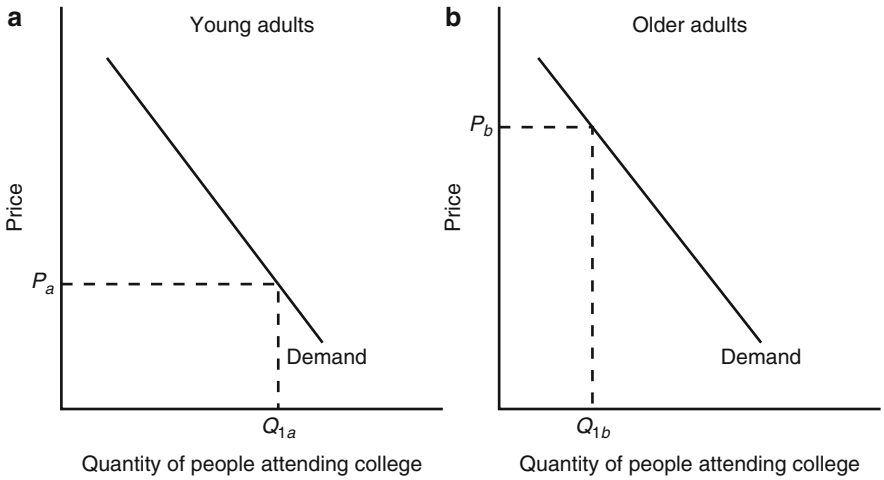

Fig. 2.2 Difference in Total Price of Education to Young and Old

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![4]

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.[5]

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 (consequentially) pollution.[6]

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.[7] 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 insure. 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 there 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.[8]

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.[9]

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.[10]

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)[11]

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.[12] 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).[13] 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.

Chapter 3
Maslow's Hierarchy of Needs and Economist's Demand

Psychologist A. H. Maslow argued that basic human needs can be specified with reasonable clarity and can be ranked according to their importance in providing motivation and influencing behavior.[1] Embedded in Maslow's hierarchy of needs is a theory of human behavior that is to some degree foreign to the economist's way of thinking. In this chapter, we outline Maslow's system so that we may be able to use it for comparative purposes.

Our discussion of Maslow's "hierarchy of needs" is, admittedly, a digression of sorts, but we think it is an important one because we have a suspicion that Maslow's system (at least in terms of its basic structure) is not terribly dissimilar to the views of many laymen in economics. In addition, Maslow's hierarchy (or some similar structure of needs) underlines the research in several other disciplines, including business courses.

Maslow's Hierarchy

In Maslow's hierarchy (see Fig. 3.1), the importance of the needs, in terms of how powerful or demanding they are in affecting human behavior, ascends as one moves downward through the pyramid; that is, the most fundamental or prepotent needs, which are physiological in nature, are on the bottom. This category of needs includes on one level all attempts of the body to maintain certain chemical balances (such as water, oxygen, and hydrogen ion levels) within the body. On a higher level, the physiological needs include the individual's desires for food, sex, sleep, sensory pleasures, and sheer activity (meaning the need to be busy).

The need for safety, which is next in prepotence, may include the desires of the individual for security, order, protection, and family stability. The next category, belongingness and love needs, may include, among other things, the desire for companionship, acceptance, and affection. Under the heading of esteem needs, Maslow lists the individual's desire for achievement, adequacy, reputation, dominance, recognition, attention, appreciation, and importance. He argues that the need

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_3,

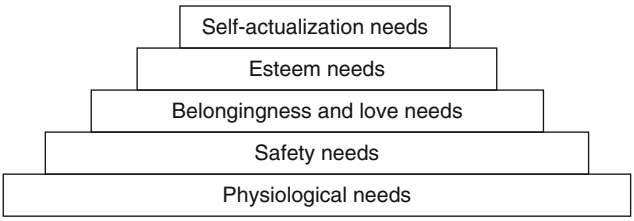

Fig. 3.1 Maslow's Hierarchy of Needs

for self-actualization "refers to man's desire for self-fulfillment, namely, to the tendency that might be phrased as the desire to become more and more what one is, to become everything that one is capable of becoming."[2]

Maslow stresses that an individual may indicate she (or he) is striving after one need when in fact she is pursuing something else. For example, the individual may say that she is hungry because by doing so and going out to dinner, she can acquire companionship, affection, and attention. This may be the case because the individual may find it useful to deceive another person or because she does not consciously know what her true motivation is. In addition, Maslow argues that certain preconditions, such as the freedom to express oneself, are necessary before basic needs can be satisfied. Consequently, individuals can be motivated to establish the necessary preconditions; they may not appear to be attempting to satisfy basic needs.

Maslow does not hold rigidly to the ordering of needs as indicated in Fig. 3.1. He specifies this particular ranking because it appears to him to be descriptive of the people with whom he has associated and because it appears to be a reasonably good generality concerning human motivation. Because of cultural or environmental factors or because, for example, love has been denied in the past, some people may place more emphasis on esteem needs than on the need for love. He also suggests, "There are other apparently innately creative people in whom the drive to creativeness seems to be more important than any other counter-determinant. Their creativeness might appear not as self-actualization released by basic satisfaction, but in spite of the lack of basic satisfaction."[3]

Although he qualifies his argument, the core proposition in Maslow's theory of human behavior is the argument that a person will first satisfy the most basic needs (physiological needs) before attempting to satisfy needs of a higher order. He writes:

> If all the needs are unsatisfied, the organism is then dominated by the physiological needs, all other needs may become simply nonexistent or be pushed into the background. It is then fair to characterize the whole organism by saying simply it is hungry, for consciousness is almost completely preempted by hunger. All capacities are put into the service of hunger-satisfaction, and the organization of these capacities is almost entirely determined by the one purpose of satisfying hunger .... Capacities that are not useful for this purpose lie dormant, or are pushed into the background.[4]

If the most basic needs are satisfied, "At once other (and higher) needs emerge and these, rather than physiological hungers, dominate the organism. And when

these in turn are satisfied, again new (and still higher) needs emerge, and so on."[5] One gets the impression from reading Maslow that the individual will not attempt to satisfy her second most prepotent needs until the most prepotent needs are almost fully satisfied; she will not move to the third tier in the hierarchy until the needs at the second tier are "fairly well gratified."[6] Apparently, the individual will not attempt to effect any self-actualization until she has moved through all former tiers. If any tier in the hierarchy is skipped entirely, it is because of insurmountable environmental or physiological barriers.[7]

Economics and the Hierarchy

Maslow's approach to human motivation and behavior resembles the approach of economists in several respects. First, they are similar because the essence of both theories is an assumption that the individual is able to rank all of his wants (or needs) according to their importance to him. In the Maslow system, anything that is not directly a basic need is ranked according to how close it is to a basic need. Other needs beyond the five categories mentioned, such as the need to know or understand and the need for esthetic quality, can be handled by adding tiers.[8] As pointed out in Chap. 1, the economist simply starts with an assumption that the individual knows what she wants and is able to rank all possible goods and services that are able to satisfy her wants.

The two systems are dissimilar, however, when it comes to specifying of the ranking. Maslow is willing to argue that in general the basic needs and their ranking can also be identified; that is, he can say what the individual's needs are and is willing to venture a statement about their relative importance. On the other hand, an economist would generally take the position that the relative importance of the needs varies so much from person to person that a hierarchy of needs, although insightful for some limited purposes, does not move us very far in our understanding of human behavior.

The economist may specify whether a good or service may add to or subtract from the individual's utility and will argue that more of something that gives positive utility is preferred to less, but would be unwilling to try to say exactly where the good (or need) may lie on some relative scale. We must presume that the specificity Maslow seeks is to him a useful, if not necessary, basis for predicting human behavior. Economists believe that they can say a great deal about human behavior without actually specifying the relative importance of the things people want. We certainly admit that the economist's inability to specify the relative importance of needs is a limitation to economic theory. (Given some of the areas into which economists are now delving, more and more economists are beginning to wish that they could somehow specify the ordering of people's preferences.)

The two systems are similar to the extent that they view the individual as consuming those things that give the greater satisfaction. Even in the Maslow system, which lacks a direct statement to the effect, there is the implicit assumption

that the individual is a utility maximizer. Maslow also assumes diminishing marginal utility as more of the need is consumed; if this is not the case, it is difficult to understand how the individual can become fully or almost fully satisfied at any need level.

The systems are different because of their views of the constraints that operate on the ability of the individual to maximize his utility. The constraints in the Maslow hierarchy include environmental and cultural factors and the individual's character, or his beliefs about what is right and wrong. There is no mention of the individual's productive ability or income (unless these are implied in the environmental or cultural constraints) or of the costs of the means by which his basic needs can be fulfilled. These considerations are basic constraints in the economist's view of human behavior.

By not considering cost, Maslow appears to assume either that there is no cost to need gratification or that (in spite of an implicit assumption concerning diminishing marginal utility) the demand curve for any need is vertical (or perfectly inelastic). This means that the quantity of the need fulfilled is unaffected by the cost. An implied assumption of the vertical demand curve is that the basic needs are independent of one another. They are not substitutes; for example, a unit of an esteem need fulfilled does not appear in the Maslow system to be able to take the place of even a small fraction of a unit of physiological need.

Maslow recognizes that most people have only partially fulfilled their needs at each level. He writes:

> So far, our theoretical discussions may have given the impression that these five sets of needs are somehow in such terms as the following: if one need is satisfied, then another emerges. This statement might give the false impression that a need must be satisfied 100% before the next need emerges. In actual fact, most members of our society who are normal are partially satisfied in all their basic needs and partially unsatisfied in all their basic needs at the same time. A more realistic description of the hierarchy would be in terms of decreasing percentages of satisfaction as we go up the hierarchy of prepotency. For instance . . . it is as if the average citizen is satisfied 85 percent in his physiological needs, 70 percent in his safety needs, 50 percent in his love needs, 40 percent in his self-esteem needs, and 10 percent in his self-actualization needs.[9]

Maslow does not, however, explain why this will be the case, nor does he provide an explanation for why a person will not fully satisfy the higher needs before he moves to the next tier.

The Relevance of Demand

The economist might concede for purposes of argument, as we do, that the demand for a physiological need is greater (and more inelastic) than the demand for a safety need, which in turn is greater than the demand for a love need. However, it does not follow that, as Maslow suggests, the love need will be less fulfilled in percentage terms than the safety or physiological needs. To what extent the different needs are

gratified depends on the cost or price of each unit of the means for satisfying a need and the elasticity of demand of each need. To illustrate, consider Fig. 3.2. The demand for a means of gratifying a physiological need is depicted as being greater (meaning it is further out to the right) than the other demands. (For the sake of simplicity, we consider only three needs.) We assume that any given need is fully satisfied if the quantity of the need purchased is equal to the quantity at the point where the respective demand curves intersect the horizontal axis.[10]

If, as in this example, the cost of satisfying each need is the same, P_1, the individual will consume Q_{p1} of the means of satisfying his physiological need. As far as units are concerned, this is greater than the quantity of units consumed for satisfying the other needs; however, the percentage of the need gratified does not

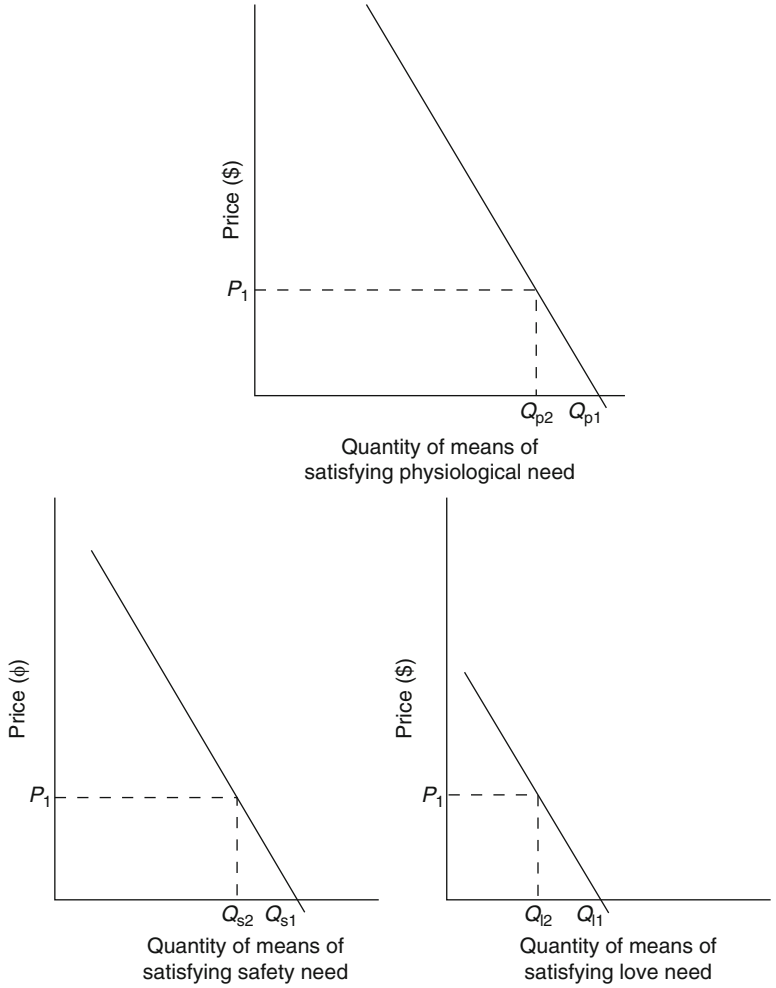

Fig. 3.2 Different Prices for Different "Needs"

have to be greater. If demand for the physiological need were sufficiently inelastic, the percentage of the need gratified could be greater.

It is doubtful, however, that the costs of satisfying the different needs are the same. The availability of the resources needed for satisfying the different needs can easily be different; consequently, the costs of need gratification can be different. If the cost of fulfilling the physiological need were substantially greater, even though the demand for the need were greater, the percentage of the physiological need fulfilled could be less than the percentage of the other needs fulfilled.

In Fig. 3.3, the prices (or cost per unit) of the means by which a physiological need can be satisfied (P_p) are greater than the prices of the means for satisfying the other needs. The price of satisfying the safety need (P_s) is assumed to be greater than the price of satisfying the love need (P_L). The result in this case is what we suggested it could be; the individual will fulfill a lower percentage of his physiological need than she will fulfill of her other needs. In fact, the order of need

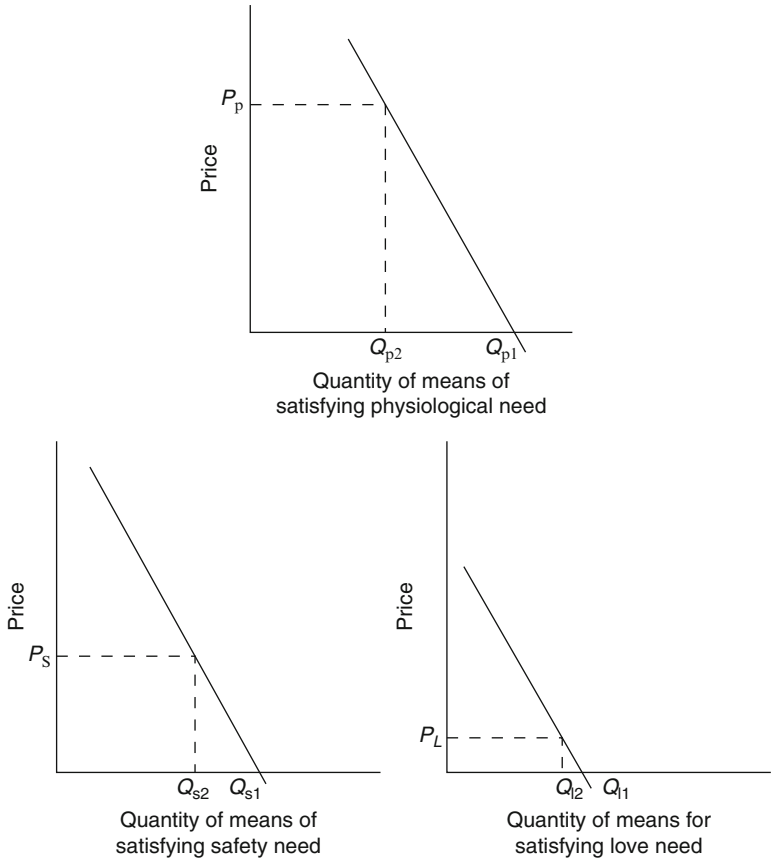

Fig. 3.3 Different Prices for Different Levels of Needs

fulfillment is reversed from the order suggested by Maslow: the individual fulfills a higher percentage of her love need than of the other needs.

Concluding Comments

Maslow apparently has observed that people fulfill a higher percentage of their physiological needs than of other needs. Our line of argument suggests that this may have been the case because the price of physiological need fulfillment is lower than the prices of fulfilling the other needs.[11] The important point we wish to make is that a change in the price (or cost) structure can bring about a change in the extent of need gratification at each level. In such an event, our (and psychologists') definition of what may be considered normal as far as need gratification is concerned should be reconsidered.

People's behavior need not have changed in any fundamental sense; they may merely be responding to different prices, while their basic preferences and attitudes remain the same.

Part II
The New World of Market Economics

Markets have always been central to economics, almost always studied by the forces of supply and demand as they relate to candy bars, sodas, and bicycles. Those topics are important, but in the following three chapters, we extend conventional analysis by explaining how, for example, airport security affects the supply and demand for air and highway travel, and how the two modes of travel are interconnected by way of price. Indeed, we explain how the 9/11 terrorists have probably killed more Americans since 9/11 than they killed on that fateful day, and the terrorists have been dead ever since 9/11. We also explain how well intended how the pricing of university housing supposedly for the benefit of graduate students can undercut the potential welfare of the graduate students, as well as undermine the quality of graduate students attracted to the university. A theme of these chapters is that the "law of unintended consequences" always rules. You cannot fool Mother Nature and you cannot fool Mother Market, no matter how well intended the policy changes. Also, in these chapters, the wisdom of French economist/pundit Fédéric Bastiat (1801–1850) comes through intentionally. He once mused,

> There is only one difference between a bad economist and a good one: the bad economist confines himself to the visible effect; the good economist takes into account both the effect that can be seen and those effects that must be foreseen.

How true, how true. These chapters (and, for that matter, all the others in the book) will help you become a truly good economist.

Chapter 4
Price and the "Law of Unintended Consequences"

Economics is as much a communicable disease as it is a discipline. Economics is a way of thinking about everything and coming to a better understanding of life. When you catch it, the way of thinking (by way of learning a few basic but powerful economic principles), it is hard not to see most of life's large and small events as economic puzzles worthy of reflection and solution.

We admit it; we are economists with this affliction: We are constantly puzzling over everything we read in the newspapers, watch on television, and hear others say, especially when the comments are about why prices are what they are (and not something else). But then we puzzle over observed prices when many others seem to miss their importance. We understand all too well that prices are the products of so-called market forces, but leaving the explanation at that superficial level of analysis is hardly satisfying, especially since our affliction is terminal. We feel a compulsion to understand exactly what market forces are at work on the prices we see. And when we see prices that do not make sense, our compulsion goes into overdrive. We must understand why prices are what they are.

Chalking supposedly ill-conceived prices up to people's stupidity (or to their unthinking or irrational behavior) is hardly satisfying, not that we do not recognize that people—both buyers and sellers—do a lot of stupid things as they go about their daily business. Most ill-conceived prices are quickly corrected, mainly because ill-conceived prices imply that someone can make them better—*and profit by doing so*. The ill-conceived prices we often notice are ones that are systemic and have staying power, or else we would not have time to pay much attention to them, or need to explain them. We cannot help but search for explanations for persistent "ill-conceived prices"—that, to us, by their very persistence suggests that they are not nearly so ill-conceived as thought. Indeed, "ill-conceived prices" often do have rational, albeit counterintuitive, explanations, with "rational" explanations being grounded in the costs and benefits market participants face. Finding explanations for observed prices is a form of economic detective work, which can be fun, especially when the sources of observed prices and their consequences are as unintended as they are unexpected.

Prices have been at the heart of economic inquiries for a very long time, but prices can still be mysterious. Satisfying explanations for the many prices we see all

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_4,

around us can be as surprising as they are elementary. Pricing strategies can also have consequences that are … well, perverse—again, as will be shown time and again throughout this book. For a start, consider a puzzle embedded in Apple's price for the iPhone on its release in mid-2007 (and its one-third reduction in the price of the top model two months later), Audible.com's announced clearance sale, and the proposed price control for brothel prostitution in postwar Japan.

Early in 2007, Steve Jobs, the now late founder and CEO of Apple, announced that his company would enter the mobile phone business with the introduction of the iPhone by mid-2007. The iPhone would be a multipurpose device, one that could be used to make calls, to listen to music, to store pictures and videos, and to surf the Web, all with the typically sleek Apple design touch.

In making his announcement, Jobs set off a worldwide media feeding frenzy about the iPhone that reached a crescendo in late June 2007. And sure enough, as the June 29 released date approached, Apple devotees around the world began forming lines outside of Apple stores and AT&T stores (which, at the time, had exclusive service rights). To hold their places in line, many slept for several nights on the sidewalks, even in the rain.

Just before midnight on June 28, the queues outside of many Apple stores wound around several blocks—in spite of some technology reviewers' warnings that the iPhone had problems (a not-so-user-friendly virtual keyboard and connection incompatibilities, for example) and in spite of iPhone's high initial prices, $499 for the model with 4 GB of memory and $599 with 8 GB. Notwithstanding the iPhone's early less-than-stellar reviews, people in the long queues were convinced that the device would be as cool as the phenomenally successful iPod, and would set the standard for the next generation of cell phones just as the iPod had set the standard for MP3 players a half-dozen years earlier.

When the doors of the Apple (and AT&T) stores swung open one minute after midnight on June 29, the throngs of "Appleholics" poured in to snatch up their iPhones. During the first weekend, Apple reportedly sold at least a half of a million, and maybe three quarters of a million, iPhones, several times Apple's and everyone else's aggressive sales projections based on market research, but the company could have sold more.[1] Any number of Apple (and AT&T) stores quickly ran out of both iPhones models before 1:00 a.m., and surely before the sun came up.[2]

The iPhone's introduction, and its immediate market mega-success, is surely puzzling to many economists, if not everyone else, for several reasons. Aren't markets supposed to clear? If they are, then the long queues at the Apple stores for the iPhone's release must have been an unintended consequence, or was it? When Jobs saw the media feeding frenzy build early in 2007, why did not he order an even higher price in anticipation of long queues on the release date to ensure that many people would not waste time camping out for days—and, not immaterially—that Apple's profits would rise? Immediately after that last weekend of June, reports surfaced that the 8-gig model, which was in especially short supply, began showing up on eBay at prices a third higher than the posted retail price at Apple stores. EBay reported that the highest bid for an iPhone that first weekend was a remarkable $12,500.[3] Why did Jobs leave money literally on the sidewalks for "technoscalpers"

to pick up, or did he? Did Jobs know something that is not apparent to microeconomic textbook authors (who write glowingly about how price hikes can, and will, relieve market shortages)?

Then, we cannot help but wonder why Apple charged only 20 percent (or $100) more for the iPhone with 8 GB of memory than the 4-GB model? Why not more, especially since the excess demand of the 8-gig model was greater? Does anyone really think that the price difference is attributable to the cost difference in memory? If cost does not explain the price difference, then what was behind Apple's pricing strategy?

During the first week of September after the iPhone's release, Jobs did what he had never done before: he lowered the price of the 8-gig iPhone by $200, causing the price of Apple stock to fall immediately by 5 percent, because, according to media reports, the price reduction indicated that the iPhone was not selling as well as anticipated, as reported by the *Wall Street Journal*.[4] Might it not be the case that the market got it wrong? Perhaps Apple hiked the price of the iPhone on its release in anticipation of the initial surge in demand—and in anticipation of the price reduction two months later and the encouragement of a "tipping" of the media player market even more in Apple's favor.[5]

Even more perplexing, why did the prices for all iPhones end with "9"? For that matter, why have the prices of almost all Apple products, from iPods to iTune songs, ended with "9"? Do Jobs and the obviously very smart marketing people at Apple really think that their buyers are so dumb that they cannot see that prices of $499, $599, or $399 are just a dollar short of $500, $600, and $400, especially since they were obviously smart enough to earn enough to pay the considerable purchase prices of their iPhones? If the $1-off prices were intended to fool people, then it is hard to see how, since so many print and online news reports of the iPhone's release dispensed with the 9s, giving the prices of the two models at $500 and $600.

Shortly after the iPhone was released in the summer of 2007, we went to Audible.com to download additional audiobooks and were struck by the Web site's banner announcement: "SUMMER CLEARANCE SALE … 25% Extra Off … Selections from Thousands of Titles." We could not help but wonder, Audible is clearing out its inventory? How can that be? It *does not* have an inventory, other than the master copies of audiobooks from which it duplicates the copies its subscribers download (at a close to zero cost to Audible, we might add, since its "inventories" are nonmaterial, or are nothing more than electrons in a server's hard drives). Surely Audible is not giving up its masters. There would be no need. Why would Audible announce a "summer clearance sale"?

Only a marketing gimmick, you might be thinking? Maybe so, but maybe Audible's clearance sale suggests that similar sales conducted by brick-and-mortar retail stores may be motivated by some economic motive that is independent of the stores' interest in clearing out inventories that are, supposedly, unwanted because they represent mistakes in ordering. If inventory clearance does not explain many seasonal (winter, summer, or after-Christmas) inventory clearance sales, then what does? Might not after-Christmas sales be as planned as carefully as the before-Christmas non-sales, suggesting that "sales" may have a hidden logic beyond the obvious that stores use them to move unwanted goods?

If you find such questions uninteresting, you probably bought the wrong book. If you find them intriguing and enticing, then read on, because addressing those kinds of questions is what this book is about—but also much more, as another puzzle dealing with . . . (oh no!) *sex* reveals. By the time you finish this book, you should have a far deeper understanding of why Jobs and Apple chose the pricing strategy they did, without our ever providing an explanation—not directly, at least.

Hybridnomics: HOV-Lane Economics, California Style

To encourage sales of fuel-efficient, environmentally friendly hybrid cars, Congress authorized a tax credit for hybrid automobiles (which use a combination of gas and electric powered motors) of up to $3,150, with the credit varying with the hybrid's EPA fuel efficiency and the year of production.[6] The California legislature upped the ante for owning hybrids, authorizing the state's Department of Motor Vehicles to distribute 85,000 stickers to hybrid owners entitling them to drive alone in any of the state's High Occupancy Vehicle (HOV) lanes formerly restricted to cars with two or more passengers. But only owners of cars that had an EPA fuel efficiency rating (given the rating methods in place at the time) of at least forty-five miles per gallon received HOV-lane stickers.

The tax credit and HOV-lane sticker privilege did what they were supposed to do. They drove up the demand for the Toyota Prius and Honda Civic hybrids (the only cars that qualified for stickers at the time), but the sticker privilege surely had market consequences that were unexpected and unintended. For example, because of the stickers, the small Prius in 2006 was selling for over $30,000, and had waiting lists until early 2007. The Civic hybrid carried a dealer "added premium" to the manufacturer's suggested list price of as much as $4,000 (with the hybrid Civic total price more than $7,500 higher than the quoted price of a nonhybrid Civic).

No doubt, there were many hybrid buyers who did not have warm and fuzzy feelings for the environment. They recognized that the tax credit plus the HOV-lane privilege amounted to a reduction in the *effective price* (dealer price minus tax and commute savings) of the hybrid. The tax credit that accompanied the hybrid purchase lowered the after-tax purchase price of the hybrid. The reduction in buyers' time cost of their commutes to and from work also lowered the *effective* price commuters had to pay for their cars. Commuters' demand for hybrids, inflated by the tax credit and the lower commute times, drove up the dealer prices for hybrids and drove out of the hybrid market many dedicated environmentalists who were not sufficiently dedicated or wealthy to pay the hybrid premiums commuters were willing to pay.

At the end of January 2007, the DMV ran out of stickers, leaving more than 800 new Prius and Civic hybrid owners, who had bought their hybrids at premium prices and who had applied for the stickers, with the tax credit but without the right to drive alone in the state's HOV lanes.[7] They gambled and lost on the stickers, and we can feel their pain.

Now with no more stickers to distribute, what can be expected to happen in the California market for hybrids? No doubt some of the effects we can list were unanticipated and unintended.

First, we should expect a drop in the demand for new hybrids at dealers, along with a drop in their negotiated sale prices. Buying a new hybrid Civic instead of a nonhybrid Civic has been difficult for even warm-hearted environmentalists to justify, since the hybrid would very likely have to be driven over 500,000 miles (or driving the car for more than forty-two years at 12,000 miles a year!) before the savings in gas could offset the added purchase price plus the cost of replacing the hybrid battery (most likely every ten years) and the added interest and sales taxes on the added purchase price.[8,9] However, those added car costs can be easily justified by a commuter who earns $40 an hour and who, with the stickers, can save an hour a day commuting to and from work. Such drivers can cover the added hybrid costs through lower commute costs within a year.

Since the HOV-lane stickers stay with the hybrids, the demand for used hybrids with stickers can be expected to rise, along with their prices, perhaps dramatically. Used hybrids with stickers can be expected to sell for more than hybrids comparably equipped with approximately the same miles on them but without the HOV-lane stickers. Hardly surprisingly, by spring 2007, *USA Today* reported that Kelly Blue Book had found a $4,000 difference in used Priuses with and without stickers.[10] No doubt the hybrid/nonhybrid price differential will rise with the growth in California's population and the count of cars on the state's freeways and will fall as the expiration date for the HOV-lane stickers draws closer (now set for 2011), and, of course, will rise with any extension in the expiration date for the stickers.

The growing number of drivers with long commutes and high opportunity costs, meaning high hourly earnings, can be expected to spur the demand for used hybrids. They can be expected to buy hybrids from owners who bought their hybrids for environmental reasons and from owners who have lower cost savings from using the HOV lanes, because they have lower wage rates and/or shorter commutes.

As a consequence of the used hybrid sales, we should expect the HOV lanes to become more crowded because the lanes will be dominated to a greater extent by people with longer commutes (while all other lanes will become marginally less crowded), which will, of course, undercut (albeit marginally) the value of the stickers and the price of used hybrids. Given the market value of stickers (equal at least to the $4,000 price differential between hybrids with and without stickers) and the fact that the DMV appears to have distributed stickers that are far from counterfeit proof (even though the stickers are designed, supposedly, to crumble if tampered with), no one should be surprised if a healthy black market for stickers emerges, with the counterfeit stickers dampening the rise in the prices of used hybrids. And not surprisingly, the theft rate for hybrids with stickers exceeds by a healthy margin the theft rate for hybrids without stickers. Indeed, by mid-2007, reports had surfaced that 2–3 dozen sets of California HOV-lane stickers were being stolen from hybrids each month.[11]

The impact of used hybrid sales on automobile pollution is more difficult to assess. On the one hand, the people who buy used hybrids to speed up their

commutes will reduce pollution, since they will be driving the less-polluting hybrids and will spend less time on their commutes with their engines running. On the other hand, the more crowded HOV lanes will mean that other nonhybrid HOV-lane users will, because of the greater crowding, have longer commutes with their nonhybrid engines running all the while. The slowing of traffic in the HOV lanes can also lead to less carpooling (again, albeit marginally).

Should hybrid owners with stickers have been allowed to sell their stickers as separate items, that is, without selling their cars? Of course so, *if* the goal of government is to make sure that those who use the scarce HOV-lane slots are drivers with the most urgent need to travel faster, but pollution control might be the more important government goal.

On first thought, it might seem that pollution would remain unchanged, since the stock of stickers and hybrids will remain at 85,000; however, you can bet that current hybrid owners with stickers would love to be able to sell their stickers separate from their cars. Doing so would save them the hassle of buying another car, and the added value commuters with Hummers (and all other large and small cars) would put on the stickers would drive up the demand for and price of the HOV-lane sticker advantage. Hummer dealers, before the line folded in 2009, could also see an advantage in independent sticker sales since people could buy Hummers with the intent of going into the "used sticker" market to reduce their commute times. If stickers could be sold independently of the hybrids, we might see another marginal increase in the crowding of the HOV lanes because of the likelihood that some of the used sticker buyers would have cars larger than the relatively small Prius and Civic that would be replaced in the HOV lanes.

The impact of shifting to independent HOV-lane sticker sales on pollution is, again, problematic. If current Hummer owners move into the HOV lanes, they might pollute less, since they would have lower commute times, but, again, the added crowding could add to the pollution coming from all the nonhybrid cars using the HOV lanes for daily commutes. However, independent sticker sales could spur sales of cars and trucks larger than the current crop of hybrids. Such sticker sales could also cause large car buyers to move farther from work.

Hybrid owners needed to be aware that their cars' resale prices would wane with time because the stickers expired at the start of 2011. Hence, the stickers' value to both commuters and environmentalists could have been predicted to decrease as the expiration date approached, which indeed happened. The use value of the stickers simply diminished as the deadline drew nearer.

Air Travel Safety for Infants and Toddlers

Historically, parents have been able to buy airline tickets for themselves and hold their infants and toddlers under two years of age on their laps during flights. But in the late 1980s, under the banner of saving children's lives, the National Transportation Safety Board and Los Angeles Area Child Passenger Safety Association

petitioned the Federal Aviation Administration to end the free ride for young children by requiring the use of child-restraint systems in paid seats for infants.[12] James Kolstad, chairman of the NTSB, said, "The economic cost of the extra passenger seat . . . [is] a very small price for preventing injuries and saving lives."[13]

To ensure the FAA did not resist changing its child-seating rules, then Representative Jim Lightfoot (R-Iowa) and Senator Kit Bond (R-Missouri) introduced legislation to mandate the use of safety seats for infants and toddlers on airplanes.[14] Congressmen Lightfoot was spurred to introduce his bill after the death of two infants in the crash of United Airlines flight 232 in Sioux City, Iowa, in July 1989. (Video of the crash, in which the plane somersaulted down the runway, has been aired repeatedly around the world because of how fiery it was.) Lightfoot spoke for his supporters within policy circles and the general public when he reasoned that rules requiring the use of safety seats in automobiles should be extended to airplanes because "the potential for injury in an aircraft flying at 550 miles per hour is much greater than the potential for injury in an automobile traveling at fifty miles per hour."[15]

The FAA, the fifty or so members of Congress, the National Transportation Safety Board, and everyone else who at the time supported the rule change were rightfully concerned with the safety of traveling children. However, what proponents of child seat rules, both back then and since, have not considered is beyond the obvious effects from the rule change, there might also be some unanticipated, unintended, and even perverse results.

The more notable unanticipated and unintended effect was that the infant seat requirement would increase the total price of air travel for families, encouraging families to travel by automobile instead, and auto travel is far more dangerous than flying. At the time Lightfoot and Bond introduced their bill to regulate infant safety in the air, automobile transportation was at least 30–40 times as hazardous in terms of the death rate per mile traveled.[16] In a study prepared for the FAA, Department of Transportation researchers concluded that mandatory infant safety seats on airplanes could have prevented at most only one infant death since 1978. All other infant fatalities in airline crashes occurred in sections of planes where no one survived.[17] On the other hand, nearly 1,200 children under age 5 were killed in automobile accidents in 1988.[18,19] That means that there were approximately one-quarter more automobile deaths of very young children in 1988 alone than there were total deaths of children and adults on scheduled airlines during the entire 1980–1988 period.[20,21]

According to the FAA's own (admittedly rough) calculations at the time of the congressional debate, mandated safety seats for infants could increase the average air travel cost of a family of four (two parents with one child over age 3 and one infant) by at least 21 percent—assuming that airlines charged half fares for infants and did not raise their fares across the board because of rule-induced increased demand.[22,23] That cost increase could reduce the number of infants on board by about 18 percent, or 700,000, again according to FAA estimates. Nevertheless, the FAA figured that airlines would be able to sell 3.3 million additional seats each year

to infants' parents at a cost of $205 million (equal to about $325 million in 2007 dollars), a handsome sum that explains the airlines' interest in the proposed rule.[24]

The precise effect on air travel safety of requiring seats for infants and toddlers has been debated ever since Congressman Lightfoot and Senator Bond introduced their legislation in 1990, and will probably be debated again. One of the authors' (McKenzie's) own econometric research (undertaken with colleagues at the University of Mississippi and Clemson University) on the impact of airline deregulation documents a point that the FAA and Congress must keep in mind: air and highway travel are interchangeable modes of transportation for many families. Changes in airline fares significantly alter the amount of highway traffic, and highway accidents, injuries, and deaths are highly correlated with the amount of highway travel and congestion.[25] Our research suggests that there is every reason to believe that increases in air travel costs for families, as a result of the proposed safety seat requirement, should have the opposite effect of the one intended: the infant safety seat proposal would have, on balance, increased infant travel deaths.[26]

The FAA subsequently drew the same general conclusion: an infant seat requirement would cause more infant travel deaths than it would save, although its estimates of the infant lives lost were much more conservative than the estimates our research indicated.[27] In essence, the infant seat proposal to save infant lives is probably a proposal to sacrifice lives of relatively less wealthy people who make their trips by car to save fewer lives of relatively more wealthy people who continue to fly, in spite of the added expense.

From time to time, a Lightfoot/Bond-type proposal has been tendered in the media, prompting the FAA to make additional pronouncements against an infant seat requirement as late as 2005.[28] If such a proposal were ever adopted, an unknown number of the travel victims would surely be infants who would have traveled quite safely on their parents' laps in airplanes. Many of the automobile victims will also be the infants' parents, brothers, and sisters, but many will also be road travelers who may have never contemplated air travel as an alternative means of transportation. They just happened to be in the wrong place at the wrong time on the nation's roads, made marginally more congested by an airline infant safety seat requirement.

There is one good rule that comes out of this analysis that Congress and all government agencies should heed: do not create a travel-injury problem that is bigger than the one being addressed. Changes in policies that make for changes in prices, whether explicit or hidden, can prove deadly, which is a point fortified in the following discussion of antiterrorism measures.

9/11 Terrorists and American Deaths Since 9/11

The overarching lesson of the last section should never be forgotten when assessing the consequences of one of the most appalling acts of terrorism in human history committed on September 11, 2001. The nineteen 9/11 terrorists killed more than

2,700 Americans when they commandeered four planes and flew them into buildings and the ground on that surreal day. Such a loss of innocent lives is tragic enough. However, those terrorists have very likely killed (albeit indirectly) more Americans since that fateful day than they killed on that day.

How can that be? The explanation is remarkably straightforward. On 9/11, the terrorists immediately increased the overall price of flying by increasing many potential air passengers' perceived risk of flying. After all, before 9/11, few Americans considered the prospects that a bunch of religious zealots would harbor so much hatred for Americans that they would be willing and able to take over planes only to use them as guided missiles. Since 9/11, most air travelers have understandably feared that copycat terrorists would strike again.

The terrorists, of course, forced the U.S. government to dramatically beef up security checks at airports, the result of which has been an increase in travel time for all passengers. The time spent in security lines at airports has translated into a greater overall cost—and effective price—of air travel relative to ground travel.

Hence, since 9/11, more Americans than otherwise have been more inclined to choose automobile travel, leading to more miles driven and greater highway congestion. Since travel by car is far more deadly per mile than air travel, it should surprise no one that automobile accidents, injuries, and deaths have increased as a consequence of the greater cost of air travel imposed by the 9/11 terrorists (independent of other changes—for example, road conditions—that can be expected to affect car-travel deaths).

Cornell University economists Garrick Blalock, Vrinda Kadiyali, and Daniel Simon have reported in two working papers the econometric findings of the price tie-in between the 9/11 terrorists' actions and car-travel deaths.[29] They found that the 9/11 events and resulting security measures reduced air travel volume, independent of other forces, by about 5 percent across all of the nation's airports and 8 percent from the nation's major airports. The resulting increase in car travel following 9/11 led to approximately 242 more automobile deaths per month than would otherwise have been predicted for the last quarter of 2001.

As Americans adjusted their travel behavior in subsequent months to accommodate the greater cost of air travel, the increase in the number of car deaths per month attributable to the 9/11 attacks began to taper off. Still, the Cornell researchers were able to surmise that at least 1,200 more Americans lost their lives on the nation's roadways in the 12 months following 9/11 than would have otherwise been predicted.[30] It is no stretch to think that the greater count of American road deaths over the past 6-plus years attributable to greater flying risks and 9/11 security measures have surpassed the 9/11 deaths.

The economic tie between air and car travel means that the Transportation Security Administration (TSA) should be ever mindful of the prospects of unintended consequences, the most notable of which is that raising the security alert from, say, yellow to orange can spell greater road deaths, because the security measures can lengthen check-in lines and thus increase the total cost of flying and drive many would-be air travelers to the much deadlier highways. Indeed, the Cornell economists cited above have found that the tighter airport security

measures instituted by the TSA after 9/11 also decreased air travel, increased road travel, and led to about 1,250 more American road deaths in the 12 months following 9/11 than would have been projected.[31]

The price tie between tighter airport security measures and road deaths means that the TSA has a life-and-death management issue on its hands that has no easy solution. Suppose the TSA has heard of a *potential* terrorist plot to take over a plane. The TSA considers the source reliable, but not perfectly reliable. Should it raise the alert status from, say, yellow to orange? Without the potential for its security measures affecting road deaths, the TSA's decision is perhaps clear—raise the alert status because the only effect will be to inconvenience travelers who will have to stand in longer lines and to suffer more frequent searches. With the price tie of its alert pronouncements to road deaths, the TSA's decision is far more serious, because its decision can lead to more highway deaths, perhaps more deaths than would be suffered if the alert status were not raised and the terrorist plot became a terrorist act, with deaths in the air.

Needless to say, the TSA might at times refuse to raise its alert status because by not doing so, it can save more American lives on the nation's highways than might be lost from terrorists in the nation's airways. But then, the TSA must also be ever mindful that not raising the alert status can result in additional deadly terrorists' acts on planes, which, again, can drive hordes of Americans to the nation's roadways. Indeed, without an occasional elevation of the alert status, many Americans might drive with greater frequency to their destinations because they fear that the TSA is not doing its job, which is catching wind of terrorists' plots to use planes as missiles.

Clearly, the line of argument developed here speaks to one policy issue: Any waste of scarce TSA manpower on screening everyone—even infants and aging grandmothers—because of a prohibition on profiling can be deadly. This is because the tighter security measures and waste of security resources can increase the time cost of air travel and result in more car travel, and subsequently, more road accidents, injuries, and deaths.

Of course, terrorists may figure that they can effectively cause greater deaths of Americans even when they get caught trying to breach airport security defenses. Their failed efforts can keep the terrorist threat alive, and can cause more Americans than otherwise to take to the roads.

By the same token, efficiency improvements in screening passengers, which reduce the time spent in security lines, can save American lives. The price effect of shorter lines can lead to a reverse substitution of air travel for car travel—and fewer accidents, injuries, and deaths on American roads.

In short, the interplay between the full cost of air and road travel cannot—and should not—be overlooked, by homeland security agents or terrorists as they develop their respective defensive and offensive strategies. Regrettably, TSA officials understand all too well that they will catch hell from the media and policymakers if they allow terrorists to slip through and pull off another massacre on board a plane. Those same officials will not likely ever be held responsible for how their airport policies affect highway accidents and deaths. Accordingly, we should not be surprised if TSA officials will want to err on the side of being too

cautious, which can translate into more deaths on the nation's roads than will likely be saved in the air.

Water Crises in Southern California

University of California, Irvine, executive MBA students enrolled in microeconomics are frequently asked during the first class lecture: "Why are there water crises in Southern California?" Students seem to draw back, somewhat puzzled, because on the surface the question seems silly. Of course, in spite of their puzzlement, they think they *know* the answer, and more than one student will offer the "obvious" answer, "It does not rain much in Southern California!"

Granted, the prompt answer contains an element of truth. Rainfall in Southern California averages 13 or fewer inches a year, making the area close to desert conditions.[32] The obvious answer to the question of why there are water crises may be a good one for a course in atmospheric physics. But an economics class challenges students to think beyond the typically low rainfall when considering the problem of water shortages.

We like to remind students, "True, it does not rain *water* in Southern California, but it also does not rain *Mercedes Benzes* in the area either, and neither does it rain Snickers candy bars, or any other good of value! But have we ever had a *Mercedes Benz* crisis in Southern California?"

The question answers itself and directs student's attention (eventually) to a good old-fashioned reason why Southern California sometimes has water shortages (that, in the media, easily get elevated to dire "crises") but never Mercedes Benz shortages. The streets are full of Mercedes Benzes, as are the lots of dealerships—all for a very good reason: the price of Mercedes Benzes is left to move with the forces of supply and demand. If the demand for Mercedes rises or if their supply contracts, the price of the cars rises, cutting out any would-be shortage by curbing the number of Mercedes bought and averting anything approaching a shortage, much less a crisis.

On the other hand, the price of water is stuck at some subsidized level, determined by government officials who are reluctant to change the price of water to accommodate transient changes in the demand for and/or availability of water. If rainfall drops way below average, as it is bound to do from time to time, and the price is not hiked, people can be expected to continue using water as if nothing has happened. After all, the low price of water tells many consumers (especially a large percentage of the population that never pays attention to the news) that water is as abundant as ever. The continuing flow of water out of home faucets can convince uninformed and informed consumers that any shortfall in rainfall in Southern California could be offset by a greater snow pack in the mountains of Northern California where Southern California gets a third of its water.

Southern California water consumers can also reason (if they are aware of the drought) that if they alone curb their consumption, the water tables in the area's

reservoirs will not be noticeably affected. Even if a sizable bunch of consumers curb their water use, consumption would not likely be materially affected because other consumers can expand their use of water. And do understand that Southern Californians use water with little thought of how scarce water really is, mainly because its low price—0.25 cents per gallon for residential use,[33] which is one third the price of water in Mississippi where the rainfall is over fifty inches a year—makes it seem abundant (which is the case, given the considerable federal, state, and local government subsidies to draw water from other parts of the state through aqueducts and from other parts of the country through tapping into aquifers that extend into the upper Midwest). Accordingly, many Southern Californians enjoy backyards that look for like the tropics (without the heat and humidity). The water subsidies have actually increased the price of Southern California housing because they have made living in a semidesert more affordable than it otherwise would be.

So, when rainfall falls off and people continue to use water without restraint, a "crisis" eventually raises its ugly head in public discussions, with public officials first appealing for voluntary cutbacks in water consumption, which typically have meager impacts.

Indeed, during a recent water crisis, the Orange County, California water authorities told everyone that the situation was "dire" (given the combination of little rainfall and the reconstruction of a major water main), and pleaded with everyone to conserve. What happened? Water consumption rose markedly, as many people hurried to wash their cars and water their lawns, fearing that their faucets would soon run dry or prohibitions would be imposed on outdoor water usage.[34] All the while, the waterlines around the area's reservoirs were sinking deeper and deeper. Understandably, appeals for voluntary curbs are usually followed by threats of "water police" prowling neighborhoods looking to give tickets to violators of water-use ordinances.

Of course, some state institutions pay lip service to water conservation, with some effect. In the midst of the recent growing water crisis, the University of California announced reductions in its sprinkling of the campus lawns. At the same time, it continued landscaping newly opened areas of the campus with thousands of water-thirsty shrubs, trees, and flowers.

The more general lesson to be learned from the water crisis puzzle posed to MBA students is as simple as it is unheralded: where shortages are evident, it is a good bet that prices have been held in check someway, somehow. Water crises would evaporate if the water authorities had the fortitude to do what businesses—Chevron, as well as Mercedes—do naturally: raise the price! And make no mistake about it: at the same time that a water crisis in Southern California was emerging, the price of gasoline was well above $3 per gallon and rising rapidly (because of ongoing political/military problems in the Middle East and because refineries were being taken offline for repairs). But the price increase (even though it might be temporary) did its job. Even though both the number of licensed drivers and the number of vehicles on California roads had risen by more than 10 percent during the 2000–2006 period, gasoline consumption had risen far less and showed signs of falling, according to reports in the *Los Angeles Times*.[35]

Ethanol Subsidies and World Hunger

Following the OPEC oil embargo of 1973, which led to a spike in gasoline prices, price controls on gasoline, and long lines at service stations, Congress legislated the use of ethanol, which is produced from corn, as a gasoline substitute. In 1977, then President Jimmy Carter made energy independence the "moral equivalent of war," a position that during the intervening decades led to the passage of a variety of federal and state subsidies for the production of corn and ethanol.[36] In 2005, U.S. corn farmers received nearly $9 billion in subsidies from the U.S. Department of Agriculture intended to stimulate corn production, a growing portion of which has been used in ethanol production. Ethanol producers receive slightly more than a half dollar in subsidies (in the form of tax credits) for every gallon produced. The wars and political instability in oil-producing countries of the Middle East and the rapidly modernizing and expanding economies of India and China caused a run-up in the price of oil on world markets in the early 2000s that further increased the demand for oil substitutes, with ethanol being one of them.

Not surprisingly, by the end of 2006, 110 ethanol refineries were in operation in the U.S.A., many of which were expanding their production capacities. Seventy-three more refineries were being built.[37] In 2006, U.S. biofuel firms produced five billion barrels of ethanol. In 2007, production was expected to rise 40 percent to seven billion barrels.[38] Also not surprisingly, the growing demand for ethanol has hiked the demand for corn, which has driven up the price of corn by a third in less than a year, from $3 a bushel in the summer of 2006 to $4 a bushel in the spring of 2007, a price level not seen in a decade.[40] Moreover, the prices of other food crops—for example, wheat, peas, sweet corn, and rice—have jumped upward as farmers have moved land into the production of corn, contracting the supplies of other food crops and causing their prices to rise. The growing prices for grains have (literally) fed into upward pressures on chicken and beef prices—and to price increases on (among other products made from grains crucially important in the diets of many poor and rich people alike) tortillas![39]

What is the basic problem with the corn and ethanol subsidies? To fill up an SUV with ethanol, it takes 450 pounds of corn, which contains enough calories to feed a poor person for a year.[40] There are at least a half billion and maybe a billion people in the world who are chronically hungry, which means that they do not get enough calories on a daily basis to remain healthy, many of whom continually face starvation. For every 1 percent increase in the prices of basic foods, the poor's consumption of calories declines by 0.5 percent, according to the World Bank.[41] Moreover, the world's count of "food insecure" people rises by sixteen million for every 1 percent increase in the prices of staple foods.[42] And the various policies designed to encourage use of ethanol could have increased the world price of corn and other grain crops by several percentage points.

No doubt, Jimmy Carter and other political leaders who have pressed for the development of an ethanol industry may have had their hearts in the right place, but they may have overlooked the power of the law of unintended consequences, which

in this case can be bleak for many poor people around the world. As applied economists C. Ford Runge and Benjamin Senauer have observed, "The world's poorest people already spend 50 percent to 80 percent of their total household income on food. For many among them who are landless laborers and rural subsistence farmers, large increases in the prices of staple will mean malnutrition and hunger. Some of them will tumble over the edge of subsistence into outright starvation, and many more will die from a multitude of hunger-related diseases."[43]

Perhaps the bad things the world's poor will suffer because of the indirect effects of corn and ethanol subsidies could be offset by a couple of potentially positive effects. The rise in the world price of corn, along with the drop in the price of blue agave, a cactus-like plant used in Mexico and elsewhere to make tequila, has caused Mexican farmers to contract their planting of agave to make room for corn. The reduction in the supply of agave (from what it would otherwise have been) can be expected to lead to a rise in the price of tequila, and a reduction in its consumption.[44] That price change can be expected to lead to less drunk driving and, very likely, fewer road accidents, injuries, and deaths among Mexicans. Through a change in the world price of tequila, such a positive effect of the hike in the price of corn can be expected to spread across the globe (although the effect might be hard to detect).

The corn and ethanol subsidies harbor the potential for positive environmental—or "green"—effects from ethanol use. A cleaner environment could mean a healthier world population and, hence, more income, and a better life, on balance, for the world's poor. However, Runge and Senauer report that "using gasoline blends with 10 percent corn-based ethanol instead of pure gasoline lowers emissions by 2 percent."[45] Then, the crops used to make ethanol require the use of fertilizers and pesticides, and farm machinery that consumes oil-based products as they are used on farms. In short, the environmental effects could be meager and difficult for the poor of the world to detect.

Then again, the green effects could be significant—and negative. According to reports by the Friends of the Earth, Europe's encouragement of use biodiesel fuels has led to the destruction of rainforests in Indonesia and Malaysia because of the creation and expansion in those countries of oil-palm farms to satisfy the increased demand for oils that come mainly from palms and rapeseeds used in the production of biodiesel fuels.[46]

Granted, biodiesel fuel can be made, and is being made, by firms such as Metro Fuel Oil Corporation, which in 2007 was awaiting approval to open its plant that would produce 110 million gallons of biodiesel fuel from recycled raw vegetable oil collected from restaurants in the New York City area.[47] The use of such oil could have beneficial green effects since some of the used oil would have been thrown away, but some of the oil could have been recycled for use again in restaurants' deep fryers. That means that the production of biodiesel fuels from used vegetable oil would require the production of more new vegetable oil used in restaurants that, again, could cause some food prices to rise and impose problems for the world's poor.

In short, subsidizing the use of renewable plants to satisfy a portion of the world's energy needs sounds like a nice idea on all fronts, until you consider the price implications and how the world's resources will be shifted, often in unanticipated and unintended ways, in response to price shifts. Those who would like to think biofuels provide the proverbial "free lunch" either for the economy or the environment will be sadly disappointed.[48]

If (or to the extent that) carbon dioxide is a significant culprit in global warming (or any other environmental problem), a more promising solution is the one that economists have been touting for decades: tax the carbon dioxide that is emitted from cars (or any other plant and equipment). The greater the carbon dioxide emitted, the greater the tax. The expectation is that the tax will feed into the price of the offending products, and fewer of those products will be bought and used. Greenhouses gases will be reduced. Global warming will be setback into the future, if not eliminated altogether. Okay, the higher prices will affect the poor, and no one wants to hurt the poor. But there is an easy solution on that front: return the carbon taxes paid by everyone to the taxpayers who paid the carbon taxes in the form of tax refunds. People will have more or less the same spendable money incomes, plus a cleaner environment. But because of the carbon tax and the higher prices on the taxed products, people will move their consumption from less environmentally damaging products.[49]

But then, relief for the poor and the environment can come through price adjustments. By late 2007, it was becoming apparent that an overcapacity in ethanol production had emerged since early 2007, with the price of ethanol falling 30 percent between March and September.[52] That price reduction can dampen the demand for corn and other crops, which can reduce upward pressures on food prices paid by the poor. Nevertheless, the subsidies for ethanol should still leave corn and other grain prices higher than what they would have been.

Concluding Comments

The discussions of various topics in this chapter have helped to spotlight an important economic lesson: unless business people and policymakers understand how prices are affected by market and nonmarket forces, the "law of unintended consequences" will bedevil people's best intentions when setting prices—and especially when they try to subvert market forces.

The discussion of infant and toddler seat requirements on airlines explains why policymakers need more than good intentions to save lives; they need to understand the interplay between the prices of various modes of travel. Similarly, the discussion of the 9/11 tragedy exposes how the TSA's changes in the security alert status at airports should be taken with deadly seriousness because the consequences can indeed be a matter of life and death in ways not widely recognized. Security alerts can change the relative price of air travel vis-à-vis car travel, all without anyone noticing the change or its consequence. The "law of unintended consequences"

rules, often with deadly silence. That theme will continue to form the foundation of the discussions of additional pricing puzzles considered in following chapters, especially the next one.

An important purpose of this chapter has been to reassert a point too easily overlooked: a well-functioning market system depends crucially on prices. Prices do far more than alert people to how much they must pay for the things they buy. They are themselves productive by providing incentives for people to choose and buy wisely, by containing a great deal of information that permits people to economize on the amount of information they must gather and absorb, and by helping coordinate close-at-hand exchanges and also complex economic activity of people spread throughout the world. Without prices to "grease the skids" of the economy, we all would be less productive than we are and worse off.

Another, equally important purpose of the discussions in this chapter has been to convince you that a study of prices can help us understand better (not perfectly) why people behave the way they do. An understanding of how prices are determined and changed can help us unravel a host of seemingly obtuse economic puzzles.

Much of the discussion in this chapter has been founded on one economic principle, the "law of demand," that price and quantity are inversely related. If the price of a good is raised, people will consume less of it. If the price is lowered, people will consume more of it. That principle will remain in heavy use throughout this book and will play a key role in our unraveling many pricing puzzles.

Chapter 5
Pricing Lemons, Views, and University Housing

Prices capture a whale of a lot of information on the scarcity of the resources that go into the production of products and on how much people value various goods. Prices enable buyers to economize on their time. By not having to know much, if anything, about production conditions in various parts of the world or about consumer tastes other than their own, buyers can focus their time and energy on comparing prices and attributes of goods they want to buy that, with as much income as many buyers have these days, is not always an easy problem.

Buyers can be forgiven if they are lulled into not understanding why many prices do not seem to reflect production costs and consumer values, as demonstrated, for example, in the precipitous drop in the resale price of new cars as soon as they exit the dealer lots. They might also be forgiven if they accept, without reflection, many comments on prices that, because they are heard so frequently, seem indisputable, such as those of real estate agents who often parrot, "Houses with views sell quicker than houses without views."

In this chapter, we attempt to explain the wisdom of another quip economists often make, "If everyone believes it and says it, doubt it!" You will find that the "law of unintended consequences" will remain with us as we consider several pricing puzzles and frequently heard glib comments about prices, which are puzzling only because so many people believe them despite the fact that the comments are often patently misguided.

The Pricing of Lemons

We are great believers in how important economic lessons can be learned from unraveling puzzles. For a long time, economists were mystified by the fact that new cars drop precipitously in value once they are driven off dealer lots.

One well-worn explanation is that many car buyers yearn for the "new-car smell" and are willing to pay a premium for new cars over what they are willing to pay for used cars, even cars that may have only recently left dealers' showrooms.

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_5,

Another explanation for the new/used-car price differential is that car dealers are in the business of making markets for their cars with glitzy showrooms and glossy advertisements. Car owners are not in a position to maintain the demand for their cars that the dealers created. As a consequence, car values drop on leaving dealer lots because the demand for the cars drops.

Such explanations cannot be summarily dismissed, but we must wonder if they are the whole story, especially since the resale price of a car just driven off a dealer's lot can be 20 percent (or upwards of $10,000 for some luxury cars) below its purchase price. Economist George Akerlof has offered perhaps a far more telling explanation for the price gap between comparably equipped new and used cars.[1] To keep the analysis simple (as does Akerlof), suppose there are two types of used cars, good ones (which have low maintenance costs) and bad ones (which have high maintenance costs)—with the bad ones commonly known as "lemons." Buyers will discover which cars they have from using their cars. Hence, they will have information, drawn from their experience, about their cars' quality that potential buyers of used cars will not have. Information on car quality will be decidedly one-sided—or "asymmetric"—meaning buyers and sellers do not go into potential deals with the same level of information.

Buyers in the used-car market can be expected to reason that new-car buyers who learn they have good cars will keep their cars. On the other hand, buyers who learn they have lemons will want to lower their car maintenance costs by putting their cars up for resale. Hence, lemons can disproportionately dominate the available supply of used cars. That is to say, used-car buyers will have to worry that they will likely buy problem cars, or cars with nontrivial repair costs. The price of used cars must drop if buyers are to be enticed into buying used cars. Of course, as the price of used cars drops, car owners with problem cars, which are not total lemons, can be expected to pull their cars off the resale market, because they can be better off incurring their modest repair costs than suffering the lost resale value. This means that (serious) lemons will even more heavily dominate the available stock of used cars for sale, again, given that owners are likely to retain the better used cars. A drop in the price of used cars can, in other words, lead to a further drop in the supply of quality used cars.

This line of argument draws into question a frequently heard claim that "used cars are better deals than new cars" because of the dramatic price difference between them. If that were the case, and everyone knew that were the case, then the demand for used cars would rise while the demand for new cars would fall, causing the prices of used and new cars to converge, until used cars were not the "better deal" they are claimed to be. Sure, used-car buyers can pay a much lower price than they would have to pay for new cars, but they must also suffer the normal wear and tear attributable to the miles put on the used cars, and used-car buyers have to suffer the considerable risk cost associated with buying in a market potentially dominated by lemons that will require high repair costs (especially when the warranties on the used cars have expired).

Granted, the new/used-car price differential might be expected to exceed the expected repair cost, but that still does not make used cars "better deals." The

problem of asymmetric information cannot be denied; it is a real problem that used-car buyers have to consider as best they can. The prospects that used-car buyers just might buy cars with repair costs far higher than "average" can weigh down the price they are willing to pay for used cars.

In the so-called "lemon problem" (as with all "problems"), there is money to be made by entrepreneurs who can solve the problem. Individual used-car sellers might have a credibility problem with potential buyers the sellers do not know, but sellers can elevate the price they can charge by, for example, allowing potential buyers to have the cars they are considering inspected by mechanics. Used-car sellers might only try to sell their cars to relatives and friends where their word on the quality of their cars would carry more weight, because of the potential ostracism sellers might suffer if they are not true to their word. And sellers can also pay for extended warrantees, which is a means sellers can use to ease the risk facing the buyers. Presumably, the added price used-car sellers charge for their cars because of the warranties will at least cover the price of the warranty.

Alternately, used-car sellers can sell their cars to reputable dealers who can pay premium prices for used cars because they can get even greater premium prices from the resale of their used cars. Dealers can charge premium prices to the extent that they have established reputations for honest dealing, a line of reasoning that explains why so many new-car buyers trade-in their used cars when they buy new ones. New-car buyers can get better deals on their trade-ins from the dealers than they can get from individuals, and the dealers can make money on the trade-ins because they solve, to a degree, the lemon problem, or rather the underlying asymmetric information problem in the used-car market.

Akerlof points out that the problem of selling health insurance to the elderly has features of the lemon problem. As people age, those who see themselves as being most in need of expensive and frequent health care are the ones who are most likely to buy health insurance. Healthy people will be less inclined to buy health insurance. This is especially true because health insurance providers will have to charge premiums that reflect the relatively high costs of health care provided to policyholders that, as a group, will tend to need lots of health care, which makes them, for all intents and purposes, "human lemons." As the price of health insurance is raised to accommodate the so-called problem of "adverse selection" (or the tendency of people to buy insurance when they expect to be beneficiaries), healthier people will drop out of the insurance market, leaving people who expect to need lots of health care to predominate even more among policyholders. The price of insurance will have to rise again to reflect the growing adverse selection problem.

Akerlof notes in passing that the "lemon problem" in health care is an argument for some form of national health insurance for the elderly. That could be the case, but what Akerlof does not mention is that public provision of health care can give rise to other problems. If people know that they will not have to pay for their health insurance when they become elderly (and will not likely have to pay a premium in line with their state of health when they are elderly), they can have less incentive to take care of themselves before they have access to publicly provided health insurance. In addition, if health care for the elderly is heavily subsidized, then we

should expect the elderly to demand more health care than they otherwise would, and that increase in demand can push up health care prices for everyone, including the young. A rise in prices for health insurance may prompt some younger people to decide not to buy health insurance because their expected health care costs are lower than their insurance premiums.

Insurance companies have found ways of solving the adverse selection problem in health insurance, at least somewhat. First, they provide health insurance policies to workers through their employers. Such a distribution channel has one largely unrecognized advantage: it reduces the pool of policyholders who cannot meet a minimal health standard, being able to work and hold a job. In other words, group health insurance policies narrow the adverse selection problem.

Second, health insurance typically gives policyholders a menu of policy options, with a key differentiating feature being the size of the deductible, after which all care costs are covered by insurance. The policyholders who seek a small deductible are self-identifying themselves as people who see themselves as likely needing a great deal of care (including lots of office visits that require only small "co-pays"). The policyholders who select a high deductible are self-identifying themselves as likely needing little care. The insurance company can simply charge the low-deductible group far more than they charge the high-deductible group. This line of argument helps explain why in moving from a deductible of $250 a year to $1,000 a year, the premium drops by substantially more than $750 a year. This is because the policyholders move from a high health care cost group to a low health care cost group.

How Prices Adjust to Advantages and Disadvantages of Property

One of the unheralded advantages of prices is that through market forces, they capture the advantages and disadvantages of property and, in the process, give a market value to the advantages or disadvantages. Prices adjust until buyers are more or less indifferent between properties. In this section, we consider three real-world cases of how property prices can neutralize the advantages and disadvantages of different properties: (1) property inside and outside floodplains, (2) property with and without views, and (3) property that is owned and rented.

Property Inside and Outside Floodplains

Should we feel sorry for our fellow Americans in the Midwest (or elsewhere) who are, from time to time, flooded out of their homes by nearly forty days and nights of continuous rain and snow? Of course we should. Vivid reports of mounting property losses from floods on television and in newspapers do weigh heavily on just about everyone's emotions. No one wants to see others suffer, and the

outpouring of aid for flood victims is understandable—as a raw emotional response. We all are, or should be, our brothers' and sisters' keepers—*to some reasonable extent*, with "reasonable" meaning that the consequences of helping victims will guide and constrain our judgments.

We cannot summarily dismiss the question—should help be provided?—as if the only answer is that we should help, because that question leads, inexorably, to the tougher questions of how much help should be rendered and in what form. Those decisions must be grounded in a hard-nosed assessment of the real damage incurred by flood victims—and potentially caused by the relief itself. Such an assessment may cause us to reach a paradoxical conclusion: on balance, many flood victims may not be *victims* to the extent media reports indicate, at least as measured by their *net* losses, in spite of the fact that many have experienced sizable property losses. The paradox can be unraveled with a little reflection on the economics of floods (and other similar natural disasters), and how the consequences of floods and relief for victims can be captured in prices.

When an area is designated as a "floodplain," people who live in them, or who might contemplate living in them, know the area is prone to floods with varying frequency and duration (but most often with *expected* frequency and duration). The residents (and prospective residents) might not know exactly when the floods will come or how severe they will be when they come, but that should not stop them from considering the prospect of floods and the damage that must be endured when the floods do occur. The prospects of floods, without much question, temper the market's demand for pieces of property in floodplains, causing their market values to be lower than property with similar attributes but not located in floodplains.

This being the case, when viewing alternative pieces of property, some in and some outside of floodplains, prospective buyers should not be willing to pay as much for floodplain property as for other property that is deemed safer. Indeed, prospective buyers should lower the price they are willing to pay for floodplain property by an amount at least equal to the *expected* losses during floods (with the actual losses, measured in dollars, discounted for risk and time). The greater the frequency and duration of floods, the greater the expected damage, and thus the lower the expected floodplain property prices.

To illustrate, if a house on a "safe" piece of land outside of a floodplain costs $100,000 and if the expected losses from floods on a comparable house and piece of land inside the floodplain is $20,000 over the foreseeable future, the floodplain property should sell for $80,000 (more or less). If the floodplain property had a price of $90,000, the total cost, including the loss from expected floods, would be $110,000, which means the prospective buyer would turn to the property outside the floodplain. Hence, the price differential between the property inside and outside the floodplain can be expected to diverge until it is (roughly) $20,000. With the price gap of $20,000, the floodplain property owners can endure $20,000 of losses without actually being any worse off than they would have been had they chosen to buy outside the floodplain.

Clearly, some floodplain property owners will suffer heavier losses than were expected, mainly because floods cannot be predicted precisely, or may occur more

frequently and/or be more severe than expected. By the same token, some property owners, in spite of their losses during floods, can be net gainers, mainly when their losses turn out to be less than expected, that is, lower than the discount they received on the price of their property for buying in a floodplain.

For example, suppose the owners in this example bought the floodplain property for $80,000 yet suffer only $12,000 in flood-related losses. In effect, they realize an economic gain, on balance, in the instance of that flood because their flood-related losses are $8,000 less than the $20,000 premium they would have had to pay for property outside the floodplain. Ironically, those who bought outside the flood-prone area and are not flooded lose, in this example, more than the victims of the flood; the nonvictims lose the premium paid on their property, $20,000. (We know some readers may be thinking that flood victims must work to clean up their property. True enough. Such clean-up costs will simply increase the gap between the property inside and outside the floodplain. The basic point is left undisturbed.)

Flood insurance might seem to be an obvious way for the floodplain property owners to protect themselves against losses. The problem private insurance companies face in providing flood insurance is that the likely flood victims know who they are, and they will be the only ones who buy flood insurance. People outside the floodplain know they are safe. Why should they pay flood insurance premiums? Again, the problem of adverse selection (a form of the lemon problem) rears its head. The floodplain property owners are unwilling to pay more for flood insurance than their expected losses from floods. Hence, the insurance companies cannot charge more than their expected payouts that will equal the victims' expected losses and cannot make a profit. In addition to coping with adverse selection, insurance companies face the added problem of "moral hazard," or the tendency of policyholders to change their behavior, which in this case would mean putting more property at risk because their prospective losses are lowered due to their flood insurance coverage.

Because of the problems of adverse selection and moral hazard, if flood insurance is going to be provided, it generally must be heavily subsidized, which it is in the United States. Premiums of flood insurance policies written under the National Flood Insurance Program of 1968 are 35 percent to 40 percent of what the true risk premiums would be to cover expected damage. Accordingly, it should be no shock that in 2003, payments for flood losses amounted to a half a billion dollars more than the premiums collected.[2] The problem with many government aid programs is that they force the Americans who paid premiums for their property outside floodplains to cover the losses of people who bought discounted flood-prone property. One must wonder, then, who are actually the victims, those who live inside floodplains or those who live outside them?

The point of following this line of argument is not to say that no aid should be provided. Rather, it is to stress that aid should be provided very judiciously and with great caution and restraint. If the losses of flood-prone property owners are fully covered by aid from, say, federal and state treasuries, the real benefits of the relief effort are likely be short-lived, not because the aid will dry up (pardon the pun) but because property values will adjust to account for the expected aid in the future.

Prospective buyers of property inside and outside floodplains can be expected to take into account the expected aid for flood victims in their purchases. The demand for floodplain property will rise, as will its market value, in line with the expected aid. Future prospective owners of floodplain property will no longer get discounts on the floodplain property they buy for expected losses. The expected (discounted) value of the future aid will be captured, in effect, in the current prices of floodplain property. The gainers from the aid will not necessarily be the owners who incur the losses when the floods actually occur (they have had to pay upfront, before the advent of the flood, a premium for their property because of the aid they receive), but rather the former property owners who receive a price for their property that was inflated by the prospective aid going to current or future owners.

In fact, when aid is routinely offered to victims of floods, it can actually raise the number of victims and the amount of their losses during floods because of the problems of adverse selection and moral hazard. Knowing that all or a significant portion of their losses will be covered, more people will be willing to move to floodplains, to build bigger and more expensive houses there, and to stock them with more expensive furniture. They may even be less inclined to try to save their property in times of floods. They can also be less inclined to self-protect themselves with flood insurance, which means that flood insurance must be even more heavily subsidized to get floodplain property owners to buy the insurance. Why? They can expect some, if not all, of their prospective losses to be covered by disaster relief programs. We can reduce these perverse incentives that aid programs foster only if public policymakers and agency administrators (and charity groups) exercise extreme caution and are conservative in allocating aid.

Victims of major natural disasters—whether in the form of floods, earthquakes, or hurricanes—receive a great deal of attention in the media and from government agencies because they are easy to identify and their numbers are large. They are natural candidates for government largess. However, many other people in the country are victims of a series of minor natural and man-made disasters, with their total losses often exceeding the losses of victims of major floods. Nevertheless, the government and media often ignore victims of a string of minor losses, though their numbers are large, precisely because they are not so easily identified and their relatively small losses in each isolated minor disaster are not headline makers. We must be cautious in giving aid to the victims of floods because the aid may not be allocated evenhandedly across all victims of all major and minor disasters. Those who suffer unacknowledged minor disasters may actually be double victims, for not only do they lose when they endure their own losses in minor disasters, but they are also called on to aid the victims of major disasters.

Floods have a way of destroying property. Hardheaded thinking has a way of throwing cold water on emotional responses to widely reported losses. There is no clear argument against aid, but there are very good reasons for exercising considerable restraint, especially when many flood victims are fully capable of buying property outside of potential disaster zones, but choose not to do so. Unless carefully crafted, aid programs can create policy disasters that are no less threatening and damaging than the natural disasters themselves. Disaster aid that is

routinely given and becomes expected by property buyers can entrap policymakers because, as noted, the future value of the aid can become captured—or to use the jargon of finance, capitalized—in the value of the property. When this happens, any withdrawal of aid can undermine the value of the property, which means that the withdrawal of aid can destroy the market value of property as surely as can natural disasters.[3]

Our consideration of aid for flood victims elevates a lesson that has wide applicability: Prices today can capture expected gains and losses going forward. Change the streams of prospective current *and* future gains and losses on properties, and today's prices of those properties can capture the change.

Houses with and Without Views

This lesson exposes the folly in many widely heard and believed claims. Consider the often-repeated claim of real estate agents who glibly announce, "Houses with views sell more quickly than houses without views." Perhaps that is sometimes the case (just as the opposite is sometimes the case), for reasons unassociated with the presumed value of the view, but should we expect the claim to be systematically reflective of the housing markets because of the difference in views houses have?

We have no qualms with the equally frequent claim that houses with (good) views sell for higher prices than comparable houses without views. Of course, houses with views will sell for more—precisely because of the (presumed) value of the views of, say, the ocean or a mountain valley. (Similarly, no one would doubt that houses with views of garbage dumps sell for less than houses without such views.) Indeed, we would expect comparable houses to have price differences that approximate the market value of the view, which will be affected by the relative scarcity of such views. The greater the abundance of (good) views, the lower the market value of views, and the lower the view premium that will be captured in the value of the property with views.

Our question is, however, why should houses with views be expected to sell systematically *faster* than houses without views? If houses with views did sell faster, might we not expect their owners to hike their prices even more to slow the pace of their sales to the pace of sales for houses without views? Might not owners of properties without views lower their prices to speed up the sale of their properties?

Granted, there is one possible reason houses with views might sell more quickly, *but not so much because of the views in and of themselves* (without their implication for the value of the property). Because of their relatively higher prices, owners of houses with views might have more equity in their houses than do owners of houses without views. They might want to unload their houses with greater urgency because of the greater cost of delaying their sales, with the greater cost equal to the time-value of their relatively greater equity. But then, buyers of houses with views might be expected to be as reluctant to tie up substantial equity in a house,

through a quick purchase, than the sellers are to get their equity out of their houses. Maybe buyers and sellers of houses with views have different discount rates—that is, they place different time values on tied-up home equity. Otherwise, we should expect, as a rule, the prices of houses with and without views to adjust so that their speed of sale is very similar.

Houses Owned and Rented

Consider another claim: "Buying a home is a better deal than renting an apartment. The interest on a home mortgage is tax deductible, and the value of homes can appreciate." We are sure every reader has heard the argument. If the argument carried the weight of truth that the proponents suggest, we must wonder about the sanity of the hordes of apartment renters around the country. Many renters can afford to buy their own homes but choose not to do so, for good economic reasons apart from the fact that they may not want the problems of home maintenance. If there were a decidedly large tax advantage to buying homes, then we would expect two consequences that would narrow, if not eliminate, the relative value of owning a home vis-à-vis renting an apartment: First, the demand for owned homes would rise, along with their prices. Home sellers would capture much, if not all, of the tax advantage. Second, the demand for rental apartments should fall, along with their rents. Besides, people who press the argument about the tax deduction of mortgage interest often fail to acknowledge that owners of apartment complexes have mortgages, and they can deduct their interest payments from their rental charges. Apartment owners' interest tax advantage should show up, through competition for renters, in lower rents.

Granted, homeowners can see their property values appreciate, but they can also see them depreciate. Such downside risk should temper people's enthusiasm for buying the argument, stripped of qualifications, that owning a home is a better deal than renting. Moreover, if homeowners can be confident that their home values will appreciate, then surely the sellers can work from the same expectation, which means sellers can be expected to capture some, if not much, of the expected appreciation in the selling prices. Also, it makes sense to rent for a longer period than otherwise when renters expect housing prices to fall or even when they expect the appreciation of housing at some point in the future to spike upward. Renters, in other words, can be affected by what they *expect* to happen to housing prices in the future.

All of this is not to say that homeownership is never a better deal than renting. It is to say, however, that market-induced adjustments to prices help us understand a would-be puzzle, why so many people continue to rent in full knowledge of the ownership "advantages" they forego.

Why Retirement Does Not Curb the Retirees' Food Consumption

Many social scientists have observed that people drastically cut their expenditures on all goods, but especially food, after retirement. Indeed, two economists, Mark Aguiar and Erik Hurst, found that people's food expenditures rise from the time they are in their early twenties until their early fifties, but their food expenditures fall by 17 percent at retirement. While high-income people spend more on food and tend to eat healthier both before and after retirement, the food expenditures of all income classes decline markedly at retirement.[4]

Some researchers, finding even larger drop-offs in food expenditures, have concluded that the pre/postretirement drop-offs in food and other expenditures prove that people do not plan for their retirement very well. They have also concluded that people are obviously not as rational in their behavior as economists conventionally assume. If the subjective value of food declines with the amount consumed, the value of the last dollar spent on food postretirement has to be greater than the value of the last dollar spent on food before retirement. People could improve their welfare by consuming less food in their preretirement years and save more to boost their consumption of higher-valued food in retirement. Researchers inclined toward social activism have used the decline in retiree's expenditures on food and other goods to support their political case for forcing (or inducing) people to save more for retirement than they are inclined to save voluntarily.

Economists, who have based their careers on the assumption that people are rational (or more rational than retirees seem to be), consider people's lifetime consumption patterns as a major puzzle. Rational people should tend to even out their consumption of goods over the course of their lives, following what has been dubbed the "permanent-income hypothesis," which is based on the work of the late Milton Friedman, a Noble Prize winning economist.[5]

The problem with this analysis is that it fails to recognize important points about prices and retirement:

- First, the *effective* prices of so many goods people consume are not captured by what's on price tags alone, mainly because things people buy are really inputs (or resources) into what people produce at home for themselves (a point stressed most prominently by economist Gary Becker, another Noble Laureate[6]). The prices of home-produced goods can rise and fall with the prices of inputs *and* the opportunity costs of people's time.
- Second, on retirement, people who retire knowingly give up some income to gain more time to do what they want. Retirees may have less income to spend on food, but they have more time to search out food bargains and to produce their own meals. This means that retirees' *consumption* of food can differ markedly from their *expenditures* on food.

Once these points are recognized and accommodated in analysis, perhaps people's lifetime consumption patterns are not the mystery (or as out of sync with rational precepts) we have been led to believe. Indeed, Aguiar and Hurst have found

that after retirement people devote, on average, 53 percent more time to shopping for food and to preparing their own meals than they did before retirement.[7]

One explanation for why people increase their food expenditures through their early fifties is that they are substituting prepared foods and meals out for time-intensive and (because of the opportunity value of their time) higher-cost meals at home. Along the way, with less time spent searching for good deals on food purchases, they probably pay higher prices than they would have to pay if they had more time for searching out deals. When people retire, people will understandably become more price sensitive, since they will have more time to check out prices and features of alternative goods they want to buy and will thus have more knowledge of which goods have lower prices (given their qualities and features). One explanation for "senior citizen discounts" is that stores understand that seniors are more price sensitive, with the senior citizen discounts feeding declines in their *expenditures*, not their *consumption*.

Aguiar and Hurst have found, contrary to conventional wisdom, people's *consumption* of food remains more or less flat from their early twenties through their late forties but then trends upward, albeit slightly, through their early seventies (the last age the researchers have the necessary data to make the required consumption calculations). While it is true that retirees spend less on meals out than they did before retirement, the reduction is largely in expenditures at fast-food restaurants, not sit-down restaurants. Moreover, retirees do not tend, as a group, to lower the healthiness of the food they consume.[8]

Clearly, while people face difficult problems in planning for retirement, they seem to be doing much better than many people have surmised by considering misleading *expenditure* figures.

University Mispricing

Like so many other state-funded universities, McKenzie's university—the University of California at Irvine—wants to believe that it can pursue higher academic standards through price controls on student and faculty housing. This on-campus housing will, supposedly, have the effect of indirectly subsidizing student education and faculty salaries. The presumption is that the subsidies can increase the "quality" (however the university wants to define "quality") of its students and faculty who can do great work on campus for the benefit of the rest of the world. Unfortunately, the university's controlled prices for student and faculty have had much the opposite effects of those intended. To be more direct, the implicit housing subsidies embedded in the price probably have undermined the overall quality of the university's students and faculty in unexpected ways.

The University of California Student Housing Subsidies

Irvine provides a limited number of graduate students with on-campus apartments at monthly rental prices that are several hundreds of dollars below the rental prices in Irvine and other surrounding Orange County communities. For example, several years ago, a two-bedroom graduate student apartment on campus rented for $600 a month. A similar size nonuniversity apartment across the street from the campus rented for $1,990, and a two-bedroom a mile down the road rented for more than $2,500. The nonuniversity rents are higher partially because the apartments are nicer, but also because landlords seek to price (potentially unruly) students out of their apartment complexes, increasing the net value of the apartments to the nonstudent residents who pay the premium rents.

The university argues that by controlling the prices of its on-campus apartments, it can attract better Ph.D. students from the best undergraduate programs in the country and can pay them less than otherwise for their teaching and research assistantships. Moreover, high-quality graduate students help UC-Irvine faculty do their research, published in top academic journals, and, after graduation, they go out into the academic world and develop stellar scholarly records of their own, reflecting academic glory back on the degree-granting university.

Although the university seems convinced that much of what it does represents a positive contribution to society, it may take more credit than it deserves for the success of its graduate students. After all, high quality graduate students might be able to build substantial scholarly records even if they got their advanced degrees elsewhere, making the marginal contribution of UC-Irvine's programs more debatable than the university might want to concede. Indeed, if the university did not offer the students the price break on housing, thus lowering the overall costs of their degrees at UC-Irvine, at least some of the graduate students might have chosen to go to more highly rated universities (say, Stanford or Harvard) with fewer benefits but with better graduate educations and, as a consequence, might have been, after getting their degrees, in a position to develop even more stellar scholarly records.

This line of argument suggests that the UC-Irvine rental subsidies could be marginally undercutting the extent of some students' career successes. Put another way, some students might be better off (the rental subsidies raise their standard of living while in graduate school), even though they may do less well in their careers were the rental subsidies not available. Alternatively, for those students whose parents are covering the students' bills, the graduate student rental subsidies can show up in a higher living standard not for the students, but for the parents, with the parents' higher living standards captured, for example, in bigger and better cars or more frequent and longer vacation trips.

But then, there is a good chance that the university's rental price controls are themselves impeding the university's efforts to achieve the highest academic standards it can *with the available housing resources*. This is because with the rents well below market, graduate students have an incentive to "buy" more apartment space than they need, or at least more space than they would buy

were they forced to pay market rents. A married couple with a child might rent from the university a two-bedroom apartment at $600 a month when one bedroom would do, if they had to pay the outside rental rate of $1,990 a month. Because of the subsidy, the available university land and floor space could be, and probably is, allocated among a smaller number of students than would be the case were rental rates set at market.

More importantly, graduate students get the $1,390 monthly subsidy for a two-bedroom apartment *only for as long as they are in school*. With the total housing subsidy tied to the students' length of stay, students are given a financial incentive to extend their graduate careers longer than otherwise, denying other incoming students access to the limited number of apartments. Indeed, some married couples lucky enough to get one of the apartments have become "serial graduate students." After one spouse has strung out his or her graduate career for as long as possible, the other spouse applies for graduate admission, thus extending the couple's collection of the implicit monthly subsidies. As a consequence, 20 percent of the graduate students in the rent-controlled apartments have "squatted" in their apartments for 12 or more years.[9] Their extended stays no doubt have reduced the university's ability to attract good graduate students. The available housing has been taken by graduate student "squatters."

The university could easily remedy the "squatting" problem. The university could restrict the number of years students can stay in the apartments, but such a restriction has an obvious flaw: Some students in some programs need more time to finish their degrees than others. Would the university really want all students to be treated equally in terms of their tenure in student housing? If so, what should the restriction in years be—the number of years required to obtain a Ph.D. in management or the number of years required to get a degree in rocket science?

The university can rationalize the system by simply raising its rents to market levels. Those who valued on-campus apartments at less than the market rental rate would look elsewhere for cheaper, more far removed, and lower quality apartments, freeing university housing for students for whom location adds more value than the added rent. The squatting problem would go away, since students would not have the built-in subsidy incentive they now have to extend their graduate careers any longer than is really necessary. Apartments would be freed up for more and larger generations of graduate students who could be expected to complete their degrees in shorter time frames.

Now, it might be thought that the higher rental rates would scare off good graduate students. They could, and will, *if* there are no offsets to the higher rents set at market rates. Fortunately, the university could relieve this problem by using its higher rental revenues to hike the payments made to students under its fellowships and teaching and research assistantship programs. That is to say, if the monthly rent for on-campus two-bedroom apartments is raised from $600 to $1,990, the university could award students $16,680 a year (12 $\times$ $1,390) more in scholarships or hike their pay by that amount under teaching and research assistantships. Granted, students may have to pay taxes on their additional income, but it should be stressed that the $16,680 in cash is worth more to students than the

$16,680 embedded in the controlled rental prices, perhaps more to most students than the embedded housing subsidies, especially since graduate students are typically have low incomes and are in low tax brackets. Cash would be preferred by students simply because the students would then have more choice over housing: They could decide to pay market rental rates for on-campus apartments or go off campus to comparable apartments at more or less the same rental rates. Of course, given that students could choose among on-campus and off-campus apartments, we might anticipate that the competition among housing developments on and off-campus would elevate the quality of apartments on campus over what the quality level would be when students have to take their subsidies only through renting on-campus housing. This means that by switching from in-kind/apartment embedded subsidies to cash subsidies, the university should be able to attract higher quality graduate students than with the in-kind rental subsidies.

Indeed, given that the cash is preferable to the embedded rent subsidy, the university can potentially raise the rent by $1,390 a month and then give higher quality students, say, $1,200 a month in cash with the result being that the students are better off than they would have been with the $1,390 a month in the rental subsidy. In this example, the university would then have $190 a month from each student given the cash subsidy to offer additional graduate students fellowships and assistantships. The shift from embedded rent subsidies to cash subsidies is a potential win–win university policy change for everyone.

Why then do not state universities like UC-Irvine change their rent policies? The best answer is that university officials have not read this book. Better yet, because the price of education (as well as housing) is subsidized, university officials are protected from competitive market pressures to find the most efficient pricing policies, but we are hardly satisfied with these answers. One of the authors (McKenzie) was in one of his university's many administrators' meetings in which the topic of the shortage of graduate student housing was a prominent item on the agenda. The administrators barked one after the other:

- "We need more graduate student apartments to attract more and better graduate students."
- "We do not like the way the limited supply of apartments is allocated across departments."
- "We have a shortage of teaching assistants because of the university's apartment shortage."
- "Too many students are in their apartments for far too long."

When McKenzie interjected how many of the voiced concerns could be attributed to the rent controls and explained how market-based rents combined with more generous fellowships and assistantship payments could partially remedy many, if not all, of the problems mentioned, the administrators paused, but in short order continued their complaining about the shortage of student housing, dismissing the proposal as "free-market ideology." The outlined proposal has nothing to do with any ideology, free-market or otherwise, but everything to do with getting

prices right (even in institutions that are as socialistic in basic structure as public universities), and, in the process, advancing university's declared goals.

Yet, the reaction at the meeting gives good reason to question if our analysis of the issue is complete, mainly because even the graduate students on the committee summarily dismissed the proposal. Why? One of our executive MBA students offered some insight when he asked: "What percent of graduate students actually seek on-campus housing?" Just for the sake of following the logic implied in the question, suppose 40 percent of graduate students do not want on-campus housing, perhaps because they live in the area and have a working spouse with sufficient income to live away from campus (in a location closer to the working spouse's job, for example). Many graduate students might oppose the switch from the in-kind to cash subsidy system because the cash subsidy could be spread over far more graduate students, resulting in a substantial decrease in the subsidy going to students who are in a position to claim the in-kind/on-campus housing subsidy.

Instead of giving out cash subsidies, if the university were to distribute "housing vouchers" (which give holders, say, three years of on-campus housing), then students could sell the vouchers. Again, the housing rights would very likely be split among a larger number of graduate students, with the students who can claim the on-campus apartments receiving less in subsidies than they would receive under the current system. In short, these graduate students (who can be a majority of graduate students and who can be expected to be disproportionately represented on committees that consider the way the available apartments are allocated) have good reason to want to focus the subsidies on themselves through unlimited in-kind housing subsidies. In short, all of the grumbling about graduate student housing boils down to on-campus politics giving rise to some bad economics in the form of behavior-distorting prices.

Faculty Housing Subsidies

The University of California, Irvine, also aims to provide faculty with reasonably priced housing (in a very high housing cost area of the country), a practice that is also good analytical fodder for this book.

The university arose rapidly in the late 1960s on 1,500 acres of orange groves and pastures in Orange County, California. The university's land was given to it by the Irvine Company, which owned at the time, about 180,000 acres of prime Orange County land and which expected a new University of California campus to increase the commercial and residential value of the company's remaining acreage. This remaining land would eventually be developed into the City of Irvine, which at this writing has more than 200,000 residents.

By the mid-1980s, having expanded to a student body of more than ten thousand, UC-Irvine was facing growing pains, one of which was peculiar to the then (and for decades since) "hot" housing market in Southern California. The price of housing in Irvine and surrounding communities was rising far more rapidly than were the

state-controlled salaries of UC-Irvine professors. To continue to attract and retain top-quality faculty (in pursuit of its goal of becoming one of the top 50 research universities in the country, which it has since achieved), the university came up with an idea that many administrators and faculty members at the time considered ingenious: The university could use a few hundred of its then unused acres on the perimeter of its core campus to build faculty housing. The single-family houses and townhouses could be sold to faculty members at the cost of construction (not market prices). If the difference between construction costs and market value of a 2,000-sq ft house was $100,000 in 1990, the embedded subsidy on the house itself then amounted to about $6,000 a year (assuming a mortgage interest rate of 6 percent).

By the dictates of the land grant and charter, the university could not legally sell its land to existing or prospective faculty, but it could legally lease the land to the faculty member for 99 years at far below-market—that is, subsidized—rates. A lot that might cost $250,000 in the Irvine community adjacent to the university property in 1990 might be leased to a faculty member as if the lot cost only $30,000. At 6 percent, the $220,000 differential between the actual land cost and the university lease value represents a covert annual subsidy of $13,200, an add-on to the faculty salary.

Total house and land subsidy in our example (which was close to reality in 1990): $19,200 a year ($6,000 in house subsidy and $13,200 in land subsidy), the equivalent to about a 50 percent increase in effective income for a full professor in the humanities and a 20 percent increase in effective income for a full professor in the business school. Again, the presumption was that the subsidy would enable the university to continue growing with better faculty than could otherwise be hired.

To make the plan work, the university, however, had to incorporate some resale restrictions. Otherwise, the initial new faculty members who bought their houses at cost (and leased the land are far below market rates) could be expected to turn around and sell their houses to other incoming faculty or to people in the community at market prices. The faculty could run off with the capital gains that were supposed to go to a series of faculty members over the following decades. There were five major kickers to the housing contracts the university signed with faculty residents in what has become known as "University Hills" (and sometimes referred to as the "Faculty Ghetto"):

- First, the faculty members who bought University Hills homes could only resell their homes for what they paid for them, plus an appraised value of any improvements and an appreciation in the initial value of the homes equal to the increase in the consumer price index between the date of purchase and the date of resale. For example, if a professor bought a house in 1990 at $200,000, never improved the house (beyond regular maintenance), and wanted to move to another university in 2007, that professor could only resell the house for $318,000 (given that the CPI rose by about 59 percent between 1990 and 2007).
- Second, the professor had to offer the house for sale first to existing or prospective UC-Irvine faculty members. If no faculty member wanted to buy the house, then the house could be offered to staff members. Only when no faculty or staff

member wanted to buy the house could the house be offered for sale to people outside of UC-Irvine, and then the "outsiders" would be required to follow the resale restrictions. (Because there has always been an excess demand among UC-Irvine faculty and staff members, no University Hills track house has ever been sold to an outsider.)

- Third, faculty (or staff) members who leave the university without retiring from the university system have to sell their houses, following the above rules. However, retiring faculty members can stay in their houses for as long as they live. Their surviving spouses can also remain in their University Hill houses for as long as they live.
- Fourth, faculty members can rent their houses, but for no more than two years in sequence (which means that faculty members could only rent their houses when they go on sabbatical or on leave from the university).
- Fifth, faculty members' University Hills houses must always be their "primary" residence (which effectively requires faculty members to live in their houses more than 50 percent of any year).

University Hills housing was initially, no doubt, a factor in attracting good faculty members because of the implied housing subsidy, which is, effectively, an expensive fringe benefit. However, the improvement in faculty quality probably has not been as great as the embedded housing subsidy, taken by itself, might imply. This is because the subsidy has likely taken the pressure off the State of California to raise faculty salaries and other fringe benefits. That is, faculty salaries and fringe benefits have risen in real dollar terms over the last decade but, very likely, not by as much as they would have risen had the housing subsidies not increased the supply of qualified faculty members and held faculty salaries and fringe benefits down (below what they would otherwise have been).

However, given points made in our earlier discussion about the relative value of in-kind and cash subsides, it should be noted that to attract and keep any given quality faculty, salaries need not have been raised in 1990 by as much as the housing subsidies, which in the above example was the equivalent of $19,200 a year. This is because the housing is an in-kind benefit that is tied to the consumption of a given good, housing. Most existing or prospective faculty members surely would prefer a salary increase of $19,200 over the exact same in-kind, housing subsidy. As with the student renters, the faculty member could take the cash, buy a house in University Hills, or use the cash to buy elsewhere in the area—or, for that matter, use the cash to buy a boat or car. If they bought houses in the surrounding communities, they could also gain from the ongoing housing appreciation in the area.

As it happened, the housing subsidy was and remains an inducement for faculty members to buy bigger houses and lease bigger lots than they would have bought had they been required to pay market prices for their square footage. Of course, this means that the available land has not likely accommodated as many faculty members and their families over the years as it could have accommodated were market pricing used.

The embedded housing subsidy also has likely caused faculty members who bought the larger houses to hang on to them longer than they otherwise would. Outside of the subsidized University Hills development, many parents whose young adult children move to places of their own do what comes naturally: they downsize their housing. The downsizing process not only reduces the housing costs of the homeowners with contracting family sizes, it also frees up the stock of larger houses for younger parents with growing families.

In University Hills, however, that process has been abated for two reasons:

- First, the large houses owned by downsizing families are relatively cheaper than they would otherwise be. So, the downsizing families can be expected to continue to retain their "excessive" square footage, as has been the case. (There was one notorious case of a wife of a deceased prominent faculty member who held onto her five-bedroom/three-garage house for years until she died in her eighties, in spite of the fact she lived only in the downstairs part of the house.)
- Second, since appreciation of the faculty housing has been capped by the rise in the consumer price index, faculty members with contracting families often have limited equity in their houses and, hence, have less to gain (than they would if their houses had been market priced) by moving to smaller and cheaper houses and diverting their equity to other asset forms, for example, stocks and bonds.

One unfortunate, and unanticipated and unintended, result of the rules of ownership and resale is that the university has begun to lose younger faculty members to other universities because they cannot move to larger houses in University Hills and cannot afford to buy larger houses in the surrounding Orange County communities, where housing price increases have hardly been restricted to the rise in the consumer price index. The annual rise in the price of housing in Orange County since 1990 has been one of the highest in the country.

Indeed, between 1990 and 2007, the median housing price in surrounding Orange County communities appreciated by more than four times the rise in the consumer price index. This means that the professor who bought the $200,000 house in University Hills in 1990 could only sell the house for $318,000 in 2007, but if the professor did sell out, he or she would have to shell out in 2007 perhaps $1.2 million to $1.5 million to buy a comparable house in the surrounding Irvine community. The implied housing subsidy has, accordingly, jumped dramatically. Assuming a comparable house in the surrounding community is only $1.2 million and an interest rate of 6 percent, the price differential between inside and outside University Hills, in round numbers, is $900,000, or $54,000 a year in 2007—a subsidy, we might stress, that is collected year after year *only if the faculty member stays put*.

The growing disparity between the prices of houses in University Hills and the surrounding communities has resulted in many faculty members holding onto their houses after they retire. With the shortage in housing in University Hills, the university has used the available housing stock strategically, often offering the available houses to much sought-after distinguished professors on the so-called "priority list" who tend to be in their late forties and fifties, if not sixties. Many such

faculty members can expect to spend more years in their houses after retirement than they spent there during their active teaching and research years.

Because of the growing spread between the prices of houses in University Hills and in surrounding communities, the housing deals offered years ago have been described as "golden handcuffs." Many faculty members have no choice other than to stay put. Other faculty members who relocate after retirement to other parts of the country have an added incentive to use their University Hills homes as second homes (although they have to make sure that they follow the letter of the definition for "primary residence"). After all, their capped resell prices make their houses cheap places to own and to use on trips back to Southern California to enjoy the close-to-perfect weather no more than five miles from the Pacific Ocean, as well as the virtually bug-free environment (factors that help explain why housing prices are so much higher in Southern California than in most other parts of the country).

The university now realizes it is in a housing bind, one that could have been anticipated with a little hard-nosed economic thinking, but, of course, was not. University Hills is "graying" as more and more faculty members retire and stay in their homes. Indeed, some faculty members jokingly call University Hills a retirement community—an academic "Leisure World" of sorts—because of the growing number of aging faculty in the neighborhood with canes and walkers. For the time being, the university has been able to bring younger faculty into the neighborhood, but only by building more houses. However, the available land for additional University Hills homes will soon run out—perhaps in as little as five years, long before the university expects to stop the growth of students and faculty—after which the graying of University Hills can be expected to accelerate, especially since the housing program will by then have been in place for 30 years, a tenure of service often sufficient to achieve maximum benefits from the university's defined-payment retirement plan.

What can be done to relieve the growing housing shortage (there are over 600 people on the waiting list at this writing)? Unfortunately, not much—short of allowing current homeowners to sell their houses at prices above the current pricing caps. If faculty members can only sell their houses well below market, where will they go? How will they pay for houses in the community?

If the university allows faculty members to sell at market (so that they can move out), then it might have a public relations problem of some magnitude, given that current homeowners would be allowed to pocket the capital gains associated with living on state property. But we do not see why such would be considered any more unfair or inappropriate than the current system that allows identified faculty to garner the value of state property by continuing to live where they are.

Then, what other options does it have, once it uses the last acre of its "free" land—if it truly wants to continue to build the quality of its active faculty, not its retirees? One course the university has taken has been to elevate reminders of the "primary residence" requirement by investigating several supposed violations. Faculty members also have become neighborhood police squads, reporting on retired neighbors who do not appear to be meeting the residency requirement. In other words, the price controls will make more and more faculty members

neighborhood snoops and nannies, hardly an anticipated and intended consequence. But there is a question the nannies will have to ask themselves: are the faculty members who use their houses only a few months of the year depriving young faculty members housing any more than the aging retirees (and their spouses) who continue to squat in their houses for decades after they retire? Did they not pay for the right to use their houses on a limited basis through their active years by suffering salaries below what they would have demanded, absent the housing benefit?

The solutions may now be limited. One possible solution might be to allow faculty members to rent their houses to other faculty members for long stretches of time. At least such rentals would make more houses available to younger faculty members for longer periods of time. That is, such greater leniency of the rental rules can result in greater use of the available housing stock.

In the end, the university might simply have to use donated or state funds to buy out professors from their University Hills houses at something above capped rates just to free up houses for the (supposedly) higher goal of continuing to expand and upgrade its faculty through the coming years. And why should it not? The university has demonstrated that it will use an extraordinarily valuable university resource—land—to build its faculty. Why not use its donated real dollar resources to continue to do the same? Certainly there will be a cost. But the land used for housing was hardly ever "free," because the university could have leased the property (and any commercial units built on the land) and used the rents collected to pad faculty members' salaries (or do any number of other great things).

Now, if the university wants to free up houses, it will have to incur a cost of some magnitude. No escaping that fact of economic life. However, the cost of faculty buyouts will not likely have to be as great as the differential between housing prices in University Hills and surrounding communities because some unknown number of retiring faculty members will want to retire elsewhere in the country where housing prices can be higher than in University Hills but lower than in Orange County, or the rest of California. The university simply can offer a buyout price equal to a comparable house in the faculty members' retirement destinations. Granted, some retiring faculty members can be expected to game the buyouts system by proposing to retire in places with high housing prices, but such problems can be overcome with contractual provisions, at least to a degree, that payment will only be made if the faculty member relocates to where he or she indicates (and remains there for some specified period of time).

Alternately, the university can use a buyout auction system similar to the one airlines regularly use when they are overbooked. When the airlines need passengers to release their seats to people on the wait list, flight attendants will usually announce a "low" buyout price (say, a seat on the next available flight to the person's destination plus another roundtrip ticket to any of the destination served by the airline within the continental United States). If an insufficient number of passengers accept the offer, then the deal can be sweetened (say, to two tickets to any destination in the world flown by any airline). The university can simply gradually increase its buyout premium until the desired number of houses is freed up. Faculty members thinking about moving will be put into something of a

competitive quandary that can cause them to reveal something close to their true minimum sellout price. When faced with the initial offer, you can imagine a faculty member thinking, "Should I take the offer on the table now or wait for a better one? If I wait for a better one, I could be left out in the cold, not able to get a premium price at all, because others have taken all available buyouts."

Okay, you do not like to apply market solutions to universities. Offer a better one? Renege on signed contracts and force aging faculty members to downsize their houses? That's a surefire recipe for lawsuits that can cost the university dearly. Suppose we limit by contract the years that newly arriving faculty members can stay in their houses. The university could also force new hires to accept a contractual provision that requires them to sell out when they retire. All you have done through such provisions is lower the value of the housing fringe benefit, which smart prospective faculty members should surely be able to figure out—*if university administrators making the rule change can figure it out*. Contractual limitations on the use of houses will have a way of feeding into new faculty members' starting salaries (or other fringe benefits) that will be higher than they would be without the housing forced-resale restrictions.

If only the university had thought through these pricing issues thirty years ago—if it could have.

Concluding Comments

There is a theme running through the discussion of various pricing puzzles in this chapter: "You cannot fool Mother Nature, and you cannot fool market forces" (at least not for long). Market prices for tradable goods, especially those with some durability like cars and houses, have a way of capturing the goods' disadvantages and advantages—and *changes* in those advantages and disadvantages. So it is that new car prices drop substantially when the cars leave the dealer's lot for the first time, partially because of the inability of the buyers (relative to dealers) to make a resale market for the cars they just bought. And new-car buyers need to understand that used-car buyers would not be fooled systematically into believing that used cars available for sale, as a group, are likely to have the same risks of repairs as new cars sold by dealers. If they are fooled, the pain of their purchases will no doubt lead them "as by an invisible hand" (Adam Smith's pat phrase) to correct the error of their buying ways. That is to say, the price differential between new and used cars can be expected, at least eventually, to reflect not only the wear and tear that goes with the normal use of cars, but also risk cost that goes with the prospect of used cars being lemons (or more defective than cars that people keep).

Similarly, if house buyers see value in views, that value will be reflected in the prices of houses with views. Prices, in other words, will absorb some (not necessarily all) of the value of the views, which is a solid explanation for why many people who value views do not seek properties with views (and often seek properties with big negatives, for example, an occasional natural disaster).

Also, this chapter has sought to drive home an easily overlooked lesson: when we try to help victims of natural (or even unnatural, for example, workplace) disasters through public aid, some, if not all, of the value of the help will be captured by hikes in the prices of assets owned by the victims. The aid that policymakers provide can also constrict future changes in public aid policies. Once the aid for natural or manmade disasters is captured (or capitalized) into the prices of property, then any withdrawal of the aid can give rise to a "disaster" of its own, given that the aid withdrawal can undermine the value of property as surely and as completely as the natural and manmade disasters that gave rise to the aid in the first place.

Chapter 6
Markets and More Markets

In this chapter, we consider several problems that will allow us to demonstrate how supply and demand curves can be employed to understand social issues and to predict directional movements in market price and quantity of a good purchased. Supply and demand analysis does not tell us all we may like to understand about the market—for example, how much price and quantity change—but it can indicate general tendencies and, to that extent, can help clarify issues that may otherwise remain obscure.

Why Coal Producers Love OPEC

When the thirteen countries that made up the Organization of Petroleum Exporting Countries (OPEC) restricted output and forced up the world price of oil in 1973, coal producers in this country and elsewhere smiled. The action of OPEC enabled them to achieve windfall profits they would not otherwise have had. Reference to simple supply and demand curves can illustrate why this was the case and why coal producers continue to be pleased when OPEC seeks once again to restrict the production of oil in their member countries.

Increases in the price of oil cause energy consumers, acting rationally, to seek substitutes for oil (a restatement of the law of demand presented in Chap. 1). Coal is a particularly good substitute because many electric utility plants are equipped to burn either oil or coal, depending on which is the cheaper at the time. Therefore, as a consequence of OPEC's actions, the demand for coal increased. Figure 6.1 illustrates the demand curve's shift from D_1 to D_2 to reflect the increase in demand. At the original market price for coal, P_1, a shortage develops which embodies the necessary ingredients for an upward movement in market price. The price in this example rises to P_2. As the price rises, production becomes more profitable and producers can justify incurring the higher marginal costs of production.

Because of OPEC's actions, the profit of the coal industry increased. The coal industry's revenues, before oil prices increased, are equal to the then current price

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_6,

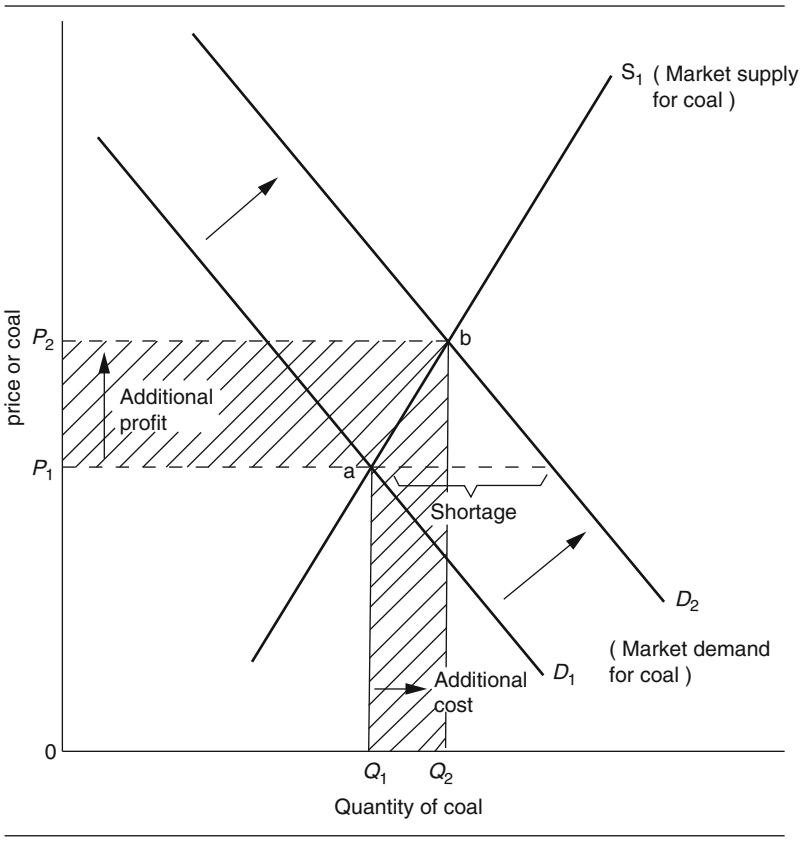

Fig. 6.1 Increase in the Demand for Coal

of P_1 times the quantity sold, Q_1, which in the figure is equal to the area OP_1aQ_1. After the increase in the price of coal, the revenues of the coal industry expand to the higher price, P_2, times the higher quantity Q_2, or the area OP_2bQ_2. The increase in revenues is indicated by the L-shaped, striped area on the graph ($P_1P_2bQ_2Q_1a$). The supply curve tells us the marginal cost of each additional unit of coal produced; therefore, the total cost of expanding production from Q_1 to Q_2 is the portion of that shaded area that is under the supply curve (Q_1abQ_2). The additional profit, which is the additional revenue minus the additional cost, is that portion of the shaded area that is not underneath the supply curve (P_2baP_1). It is this additional profit that caused coal producers to smile when OPEC made its announced price increases.

The foregoing analysis applies just as readily to any other substitute for oil. OPEC's actions, for example, served the purpose of making wind and solar energy more attractive to energy consumers and, because higher prices can be charged, more profitable to investors. As the price of gasoline rose, reflecting higher oil prices, people began looking for alternative ways of accomplishing the things that could be accomplished with a gasoline engine. Demand for bicycles exploded; their

prices rose and the quantity sold expanded considerably. As producers caught up with the dramatic increase in demand, the price of bicycles dropped, as expected. In these ways, an increase in OPEC prices sets in motion a whole series of actions that gradually eat into the energy market over which the Middle East countries may think they have more influence than they actually do.

Because of the interconnection of markets, economists are prone to take a cynical look at almost all policy areas. In 1987, when the United States was seeking to protect oil tankers from Kuwait in the Persian Gulf from attack from Iran, one economist wondered aloud, "I wonder if it really was Iran mining the waters off Kuwait. Could it not be one of the multinational oil companies?" While no oil company may have played a role, foreign policy officials cannot totally ignore the economist's comments. It just might be that some devious, and profit-maximizing, oil company was in fact doing the mining. The threat of a reduction in the supply of Middle Eastern oil during 1987 sent the world price of oil—and the prices of oil company stocks—sharply upward.

For that matter, beginning in 2010, the populations of several Middle East countries had finally had it with their dictators. In late 2010, Tunisia's dictator was overthrown, followed by the dictator of Egypt early 2011. Various levels of political unrest were being reported throughout the Middle East, including protests organized in Morocco, Algeria, Libya, Jordon, Yemen, Iran, and Saudi Arabia with, at this writing, some prospects of outright revolutions in an uncertain number of those countries. Of course at the same time, Iraq, Afghanistan, and Pakistan had been at the time political basket cases for years. Such political unrest can create risk in oil markets, which can translate into higher gasoline prices—and into higher coal prices and higher profits for coal mining companies. (And as we will see in Chap. 12, the higher energy prices can feed a reduction in the obesity rates in countries around the world, but especially the United States. Stay tuned!)

A Market for Bodily Organs?

An individual has legally recognized property rights to his (or her) body and the parts of it. He can do many things with his body and his organs; he can build them up through exercise and diet, or mistreat them through lack of care or through overuse of drugs. He can give them away or even destroy them. (Suicide is not illegal, although it used to be. In general, today only attempted suicide is illegal!)

However, there is one thing people cannot do with their body parts, which is sell them. Former Senator Albert Gore (D-TN), the 2000 Democratic presidential nominee and later winner of the Nobel Peace Prize, made certain of that. Senator Gore was instrumental in passing a federal law that outlaws the sale of bodily organs to transplant recipients. If laws allowed free commerce in bodily organs, much of the medical profession would resist such sales on ethical grounds. One spokesperson for a kidney transplant center has commented that it "without question would never even consider such a proposal [purchase or sale of a kidney]. Such

a thing might open up a whole new concept that is abhorrent."[1] A doctor in northern Virginia announced in the early 1980s that he intended to go into the business of tradable organs, acting as intermediary between transplant organ sellers and transplant organ buyers. The medical profession in the area expressed horror, and Gore introduced in Congress his proposed ban on organ sales, which passed with little opposition.

Even the suggestion of a market in bodily organs may be grossly shocking to some readers, and there is much that is unattractive about the idea to the authors; however, reflections on how a market system may affect the availability of transplantable organs may make the idea somewhat more palatable.

Today, more than 100,000 Americans (four times the count in the early 1990s) are on waiting lists for kidney transplants. Thousands more are on waiting lists for transplants of other organs, hearts, livers, pancreas, livers, lungs, not to mention those who await whole or partial face transplants (which has been done). At least fifteen Americans die each day while waiting for an organ transplant.[2] This is true in spite of substantial growth in the number of transplants performed each year and the improvements in preventing rejection of the organs.[3]

The quantity of any transplantable organ, such as a kidney, is dependent almost exclusively on the charity of potential donors, and charity in this area is not an insignificant motivational force; without it, many people would die.

However, many potential donors are reluctant to give to medical schools for training purposes or to people in need for reasons that may seem strange to others but are nonetheless very important to them. Some people object to donating their organs totally on religious grounds; others resist the idea of donating their organs for fear of going to their "eternal reward" with some of their "pieces" missing. (They may not have all their marbles, but they want to have their kidneys, lungs, livers, and corneas just in case they are needed.) Still others resist giving their bodies or parts of their bodies to medical schools because they recoil at the thought of medical students making jokes about them.

If the legal prohibition against sale of, say kidneys, is maintained, the quantity of transplantable kidneys can be more than the quantity made available out of strictly charitable motives. People may experience some discomfort in having to give up a part of themselves to which they have become attached, but many can be persuaded at some price to donate their kidneys (for transplantation at death, if not before) to a worthy cause. One person in the late 1970s advertised in a newspaper his willingness to buy a kidney in good order for $3,000, an ad that horrified many, but drew a hundred people willing to sell.[4] Since then, reports abound of a black market for kidneys from living donors that has emerged and flourished among the poor in India and Southeast Asia, with surgery scars evident on the backs of donors, all because donated kidneys are fetching $6,000 and often far more, a market outcome that has been decried everywhere by pundits, politicians, and medical professionals.[5]

As the price rises, more and more people will overcome their hesitancy to give up one of their kidneys (either before or after death) and to offer it for sale. In short, there is likely to be some quantity of kidneys made available when the price is zero; this quantity, depicted by Q_1 in Fig. 6.2, reflects people's altruism. From that point

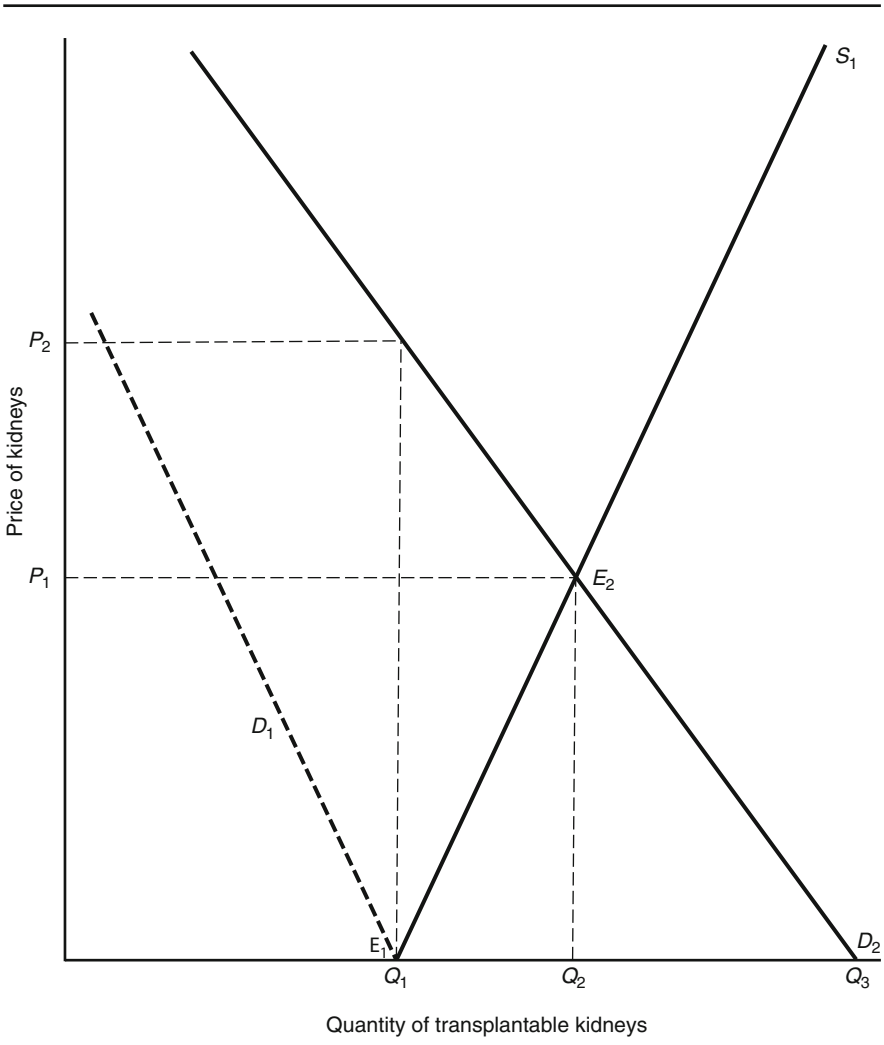

Fig. 6.2 Supply and Demand of Transplantable Kidneys

in the graph outward, the supply curve rises in a normal positive direction, illustrating that a larger quantity will be made available to buyers as the price rises.

The demand for kidneys is a function of several factors, including the size of medical schools and their need for kidneys in research and instruction and the number of people who experience kidney failure. Because kidney failures can be linked to a person's eating and drinking habits, these habits also can affect the demand for kidneys. Further, the demand for kidneys is related to known techniques for transplanting organs. As the techniques in this area are perfected, the doctors' willingness to operate will rise, increasing the demand for transplantable kidneys.

The demand may be highly inelastic, as is the curve in Fig. 6.2, but it should still exhibit the normal negative slopes of all other demand curves. As the price of a kidney rises, some people may be willing to stay with the then cheaper dialysis machine; others may be excluded from the market because of insufficient funds to buy at the higher prices.

Under a completely altruistic system, no serious problem arises as long as the demand for kidneys is no greater than D_1. With a supply equal to S_1, charitable donors are willing to give Q_1 kidneys, and that is all potential demanders want even at a zero price. In this case, equilibrium is at E_1 with a price of zero. In the real world, such an outcome is likely to be a rare occurrence, if for no other reason than that the demanders and suppliers are two different groups of people and are in the market for largely different reasons.

One might reasonably expect the demand for kidneys to be so great relative to supply that at a zero price there will be a shortage of kidneys. This is the case when the demand in Fig. 6.2 is positioned at D_2, the quantity demanded is Q_3, which is greater than the quantity being offered out of altruism, Q_1. Granted, it is possible that with campaigns to enlist new donors, the gap between supply and demand at zero price can be closed[6]; barring that, which we must point out can be an expensive process, the shortage means that many people will go without kidneys and, without any question, some will die.

If a free market in kidneys (or in any other organ) were allowed to function, the price of a kidney would rise toward the intersection of supply and demand, or P_1, which in real life can be several thousand dollars, if not tens of thousands. At present, the only viable alternative to a transplant for many patients is dialysis through a machine, which can cost upwards of $30,000 a year. The process can also be time consuming—time spent on the machine plus travel time to and from the medical center. Furthermore, the patient may have to relocate near a dialysis center and may have to endure all the anxiety that goes with waiting until the right donor comes along. Indeed, when the costs are totaled, one can see that many kidney patients may be willing to pay a handsome market price for a kidney not because it is an attractive or morally acceptable solution, but because it is cheaper than the next best alternative.

The prospects of individuals charging for "their God-given organs" are repulsive to many people because it will force some potential buyers out of the market. The people who take this position may simply have a strong ethical position that makes the sale or purchase of an organ "wrong"; they may also see that the quantity of organs demanded falls from Q_3 at zero price to Q_2 at P_1. Perhaps nothing can be said to many people who oppose the sale of kidneys that will cause them to change their minds, but another important point evident in the illustration should not be overlooked. At a price of P_1, the quantity of transplantable kidneys is greater than what is available under a completely altruistic system; people offer a total of Q_2 instead of Q_1. Because of the pricing system, more people will have kidneys; fewer people will be strapped to a dialysis machine for the rest of their lives, and fewer will die.

Clearly, the people who are willing to buy the kidneys, even at what may be considered a very high price, are made better off. The price they pay is evidence of the net benefit. The persons selling the kidneys are also better off, or at least, they expected to be when they sold the organ. If they give up their kidney while they are still alive, they run the risks associated with having only one kidney. Presumably, the price they receive compensates them for suffering those risks. The person who received payment for a kidney that he gives up on his death is compensated for the anxiety he may feel from knowing that his body will be taken apart upon death.

Furthermore, doctors will have a greater variety of kidneys to choose from; and the greater variety can mean that doctors can more closely match the kidney to the recipient, reducing the possibility of rejection. The doctor will tend to receive a larger number of kidneys from live donors. Since experience indicates that the rejection rate is lower with kidneys from live donors than from cadavers, further reductions in the rejection rate can be achieved.

The market system is not without its difficulties in this area. As noted, some people in need of a kidney will be unable to buy one because of their limited financial resources. However, the introduction of a market for kidneys may reduce, but need not preclude, altruistic donations of kidneys. These donated kidneys can go to those people who have financial difficulties. In addition, such persons' financial problems can be solved in the same way that we now solve many other health-related problems of the poor, through charity and governmental aid. The market system has one redeeming feature, and that is the government and charitable groups will have more kidneys which they can buy and give to the poor.

In addition, it must be stressed that the creation of a working market in kidneys may not actually increase the financial burden to kidney patients. We say this for the following reason: Just because kidneys, which are very valuable, are donated, and just because no explicit price is placed on the kidney transplanted, it does not follow that the kidney has not been sold. The market value of the kidney may be included (disguised) in the prices that doctors and hospitals charge. The physicians' and hospitals' fees may be as high as they are partly because they can charge indirectly for the value of the organ (which may be one of the several reasons physicians and hospitals resist the sale of organs).

Having recognized the prospects of the donated kidneys' being sold, we might ask for how much? In Fig. 6.2, the donated quantity of kidneys could be sold for P_2 (assuming the demand is D_2), which is what would be charged in the event that the doctors and hospitals involved were out to maximize their take from the operations. This means that if the donated kidneys are actually sold to the patients (via increases in other bills) before the advent of a free market, then the advent of a free market in bodily organs would cause a drop (not an increase) in the price of the kidneys from an implicit price of P_2 to an explicit price of P_1.

If this line of reasoning were descriptive of the real world of organ transplants, any ban on explicit organ sales implies not only a restriction on the number of organs available, but also an inflated price for the organs that are transplanted. We cannot be sure that this would be the case, but economic reasoning warns us that we should at least consider these prospects before adopting a ban.

From Bodily Organs to Tennis Courts

The principles developed in the preceding section relating to kidney transplants are readily applicable to the way most universities have allocated their facilities among students and faculty who want to use them. Consider the way tennis courts are allocated; this example can demonstrate both the advantages and the limitations of the market system as an allocator of scarce resources.

Typically, universities do not charge a price for the use of such facilities as tennis courts. This usually means that there is a shortage of tennis courts; more people want to use them during certain hours of the day than can use them. The courts are typically rationed on a first-come–first-serve basis. (Some may suggest that this amounts to "allocation by congestion.") Because of this system, many people take the time to show up at the courts to see only to be turned away. Or they may have to waste time waiting until a court becomes available. Many others may like to play the sport, but do not play because they figure that the probability of a court's being open when they want it is too low to take the necessary trouble of trying to play. In any event, the cost of such a system to individuals can be extensive.

The congestion can be reduced and the courts allocated among the competing "buyers" in several ways, but we will concentrate on two (1) the pricing system and (2) the sign-up system. When a price is charged, the number of people wanting to use the courts will diminish. Indeed, the price for different hours of the day can set a level whereby the number of people wanting to use the courts will equal the number of courts available. Revenues may not change the number of courts available because legislative decisions in state capitals normally determine the size of athletic facilities, but the price can serve the very useful function of rationing the courts among potential buyers. It can, thereby, save many people the cost of going to the athletic complex in search of a court and not being able to find one.

Still, we cannot overlook the problem that is created in any market for a good; that is, the market system discriminates against those with limited financial resources. However, so long as people have competing interests (i.e., want the same thing), discrimination (i.e., rationing) is necessary in one form or another.

Many students and faculty members, even after considering the advantages of using price to ration the courts, may favor the first-come–first-serve system and would vote for it if a referendum were held on the matter; others may favor the pricing system. There are many reasons why opinions differ; however, the one we would like to highlight is the possible differences in the opportunity cost of students' and faculty's time. Those students and faculty who have a very low opportunity cost for their time—for example, they can earn only $8 an hour or be unemployed—may favor the first-come system. The cost to them in terms of the time wasted can easily be less than the equilibrium price that would be set in the market. On the other hand, a person whose time is very valuable—say one can earn $100 an hour—may gladly pay a rather high price to ensure that she will be

able to get a court when wanted and to ensure that no time is wasted on futile trips going to and from the courts.

It is by no means certain that under a pricing system faculty will always outbid students for the tennis courts. First, there are probably a number of students on campus who make more at a part-time job than do faculty members at teaching. Further, even students who do not work while in school may be willing to pay a higher price than faculty members. One reason is that they enjoy the sport more. Another, possibly unnoticed, reason is that students, while in school, are "capitalists": they are investing in their future earning power, something that economists call "human capital." If they play tennis, they may reduce their future earning stream. In short, the opportunity cost of these students' time can exceed the opportunity cost of faculty members' time; in other cases, the opposite is true. The opportunity cost of one's time is largely a subjective matter; however, the market system permits such considerations to creep into the determination of how resources and goods, such as tennis courts, are allocated.

Alternatively, sign-up sheets can reduce the congestion at the tennis courts; players simply sign up for the times they wish to play. Although this system also has an element of first-come–first-serve in it, it does reduce the amount of time a person may have to wait for a court. This system may be used because it is simpler than the pricing system—it does not require that a cashier be present—and it is generally less costly to administer. Indeed, the pricing system may not yield sufficient revenues to cover the cost of administering it. Additionally, the sign-up system may be considered more equitable than the pricing system. People can register the intensity of their preferences in a pricing system; but they can also, perhaps with less precision, register the intensity of their preferences under a sign-up system by their willingness to get to the sign-up sheet first. Since price has little to do with the number of tennis courts a university has, it may, therefore, be understandable why the pricing system is rarely used to allocate tennis courts.

Markets and the Abortion Dilemma

The debating about abortion provides a ready-made issue for a political power struggle. Much is at stake: human life and individual choice. In contrast to the purpose of others, our purpose here is to sidestep the political fracas over abortion and consider how markets may provide partial, albeit imperfect, solutions to the dilemma that can preserve both life and choice.

Heretofore, the public debate has been driven to rhetorical extremes on the presumption that the solution must be found solely through collective and political means. Accordingly, pro-life groups often characterize pro-choice as modern-day Hitlers, willing to set records in the slaughter of human life. Pro-choice advocates (who recoil at the pro-abortionist tag) frequently paint pro-lifers as religious fanatics willing to sacrifice individual freedom and dignity in their

uncompromising, zealous quest to impose their morals on reluctant and imperfect mortals with real-world population and welfare problems.

The policy dilemma has been framed in equally stark terms: a virtual ban on abortions or a moral free-for-all in which mothers are licensed to kill their unborn babies almost at will. All the while, human embryos and fetuses continue to be discarded in the world at more than forty million a year and in the United States at a rate of more than a million a year.

The political solution commonly envisioned by moderates caught in the verbal crossfire is one in which each side gives a bit, meaning the abortion protagonists and antagonists accept the establishment of some legally defined date after conception at which *life* is presumed to begin. Pro-lifers need an alternative private remedy for what they see as an egregious social ill. Perhaps, the political process will eventually reduce the period during which an abortion is legal from the current twenty-four weeks to, say, fifteen to ten weeks. Realistically, this might be about all that can be expected from a pluralistic democracy composed of citizens with various perceptions of the beginning of human life. Still, pro-lifers will likely remain unsatisfied, interpreting such a compromise on life as a politically expedient death sentence for generations of unborn babies.

Two private remedies, both of which rely on markets, are becoming evident. The first remedy is already in place; the second is futuristic, relying on further development of fetus transplant technology.

The first remedy to the abortion dilemma emerged from pro-life religious groups (especially fundamentalists) interested in saving fetuses, which they view as underdeveloped human beings. Without doubt, the favored solution of many religious groups is to dispense with abortions altogether. However, because of court rulings, the religious groups have reasoned that the best they can hope to accomplish is to reduce the number of aborted fetuses. We were never fans of the late Jerry Falwell, a nationally known Baptist minister and former leader of the "Moral Majority," directed his ministry to undertake an initiative in the mid-1980s, a fundraising drive to finance homes across the country for pregnant women who might otherwise choose to have an abortion. The homes would provide a comfortable setting in which these women could avoid the financial and peer pressures to have abortions; the homes would also be places that would provide positive reinforcements to the women for having the babies, who could be adopted after birth.

Falwell asked his followers to become "godparents," suggesting that each donate the necessary funds to cover the expenses of one woman's stay at one of the homes. In effect, he asked pro-lifers to put their money where their hearts and beliefs are. At the same time, he offered a market alternative to pregnant women: the facilities and care available at the homes would be offered in exchange for the women carrying their babies to term. Falwell imagined that if enough pro-lifers contributed to the homes, hundreds of thousands of fetuses would be saved—not a perfect solution to him (since hundreds of thousands might still die), but at least a second-best solution.

One can imagine that enterprising religious groups may carry Farwell's idea one step further and offer not only coverage of pregnancy and birth expenses but also

some additional reward for not having an abortion. All involved might find the idea of paying women to avoid abortion repulsive, but they might find continued abortions even more repulsive. Further, they may reason that the supply of avoided abortions is upward sloping, meaning they can save even more lives by increasing the reward from not aborting.

The second remedy may emerge from the fetus transplant technology being developed in animal science. For nearly two decades, animal scientists have been developing the capacity to transfer embryos from, for example, high-quality cows, sheep, horses, and pigs to lower quality host females. Indeed, by giving a high-quality cow a fertility drug that causes her to "superovulate," and by transplanting the multiple embryos into an equal number of host cows, animal scientists have dramatically increased the reproductive capacity of high-quality cows. The transplant technology has been used to rebuild the stock of endangered species.

However, animal scientists have found that they can split embryos into two or even more parts and implant the parts in different host females with the result of identical twins, triplets, or quadruplets being born by different females. For example, a single horse embryo has been artificially split in laboratories and implanted in separate mares, which subsequently have given birth to identical twin colts. Zebra embryos have been carried to term by horses.

The transplant technology may, of course, be adapted to humans with a great deal of difficulty but also with a great deal of promise. The embryo and fetus transplant technology, while still in its infancy, may offer another opportunity for pro-lifers to put their money—and even their bodies—where their hearts and convictions are, an opportunity they could begin to seize by funding research to perfect the transplant technology.

Once the transplant technology is developed—and there is every expectation that many of the important research questions can be answered—pro-life groups can establish clinics that will seek to match (and there will be matching problems) women seeking abortions with women wanting to have children (for whatever reason), or with those willing to carry a fetus to term and then offer the baby for adoption. The expenses of the pairs of women would be covered in a variety of ways, including charges on the mothers involved or on the couples wanting to adopt or through contributions from people who share the clinics' central goals.

Pro-life groups can start the search for a private solution to the political impasse on abortion by funding additional research on human embryo and fetus transplants.

Three areas of research (among many research needs) appear to be particularly important. First, doctors need to develop better and less costly means of detecting pregnancy at earlier dates and of extending the time period during which transplants can be successful. Currently, the optimum period for transplants in animals and humans is six to nine days after conception. Most women who may seek an abortion do not know they are pregnant for at least two weeks.

Second, successfully disengaging an implanted fetus from the uterus remains a particularly serious transplant obstacle. Third, nonsurgical methods of transplantation in women also need to be devised to reduce the costs of the procedures.

Once the transplant technology is developed and there is every expectation that many of the important research questions can be answered pro-life groups can establish clinics that will seek to match (and there will be matching problems) women seeking abortions with women wanting to have children (for whatever reason) or willing to save what would otherwise have been discarded embryos or fetuses.

Such clinics can specialize in encouraging pregnant women to carry their babies to term, at which time they would be kept or given up for adoption. Alternatively, as a solution short of sending pregnant women off to abortionists, these pro-life clinics can have the embryos and fetuses medically removed and transplanted into host mothers who, at term, may keep the babies or may give them up for adoption.

The expenses of both mothers can be covered in a variety of ways, including charges on the mothers involved or on the couples wanting to adopt or through contributions from people who share the clinics' central goal the saving of human life. Such pro-life clinics can alter the number of babies saved by their generosity in covering the medical expenses of the mothers.

Granted, objections can be easily marshaled against the solution tendered here. Pro-life clinics are unlikely to eradicate all abortions, mainly because of funding limitations and the legal problems involved. Not all transplants will take, and the preservation of human life will be tainted with money, as it is in so many other areas of medical science. Transplants may, in addition, encourage pregnancies, since the pro-life clinics will likely represent a less objectionable means by which women can relieve themselves of unwanted pregnancies.

However, the objections to this admittedly imperfect transplant proposal must ultimately be assessed with reference to the status quo in which abortions abound. If pro-lifers truly consider all fetuses as priceless, then they should count some marginal reduction in the current rate of fetus destruction—which would be accomplished by some, but not all, transplants—as a social improvement. This would be especially true since the transplants would be voluntary and might be consistent with principles of individual choice. Regardless of whether you approve of these market methods of partially resolving the abortion dilemma, we expect the methods will be hotly debated in the not-too-distant future.

Insider Trading and Nontrading!

In the late 1980s, Ivan Boesky, a prominent New York stock trader, became known as the Wall Street equivalent of Ivan the Terrible. His crime: he dared to buy and sell stock basing his decisions on "inside information" (or information known mainly to corporation managers and officers and not generally available to the public). As a consequence, he was able to buy stock before it appreciated in response to public release of important corporate information. He supposedly made hundreds of millions of dollars by buying low and selling high. His only problem is that his dealings were against the law, since he had access to important

information that had not yet been made public. As a result of his wrongdoing, the Securities and Exchange Commission levied a fine against him of about $100 million in 1986.

Should Boesky have been treated like a criminal for trying to make a buck? That question may appear to have an obvious answer. After all, Boesky did violate the law and, by his own admission, made huge profits; however, this obvious answer does not imply that economists agree that the law he violated should ever have been put on the books. Indeed, while businessmen and women generally support laws against insider trading, many (not all) economists who have considered the issue of insider trading dispute the value of laws against such activity. Some economists even argue that laws against insider trading have perverse effects and are inefficient, if not unfair.

Their arguments are developed along the following line: All stock (and bond) market trades are made with the intention of making a profit-by means of buying low and selling high. Hence, the buyers must assume they have information about the stocks they buy that is not known to all others in the market at the time of the trade. They base their trades on various sources of information, from "hot tips" to detailed research reports. The information they may use may be in the public domain, but it certainly is not equally available to all investors at more or less the same cost.

At best, laws against insider trading require an arbitrary demarcation between information that traders can use and information they cannot use. What is inside information is not always clear; therefore, what is against the law is not always clear. A way to solve the difficulty of legal definitions could be to simply restrict corporate managers and officers (not just people who deal on the basis of inside information) from trading stocks that are in any way related to their work for their corporations.

As a consequence, economists who oppose insider-trading laws fear such laws deny corporations an important means of compensating their managers and officers. To that extent, the income of managers and officers may not be efficiently tied to their doing things that will produce greater profits for their companies and their companies' stockholders. If managers and officers could trade on the basis of inside information, so the argument goes, managers and officers would have more incentive to make more money for their stockholders. In addition, by trading on inside information, managers and stockholders push the price of the stock in the right direction—up or down (depending on whether the inside information is good or bad news). Through changes in stock prices the inside information is made public (or, at the very least, people in the market have a greater incentive than otherwise to discover the reason for the stock price movement).

Still, proponents of insider-trading laws may reason that insider trading is unfair, and in one important sense, that is the case. Managers and officers are provided an advantage in the purchase or sale of stock not given to everyone else. They know when, for example, the company is planning a merger, has come upon a new invention or has discovered a new resource, or will soon be taken over by another firm. Indeed, stockholders may be induced by corporate officers to sell just prior to

the announcement of the news and the appreciation of the stock. The stock market gain favors the corporate managers and officers, or so it is thought.

But some economists take a different perspective on the claim that insider trading is unfair, which leaves the issue, at the very least, open to question. Insider trading need not reduce the overall profitability of the company and the value of the stock to the stockholders. Indeed, allowed insider trading may increase the value of the company stock. Because insider trading can be part of the compensation package managers and officers receive, companies may not have to pay their managers and officers as much in other forms of compensation, such as salaries. The impact of insider trading on a company and its stockholders, therefore, probably depends on the relative efficiency of payment through salary, fringe benefits, stock options, bonuses, and capital gains (achieved through insider trading) and the tradeoffs that the companies have to make in securing the services of their managers and officers.[7]

It is doubtful that all firms will find that compensation through allowed insider trading to be equally desirable, which means that not all firms will want to permit it. But in a diverse world, some firms can be expected to permit insider trading while others can be expected to prohibit it (for the same reason that they prohibit their managers and officers from selling off their office equipment). From this perspective, insider trading would be a criminal offense only if it violated a provision in the managers' and officers' employment contracts. (In fact, Boesky may have been guilty of violation of laws against fraud and breach of contract, as well as the securities laws.)

Economists opposed to legislative (noncontractual) restrictions on insider trading also have worried that such laws imply an asymmetrical application of legal penalties. Specifically, only those insiders who buy stock based on nonpublic information are penalized. However, William Kelley, Clark Nardinelli, and Myles Wallace—three Clemson University economists—have pointed out that insiders can profit from nontrading (or not buying and selling stock) based on nonpublic information, and the Clemson economists stress that insider nontrading may be a far larger problem than insider trading.[8] This is because many managers and officers have stock in their company and can always not sell their stock based on inside information. And, of course, everyone can potentially not buy stock based on inside information.

How does a manager or officer make money from not trading, you ask? The example provided by the Clemson economists is instructive:

> Consider the case of Ms. B., a highly placed corporate executive at ABD Inc. Ms. B has substantial holdings of ABD stock, and before a mid-morning meeting, she had planned to sell some of her holdings to take profits on a recent rise to $40 a share. At the meeting, she learns of a friendly takeover bid from KNW Inc. at $60. Ms. B, acting on information not yet in the public domain, holds on to her stock after the meeting. Later, she sells out for $60, reaping a hefty profit from her earlier nontrade. Now, if she had purchased more shares in ABD prior to the public disclosure of the takeover, she would have violated existing codes. Although she did not violate any codes, by not going through with a planned sale, she clearly used inside information for personal gain.[9]

To make their point clear with a modicum of humor, the authors recommended that the Securities and Exchange Commission also regulate nontrading with no less dedication than it now regulates insider trading. Of course, the regulation of nontrading is hard to do, since it is difficult, if not impossible, to detect (and detectives need to detect) when people are *not doing something* based on nonpublic information. (Can you imagine how large the SEC would have to be in order to keep a watchful eye on people *not* buying and selling stock?) So long as insider nontrading is not regulated, the application of the law will continue to be discriminatory. Unfortunately, according to correspondence received from abroad, Italian politicians have taken the Clemson economists seriously and have proposed the banning of insider nontrading. Leave it to the Italians.

Why do people oppose insider trading? One reason has already been given: insider trading is perceived to be unfair. Another reason is ignorance or stupidity regarding the subtle consequences of insider-trading laws. Although economists are reluctant to lean on ignorance and stupidity as an explanation for any social phenomenon, it does not follow that people always understand the public policies they support (an observation most principles of economics teachers should appreciate).

Fortunately, there are probably other reasons, and economists are always worried that proposed restrictions are designed to benefit the people who recommend them at the expense of others. One possible private-interest explanation is that firms (or investment bankers) are not willing to incur the necessary cost of enforcing their own contractual prohibitions against insider trading. That is to say, for some (maybe most) firms, a contractual prohibition may be the most efficient means of compensating managers and officers, but the firms may still prefer to have someone else—the government—incur the cost of ensuring that insider trading does not occur.

Still another explanation may be that the managers and officers want to cartelize inside information, that is, make sure that some independent insider does not leak the information to the public. Nothing in current security laws prevents a company, acting in its own name, from trading on inside information. If the information cartel holds, it is altogether possible for the managers and officers to take the company private at a bargain price and then have the managers and officers divide up the spoils of change known only through inside information. So long as the rules against insider trading are enforced, the "market" will never know what is afoot.

Of course, dominant stockholders within firms, who are officers or board directors and who may have considerable inside information, may want to see information kept within the firm. Dominant stockholders can ensure that the firm engages in insider trading in the name of the firm. The firm can buy the stock back from nondominant stockholders based on inside information, knowing that something is afoot that will substantially raise the company's profitability. The benefit of the information is therefore internalized within the stock of the dominant stockholders, and rather than all stockholders benefiting from the greater profitability, only the dominant stockholder will.[10]

We do not know if this is true. Economic theory only suggests what may be true. Therefore, such explanations must be treated as hypotheses, subject to empirical testing.

Concluding Comments

The market system is often criticized, and the criticisms are well known. Through the use of real-world examples, this chapter has been directed toward revealing a principal advantage of markets. The market system can perform the very valuable function of rationing scarce resources among all those who want them. It avoids the problems of congestion that will develop when no price is charged for the use of the resources, goods, and services. Further, the system allows people the opportunity to reveal their relative preferences for a good. In the process, the system can give rise to greater production of the traded goods at lower prices. These are the main lessons of this chapter.

Part III
The New World of Personal Economics

Many students who have never had a course in economics often believe that economics is only concerned with personal finance, businesses, and markets. Indeed, economics does cover those topics—a lot (as will become evident later in this book)! In this section, however, we show how economics can be instructive in understanding such personal and social institution as marriage, family, and divorce. We also consider the economics of growing weight problems of Americans (and many other peoples around the globe). Weight is clearly a personal (and social) problem, which must have economic foundations (given the importance of food production in the country and world). We also venture to show you how there is an economic approach to dying—yes, really!—although we take up the topic in short order and with a measure of tongue in check.

Chapter 7
Marriage, Family, and Divorce

The family is generally considered to be the basic building block on which social order is founded. Yet, even with all the attention that social scientists and others have given it, the family remains perhaps one of the least understood institutions, especially in modern times, because "family" comes in new variations, not the least of which are families headed by homosexual couples.

The purpose of this chapter is to develop insights into the marriage and family processes. Our approach is somewhat unusual. Certainly we recognize the importance of love in marriage and the family; however, we also recognize that a variety of motives may drive individuals as they consider establishing a family, and some of these motivations are not fundamentally different from those that lead people to buy a car or new clothes.

In addition, we will treat the family in its function as a producing unit. It is a "firm" that takes resources, including labor from within the family and the goods that are purchased, and produces things the family members desire. We want to look inside the family unit and analyze its behavior in terms of the behavior of its members. In the process, we are able to make observations regarding the economic and social importance of the marriage contract, the difficulty of divorce, the economic implications of love, and organizational principles underlying the family structure.

The Marriage Contract

Marriage can be defined in many different ways,[1] but for our purposes, we view it as a legally enforceable contract between a man and woman (or between two parties of the same sex if homosexual marriages are ever legalized across the country, which we see as inevitable, considering the spread of gay marriage laws to five states by 2011 and the growth in approval of gay marriage among younger Americans[2]). Each party explicitly or implicitly makes certain commitments as to his or her responsibilities within the family. Each agrees to recognize certain rights

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_7,

and privileges of the other, and both agree, again explicitly or implicitly, to a set of rules by which household decisions and changes in the contract are to be made. This last provision is necessary because not all issues concerning the relationship are ever likely to be settled before the vows are said and because conditions do change.

Such provisions of the contract may be only vaguely understood and recognized as such, but they are nevertheless generally present in one fashion or another. The couple may simply have an understanding that they will work things out together, tacitly realizing from their knowledge of the other's behavior what this means.

The process of marriage may be compared with the development of a constitution and bylaws for any firm or organization. As in the case of any one organization, the rules of the game can be as restrictive or as flexible as the people involved desire. In fact, the central purpose of dating and engagement may be to give the couple a chance to work out such provisions and to develop the contract by which both agree to live. (Not all couples, however, avail themselves of this chance to the same degree.)

The contract, for example, may incorporate a provision on whether children will be included (or how many), who will do the housework and mow the lawn, and which decisions will be democratically determined by the whole family and which decisions will be administratively determined. Although we might like to think that everything regarding the marriage should hinge on love, the division of the responsibilities and rewards may be greatly influenced by the relative bargaining power of the two involved.

Without the opportunity to develop such provisions, or if the couple leaves them undetermined, considerable disagreement can arise in their future and result in divorce. Because people have different views on what a marriage should be, the marriage may never take place and very often does not. This is true because the couple involved cannot agree on what the contract should be. In this sense, the dating process screens out some of those marriages that would otherwise fold. Resources are used in dating, but at the same time, the process saves resources from being tied up (albeit temporarily) in an unsatisfying marriage.

Divorce can often be the result of insufficient resources (time, energy, and emotional hassle) being invested by the couple in developing the marriage contract. This may be because the two misjudge how many resources are required. It may also be that either or both of the parties calculate that the expected gain from spending more time and energy on the contract will not be worth the cost.

Except in the case of divorce, most provisions of the marriage contract generally do not have the force of law. Occasionally there are cases in which a wife or husband takes her or his spouse to court (for example, for lack of support), but these are indeed relatively rare events. One reason is that the mutually agreed-upon contract is vague and rarely written down. Another is that the cost of one spouse's taking the other to court can be considerable in terms of time and lawyer's fees and can be easily greater than any benefits that may be achieved.

So, many of the violations of the contract are of a trivial nature, such as one party's refusal to take out the garbage, to spend time with the children, or to refrain from flirting with other men or women. The potential benefits are just not that great,

even if the court will consider the case. In addition, the court fight itself, which may generate a great deal of antagonism, can represent considerable cost, which can terminate whatever is left to the marriage.

If provisions have any meaning, it is mainly because of the moral obligation such agreement engenders, the pressures that can be brought to bear on the parties involved by either party or by friends and others, and the threat of one party retaliating by shirking his/her responsibilities. The main role of the court has generally been one of refereeing the division of the family assets (children included) between the married partners at the time of divorce. On occasion, the court does attempt to bring about reconciliation.

This role of the court in the divorce process is one that is not unimportant and not without economic implications. The reason is that the court's intrusion ensures that each party has some property rights in the family assets, both tangible and intangible. To this extent, the couple has a greater incentive to invest time and other resources in the development of family assets and the building of a strong marital relationship. The family is an investment project in the sense that returns can be received over the span of years. Indeed, researchers at Ohio State University tracked the wealth of over 9,000 Americans for fifteen years. At the end of the study, the people were in their forties. People who remained married during the study period had twice the wealth of the people who were single.[3] Another study found that almost all (92 percent) millionaire households in the country were married couples.[4]

Homosexual marriage is a contentious issue at this writing. Gays and lesbians often make the argument for same-sex marriages on moral and human rights grounds. "It is only fair and right that everyone has access to any government-enforced institution," many advocates say in one way or another. We have no reason to deny or endorse such position. We can only stress that there is an economic case for extending the right of marriage to homosexuals: it can increase the willingness of all partners to invest in the development of the relationship and, for that matter, their financial, physical, and business wealth.

An analogy of an investment in business is useful here. Suppose an entrepreneur is considering an investment in an office building. Will he (or she) be willing to make the investment if he knows that after doing so he has no property rights in the building—that is, someone else can take it over without any objections from the court? Although he may be willing to make some investment in the enterprise and to protect it, he will probably be more willing to do so and invest a larger amount if he has some rights that are enforced and protected by the state.

The same line of reasoning can be applied to the willingness of the partners in a marriage to invest in the union. To the extent that the stability and durability of the marriage is favorably affected by such investments, the legal status of the marriage yields benefits to all parties in the family.

There is one problem here. By giving each partner property rights over the family assets and, to some extent, over the other partner, and by making the dissolution of the marriage costly, the husband or wife can, if he or she desires, abuse the other. Similarly, one party may allow himself or herself to be exploited, reasoning that he or she is better off doing so than incurring the cost of divorce

(which can be extensive), and the greater the cost of divorce, the more a spouse can be expected to endure, all other things equal. If the abuse is greater than the cost of going through with divorce, it goes without saying that the marriage will be dissolved. If the parties are single and living together, either party can walk way without legal constraints. This capacity to walk away without court objections may force the other party to be more considerate.

Divorce can be emotionally draining on all former spouses, and their children, but there is a good old-fashioned economic reason for being careful on spouse selection: divorce can also be a drain on the couple's (especially women's) lifetime incomes and wealth, partially because of the legal expense but also because of the emotional drain on people's ability and willingness to work, save, and invest.[5]

Holy Matrimony

To this point we have only discussed legal marriage, or those unions endorsed and regulated by government. Many people see marriage as a God-ordained and enforced social institution. When people truly believe in the sanctity of marriage and if they also firmly believe God is omniscient, omnipotent, and omnipresent, fully willing and able to intervene in people's lives with punishments and rewards, then we have another form of enforcement of the formal and informal agreements before marriage. We might imagine that such true believers will *tend* be more inclined to hold to their vows than others who can only count on the government to enforce the terms of the marriage contract. Of course, the power and good effect of religious enforcement can be muted when true believers also hold that if or when they sin, they can confess, seek forgiveness, and return to the good graces of God, with their chance at an after-life unimpaired. This is to say that full forgiveness can encourage violations of formal and informal marriage commitments.

The Costs and Benefits of Marriage

We have assumed that people's behavior regarding marriage is to a degree rational. (Can you think of any reason we should assume differently?) This, of course, means that in choosing a spouse, both sexes are out to maximize their utility. It also means that in the process of becoming married, each individual must address two very fundamental questions (1) what are the costs and benefits in general of being married as opposed to remaining single, and (2) given these benefits and costs, how long and hard should he or she search for an appropriate mate?

The Costs of Marriage

In assessing the pros and cons of marriage, the individual must reckon with several major cost considerations. One of the most important for some (but by no means all) persons is the loss (cost) of independence. Individuals are never completely free to do exactly what they please; they must consider the effects their actions have on others; however, in the close proximity of the family, the possible effects anyone person's action can have on another in the family are more numerous and direct than effects on others that a person who lives alone will have. The result can be that all may willingly agree to more restrictions of behavior than would be necessary if they each lived alone.

They may, and very likely will, also agree to make many decisions by democratic or collective action. In taking this step, the members of the household essentially agree to incur future costs, which include the time and trouble of reaching a decision. This is because it is generally more costly to make decisions with a larger number of people involved. For example, it is more costly for McKenzie, who is married, to purchase a new car than for Tullock, who is single. All Tullock has to do is consider his own preferences. McKenzie, on the other hand, must consider not only his own preferences, but also those of his wife. The result can be, and almost always is, that buying a car is a long process for the McKenzies.

Note that if McKenzie and his wife had identical preferences, which, to be sure, is never the case in marriages, their decision cost would be the same as Tullock's. In such event, McKenzie would not have to bring his wife in on the decision to buy the car or anything else, and she would not care that he did not. Because of identical preferences, they both could be assured that whatever he bought each would like as well as the other. We have used just one example of the numerous times in which decision costs are incurred in a family. (Any reader who thinks that such costs are unimportant should try marriage for a convincing empirical study!)

Because of such decision costs, husbands and wives often agree to have many decisions made administratively by one party or the other. Except under unusual circumstances, one party can be allowed, without consulting the other, to make decisions with respect to, say, the family meals. The other party can determine what clothes will be purchased for the children and what types of flowers to plant in the yard. Each party may make decisions not agreeable with the other; however, the savings in decision costs can yield benefits that more than offset the effects of wrong decisions.

Often wives have the responsibility of making decisions with respect to meals and the interior of the house and husbands with respect to the yard and the exterior of the house. This division has been attributed to inculturated values—that is, spouses are merely role-playing. Although there may be some truth in the statements, we suggest that such argument does not explain why the responsibilities for decisions are divided in the exact way they tend to be in the first place.

Our analysis indicates that the division of decision-making power within the home can add efficiency to the operation of the household and that if roles are not

assumed to begin with, they would tend to evolve. The division of powers may not end up in the same way that we now observe them, but given what they are, there may then be the criticism that cultured-determined roles are being assumed.

As suggested above, the family is involved to a considerable extent in the production of goods and services shared by all members of the family. These are basically of one type and available in one quantity and quality. Such a good—take for example the car considered above—may not be perfectly suitable for anyone individual's tastes, but it is the good everyone agrees to buy. In this instance, and there are many of them, the individual must bear the cost of not getting the good in the amount and quality that is most suitable to her preferences.

This type of cost, incurred because of the goods consumed, purchased, or produced by the family—such as cars, television programs, recreation, and family life (which tends to defy definition)—can also be applied to relationships with people outside the family. Both spouses may agree to associate with certain people, not because either finds the people to be best suited to what they find desirable in friends, but because the selected friends represent compromises for both. This is not to say that each will not have several friends of his or her own, but only that they are likely to agree on mutual friends. To the extent that they associate with mutual friends, there is less time for them to be with their individual friends. We submit that this can be a legitimate cost calculation in marriage.

To the extent that household decisions are democratically determined, members of the household have to have a say on how the burden of the production of the household goods is to be distributed. In this way, they can determine who pays, either in money income or in time and effort. The family can effectively "tax" family members in a way that is similar to any other collective, governmental unit. Any family member can, like any citizen, be forced to pay for collective goods and projects with which they may not be in perfect agreement. This can be considered a potential cost to a family member, which is evident from the complaints that one may hear in a home when the decision is made to go on a picnic and the burden of preparation is distributed or when one is asked to take out the garbage or mow the lawn.

Other costs associated with marriage and the family in general include the risk cost of developing strong emotional ties with one specific group of individuals and forgoing the opportunity to date and in other ways associate with other people. These factors may be of no consequence to some, and may in fact be an advantage to others. Further, the cost of marrying one particular person can be the loss of the opportunity to have married someone else who is not known at the time of marriage but who, if he or she were sought out, would be a more desirable spouse. The list of costs provided can, of course, be extended.

The Benefits of Marriage

The benefits of marriage and the family are derived mainly from the ability of the family to produce goods and services wanted. First, the spouses have the

opportunity to produce things not readily duplicated in nonmarriage situations. Such a list may include children (at least ones that cannot legitimately be called bastards), prestige and status that can affect employment and the realm of friends, companionship that is solid and always there, a family-styled sex life that may be more desirable than sexual associations of which the individual may disapprove, and family life in general, which we indicated above defies definition. Granted, many of these goods can be had in certain quantities and qualities outside of the family; we are only suggesting that they take on special characteristics within the family and for that reason are valuable to people. (We also recognize that to some, these are costs.)

Second, the family operating as a single household—that is, more than the individual—can produce many goods and services more efficiently than can several single-person households. This is because there are economies of scale in household production.

Take, for example, the problem of cleaning the rug. Although there may be some selection in size and power of vacuum cleaners, generally speaking, the machines available are capable of handling the dirt of several people. However, one cleaner must be purchased. If more people are added to the house, the household need not increase the number, size, or power of the vacuum cleaner proportionally. The same can be said of many of the resources that go into the production of a garden, meals, and other household goods such as washing machines, rakes, mixers, brooms, electric toothbrushes, and so forth.

Indeed, many of the goods and services provided by individuals in the home are public goods: they benefit everyone involved and do not diminish in quantity or quality if additional people are added to the household. For example, many things done to beautify the house are this kind of good. If a picture that all enjoy is hung on the wall, one person's enjoyment of it does not detract in any significant way from the enjoyment of others. Because they all live under the same roof, they do not each have to produce such goods for themselves individually, meaning that they can raise the quality of the goods that are had or they can divert resources to other purposes.

Such goods may not be enjoyed or appreciated by a very large group of people, and because of the decision costs involved, as explained, there is some point at which the collective group would be too large. Therefore, we would expect some unit in society to develop that would be small enough that people of similar tastes can be together to satisfy their mutual interests and large enough that they can be provided efficiently—yet again, small enough that the decision costs incurred are minimized. By having provision for numerous such family units, individuals are given considerable choice over the type, amount, and quality of these goods.

The efficiency of household production can also be greater because of the opportunities for the parties to specialize and effectively trade with one another. In this way, the parties can take advantage of their comparative efficiency in production.

Suppose that, for simplicity's sake only, there are only two things for the household to do—clean a given size house and mow its lawn, which is of a given

size. Suppose also that we are given the following information about the abilities of a husband and wife in doing these two things:

	Cleaning the house	Mowing the lawn
Wife	60 minutes	100 minutes
Husband	100 minutes	300 minutes

This table shows the wife can clean the house in 60 minutes and can mow the lawn in 100 minutes; the husband can clean the house in 100 minutes and mow the lawn in 300 minutes. If they both live separately and have lawns to mow and houses to clean, it would take them a total of 560 minutes. If they live together and each clean half of the house and mow half of the lawn, it would take them a total of 280 minutes (80 minutes for the house cleaning and 200 minutes for the lawn).

However, there is a possibility here for the two to specialize, one cleaning the house and one mowing the lawn. Each will be doing something for the other, so we can, in a sense, say they are trading.

To see this prospect, recognize that every time the wife cleans the house she gives up three fifths of the lawn being mowed: If she spends 60 minutes on the house, those are minutes she cannot be mowing the lawn. Because it takes her 100 minutes to mow the lawn, we can assume that she could have mowed three fifths of the lawn in the same amount of time. On the other hand, each time the husband cleans the house, he gives up one third of the lawn being mowed. (Why?) We can thereby argue that it is more costly in terms of the portion of the lawn not mowed for the wife to clean the house.

If we want the cost of production to be minimized, we would then argue that the wife should mow the lawn, the husband, clean the house. If they divide the tasks this way, the total time spent by both of them would be 200 minutes. If the wife cleans the house and the husband mows, the total time would be 360 minutes.

Notice what we have demonstrated here: by being under one common roof, the cost of the goods the members demand can be minimized through specializing and effectively trading. Notice also that we have made this demonstration even though one spouse, the wife, is actually more efficient in the production of both tasks. By specializing, the wife and husband can also avoid many of the costs associated with developing the same skills. Each can concentrate attention on a more limited number of household tasks, improving the efficiency with which the tasks can be done.

This demonstration is important because it indicates that if the husband and wife are interested in maximizing household production or minimizing the cost of household production, which amounts to the same thing, then they will specialize to some degree in the functions of the household. They will have what many have derogatorily labeled as roles.

However, these assigned roles need not be the traditional roles for spouses. Further, it indicates that certain roles may be assumed by, say, the wife not because she is necessarily less efficient than the husband in the production of those things the husband does, but rather because her comparatively greater efficiency

(called comparative advantage) lies in what she does.[6] The same is true for the husband. (Of course, to acquire the efficiency benefits described here, the husband and wife need to have the appropriate preferences for the assigned tasks.)

Furthermore, if the decision facing the family is the allocation of members' time between work internal to the home and work external to the home, and if the family is interested in minimizing the cost of goods produced in the home, then it should use that labor with the lowest value outside of the home. The cost of cleaning the house is equal to the cost of the materials and supplies plus the value of the time outside the home of the individual doing the cleaning.

Assume that it takes two hours to clean the house, that the wage the wife can earn outside the home is $6 per hour, and that the wage of the husband is $10 per hour. (Here we are attempting only to use a realistic example; the fact is, husbands do tend to earn more than their wives, a subject of considerable complaint among women.) It follows that it would be cheaper for the wife to do the cleaning. If the husband did the cleaning, it would cost an additional $8 because his wage is $4 per hour higher.[7]

Many sociologists and psychologists contend that roles, such as child care, are assumed within the house because of socially determined values. We are unwilling to argue that such forces have no effect on the organization of many households. All we wish to add is that much of what we observe in household relationships often may be the result of a conscious, rational choice on the part of the couples.

Clearly, women do tend to earn less than men in the market, a point made above, either because they are the victims of discrimination or because they are less productive. Given this, which is not something individual households can do much about, it is reasonable to expect households to delegate many responsibilities, such as child care, to wives. In this way, the cost of the child care is minimized, and the output of the family is maximized. If the household production is greater by the wife's staying at home, then one can suggest that the output of the wife is actually greater than what is indicated by her work in the home; she should get some credit for the greater output of the household.

If the discrimination women face outside of the home is reduced and/or they are able to raise their productivity relative to men, we should expect their wages to rise relative to their husbands'. We should then expect to see more and more wives working outside the home and relatively more time being spent by husbands in housework. It is clear that the labor force participation rate of women has been on the rise over the decades; it is equally clear that the labor force participation rate of men has been on the decline. There are many reasons for this, including changes in attitudes of men and women toward women working in jobs. Our point is elementary: the greater wages of women can be another explanatory factor.

By the same token, the higher wages of women can increase the cost of home-cooked meals (when women are mainly responsible for the cooking). The result can be that families have fewer home-cooked meals, substituting restaurants meals, which, by the way typically, are more fattening. That is, higher wages of women can be a contributing cause for the fattening of Americans over the past several decades (a topic to which we will return in Chap. 12).

There are other possible benefits to marriage and the family, such as the benefit of making communication less expensive. Communication is an important aspect of any production process. (Can you name other benefits?) The point is that home economics has much to do with how households are organized.

Spouse Selection

The rational individual in search of a spouse will attempt to maximize utility as in all other endeavors. A person will not pretend to seek the "perfect mate," but only among the pool of willing candidates who best (not perfectly) suits the person's preferences. (Whom do you know who has married the *perfect person?*)

This means that the individual will seek to minimize the cost incurred through marriage and the family.[8] If he marries someone who agrees with him, the cost associated with arriving at the marriage contract is less than otherwise, and there is not as great a need for (implicit) bargaining. If he marries someone who agrees with him as to what the family should do, what kinds of recreation they should have, and how many children to have and how to rear them, then the cost of having to give up friends and goods that better suit his preferences will be minimized. In other words, we would expect rational individuals to tend to marry persons who have similar values and preferences and are in other ways like themselves. Interestingly enough, this is generally what researchers have found.[9]

Rational behavior has other implications with regard to searching for a mate. It implies that the greater the benefits from marriage, the greater the costs a person will be willing to incur in searching for the spouse. This means that the greater the efficiency benefits to be achieved in family production and the greater the esteem given to married people, then the more costs in time and effort a person will apply to the search.

Greater costs may take the form of later marriages and a smaller fraction of the population married. Also, the longer the individual expects the marriage to last and the more stable it is expected to be, the more careful will be the search. This does not mean that mistakes will not be made; it only means that greater costs will be incurred in trying to avoid mistakes.

It also follows that the difficulty (cost) of divorce should affect the extent to which people search for a spouse. It may also affect the extent to which people marry, the frequency of more informal arrangements, and the availability and economic well-being of prostitution as an institution. If a divorce is made impossible, a man (or woman) knows that if he (or she) chooses the right person, then there are more benefits to be had than if divorce were easier to come by. The impossibility of divorce will assure him that his spouse cannot freely leave and marry someone else whom she may later prefer. If, on the other hand, he chooses the wrong person, the impossibility of divorce will mean that the decision would carry with it greater cost than if the marriage could be easily dissolved.

Therefore, as Gary Becker has argued, we would expect the resources applied to search for a mate to be directly correlated with the difficulty of obtaining a divorce,

and he writes, "Search may take the form of trial living together, consensual unions, or simply prolonged dating. Consequently, when divorce becomes easier, the fractions of the persons legally married may actually increase because of the effect on the age at marriage."[10] Alan Freiden has in part corroborated Becker's hypothesis in a study of the effects of different state divorce laws. He found that the more costly the divorce process, the smaller was the fraction of women married.[11]

If divorce is made easier, this line of analysis indicates that people will tend to incur fewer search costs, perhaps reflected in a younger age at which people marry. One might reasonably assume that the durability of marriages in general is positively related to the extent to which people search the marriage market before they choose the one. If this can be accepted (and it might be a poor assumption), then making divorce easier can result in more divorces because they are less costly and also because people are expending fewer resources in search of a spouse and, therefore, making more wrong choices.

The Relevance of Love

For our purposes (in developing an economic analysis of people's behavior), we say that a person loves another if his or her level of satisfaction is in part dependent on the satisfaction level of the other person. In this sense, one person genuinely cares for the other person and cares what happens to her (or him). This is because she (or he) will have greater utility if it is known that the other person is in some sense better off. She will, therefore, be motivated to help improve the situation of the person who is loved. The more intense the love, the stronger is this motivation.

As we have explained, responsibilities are typically delegated to family members, and each member is dependent on the others' fulfilling their end of the bargain. In this way, the welfare of the family members will diminish if anyone member shirks responsibilities.[12] Because shirking hurts others, the person who loves the other will be less inclined to shirk than the person who does not. It is for this reason that a person, if given the choice, would naturally want to marry someone who loves her (or him) and would also naturally want to marry someone whom she loves because what she does for the family will also give her satisfaction to the extent that it makes everyone better off.

Put somewhat differently, the presence of love reduces the costs each spouse must incur in monitoring the marriage contract. Almost all contracts require some monitoring. The marriage contract is no exception, especially since it is necessarily involved in legal and emotional terms.

Where love does not exist, we will be more likely to find individuals shirking family responsibilities, and in turn, family resources will have to be diverted into the "policing" of family members. In this way, love has an economic dimension. This does not mean that people will not marry someone they do not love or who does not love them; rather, because of the benefits of living in a family situation,

some people may prefer to marry without love than to live the single life. Many people do marry for money as well as other benefits.

All of this adds up to one interesting conclusion, and that is that the efficient marriage is one in which the two are in love and are alike in terms of values and preferences. Oddly enough, this is what most people would readily argue. The interesting thing about this conclusion is that it is derived from the perspective of economics and the family as a producing unit. The greater the love and the closer the preferences of the couple, the closer will the marriage approximate what may be considered the ideal.

However, in the realistic world in which we live, it is clear that the maximizing individual does not always have the opportunity to choose a spouse who loves her (or him) and has similar preferences (at least to any great degree). She (or he) must often choose between a person who may love her very little but is like her in many ways, and a person who loves her but who is very different. All the individual can do is maximize over the range of opportunities.

The discussion suggests that love adds to the efficiency of the household; we also argued earlier that differences in preferences can detract from the efficiency with which the household is operated. If this is the case and the individual is seeking to maximize the output from being in a family, then we must conclude that love is not all that is necessary for a successful family and marriage.

Marriages in which the parties professed to love each other dearly have been known to break up. The problem was that they violently disagreed over what the marriage should be and do and the roles that each was to play. The gulf in preferences could have been so wide that the love, as intense as it was, could not bridge it. In the same way, we might expect that many marriages are held together with little love; the partners' preferences are so much alike, they still find their relationship very beneficial, at least given their next-best opportunities.

The Marriage Market

Competitive markets have nothing to do with marriage, right? If you think that, you would be so wrong. In a later chapter on the gender pay gap, we explain an evolutionary tie between mating markets and labor markets. Briefly here, the tie between to two markets starts with the differences in reproductive capacities of men and women. Women have a severely limited reproductive capacity, one egg a month and maybe one baby a year for several years. Men produce sperms in hundreds of millions of sperm by the ejaculate. Men's reproductive capacity is limited by their access to the limited reproductive capacity of women.

Since women's and men's chief goals (according to evolutionary biologists) is to pass along their genes to future generations. Men and women as individuals have no hope of being immortal, but their genes can be, *so long as their carriers have reproductive success*, which is to say, they have babies. And the greater the number

of babies individuals have, the greater the chances of their genes surviving into multiple future generations.

With their limited reproductive capacities, women are likely to follow a mating strategy of being selective in choices of mates. Women should seek out men with good genes and a demonstrated ability willingness to support their women before and after birth. Men, on the other hand, should want to sew their seeds as broadly as possible, with as many women as possible, because such a mating strategy increases the odds of their genes surviving into the distant future. The difference in men's and women's mating strategies should put women in a good bargaining position, which can help explain why women are most often the ones who say "no" on love-making decisions and men, in most cultures over time, have picked up the checks for dinners out. These mating strategies evolved long ago and are, according to evolutionary biologists and psychologists, "hard-wired" into men and women's brains.

Again, women can be expected to choose their potential mates based, among other things, on men's financial capability and willingness to share their financial and other resources with their mates. This means men can be expected to compete among themselves to develop their resources relative to other males, just to increase their odds of getting access to women. This competition among men can help explain why men tend to earn more than women all around the globe—across almost all cultures and ethnic and occupational groups. Women just do not have the mating incentive men have to compete for higher paying jobs with higher social and corporate status. Look for more details (with reference) on this line of argument in Chap. 26.

All we need do here to support this line or argument is point out how the competitive forces of supply and demand are playing out today in the Chinese mating market. For several decades now, China has had a "one-baby policy," which means couples cannot have more than one baby without serious tax penalties. Baby boys have long been favored over baby girls in the Chinese culture (for reasons we, admittedly, do not fully understand), which means that with the one-baby policy, over the years more girl fetuses have been aborted than boy fetuses. This means that today there are 120 marriage-age men for every 100 marriage-age women, which, again, puts marriage-age women in an even more favorable bargaining position and gives them market power to extract a higher price for saying "yes."

And would you believe the economic way of thinking about markets is playing out in mating markets in China as we write: In searching for marriageable Chinese men, marriageable Chinese women have put even greater emphasis on the financial resources of men, often assessed in the sizes and locations of men's houses and their parents' houses. From reports in 2011, apparently, many Chinese women would not consider dating Chinese men without their own houses (or condos). The women have even gotten so picky that mating services search out only men whose parents have three stories houses. And guess what has followed? Chinese parents with sons have started building more three-story houses to increase the eligibility of their sons to the restricted supply of marriageable women. Indeed, some Chinese parents have built on third stories to their two-story houses only to make them

useful fronts for making their sons more marriageable, with the third floors often left empty and unused.[13]

Think this is all nuts? Well, research has shown that families with sons have built significantly larger houses than families with daughters. They also found that across urban areas as the marriage-age male-to-female ratio has increased, the average size houses have increased.[14]

Concluding Comments

Marriage and the family are terribly complex subjects to discuss, and you probably detect there is a lot that has been left unsaid. We definitely agree. We believe that the field is wide open for future research. This has been only a sample of what economists are beginning to say about such basic social institutions, and we think that the economic approach shows great promise in contributing to our understanding of the subject.

Chapter 8
Sexual Behavior

If you are at all typical of readers of this book, these are the first words that *you* have read. We understand why you chose to start at this chapter; however, you must realize that you have skipped over some important introductory material.

In the first seven chapters, we have developed several economic concepts that will be used in this chapter, and you may not at times be able to follow the discussion (unless, of course, you resisted the temptation to read this chapter first). More important, we emphasized in the first chapter that economics cannot explain all dimensions of the human experience. This is a particularly relevant point when we deal with sexual behavior. We demonstrate in this chapter that economic analysis can provide us with several important and interesting insights about people's sexual behavior; however, there is much about people's sexual behavior we simply cannot explain, and several of these areas are, perhaps, the most meaningful. In our dealings with others, we can intuitively grasp the patterns and therefore the sense of other people's behavior. And although we may not be able to explain logically how or why we react, we are indeed able to react—and other people are able to react to our reactions. People's sexual behavior represents very complex patterns of actions and reactions; it involves varying degrees of romance and love, which are patterns of behavior that largely defy explanation.

There is a possible pitfall in trying to explain any pattern of behavior like that of sexual behavior—it is that the writer or reader will assume that those parts of behavior we can explain are more important than those we cannot explain. Unfortunately, this is probably not true. However, we should be able to take the analysis for what it is, nothing more or less. In our view, anyone who thinks that the sexual experience can be fully described and understood with economic analysis (as a few readers of past editions have told us in letters and emails) is a seriously deprived individual. Having said this, let us proceed.

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_8,

Sex and the Economist

To those who may be unfamiliar with developments within the field of economics over the past several decades, sex—or human sexuality—may appear to be a peculiar topic for discussion among economists and for inclusion in an introductory book on economics (which was clearly the case when the first edition of this book was released). However, for those who view economics as a study of human behavior (as do the authors), concern with sex is not at all peculiar, bizarre, or sensational. Clearly, a major impetus for human action is the sexual drive, and concern with matters relating to sex, in one way or another, occupies a significant portion of most people's time. Indeed, there is a good evolutionary reason for sex dominating so much of human interests. Those protohumans and early humans who developed an interest in sex became our ancestors. We are here because of their developed or acquired sex drive. Those who did not develop the sex drive fell out of the gene pool. Given the dominance of sex in human experience, one must wonder how economists can avoid the topic in their classes and books for long.

If one thinks about what is normally considered to be within the traditional boundaries of economic science and considers the ramifications of sex as a part of the human experience, the discussion in this chapter and the following one may not appear to be at all out of place. To the layman, economics may be thought of as a discipline that:

- Is founded on the study of goods and services that yield benefits, or, in the jargon of the profession, utility to the buyers
- Concentrates on the give-and-take, exchange, or trading relationships between and among people
- Deals with scarce resources and, thereby, with goods and services that involve costs in their production and can command payments from persons who desire them
- Is grounded in such concepts as opportunity cost and on such laws as the laws of supply and demand, diminishing marginal utility, and diminishing marginal returns
- Is concerned primarily with that domain of human behavior in which the individual is rational, that is, attempts to maximize his or her well-being

Consequently, economics is normally associated with the development of a theory that is readily applicable to such goods and services as football games, peanut butter, ice cream, brickmaking machines, Rembrandt paintings, and, perhaps on occasion, with prostitution as an long-standing "profession"—that, we might add, is plied everywhere on the globe by both sexes. In the remaining portions of this chapter, an attempt is made to show how the sexual behavior of people other than prostitutes or buyers of the services of prostitutes can be discussed and partially analyzed and understood within the context of economic concepts and theory.

Economic Characteristics of Sex

As we will see, many of the concepts and reasoning tools employed by economists in their everyday work can be transferred to an analysis of sexual behavior. Certainly, the laws of supply and demand apply. Sex is demanded, and sex is supplied, often at significant costs.

Sex as a Service

Sex is a classification of a whole range of services one person provides for himself or herself or for another that yield utility to the recipients. The list of services provided under the heading of sex may include such normal experiences as holding hands, kissing, petting, and intercourse. A sexual experience (or service) may also include the stimulation one receives from watching the opposite (or same) sex go by on the street, from surfing the multitude of pornographic sites on the Web (which have run many sex magazine and video arcades out of business), from reading romance novels, or from watching people relate their tales of sexual inner fantasies and childhood abuse to self-appointed television therapists, such as the Jerry Springer television talk show which has often degenerating into sexual fisticuffs. For junior high school boys and girls, a gratifying (and permissible) sexual experience may be nothing more than the frequent and purposeful bumping and shoving that goes on outside the classroom. The list of sexual services can be considerably lengthened.

Many people are quick to condemn one sexual practice or another as inhuman or immoral. Although the authors, and most everyone else, have their own sexual preferences, they submit that they are just that—their preferences. The issue of what is immoral will not be our concern, mainly because such a discussion is likely to be worthless to anyone who disagrees with us. Moreover, it would be an unnecessary diversion from the central purpose of this chapter, which is to explore the question of how people do behave and not how they should behave.

The utility that one receives from a satisfying sexual experience may in the psychic realm be similar, but certainly not identical, to the satisfaction a person receives from eating a good peanut butter sandwich, drinking a chocolate milk shake, or watching a performance of Sir Lawrence Olivier in a Shakespearean play. Indeed, food, alcohol, and sex all activate the release of the same chemical, dopamine, in the same region of the brain, which is informally called the "pleasure center," understandably.

For most people, the distinctive, but not the only difference between a sexual experience and other more "normal" goods and services consumed may be in the intensity of the pleasure received. For most persons, sexual intercourse and all the trappings that go with it probably give the recipient more satisfaction than a peanut butter sandwich; that is evidenced by the cost a person is willing to incur for sex

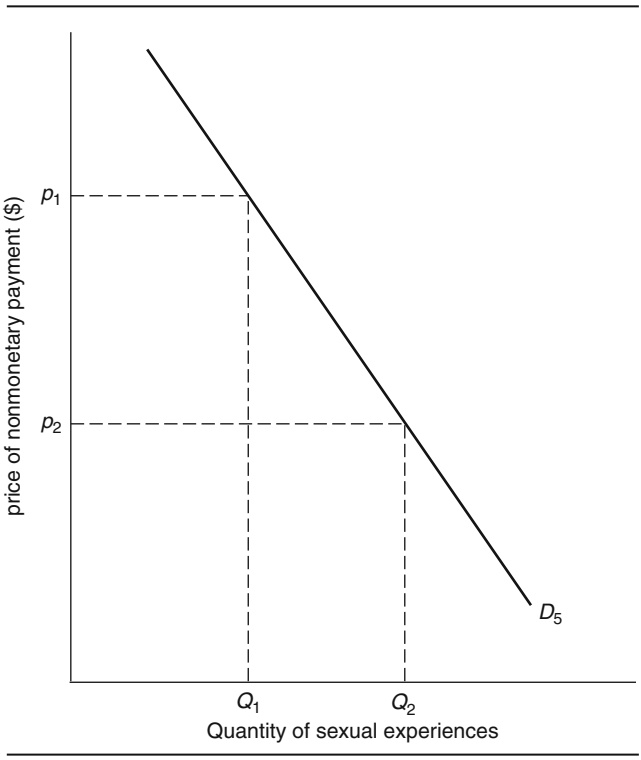

Fig. 8.1 The Demand for Sex

relative to the cost he or she is willing to incur for the sandwich. For some people, however, the sandwich can deliver more utility than intercourse does. Not everyone may consider sex to be within his or her own choice domain just as not everyone may wish to purchase pickled pig's feet.

Oddly enough, even the person who never engages in sexual activity can receive considerable utility from sex. He or she may refrain from engaging in sexual activities because of the extent of the cost. Because of this, it is extremely risky (if not impossible) to make interpersonal utility comparisons regarding the absolute psychic value of sex just as it is risky to suggest that the people who attend Shakespearean plays enjoy the plays more than those who never attend.

Given that sexual experiences can yield utility as other goods do, it follows that for the fully rational person the quantity of sex demanded is an inverse function of the price—that is, the demand curve is downward sloping as in Fig. 8.1. If the price goes up, the quantity demanded goes down; if the price goes down, the quantity goes up. This means, in effect, that given the price of sex, the consumer will want only so much sex supplied by another and will vary his or her consumption with the price that is charged. The reason for this relationship is simply that the rational individual will consume sex up to the point where the marginal benefit equals the

marginal cost of other goods. If the price of sex rises relative to other goods, the consumer will rationally choose to consume more of other goods and less sex. (Ice cream, as well as many other goods, can substitute for sex on the margin if the relative prices require it.)

The law of demand, as stated above, is a fundamental principle of business operations that the prostitute cannot ignore. By raising her (or his) price, the prostitute will not only sell fewer "tricks," but may find that if there are a number of other readily available competitors, the quantity demanded from her (or him) can fall to the point that total revenues will fall.[1]

Revenues can rise if the demand she (or he) faces is inelastic (meaning consumers are relatively price insensitive). In other words, the prostitute must remember that although the demand for sex in general may be inelastic because of the relative necessity of the services to those who want it, the demand for any particular sex service from any particular person can be highly elastic. This is because there are many substitutes from who any particular sex service can be obtained. If one prostitute raises her price, buyers can move to any number of substitute providers. The greater the number of sources from whom sex can be obtained, the greater buyers can respond to the price increase (or decrease) from any one prostitute.

The law of demand is also applicable to the more ordinary sexual relationships. A man may demand very few units of sex from the women he is dating or from his wife, in part because of his sexual preferences. However, closer examination of the individual's circumstances may reveal that the price he would have to pay—although in nonmonetary terms—may be so great that he must rationally choose to be "gentlemanly" and ask for very little. The same may be said for women; in fact, the difference in the quantity of sex demanded by men and women may reflect in part the relative difference in the cost of sex to men and women.

Differences in men's and women's inclination to have sex may or may not be chalked up to differences sexual appetites. Sexual appetites are hardly within the professional purview of economists, especially your authors. What we can suggest is that the potential cost women have to bear from sex is substantially greater than for men. First, and obviously, with pregnancy, women must devote a lot of her bodily resources to the development, care, and protection of an unborn baby, with added resources devoted to the feeding and nurturing of the newborn, especially if the baby is breast-fed. Moreover, women have a limited supplied of eggs, which number in the hundreds, while men typically can generate what might be construed as an unlimited number of sperm, which can run into the hundreds of millions in every ejaculate. Given her limited opportunities for bearing children (hardly more than one a year), the woman's opportunity cost for using one of her eggs for pregnancy with a given male is higher than the opportunity of the man using his sperm. If humans are driven by our "selfish genes" to perpetuate themselves into the next generation and beyond, as evolutionary biologists (most prominently Richard Dawkins[2]) theorize, then women can be expected to use their high-cost reproductive resources with more care than men. This is to say, women are more likely to be more selective in mating partners than men. Our selfish genes can drive women

toward "quality control" in selecting mates, those with good genes and those who demonstrate a willingness and ability to provide support pre- and post-partum. Our selfish genes can drive men more frequently into mating strategies of "sewing their seeds" whenever and wherever they can, which explains why women generally have the upper hand when it comes to decisions over whether to have or not have sex. In short, both biological and economic forces explain the differences in sexual strategies and inclinations of men and women, which we must add are differences that cut across national boundaries and cultures. They are also differences that are observed in virtually all animals.

If the price of sex to women were lowered, one might anticipate a relatively larger quantity of sex demanded by them. The problem of men obtaining more sex from women, if viewed this way, becomes one of how to reduce the cost of sex to women (or, in addition, how to increase their preferences for it—that is, increase women's demand).

From this perspective, the invention of various forms of contraception (other than "no") and the legalization of abortion have dramatically reduced the price of sex to both men and women. The dispensation of free contraception devices on campus has, no doubt, increased the coital frequency of college students (contrary to what college officials might try to tell parents and religious leaders).

The Cost of Sex, Again

Sex is a service that is produced and procured. One party must produce the sexual experience for another. Like all other production processes, the production of any sexual experience entails costs. This is the case because not only may some materials, such as contraceptives, be required and a direct expenditure made (as in the case of the prostitute), but also because the participants must generally forgo some opportunity that has value to them. That, by definition, is the cost. The actual experience requires at least a few minutes, and this, of course, implies that one cannot normally do anything else of consequence at the same time. (One can, perhaps, imagine eating an apple or reading a book while producing sex for someone else, but it may be difficult indeed to imagine playing a successful game of pool or efficiently carrying on one's normal business operations, although, no doubt, some people have probably sought to engage in such multitasking.)

The opportunity cost of the time spent in the sexual act in most instances may be a trivial part of the total cost involved in either the production or procurement of sex. The total cost may include such items as the cost of the "wining and dining," which, contrary to the general impression, may often be heavily borne by females. Consider, for example, the number of times the woman may invite her male companion in for coffee and a snack after a date or over to dinner; or consider the possibility that she may be purposefully and skillfully arranging the situation in which the wining and dining may take place. Because the man may pick up the check, he is credited with the wining and dining. However, one must wonder who

wined and dined whom. This is not meant to suggest that all such efforts by one party or the other are intended to procure and produce a sexual experience. The motive can simply be to have an enjoyable evening out. We are suggesting, however, that the wining and dining can, for some, be a part of the calculated cost of obtaining or producing a gratifying sexual experience.

The cost may also include the risk cost of pregnancy (which may be disproportionately borne by the female), the expenditure of effort (male orgasm alone requires approximately 200 calories), the psychic cost of violating one's own moral standards, and the damaged reputation cost which may be incurred if one's family or friends find out about the sexual relationship. Lastly, there is the cost incurred in the time spent plotting and maneuvering into a position in which the type of sex desired can be had. Both female and male must assess the "market" to determine which persons and sexual experiences are within their choice domain and must develop a strategy tailored to the selected party or parties. The selected strategy may require a considerable expenditure on clothes, hairdos, makeup, and education. It may also require a time expenditure on being in the right places. The producer may also require the recipient to become involved emotionally as well as physically; coupling marriage with sex is, perhaps, the ultimate form of contracted involvements.

The value of one's time, as approximated by his or her wage rate, will obviously have a bearing on the cost of the sexual experience. The higher the opportunity wage, the higher the cost of the experience. Because of the different effects of higher income on sex consumption (and, perhaps, the associated education levels and lifetime experiences) and the different preferences between the high and low income groups, one cannot say theoretically which income groups—high, low, or middle—should be expected to have the higher rate of sexual activity. The economist can say, however, that the difference in cost to the two groups, because sex is labor-intensive, can partly explain the difference in the level of sexual activity that may exist.

Studies have generally revealed that the higher income groups consume as a group more sex than the lower groups. They tend to be more open-minded, are more educated, and have fewer psychological hang-ups regarding sex.[3]

We can explain these facts by arguing that the demand for sex, because of the nonprice factors, is greater for the higher income groups. This situation is described in Fig. 8.2a, b. The demand in Fig. 8.2a for the higher income groups is greater than the demand in Fig. 8.2b. Given the differences in cost, P_a for the higher income group and P_b for the other group, the difference in revealed sexual activity is $Q_{1a} - Q_{1b}$ where $Q_{1a} > Q_{1b}$. If the opportunity wage cost had been the same and equal to the wage of the lower income group, the difference would have been greater, $Q_{2a} - Q_{1b}$. The difference in the opportunity wage cost explains $Q_{2a} - Q_{1a}$ of the difference in sexual activity of the two groups.

In summary, a gratifying sexual experience can be quite costly. In economics, there is an adage that is probably repeated in almost all principles courses: "There is no such thing as a free lunch." We suggest with equal conviction that there is no such thing as a "free love" or "free sex." Indeed, when looked at realistically, many

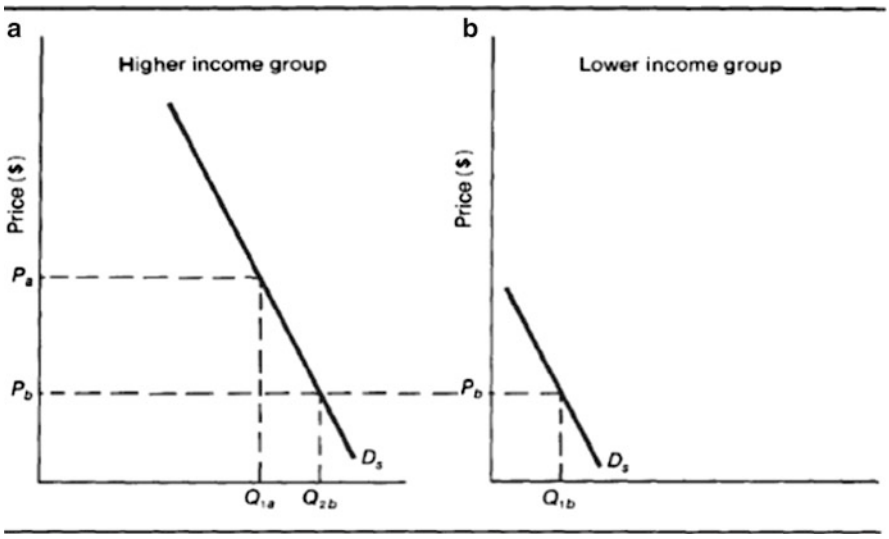

Fig. 8.2 Different Demands for Sex

of us might conclude that sex can be some of the most expensive stuff we purchase, albeit without money.

Sex as a Cooperative Experience

Sexual intercourse is a human experience that must be (for the most part) cooperatively produced and enjoyed. We have, perhaps, written nothing that is more obvious than that, but stating the obvious can direct our attention to essential points. First, if one party shirks his or her responsibilities in the exercise, then both parties lose in terms of the satisfaction that could have been had. Another way of saying the same thing is that the productivity of one's efforts is integrally related to the efforts of the other person. Understandably, people seeking sexual experiences will try to find other persons who have interests similar to theirs. The search may be costly in terms of time and money expense, but it can be rewarded in terms of finding someone who will energetically apply himself or herself to the sexual experience, thereby increasing the productivity of the efforts of the person doing the searching.

Second, although it may be at times, sex is not always a give-and-take relationship like the relationship that exists between buyer and seller in the marketplace. In many or most instances, the relationship is fundamentally different from the relationship that exists between traders. Granted, both parties, in the course of the sexual experience, give and take from the other. However, the sexual experience is much more; it is in large measure an exercise in which two (or more) people jointly pursue essentially the same goal, self-gratification, and even mutual-gratification,

with mutual-gratification enhancing self-gratification. This dimension of sexual experience is probably what causes people to set it apart from their other activities. In so many activities, people work independently of one another—that is, they work competitively, each trying to undercut, undersell, or outdo the other. There is some competition involved in most any relationship, but because of the nature of the experience, sex is an activity that forces people to work together. This is, no doubt, one of the elements of the experience that causes it to be thought of as more human than other experiences. Moreover, commercial relationships can be maintained at more than arm's length (and from different points on the planet). Gratifying sexual relationships—the normal kind, not the professionally procured kind—often require personal, if not intimate knowledge, of both parties.

Sex as an Exchange Relationship

As much as they may depend on cooperation, sexual experiences can also involve exchanges—one person doing something for someone in return for something else. Generally, when exchanges are involved, the relationship is a barter one—no money is involved. One can provide sex to another in exchange for a similar but different sexual experience. However, the exchange need not always be in kind. One party can provide sex in exchange for security, clothing, candy, kindness, marriage, interesting company, conversation, being a part of a crowd, and entertainment. How many times has one person said or, perhaps, indicated in more subtle terms:

- "I will give you sex if you will marry me or go out with no one else"
- "I will give you sex if you carry out the garbage or vacuum the house for me"
- "I will give you sex if you will stay home with me tonight"

In the courting ritual, such implicit dealing is frequently, although not always, present. All such bargains imply nonmonetary payments. Because, as we believe, the supply of sex is upward sloping, the payments should result in a greater quantity of sexual experiences than would occur from strict cooperative efforts. In fact, sex demographers have found that the coital frequency of the American population peaks during the second week in February, suggesting that many (but certainly not all) of the boxes of candy and bouquets of flowers given for Valentine's Day have the desired effect.[4]

Why do exchanges occur in this dimension of interpersonal relationships? The answer must involve the fact that the sexual preferences of the two parties are not identical. Furthermore, the exchanges can increase the utility levels of both parties. Let us explain with references to Fig. 8.3.

Suppose both parties enjoy sexual intercourse, but they get different levels of satisfaction from different coital frequency rates. As can be seen in the top half of Fig. 8.3, the utility level of the female is assumed to rise until her total utility peaks

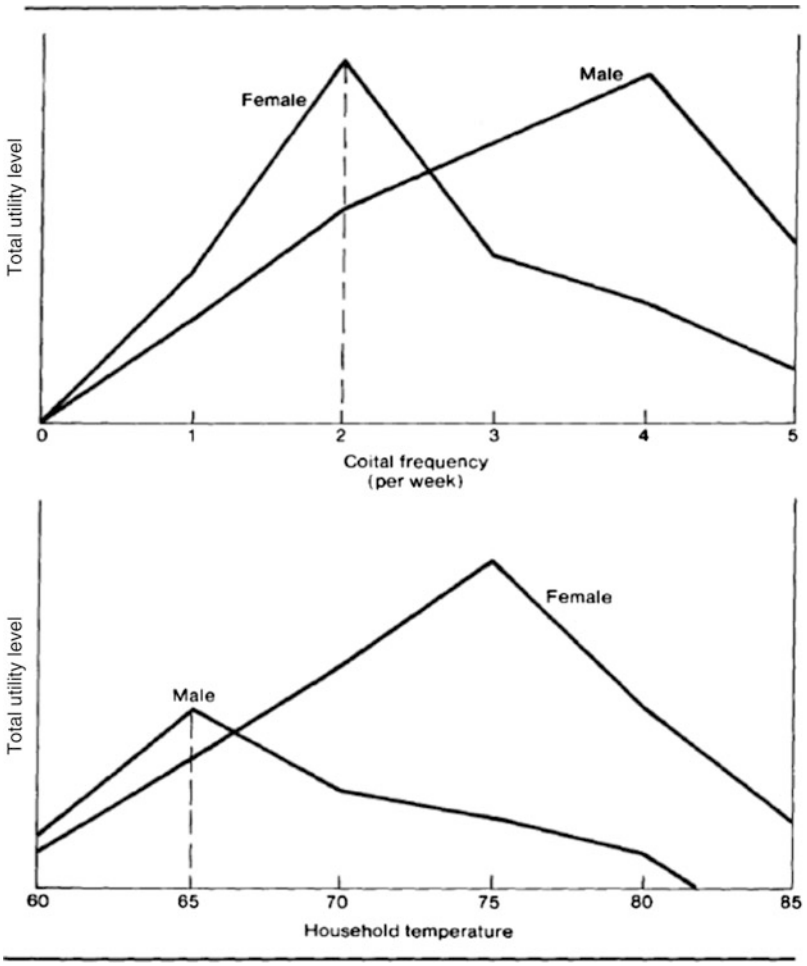

Fig. 8.3 Possible Gender Differences in Lifetime Coital Frequency

when intercourse is being experienced two times a week. From that point onward, her total utility falls as the coital frequency is raised.

On the other hand, the male's total utility level rises, although less rapidly than the female's, until it peaks at a coital frequency of four times per week. (Remember, the shapes of the two curves in the figure can be anything; by drawing the curves as we have, we mean only to illustrate the fact that sexual partners can differ over coital frequency, and there is no reason why the labels on the two curves could not be reversed.)

Given this information, how many times per week will the couple experience intercourse? That is not an easy question to answer precisely. We can say, however, that they will have intercourse at least two times a week. This is simply because between zero and two times per week, both of their utility levels rise, generated

directly by the pleasure they receive from the sexual act and indirectly from seeing the other enjoy the experience. Beyond a coital frequency of two, the male's utility level continues to rise, but the female's falls. The female may engage in intercourse more frequently out of a sense of duty or sheer love; however, she may be induced to go even further by exchanges that may be made. Since both of their utility levels are falling beyond a coital frequency of four, we expect the couple to have intercourse between two and four times per week.

In the bottom half of the graph, we have illustrated another dimension of marital life—the temperature setting in the home. (This dimension can really be anything, like the frequency of cleaning the house, or cooking meals, or staying home at night.) In the lower graph, we have illustrated a situation in which the most preferred temperature setting for the female is much higher than the male's. The male would prefer a temperature of 65°F, whereas the female would prefer a temperature of 75°. We know that they will cooperatively move to a setting of at least 65°, because both are better off at that level than at any lower level. Again, the temperature may be raised even further for noneconomic reasons.

However, the potential for exchange is indicated in the two halves of the graph. The female may agree to have intercourse more than two times a week if the male will agree to set the thermostat above 65°. So long as the increase in the female's utility from setting the thermostat higher is greater than the loss in utility associated with a higher coital frequency, then she gains by the trade. The same holds for the male but, or course, in the opposite direction. The point of the discussion is that trade can increase the coital frequency over and above what it would otherwise have been, and, in the process, both parties can be better off. The actual trades, however, may not be viewed as such; the two sides of the deal(s) may be discussed in terms of compromises.

Because money is not normally a permissible part of the deal, people who desire heterosexual or homosexual experiences must have double coincidences of wants. One party must be able to provide what the other party wants and must want what the other party has to offer. This implies that the search cost of both parties can be considerable and can result in less sex being exchanged than otherwise. It is because of such search costs alone that people may be willing to make monetary payments to prostitutes.

Sex as a Marketed Product

Sex can be molded, packaged, advertised, and promoted like most other product groups. In the case of *Playboy* and *Hustler* or any number of pay-per-view porn sites on the Web, the marketing process is direct and open; people know clearly what is being sold. In other instances, such as sexual advice gurus, the intentions, which may include the simulation of a sexual experience, are not so obvious. Most watchers of television realize that sex is the medium through which other products are sold. A less-than-subtle example: many years ago, the testimonial of Joe

Namath, former all-pro quarterback, in a Brut cologne commercial ended with the statement: "If you are not going to go all the way, man, why go at all?" The airways are filled with commercials with bare-chested men and barely covered women make pitches goods and services, hamburgers to cars to beers, that seek to arouse and encourage purchases by causing the dopamine to flow in the pleasure center of the brain.

On a personal level, people use many of the same marketing techniques as major manufacturers—they package and advertise their sexual products. Short skirts, padded bras, no bras, tank tops, tight slacks, deodorants, and body shirts are all forms of presenting one's sexual services in the best possible light and of attracting the attention of possible "buyers." By using such devices and techniques, the individuals involved may be as guilty of fraudulent packaging and advertising as are producers of cosmetics, soaps, and toys. If one views much of the advertising of such products as wasteful, then it would be consistent to view much expenditure on makeup and clothing in the same light.

Why do people incur the costs associated with personal beautification? We must, at the start, admit that there is the prevalent "honorable" reason that people just want to look nice and/or feel good. Be that as it may, we wish to suggest that there are other reasons (which are no less honorable except in m individualistic sense). An individual may want to increase the number of buyers for what he or she has to offer in order to have a larger quantity of sex and a larger group from which to select the services that he or she desires. With an increased choice range, the individual, in all probability, can select a higher quality service, as he or she assesses quality.

By looking attractive, a person can also possibly increase the nonmoney payment received for the sex services that he or she produces or can possibly lower the nonmoney payment that he or she will have to make for the sex services of others. All of these possible benefits can make expenditures on personal beautification rational.

In other words, people may attempt to look more attractive for the same reason that the professional prostitute does, although not necessarily in the same ways; how much expenditures are made depends on the costs, the benefits, and market conditions. The man or woman with no competitors may be expected to expend, *ceteris paribus,* less on improving the quality of his or her sexual services.

There is one other economic explanation for looking attractive. The human mind has a limited capacity to absorb facts and information, such as who may be in our presence and their characteristics. On the other hand, an individual is bombarded by tens of thousands of bits of information. Because the mind is incapable of absorbing, analyzing, and registering all of the information, the individual must, by absolute necessity, make decision rules regarding the facts and information that will be permitted to register in the brain. A result of deciding to ignore some information as a general rule may be that he or she does not notice all the people nearby.

Before a person can have a meaningful relationship in any dimension with someone else, the fact that he or she exists as a distinct entity must register in the mind of someone else. Because of the construction of decision rules regarding

which bits of information will actually be allowed to register, the person desiring the relationship must not only be present but also be able to somehow break through the decision rule that presents a barrier. This may mean that his or her actions have to be dramatic or flashy; a simple statement that "I'm present" can be ineffective. The extra nice clothes, the tight skirts, the bulging muscles, the makeup, and the exceptionally nice manners may be means of breaking through the barrier of decision rules.[5] Once this has been accomplished—that is, his or her presence has registered—and the relationship has been established, the individual can drop back into his or her own manner of dressing and behavior.

A Model of Sexual Behavior

The amount of sex that is produced and consumed is not in our view determined by the gods (at least not entirely). Granted, men and women have biological drives, and there are bodily constraints on sexual behavior. Man and woman, however, have some control over these drives (as a general rule) and do not engage in sex to the extent of their biological capabilities. The amount of sex produced and consumed is the result of the interaction of individuals within what we might call social space (or the market). For an explanation of how the amount of sex actually consumed and produced is determined, we must look to some of the forces these individuals bring to bear on this interaction process.

A restatement of principles that have been intrinsic in much of the discussion that has gone before would be helpful. These principles are the laws of demand and supply. We stress, however, that these principles cannot explain all sexual behavior—only a small portion of it. We assume that the demand curve for sex by either males or females is downward sloping and that, as a reasonable generality, the market supply curve of sex is upward sloping. Therefore, the quantity of sex supplied will increase with the price paid for it. As in Fig. 8.4, which depicts the demand for sex by men and the supply of sex by women, the relative positions of these curves depend on such factors as the relative preferences of each gender and the relative costs of the sexual experience(s) borne by them.[6]

If the supply and demand for sex were determined solely by biological drives and if these drives were equal for men and woman (which may or may not be the case), the supply and demand curves could be so positioned on the graph that their interaction is on the horizontal axis; the price, or nonmoney payment, paid for the sex would be zero, as is the case with S_1 and D_1 in Fig. 8.4. This does not mean that no costs are involved to the parties; there are, as discussed above. It only means that there will be no need for extra nonmoney payments or direct money payments made by one party to the other. The gratification one receives from the experience will compensate him (her) for the cost incurred in providing the sex.

Such a circumstance does not, however, realistically reflect the general state of the world. Women and men are often restricted from fully revealing their biological drives. Women bear a substantial portion of the risk cost associated with pregnancy.

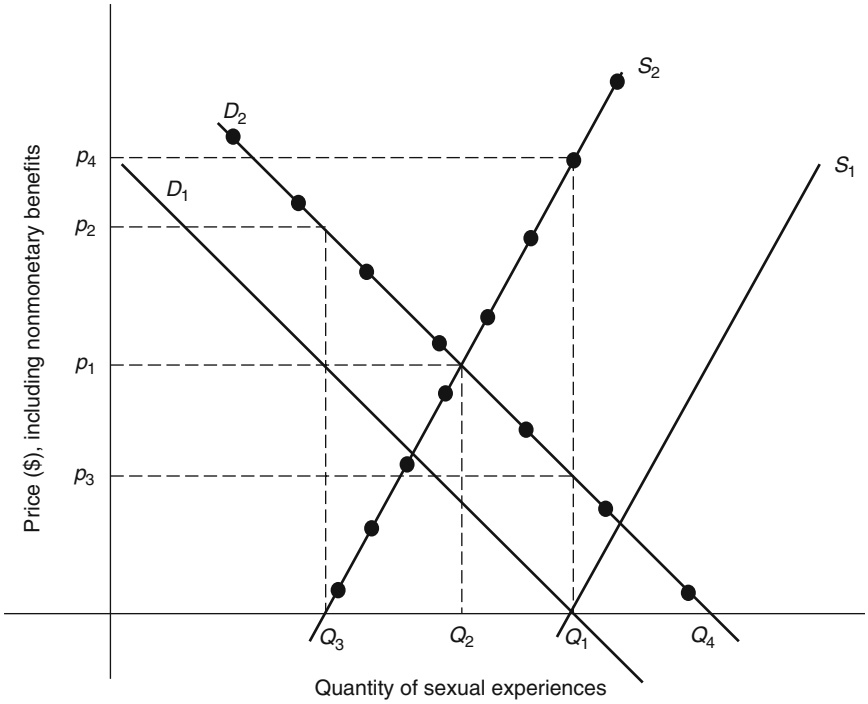

Fig. 8.4 Changes in the Supply and Demand of Sex

(Men, it must not be forgotten, bear a part of the cost.) Although general standards have changed drastically over the past three or four decades, many women and men still view sex as an activity that is best reserved for a committed monogamous relationship, or marriage.

Some segments of the population consider virginity (particularly for women), in and of itself, as having positive value, so that giving it up is an added cost of sex. In contrast, some people (often men) regard sex as a service to be pursued for purposes other than the pleasure received directly from the experience. In tribal Africa, men may achieve status within the tribe from killing a lion barehanded, and in more modern and less barbaric places, men can achieve the same stature among their peers by sexual conquests. When these pressures prevail, the effect is to raise the male's demand for sex and to decrease the female's supply of it (to say, S_2 and D_2 in Fig. 8.4). At a zero price, there will then exist a shortage of sex to men since only Q_3 sex will be supplied by females and Q_4 will be demanded.

The upward sloping supply curve of female sex indicates that women are willing to offer a larger quantity of sex than Q_3 if the price (not necessarily in money form) is raised above zero. As indicated by the demand curve, D_2, men are willing to pay as much as P_2 for an additional sexual experience. We might anticipate, therefore,

that nonmoney payments in any number of forms (security, dining out, and so forth) will be offered. The result will be that the quantity of sex will expand toward Q_2. Beyond Q_2, the side payment women will require to bring forth an additional unit of sex is greater than what the men are willing to pay for the experience. (To see this clearly, the reader should ask how much the men would be willing to pay for an additional unit of sex at Q_1 and how much the women would charge for the unit.)

The market for sex continues to change along with individual and cultural values toward sex. The supply of sex by women is expanding as societies' checks on women's sexuality (such as female circumcision in some cultures) become unacceptable. The pressure on individuals to refrain from premarital sexual intercourse has eased. The availability of contraceptives is reducing the potential pregnancy cost of intercourse, with a greater cost reduction for women than men (because they have borne a disproportionate share of the costs in the past). Abortions are more easily accessible—and safer—than in earlier decades. Assuming that these changes in cost and values have no effect on the demand side of the market, we can conclude that the quantity of sexual activity will increase and the price or nonmoney payment made to women can fall.[7] We are frankly uncertain about what is happening to the demand for sex by men. If the demand rises, but by less than the supply increases, the same general predictions as the ones above would follow; the price, however, would not fall as much, but the quantity of sexual activity would rise by more than in the case above. (What may be the consequence of a drop in the men's demand for sex?)

We have been speaking in terms of generalities, and, of course, an oversupply of sex for some women does not hold for all women. For some women—for example, the not-so-pretty and the old—there can be a shortage of sex, and they may have to make the nonmoney payments to obtain the desired quantity of sex.[8] In fact, if we individualize the market, we can postulate that what the woman may view as her "standards" may really be a mirror image of her relative market position—that is, because a woman is beautiful she can maintain higher standards than the woman who is less endowed and who has no offsetting differences. Of course, the homely men with few resources pay in money and nonmoney forms more for sex than good looking star athletes and entertainers.

Prostitution

Why does prostitution exist? One explanation is that we human beings are animals, and we try to secure sex any way we can, or even as animals—more specifically, monkeys—have been found to do. In *Superfreakonomics*, authors Steven Levitt and Stephen Dubner[9] have reviewed studies of economists who taught seven small-brained capuchin monkeys (four females and three males) in captivity how to trade their allotted "money" (one-inch silver disks) for favored foods, that is, Jell-O cubes, grapes, or sliced apples. The researchers found that when the "price" of Jell-O cubes rose, the monkeys bought fewer cubes and more apple slices and grapes, just as economists would predict. The researchers were then shocked when a trained

and enterprising—and horny—male capuchin gave disks to a female capuchin and had sex with her, after which the female capuchin used the cash to buy grapes, which Levitt and Dubner describe as "the first instance of monkey prostitution in the recorded history of science."[10]

But, the research finding was only surprising because money changed hands. Other animal behavioralists have found that macaque monkeys in the wild have had an ongoing active sex market involving barter for some time. Male macaques have groomed females for which the females would "pay" for grooming services rendered with services of their own, sexual favors. The researchers also found that the longer the males groomed the females, the greater the males' chances of getting sex. Moreover, the researchers discovered that competition determined the female macaques' grooming price for sex. When close-by females were abundant, the males got more sex for less grooming of each female, suggesting that the females were not above competing on "price" for the attention of males.[11]

But the forces of supply and demand might help us understand the existence of human prostitution, which involves money. The question is easily answered once we recognize the existence of the cost of sexual intercourse and the positive equilibrium price in Fig. 8.4. The price of prostitution (male or female), even though it may be $100, can be much lower than the cost the man (woman) would have to bear in order to obtain the same pleasure from other, more legitimate sources.[12] A man can pay the $100, and by doing so, does not have to spend the time that may be required to seduce the nonprostitute. He does not have to send her flowers or other gifts and, more important, does not have to become involved emotionally or otherwise. He can satisfy his needs and leave anonymously.

Another reason why a man may seek the services of a prostitute is that the quality of the service can be higher. The prostitute is a professional; she may not only have had more experience than the conventional sex partner, but also can prorate the cost of "training" and improving the quality of her service over a larger number of sexual experiences. The investment cost per "trick" can be trivial if she operates in large quantities.

Legalizing prostitution can have several predictable effects. First, because the penalties for being caught soliciting buyers will be eliminated, the cost of searching for buyers (streetwalkers have to keep on the move) will be substantially reduced. The supply of prostitutes should increase, which should result in a larger quantity of output. The quality of the product should also rise, bringing about, in part, a reduction in the threat of venereal diseases or AIDS. Houses of prostitution would be able to justify a greater expenditure on medical checkups for the prostitutes because the quantity of their business would reflect their reputation for cleanliness, just as in the case of Holiday Inns. "Streetwalkers" may have less incentive to seek regular medical checkups because they really do walk the streets, moving from corner to corner, which means there is less value for her to develop a reputations for quality or disease-free service, just as "mom and pop" motels have an impaired incentive to provide quality service to here-today/gone-tomorrow customers. They will never see many of their customers again and will not suffer

the pain of their customers checking into another of their facilities down the highway, because they have none.

Furthermore, if we assume that the price or nonmoney payment charged for sex is competitively determined in the normal sex markets, the existence of clean, legalized prostitutes means a larger number of competitors for nonprostitutes, including wives. Legalization of prostitution should, where nonmoney payments are charged, reduce the nonmoney payments. Wives, or women in general, may be against legalized prostitution because of moral convictions; our analysis indicates, in addition, that they may (or should) be opposed to its legalization on the grounds that it can reduce their competitive position. In a similar vein, prostitutes probably do not look upon the changing values of women in general with much favor. To the degree that the price of nonprostitutes goes down, the price that the prostitute can charge must fall.

Controlling the Price of Sex with Unintended Effects

Rendigs Fels, a late economist at Vanderbilt University, recalls in a puzzle he repeatedly gave his introductory economics classes during his long and heralded teaching career, how when he was stationed in Yokohama, Japan after World War II, he was put in charge of imposing and enforcing price controls throughout the Japanese economy. "One day the medical officer of our company came to see me," Professor Fels writes. "He was worried about the health of the American troops. They were picking up girls on the street instead of patronizing the brothels, where the girls were given a medical inspection once a week. The medical officer thought the soldiers were picking up girls on the street because the brothels' prices were too high. Since we was in charge of price control, he wanted me to take action."[13]

Professor Fels initially thought that it would be a good idea to require Yokohama brothel prostitutes to charge no more than their counterparts in the streets. He figured that if brothel prostitutes were "cleaner" than streetwalkers and brothel prices were lowered, more troops would substitute the services of brothel prostitutes for the services of streetwalkers. Accordingly, venereal disease among the troops would decline.

Professor Fels set aside his plan, but only because he worried that newspapers back in the States would report unfavorably that "a United States Army officer was reducing prices in brothels for the benefit of American troops." He muses, "Years later, when we finally saw the light, we became shocked at the deficiency of my economics training" (in spite of having earned a doctorate in economics from Harvard before going to war). He concluded that the medical officer's proposal to control the prices of brothel prostitutes "would have had the exact opposite effect of the one he intended."[14]

Talk about an unintended consequence . . . surely the professor would not have intended his price control to cause more American troops to come down with

various venereal diseases. How is it that the good professor could have possibly reasoned that lower brothel prices would have had a truly perverse and deadly effect, increasing the spread of VD among American troops?

If you do not understand how that can be true, or find the good professor's delayed insight as mysterious, know that this book (and especially this and the following chapters) is founded on the proposition that a little elementary economic reasoning can go a long way in unraveling such mysteries, and can help us understand how prices, especially ones intended to override market forces, can have unintended—but still fascinating, if not amusing—consequences. Again, read on. Unraveling the Fels puzzle should be a snap by the time you complete this book—with no (direct) help from us.

Sex and Love

Our analysis has proceeded as if sex can be completely divorced from love. Obviously, it cannot always be, and this impression must be corrected. However, economics can say very little about love because love is an experience almost impossible to define or conceptualize. About all *we* can say is that love (whatever it is) and sex go together in many people's minds in much the same way as hotdogs and hotdog buns or razors and razor blades. Many view love and sex as complementary goods. This does not mean that the relationship between sex and love is exactly the same as the relationship of other complementary goods. We only mean to assert that a connection is drawn between the two, that the degree of love that exists will affect the demand for sex and, possibly, vice versa. Our assumptions concerning the normal slope of the supply and demand for sex can still hold; the demand can still be downward sloping and the supply can be upward sloping. The existence of the connection (although imperfect) between sex and love can determine the positions of the curves (and, possibly, their elasticities to a degree). A person's demand for sex can influence demand for a loving relationship, and the intensity of one's love for another can affect demand for sex.

Generally speaking, the common requirement among women that sex be coupled with a feeling of love is a statement that their supply curve of sex is further back toward the vertical axis than it would be if the requirements did not exist. However, as a group, they can still be expected to respond positively to an increase in nonmoney payments as we have been using the term.

Admittedly, there are women and men who adopt the decision rule that they will not engage in sex unless they are married or have established a strong bond with someone else. They, in effect, rationally choose to ignore costs and benefits and changes in costs and benefits. Even though such people exist (and they may be quite large in number), the downward sloping demand curve and upward sloping supply curve hold so long as there are people who do weigh the costs and benefits of sexual experiences in their consumption decisions.

Concluding Comments

In this chapter, we have tried to show how economic concepts and tools of analysis can be used to discuss people's sexual behavior. We have argued that men and women have downward sloping demand curves and upward sloping supply curves for various kinds of sexual experiences. This means that the quantity of sex supplied and demanded by men and women is affected by the explicit or implicit price that must be borne. In discussing sexual behavior in this way, we have been able to demonstrate a part of the logic—to the extent that it has any logic—people may follow in pursuing sexual experiences. We have been able to draw several reasonable conclusions.

However, the reader should be careful not to assume that we have said more than we have. We have said nothing about how sexual preferences are formed, and we submit that much sexual activity is actually more related to preference formation than it is to the process of making choices founded on preferences already known. This chapter reveals the limited usefulness of economic analysis, its strengths, and weaknesses. Reflections on our own experiences suggest many instances in which the analysis is and is not applicable.

Chapter 9
Exploitation of Affection

The strength of most personal relationships is founded to a significant degree on the affection one person has for another.[1] This is particularly true of the relationship between a man and a woman (but there is no reason that relationships have to be heterosexual). The relationship works for two reasons. First, each person is concerned about the welfare of the other and is willing to do things for him or her. In this sense the relationship is largely charitable in nature; each person is both a donor of *gifts,* broadly defined as any form of charitable expression, and a recipient of such expressions from the other.

Second, both persons understand the need for implicitly defined limits to their own behavior and the behavior of the other person. These limits form the basis of the unwritten social contract between the two. Each person may then proceed in his or her behavior, responding to the needs of the other, in the trust that the contract is being obeyed. This latter presumption makes possible behavior on the part of either person that is inconsistent with the agreed-on contract, implicit as it may be. It permits one party to, in a sense, exploit the other.

We intend to explain the logic behind this statement in the few pages that follow. We discuss the problem of exploitation after a chapter on sex because most of what is said has a direct application to man–woman relationships. We stress, however, that the argument is really very general in nature and can be applied to the personal relationship between parent and child or between close friends. The analysis provides an explanation of the breakdown in many personal relationships, and in general, why friends and loved ones can be "used." First, we briefly review the argument for what we call *charitable exploitation*.[2]

The Affection Model

The basic proposition underlying the charitable exploitation argument is that the donor of the gifts receives utility from giving to the recipient. This implies that he or she has a downward sloping demand curve for making gifts. Also, the rational

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_9,

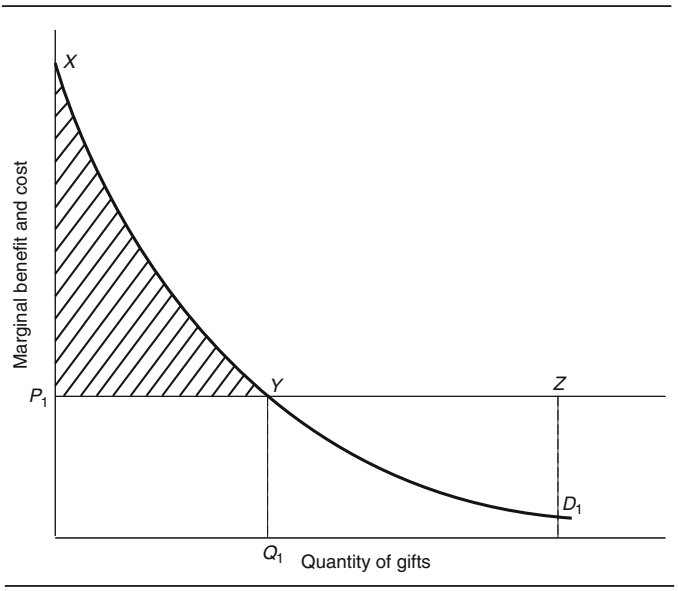

Fig. 9.1 Demand and Supply of Gifts from Donors

donor will *freely choose* gifts until the marginal benefits of doing so are equal to the marginal costs. We give *gifts* a very broad meaning here. As is conventionally thought, a gift can be in the form of money or a material object, for example, a box of candy. However, it can be the time one person spends doing something for someone else, and this can simply mean the time spent listening to another person. A gift can also be allowing the other person to listen to a record of his or her choice, scratching another's back, or providing him or her with sexual experience of one form or another.

In Fig. 9.1, we have placed marginal costs and benefits on the vertical axis and the quantity of the gift (which may be any single gift or a gift that represents a combination of gifts) on the horizontal axis. If we assume that the donor's demand curve (D_1) is downward sloping and, for simplification, that the marginal cost of units of the gifts is constant at P_1 in Fig. 9.1, then we can conclude that the donor will choose on his or her own to make gifts up to point Y or a quantity of Q_1. At Y the marginal cost is equal to the marginal benefits.

Notice that the marginal costs and benefits are equal only for the last unit—the Q_1th unit. Up to that point, the marginal benefits to the donor, as indicated by the demand curve, are greater than the marginal cost of each unit of the gift. As noted several times in previous chapters, the cost of something is the *value* of that which is forgone (not just what, in so many units, is foregone). This means that the individual donor is getting more value in making each unit of the gift up to Q_1 than he or she could have gotten from the use of his or her resources in their best alternative. This excess value, referred to as *surplus value* or *consumer surplus* by economists,

can be described by the striped area (P_1XY) in the graph. In simple language, when we do one thing we often say that we are better off in some sense; in terms of our graph we would say that the donor is better off to extent of the striped area.[3]

How can the recipient of the gifts get the donor to give more than he or she would freely choose to give, which is Q_1 in this case? One obvious means is for the recipient to be nicer to the donor and thereby increase the donor's demand for giving. But that is too simple, and could be costly, although people have employed the strategy. Kids often are extra kind to their parents in the weeks leading up to Christmas with the hope that their effort will inspire their parents to be extra generous at Christmas time. Boyfriends and girlfriends, and even spouses, often try much the same strategy for much the same reason before special occasions. But the really tough question is how can the recipient get more from the donor without changing the donor's demand (or, we might add, reducing the cost of the gift)?

Given the extent of the consumer surplus indicated by the striped area P_1XY, the recipient, if he or she is the only recipient (or if all recipients act collusively), can force the donor to increase the gifts beyond Y by merely refusing to accept anything unless the donor abides by the recipient's wishes, which is getting more units of the gift. The recipient says in so many subtle words, "Either give me more than Q_1, or I will accept nothing at all." Notice that we have not said that the recipient threatens overt harm to the donor, but only threatens not to accept anything unless the donor gives more. The recipient in effect presents to the donor what is often called an "all-or-nothing deal" (which, in our graphical illustration, amounts to a "more-than-Q_1-or-nothing deal").

If the recipient is able to pose the deal subtly, without the donor actually detecting the scheme in mind, the donor is presented with a choice problem. If he or she refuses to give more, then he or she must give nothing, which means that he or she must give up the consumer surplus that would have been received by giving Q_1 units of the gifts. If he or she gives more, the marginal cost of each unit, P_1, will be greater than the marginal benefits of each additional unit (indicated by points on the demand curve below Y). There is what we might call a *negative surplus value* attached to these additional units beyond Q_1. As a result, giving more will lower the donor's total satisfaction level.

We can postulate that if the negative surplus value is greater than the striped area in the graph, the donor will be better off by not giving anything at all. If the negative surplus value (the triangular area beyond Y) is less than the striped consumer surplus area, the donor will be better off by extending his gifts.

This means that the recipient's ability to extract additional units of the gift, and in that sense exploit the donor, is not limitless. If at point Z in the graph the negative surplus value (area YZD_1) is just equal to the surplus value (P_1XY), then the smart (maximizing) recipient will ask for an amount of gifts equal to something just short of point Z. In this way, the recipient will insure that the negative surplus value is less than the consumer surplus and that therefore the donor will give more. If the recipient asks for more than Z, the negative surplus value is greater than the consumer surplus, and the donor will be better off by not giving anything. If the

recipient asks for *Z*, the donor will be *indifferent* to continuing the gift giving and may, on some whim, stop giving.

Therefore, the closer the recipient tries to come to *Z*, the more risk he or she must assume that he or she has misjudged the charitable feelings of the donor, and may end up getting nothing. Remember, it is not likely that the recipient will be able to make the calculations that are implied here with a great deal of precision and certainty.

Two points need to be stressed. First, the ability of the recipient to extract a larger quantity of gifts depends on the number of alternative recipients of the gifts, that is, the number of what we might call competitors for the gift. If the recipient is one of many possible equal recipients and attempts to impose the all-or-nothing deal considered here, the donor can turn to someone else and in the end receive the full (or almost full) extent of the consumer surplus. The donor need not go beyond *Y* in Fig. 9.1. The demand curve in Fig. 9.1 is, in this case, the demand for giving in general and is not the demand for giving to anyone individual.[4] If, on the other hand, the recipient is, in essence, a monopolist, the donor must in this circumstance either accept the deal or turn to buying goods that yield less satisfaction.

Second, exploitation of the donor will occur only to the extent that the recipient is unconcerned about the welfare of the donor. If the recipient "cares" about the donor, then the recipient will be worse off to the extent that donor loses his or her consumer surplus. By exploiting the donor, the recipient reduces the donor's welfare and consequently his or her own welfare.

Romantic Relationships

The late Virginia Tech economist Wilson Schmidt, who formulated the foregoing argument, suggested that the argument can be useful in understanding the behavior of welfare recipients under the conditions prevailing during the late 1960s and early 1970s. At the time, many welfare recipients were demonstrating against the welfare offices around the country, "demanding" larger checks. One might reason that the recipients were in effect threatening the government with the disruption of the welfare system. In such event, the government would have been unable to make the "charitable" payments. Schmidt suggested that the protesting welfare recipients could have understood our argument to this point in an intuitive sense, recognizing that there may have been some consumer surplus that could be drawn out of the government bureaucrats and those who are in favor of giving to the poor.

We believe that the argument on charitable exploitation has a much broader application than was originally conceived and is, perhaps even more readily applicable to personal relationships. To show this we turn to romantic relationships between men and women. A romantic relationship is, almost by definition, a charitable one in the sense that the man's utility is related to the utility level of the woman and vice versa. The relationship is built on the presumption that this is

the case, to some degree; as a result, a certain amount of trust develops concerning the intentions of the other party.

In a romantic relationship, the woman or man has a demand for giving in any number of dimensions. However, she or he will choose to freely give only so much, and that will be *Y* in our example (Fig. 9.1). In the case of the woman, she may be willing to give *Y* because she feels confident in the man's feelings toward her. But if she has been deceived, she can be exploited because of the existence of her consumer surplus. The man can drain the surplus value out of the woman in any number of ways. He can, to a limited degree, generally abuse her. He can make her go places and do things that she would not freely choose to do, and he can make her put up with quirks in his own behavior that he may find costly to change. In this sense he can make her go further in giving in to him than she would otherwise choose to go.

If, however, he pushes too hard—that is, asks her to go beyond *Z*—he will be dropped. The irony of this line of analysis may be that the woman may still "love" the man, but she drops him because he has asked for too much. All of this also can be placed in the context of the woman exploiting the man, which occurs perhaps as frequently as the man exploiting the woman. It is interesting to note that women's movement has attempted to eliminate many economic and social barriers for women, including an increase in the alternatives to traditional gender roles within marriage. Our analysis suggests that to the extent that women's movement is successful, husbands will be less able to exploit their wives. To the extent that husbands have exploited their wives in the past and do not change their behavior, we would expect the divorce rate to rise. (Can you explain why in terms of Fig. 9.1?)

Sexual Exploitation

The reader may sense that all of what we have said here can be readily applied to the physical sexual relationship between a woman and a man. There may be activities in which a woman (or man) may freely choose to engage because the activities are directly pleasurable or, more important for our purposes, may contribute to the pleasure of the man she is dating. Because of the woman's value system, however, and because there may be psychic costs associated with many forms of sexual activities, there are limits to the number of times in which she may *freely* engage in sexual activity (that is, make the gift).

Because of the surplus value, the man, if he wishes and if he is her only boyfriend, can make the woman go further than she would freely choose to go. He can extract the surplus either in terms of an increased rate of specific acceptable activities (such as petting) or can draw the surplus out in the form of an activity in which the woman may not *freely* choose to engage (such as intercourse). This does not mean necessarily that the man can force the woman to have sexual intercourse, because the size of the consumer surplus may not be great enough to push her to that

point. But, it does suggest that regardless of the level or kind of activity the woman chooses, the man can, in a sense and under the condition that he is a monopolist with respect to the woman's affection, exploit the woman to some degree. Regardless of how far she chooses to go, he can induce her to go further, if the all-or-nothing deal is appropriately posed.

On the other hand, if the man is only one of many possible dates for the woman—that is, the relationship has not been permanently established—the all-or-nothing deal cannot work as effectively. In the event the man tries to make the woman go further than she desires, she can merely turn to one of her other possible dates and retain the full consumer surplus from giving to the opposite sex. In this event, she has bargaining power.

The typical male may intuitively sense the essence of the foregoing discussion and realize that he can obtain more of what he wants if he is "the only one" as far as the woman is concerned. This line of analysis may explain why the man may refrain from trying anything on the first few dates. At that point, he may intuitively understand that he is one of a number of candidates for the charitable affections of the woman, and if he attempts anything physical, she can turn to someone else to whom she may at that point receive equal pleasure in the sense we have been using the term and can ultimately receive the full extent of the consumer surplus from giving. By waiting and putting on his "best manners" he effectively may be able to eliminate his competition, and, by the delay, more accurately assess the size of the woman's consumer surplus. He may also be investing the time for the purpose of increasing the woman's charitable demand for him, in which case she will of her own accord go further. Finally, on those first few dates he may be attempting to determine what would be the most appropriate way of presenting the all-or-nothing deal. The reader must remember that if the deal is not carefully posed verbally, by facial expression, or otherwise, the woman's preferences for giving to the man can be damaged, implying a reduction in her demand for him. In other words, a deal clumsily made can reduce the woman's demand to the point that her demand curve intersects the vertical axis at P_1 or below P_1. In such case she will decide to give nothing.

Many women do trade sex for other goods, such as security, an issue covered in some detail in the preceding chapter. This, however, is not what is meant by *sexual exploitation* here; by the term, we mean one party forcing the other party to go further sexually than he or she would freely choose to go. Many readers—thinking only in terms of the stereotypical oversexed male—may believe that a situation in which a woman desires to make a man go further sexually than he would freely choose to go is only a peculiarity of the special relationships between nymphomaniacs and highly religious men. But the possibility of the female sexually exploiting the male becomes more plausible if the male stereotype is set aside and if specific circumstances are considered. First, men can bear a cost by engaging in, say, intercourse; they may be liable for a share of the cost of an abortion and, if abortion is not acceptable, they may be liable for child support, or they may be forced, because of personal values, into marrying someone who under other circumstances they would not choose. The existence of such costs and the

possibility that once the woman is aroused, she may not want to stop short of intercourse, may partially explain why the woman may have to say, or subtly indicate, that "if you do not go all the way, then you may do nothing at all." Because of the male's surplus value from engaging in petting or from stimulating the woman, he may go all the way because by doing so he will be better off than he would be if he were not allowed to touch. (He could be even better off if he could touch without assuming the risk of pregnancy.)

Second, a married man may want to establish a rather impermanent, now-and-then relationship with some woman other than his wife. He gets pleasure out of doing things for her, but he still does not want the relationship to seriously encroach on his family life. The woman may require that he see her more often and engage in sexual relations more frequently than he would freely choose. He may consent, again, because of the surplus value acquired from the first few units of the relationship consumed.

Lastly, one party may need to resort to sexual exploitation when his or her appetite for sex differs from the appetite of the other party. In any continuing relationship, it is quite possible that there will be many times when the female's appetite is greater than the male's. In such a circumstance, the female may find it necessary to exploit the male, and before closing, it should, perhaps, be noted that male foreplay may be one means by which women have sexually exploited men. They in effect say, "Either you arouse me, or I will not be interested in anything you have in mind."

Concluding Comments

By suggesting that a woman (or man) can be exploited if she (he) has a monopolist for a boyfriend (girlfriend), we have been saying, in effect, that exploitation can more likely occur if the relationship is a well-established, permanent one; that is, if the woman and man are "going steady" or are engaged. We submit that the analysis supports many of the fears of parents in seeing their teenage son or daughter becoming tied down into a permanent relationship. In concluding, we emphasize that the analysis indicates what the man (woman) can do, not what he (or she) will do. What either does is, again, dependent on their consideration of the other's welfare. If one person loves another or cares about his or her welfare, then exploitation affects the other's welfare and, therefore, his or her own welfare. It follows that exploitation is most likely to occur when feelings of love or caring are not fully reciprocal; that is, when the party that wishes to do the exploiting does not care (to the same degree) about the other person.

As we said at the beginning, the argument in this chapter is also applicable to basic friendships and has some relevance to business relationships. If a firm becomes tied down to a relationship with a sole supplier (or buyer), the firm can be subject to the type of all-or-nothing deal developed here. The supplier can drain the firm's surplus value with a tactfully made deal, which is sometimes expressed as

"take it or leave it." Firms would be well advised to have alternative suppliers in the wings, and to let the current supplier know that those suppliers would be pleased if the current supplier tried to pull off an all-or-nothing deal. To make the message clear and meaningful, the firm might turn to one of the alternative suppliers every now and then, especially when the current supplier begins to have visions of being an unchallenged and unchallengeable monopolist.

Chapter 10
Dying: The Most Economical Way to Go!

It is only human for one to feel sympathetic toward the person who dies with everything going wrong; a malfunctioning liver, arteriosclerosis, a defective kidney, ulcers, respiratory problems, and waning eyesight. However, such a tumultuous exit may indicate that the individual involved has more thoroughly enjoyed life than the person who dies with only a failing heart and everything else in perfect order. If this is the case, the sympathy may be misplaced.

The fact that all of one's organs are malfunctioning at the time of death may indicate that one has fully utilized his or her organic capital assets in the pursuit of utility. The person who dies with a perfect liver may have forgone a number of drinks during the course of his life that could have contributed significantly to his own welfare: a liver in good order is useless if the heart goes first.

If a person is truly interested in maximizing his well-being (which is the natural assumption of economists), he should treat his bodily organs in the same manner he treats monetary wealth. "You cannot take it (them) with you" is just as applicable to organs as it is to a bank account. A person should have a bank balance at death if he intentionally plans to bequeath it to someone (an intention which may give pleasure before death) or if he miscalculates the time of his (or her) death. The ideal exit is to die with a zero bank balance (above that which is planned) and with no surplus capacity in bodily organs (above that which is planned).[1] If you have $9 left in the bank account (above the planned amount), then you missed the pleasure of a great glass of wine at an upscale bar (and you surely cannot order take-out from the mortuary). A good working rule, drink (and eat, or whatever) when you can! And do not waste money on purchases on which you cannot get a full measure of pleasure before your final exit.

Such utility-maximizing behavior may go a long way toward explaining why elderly people as a group go to the dentist less frequently than others. This kind of behavior may explain why up-and-coming and young entertainers get their teeth capped (or breasts enlarged, men and women) and why octogenarians make such cosmetic expenditures less frequently. The young can prorate (and draw pleasure and income from) their personal "investments" over a much larger number of years. There is some economic wisdom in the story of a young investment advisor calling

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_10,

his ninety-one-year-old client to say, "If you make this investment, your return will beat the stock market over the next decade," at which point the elderly lady quipped, "Sonny, buying green bananas is now a long-term investment for me!"

The utility-maximizing thinking developed here can also help explain why the prisoner on death row may be unmoved by government reports that smoking can cause cancer (and why many death rows might be filled with cigarette and cigar smoke at all times if smoking were not banned in the prisoners' cells).

For half a century, surgeons general of the United States have warned that long-term heavy, and even moderate, smoking (say, for twenty or thirty years) causes cancer. That message has clearly deterred many young people from taking up the habit and has caused older people to drop it. But the surgeons general's message may have had unintended interpretations by others. Many very long-term smokers in, say, their sixties and above, continue smoking confident that there is no point to their enduring the hardship (disutility) of withdrawal. "Why bother? The surgeon general has convinced me that I am already doomed, unless I'm just lucky." Some unknown nonsmoking elderly in their seventies and older might conclude, "Why not smoke? If the gestation period for lung cancer from smoking is twenty or thirty years, I will be long dead before my lungs go, and why go with perfectly healthy lungs? Few use their lungs in their coffins."

Doctors do not, however, seem to fully appreciate the truth about human behavior, that people actually want to optimize on the use of their bodily organs. Most advice by doctors and most medical research are directed toward maximizing the life span of each and every bodily organ. Very little research appears to be directed toward ascertaining how a person should treat his organs (in order to maximize his utility during this life), given the life span of the limiting one (whatever it is). In this vein, a redirection of much medical research is called for because extensive medical expenditures (and much abstinence) may be unwarranted.

Some doctors, however, seem to get the message that their advice and help will impact behavior, partially nullifying the health and longevity benefits of their advice and help. For example, when McKenzie's cholesterol spiked, his doctor put him on Lipitor, which lowered his cholesterol to well under two hundred within a month. When he saw his doctor the next time, McKenzie could not resist telling his doctor, "Well, doc, you just gave me a new lease on Outback Steakhouse," figuring he could use some of his cholesterol gains to eat more red meat. The good doctor responded in a way that he understood the sentiment, "Well, we doctors do see Lipitor as a lifestyle drug," which means he understood that the benefits of various prescription drugs would be "spent" by their patients as they sought new utility-maximizing paths throughout their remaining lives.

The economist's advice is that a person should so employ his human and nonhuman resources that the world ends for him not with a whimper but with a bang.[2]

Chapter 11
Cheating and Lying

Criminal behavior can be, partially at least, explained and predicted by economic principles. Economists have created something of a cottage industry explaining how criminals can be treated as entrepreneurs out to maximize their "firms" profits from revenues gleaned from muggings and burglaries and to minimize their costs of operation, with the threat of getting caught, prosecuted, convicted, and imprisoned being one of the "risk costs" of doing business, which also can be a check on crimes. Raise the probability of criminals actually doing time, and you raise their risk costs and curb crimes, or so economists (and policymakers) predict. Likewise, raise the costs states must incur to imprison criminals, and the criminals risk costs can go down as states try to check expenditures on prisons by reducing the number of criminals who are actually caught, prosecuted, convicted, and imprisoned.

However, much behavior is not criminal in the sense that any law has been broken, but may be equally reprehensible because social and institutional rules are broken. This chapter is mainly concerned with two frequent ways that most of us break social rules—cheating and lying. Our purpose is to apply the economic principles developed in preceding chapters and to better understand the economic conditions that promote or retard cheating and lying.

The Prevalence of Cheating

Cheating is a continual problem in all educational institutions. Exactly how much cheating is likely to go on across a university campus is unclear, but we do have several very interesting studies.

Charles Tittle and Alan Rowe, both sociologists, designed a classic study to determine the influence that moral appeal and threat of sanction had on the amount of cheating that went on in their classes.[1] To do this, they gave weekly quizzes to their students; the instructors collected the quizzes, graded them without marking the papers, and then, at the next class meeting, returned them to the students for

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_11, © Springer-Verlag Berlin Heidelberg 2012

them to grade. Without any appeal being made to the students that they were on their honor to grade them correctly, the students in one test group took 31 percent of all opportunities to cheat. The other test group took 41 percent of all opportunities.

Next the instructors made an appeal to the students' sense of morality in grading the papers, and concluded that "emphasizing the moral principle involved in grading the quizzes was also ineffectual. A moral appeal had no effect whatsoever in reducing the incidence of cheating."[2] In fact, in one of the test groups, the amount of cheating went up substantially after the appeal was made.

Finally the instructors threatened to spot-check the quizzes for cheating (an obvious way to increase the *expected* cost of cheating), and the amount of cheating fell sharply from the 41 percent range to 13 percent in one class and from 43 percent to 32 percent in the other. They also concluded from the study that the instructor who had a reputation of being "lovable and understanding" had the greater amount of cheating in his class, and they found that "those who were most in need of points were willing to take greater risks (that is, cheated more). This is consistent with the theory that the greater the utility of an act, the greater the potential punishment required to deter it. And perhaps it shows the futility of a moral appeal in a social context where all individuals are not successful."[3]

One of the authors, McKenzie, replicated the above study in a somewhat different form and, in this case, for a slightly different purpose. He wanted to see how much economics the students know on entering their first econ course and how many students would cheat on a test that the students were told in clear terms would not be considered in their grades. So, he gave his classes a multiple-choice test on the first day of the term. He had their answer sheets photocopied and the copies graded by a graduate student. During the next class session, his assistant gave back the original answer sheets and called out the correct answers, letting the students grade their own tests. Later, by comparing the copied and the original answer sheets, he found that 15 percent of the students cheated—and, again, this was on a quiz that had no bearing on the students' grades.

As a point of interest, one student was rather ingenious in the way in which he cheated. In taking the test, he had left the last eight answers blank. When he was given a chance to grade his own, he filled in the answers. Because he apparently did not want it to appear too obvious what he had done, he intentionally missed three of them and marked them wrong like all the others that he had missed!

The findings of these two studies provide educational insights unrecognized before the studies were undertaken. Several decades ago, Hartshorne and May undertook a study of several thousand children in the fourth through eighth grades.[4] Their study, which has not been seriously disputed in all the passing years, is considered a classic within the psychology profession.

One of their tests was to give the students a set of examinations in which the students could cheat with ease, but the instructor would always know that they had cheated. Approximately 97 percent of the students cheated at least once. The Hartshorne and May conclusion is striking: "no one is honest or dishonest by 'nature.'"[5]

Less dramatically, economist Nicolaus Tideman invented a statistical method of determining how many times a particular type of cheating occurs. The type of

cheating considered, copying the paper from the person sitting next to you on a multiple-choice examination, can be detected by a complicated computer analysis of the examination papers. Tideman's studies showed the number of cheaters in various classes as low as zero or as high as 20 percent.

Probably no aspect of college and university education has been more widely studied than cheating; some of the findings include:

- Researchers found that of the 1,300 college students surveyed, over two thirds acknowledged that cheating on campus was a "serious" or "very serious" problem.
- Nearly all (97 percent) of more than 2,200 California college students in the 1980s had witnessed cheating on their campuses.
- Three quarters of students who cheat report doing so by copying answers or using "crib notes."
- A third of surveyed students report that "almost everyone" cheats.

Such findings, and many others, caused one scholar to generalize: "from elementary school to college, nearly all students have seen someone cheat, about two-thirds say they have cheated at least once, and about a third cheat regularly."[6]

Of course, there are the unusual cases of cheating, such as the cheating scandal that came to light at the University of Central Florida in late 2010. A business professor found that the grades on an examination were substantially higher (maybe a letter grade and a half higher) than he had given on the same or similar test in previous years. He suspected rampant cheating among the 600 seniors in his class, a suspicion that students in the class confirmed. Allegedly, before the exam date possibly a third of the students had received the answer key for the test questions on the test. The professor reported being distraught by the widespread use of the answers to his test question, telling his students in video recorded lecture, "To say I'm disappointed is beyond comprehension," claiming that the incident made him "physically ill, absolutely disgusted, disillusioned, trying to figure out what the last twenty years were all about." He gave the offending students in the class a chance to reduce their punishment by "coming clean" and confessing their involvement in the scandal that, according to media reports, 80 percent of the offending students had done.[7] With all the formal and informal evidence on cheating in classes we have seen and the soundness of the economic logic of cheating, we must admit to wondering how the professor could have been so surprised and distressed at the cheating incident. After all, he had taught for two decades, as reported.

The Economics of Cheating

The problem of cheating, then, is a relatively common one. However, the economist is typically interested in asking two other questions: what is the gain and loss from cheating, and who, if anyone, gets hurt?

Consider Pete, a student, who is worried about his grade in a given course and thinks it would be possible to cheat. The gain if he does cheat is, of course, the improvement in the grade he can expect from cheating times the probability that he will get away with it. This is true regardless of how much he learns in the course. How well he has studied is, of course, relevant to how much his grade will improve. If he will get an A anyway, why cheat? Top students are less likely to cheat for a good economic reason: they have less to gain than struggling students.

The cost of cheating is, first, that the cheater's conscience may bother him. If Pete has been taught that cheating is a bad thing (and it must be remembered that this is not true of everyone), then there is some positive cost to him for violating his own ethical rule. For some people, this cost is so high that they would never violate the rule against cheating, no matter what the benefits they could expect. For other people it is so low that they would violate it any time they saw a chance.

Former President Carter's principal press spokesperson, Jody Powell, was expelled from the Air Force Academy for cheating. The late Senator Edward Kennedy was expelled from Harvard for cheating on a Spanish test. Presumably at the time he hired a classmate to take the exam for him, he thought the chances of being caught were low. But, surely he realized there was some chance of being caught and took the prospects into account.

A student contemplating cheating, then, will compare the benefit with the cost. The moral issue is real, but not the only concern. A very immoral student may decide that the risk is too great, and a student of more than average morality may be tempted under circumstances where the benefit is very great and the chance of being caught is very low.

Who is injured by cheating? Most students tend to view cheating as a game with the teacher, but student cheating, in fact, does not particularly hurt the teacher. It is true that most teachers disapprove of cheating and tend to feel that they have been made a fool of when students succeed in cheating, but it does not really injure them (and surely not in terms of their lifetime incomes).

The people who are injured are the other students. In saying this, however, it should be kept in mind that the injury caused by one student's cheating is spread over a number of other students, so that the injury to anyone from a single student's cheating is so small as to be almost invisible. Only if a considerable number of students cheat is the injury to any individual student serious.

Suppose in a class of 100 students, a professor normally grades on a curve—that is, she gives the top 20 test scores an A, the next 40 a B, the next 30 a C, and the bottom 10 are flunked. One of the students who normally flunks is successful in cheating and, therefore, gets an A. This means that one of the noncheating students who otherwise would have received an A gets a B, one who otherwise would have gotten a B gets a C, and one of the ones who otherwise would have gotten a C flunks. In this case, the injury is concentrated in three specific people, but it is hard to tell in advance which three students they will be. Thus, at the time the student contemplated cheating, the potential injury was spread out because no one knew who would be the lowest A, the lowest B, or C, and so on.

Curve grading of this sort is not, of course, the only way of grading, and many professors use absolute standards. That is to say, they have a fixed numerical scale for settling the grades of their students. How many of the different grades are given depends upon how many students make scores within the given grade ranges.

Suppose, for example, that there were fifty questions on the test, and the professor intended to give an A to those who got forty-five or more correct, B to those who got thirty-seven or more correct, and C to those who got thirty or more correct. The cheater moves himself from twenty correct and a flunking grade to forty-seven correct and an A. This does not make any other single person flunk, but it does mean that there are more As and fewer Fs than there would be otherwise. Hence, cheating marginally depreciates the value of the As and Bs and makes the pain of flunking somewhat greater than it would be otherwise.

An intriguing, and indeed paradoxical, characteristic of this reasoning is that the cheater injures other people who cheat just as much as those who do not. Let us return to our original example where the teacher is grading on a curve, and suppose that Pete has succeeded in raising his grade by cheating so that he is the twentieth student in the series and has an A. Another student now cheats and gets a higher grade, with the result that Pete is moved down to a B. Of course, the students who have not cheated are injured by both of these students' cheating, so they are doubly injured. However, it remains true that any student who cheats is to some extent injured by other students who cheat.

The discussion of cheating has assumed that students are injured by receiving low grades and benefit by receiving high grades. This is not absolutely certain, and there are people who maintain that the entire grading system is unimportant. Surely the individual who does not care what grade she receives is not injured by having his grade lowered because other people have cheated. However, cheating injures the student who hopes that her grades will help her get a fellowship for graduate study or a good job. Note that she is also injured if the cheating simply increases the number of As, rather than moving anybody down in grade, because this means that As are regarded as less valuable by future employers or future graduate schools.

Looked at from the standpoint of society as a whole, cheating reduces the information content of grades. If there is a good deal of cheating, then the grading system does not give very much information as to the quality of students. Hence, it is harder for employers to make decisions about whom to hire, to whom to give graduate fellowships, and so forth. The size of this cost depends on how good the grades are as a predictor of later success, and, unfortunately, we do not have very much data on that issue. Nevertheless, there must be at least some cost.

Rather ironically, we have come to the conclusion that the students should be strongly in favor of rules against cheating, at least insofar as these rules are enforced against other people. An unscrupulous student should favor a rule that prevents other people from cheating while permitting her to do so.

Unfortunately, rules of this sort are not likely to be acceptable. In general, we have to choose between institutions that make cheating difficult for everyone and institutions that make cheating easy for everyone. For most students, the former set of institutions will have a net payoff because the gains they may make from

cheating, even ignoring the possible conscience problems of cheating, will be less than the loss they will suffer from other people's cheating. From the standpoint of professors, there is little cost either way. Students should be the ones opposed to cheating (especially among all others who attend their universities over the long run), mainly because the value of their degrees can be undercut as students' learning is undercut.

At the same time, penalties for cheating are likely to be necessary. Even though *all* students may favor a rule that forbids cheating, many a student will have a private incentive to cheat and improve his or her grade. If cheating is prevalent, many students who would not otherwise consider cheating may have to cheat just to protect their class standing. This problem is particularly acute in classes in which the professors scale their grades. (Can you explain why?) However, the problem of cheating for self-protection is not absent when the scale is fixed. As noted earlier, students who might not otherwise cheat may feel compelled to cheat because rampant cheating depreciates given grades. Penalties for cheating can be viewed as a necessary means of reducing the cheating of others and, thereby, decreasing the incentive to cheat for defensive reasons. Professors may see the penalties as a means of diverting student energies from finding ways to cheat to finding ways to learn the course material.

What is crucial to deterring cheating is the *expected* costs from cheating, which is computed by multiplying the probability of getting caught and penalized by the penalty exacted when caught and convicted by the professor or some tribunal of students and/or professors. If a professor (or her university) lowers the exacted or the probability of getting caught and penalized, then we can expect students as a group to do what comes naturally, increase the incidence of cheating, which, when students are graded on curves, can encourage students not inclined to cheat to do so for defensive reasons. Cheating can build across a student body the way the proverbial snowball builds as it rolls down a snow-covered hillside. And we are not surprised that cheating is rampant at many universities today, mainly because of the growth in the class sizes and the extent to which students are packed closely together in tiered lecture halls. Monitoring and detecting cheating are just damn difficult, if not so close to impossible that many professors do not even make an effort to thwart cheating.

For these reasons we are stunned that the University of Central Florida business professor was surprised by the extent of cheating in his senior class with 600 students in it. Few of his students likely had anything close to a personal relationship with the professor, which meant that they need not have felt that they would have suffered any psychic cost from violating the professor's trust or expectations. He probably employed a multiple-choice exam to ease his grading burden, not to prevent (or to discourage) cheating. We can imagine that he did not incur the costs that would have been required to secure his answer key, which means he likely eased cheating by his optimizing decisions. Even if he had incurred such costs, he could very well have figured that the extent of cheating might not have been consequentially affected, given the opportunities of in-class cheating with students so close together and with, very likely, the very limited monitoring of students

during the test (on the order of the amount of monitoring that has gone on in the universities where we have taught). Moreover, in such a large class setting, many students would have reasoned that their own individual cheating would not materially affect the grades of other students, and many of the cheating students may have reasoned that, given the availability of the answer key, they felt pressure to cheat because the extensive cheating that would likely occur required that they cheat for largely protective reasons: if they did not cheat, they might be pushed down the relative grading scale. Put another way, with the expected class averaged hiked so substantially by the likely cheatings, the students could have feared that the professor would hike the cutoff points for the various letter grades.

Moreover, readers should remember that professors have little in the way of economic incentives to curb cheating, a feeling of obligation to do their academic duty. In our long careers, we must confess that we have never heard of even one professor getting a merit raise for catching and penalizing cheaters or being denied a merit increase for allowing rampant cheating. Given the absence of a payoff, we are not surprised that many of our colleagues do not even stay in their classrooms when exams are given. There is a greater payoff to them from revising a research paper or even just having a cup of coffee with coauthors during the exam period than "wasting" time "babysitting" students taking exams.

The Economics of Lying

Cheating is special form of dishonesty that is not infrequently observed. Lying, however, is probably far more prevalent, simply because of the breadth of opportunities for people to lie.

Beginning with simple lying, an individual who is thinking of telling a lie once again has the problem of conscience. One of the costs he must face if he is to tell a lie is the moral cost. As we have said before, for some people this is a very large cost and for some people it is very small. In addition to that cost, there is the possibility that he will be caught telling a lie, and this must be multiplied by whatever injury he will suffer from being caught. Since we are talking about simple lying, this injury may constitute nothing more (or less) than a loss of reputation for honesty. If you are once caught telling a lie, people are likely to think you will tell lies in the future; hence, you may have greater difficulty getting them to accept your word, even when you are telling the truth. To the economist, "greater difficulty" translates into greater cost.

For example, a sales representative who sells gadgets door-to-door has little need to be concerned with the "reputation cost" of lying. It is unlikely that he or she will return to the same home again. If the buyers find out that the gadget is not what it was said to be, there will be little cost inflicted on the sales representative. On the other hand, someone who sells to the same people again and again can lose immensely from lying, particularly if the product is valuable enough so that the buyers give careful thought to transactions.

For example, take the vice president of a large steel company who has the duty of acting as principal sales representative to General Motors, Honda, and Chrysler. The cost to her of losing the confidence of her customers is so great that she would be a fool to lie to them.

This is particularly so since they will be experts and likely to catch the lies that are tried. In any event, the buyers will have an opportunity to make a very thorough test of her product if they buy it. In the real world, repeated sales arrangements are often based on such a high degree of honesty that the sales representative will rarely make an effort to sell a product if a competitor has one that is clearly more suitable to the purchasers' needs. The central point is that the more frequent the contact between two parties—buyer and seller—the more unlikely that lying would be expected.

Most cases of purchase and sale are intermediate between the two cases just mentioned, the door-to-door salesperson and the steel vice president. The manufacturer of canned goods had better have a satisfactory product if the firm wants to stay in business, but exact truth on the label may not be all that important when few purchasers actually read labels. You can imagine that the truthfulness of labels will rise with the extent to which customers read and verify labels (and any other claims businesses make in their promotional efforts).

The benefits from lying are a little more complicated. Presumably the reasons for telling a lie are varied. People may want to influence someone to do something they would not do if told the truth. The door-to-door sales representative, for example, if he accurately described the product, might sell very few units of the product. On the other hand, by a suitably colorful sales pitch, he may make quite a nice living. The benefit from the lie, then, is the profit (whatever it is) from influencing the victim's behavior.

For example, suppose that if the sales representative correctly describes the object, he has a one-in-ten chance of making the sale. Assume that a suitable lie increases the chances to fifty–fifty. Assume further that the commission on the sale is $5. If the sales representative lies, he moves from a one-in-ten chance of making $5, which is worth $0.50, to a fifty–fifty chance, worth $2.50, and the payoff on the lie is then $2.

But this is the gross benefit. Obviously the potential liar has to subtract from the expected gross benefits the possible cost of the lie. Ignoring possible legal penalties, this cost, as we said above, is the reduction in credibility. For the door-to-door sales representative, this may have substantially zero value; hence he can say that a $2 profit was made by telling a lie. For our vice president in charge of sales for a major steel company, on the other hand, the payoff to her from completing a sale by telling a lie might be $100,000 or so, but the cost to her of being detected in a lie might be $2 or $3 million in reduction of lifetime earnings.

The fact that people may tell lies, of course, has an effect on the behavior not only of potential liars but also of the people who will hear the lie. Most people are properly skeptical of door-to-door salesmen selling complicated devices. On the other hand, most purchasing agents who deal in large sums of money are so

convinced of the honesty of the sales vice presidents with whom they talk that they may actually use them as sources of technical information.

All of this, of course, depends on the fact that the people to whom a potential liar might make a dishonest statement try to estimate his truthfulness. The individual who hears a statement by someone else will put resources into determining its truth. In some cases, he may have great respect for the person making the statement or he may realize that the person making the statement has no particular motive to tell a lie or a strong incentive not to lie (or just fudge the truth). Hence, he would put high credence on the statement and not do a great deal of individual investigation. This is, of course, the reason that having a reputation for truth as opposed to a reputation for lying is valuable to people in business or, indeed, in any walk of life.

And do not forget that companies are valued currently by their expected profit stream that can extend into the distant future. The greater and the longer the profit stream of a firm into the future, the more people are willing to pay for the company (or its stock) and, hence, the greater the present discounted value of the company (or its stock price). If a company gets caught lying, its credibility for honest dealing can falter, which can increase its sales costs and lower its projected sales—all of which can lower its projected profit stream into the future. This means that current lies can give rise to a magnified drop in the resale value of the company (or in its stock price). Executives who are paid in shares of stock or stock options and who lie can see their wealth contract, which, obviously, can check their lying, or encouraging a culture of lying within their organizations. This is not to say that companies never lie. It would be an outright lie for us to suggest otherwise. The point we want to press is that economic feedback effects can moderate lying in business. A reasonable principle is this: the stronger the negative market feedback effects for executives and their firms, the lower the incentive to lie (or the more reliable firm information, no matter its form, can be expected to be).

To make our point more vividly, consider the situation that confronts Judy, a salesperson, dealing with a potential customer. If Judy is known to be honest, the customer will invest fewer resources in checking her statements, which means her customers are willing to pay higher prices for the delivered products. Also, in consequence, the cost of the sale will be lower—which means that Judy's firm's profit stream into the future can improve, increasing her firm's current market value. Moreover, Judy's honesty generates a net and perfectly genuine social gain for the joint society of the two of them: part of this value goes to Judy and part to the customer. Thus, social and business institutions that improve the reliability of information can have a positive payoff. And businesses can be expected to arise that verify the validity of claims people make as individuals and as business promoters.

Amazon has improved the reliability of business information on products by encouraging its customers to rate products and their suppliers and, perhaps more importantly, to review products bought, which gives the customers an opportunity to assess the match between the claims the product manufacturers make and the performance of the products in real-life trials. *Consumer Reports* has developed its entire business model around checking product performance and, hence, giving consumers independent and expert assessments of the reliability of manufacturer

claims. Several firms have arisen to validate the honesty and integrity of Internet sellers that may not be known by buyers. Warranties and money-back guarantees, as well as liberal return policies that mass sellers, such as Costco, use, add credibility to product claims (and enable sellers to increase sales at, we might add, higher prices than would otherwise be possible). Email and other modern electronic forms of communications (instant messaging, texting, and social network postings) have been a boon to consumers who want to check on a very valuable source of credible information on product performance, their friends and colleagues who may have bought the products under consideration for purchase.

"Brands"—Costco, Coke, Sony, Bank of America—are often treated in business classes as a big negative, a device major firms use to ensnare consumers and to extort monopoly profits. But brands can be a boon to consumers in search of reliable performance of products they must buy before they know exactly how well the products performs and matches with manufacturer claims. But brands have an unheralded positive economic side: they offer consumers a "hostage" that they, consumers, can destroy in a virtual heartbeat, with viral emails and YouTube video postings, if, or when and how, products do not match claims. Rather than shying from branded products because of the potential for monopoly pricing, consumers are attracted to them because the brands add credibility to the manufacturer claims, credibility that is tied to these products' frequently high development costs and to the ephemeral value of branding itself, which is extensively dependent upon reputation. Just remember a key point of our line of argument: if lying, or firm credibility, is a consequential *problem*, there is almost always money being left on the table, which provides incentives for firms to solve the problem and pick up some of the table money—which, in turn, can improve the current value of the firm (and the market values of the executives' stock shares and stock options).

Of course, one way of investing resources to prevent lying is simply refusing to believe the word of someone whom you have caught lying in the past. This superficially appears to be costless, but it is not because it means that you disregard many statements that are true. Hence, there is the cost of obtaining the same information from someone else or remaining ignorant. The problem at hand is almost a game. The more skeptical we are of things you say, the more resources you will have to invest to convince us and the more resources we will invest in checking what you have to say. Further, the chance exists that we will disbelieve you when you are telling the truth. Under the circumstances, there is a net social loss from our belief that you may be lying.

Optimal Lie Detection

There is, of course, an optimal amount of resources for us to invest in checking your statements, given that we have some idea of how likely it is that you are lying. Knowing the resources we will invest in checking your statements, there is an appropriate amount of resources you should invest in "improving" your lie.

For example, you may generate false data, misinterpret true data, improve the attractiveness of your statements by various means, and generally respond to our skepticism by resource investment. This resource investment, of course, should lead to our increasing our resource investment in detecting possible lies. It is not sensible, however, for the potential victim of the lie to invest an infinite amount of resources into reducing the likelihood that he will believe an untrue statement. In this case, the cost of further information should be offset against the benefit from the reduction in the likelihood that we will be fooled. Similarly, the potential liar should not invest an infinite amount of resources in making his lie believable because, here again, the potential resources do cost something and should be employed only if the potential gain is greater than the cost. There is, in other words, some optimal level of lie detection and lie control, which means no one should ever expect lying in business (or any other arena) ever to be completely suppressed. The world will remain beset with, at the very least (or the best that can be expected), some optimal amount of lying, which will reflect good old cost–benefit constraints that are ever present.

Lying in Politics

A very important situation in which lying occurs in most governments—democracies or dictatorships—is politics. The average person has a very low opinion of the honesty of politicians, and this opinion is completely justified. The basic problem is that the voter has very little motive to check a politician's statements; hence, politicians can get away with a good deal of dishonesty.

The reason why the voter has little to gain by checking a politician's honesty comes essentially from the fact that the individual voter has very little effect on the outcome of an election. If we devote a good deal of resources to determining that one of the two candidates is lying and vote against him, in the presidential elections this has less than a one-in-ten-million chance of having any effect on the outcome. Under the circumstances, we are not even likely to remember very accurately what the politician has promised.

There are complicating factors that make lying in politics even more likely. A man running for Congress who promises to do his best to get Blacksburg, Virginia (which is in the Appalachian Mountains), converted into a deep-water port by a massive and expensive government dredging program may in fact do his best, but Blacksburg may never become a port because he is only one congressman. Thus, we cannot tell whether he kept his promise or did not. Further, it is certain that conditions will change between the time the man is elected to office and the time he has an opportunity to act on one of his promises. Whether the change is such that the voters would agree that he should not carry out his promise is, once again, a matter for dispute.

There is one area in which politicians are well advised to keep their promises, but unfortunately this is no great benefit for the functioning of our democratic

system: if a member of Congress makes a promise concerning some matter of great moment to a few constituents, then it is likely that the constituents will be very well informed on whether their representative makes a real effort. Since the matter is of great interest to them, they will try to be informed on what the representative did for them in Washington. In general, they are apt to punish or reward the congressman in the future according to whether the promise is carried out. Thus, this is the kind of promise politicians tend to try earnestly to keep.

Unfortunately, this type of special-interest activity does not make the political system function well, and, indeed, politicians may be simultaneously making public statements against some program and privately telling a small group of people that they will back it. In many cases, this is the optimal course of action for a suitably unscrupulous person. (Do we not observe this kind of special-interest legislation?)

Under the circumstances, it is unlikely that people attracted into politics are those who have very strong moral objections to lying. In many cases, of course, they do not consciously think of themselves as lying; they just are not very careful in examining their own motives. It is very easy to convince oneself that whatever is good for oneself is good for the country. Politicians probably do this a great deal and, hence, do not consciously believe that they have done anything immoral.

Political lies are one area in which we have great difficulty making use of the government to control lying. Politicians, by definition, are in control of the government, and politicians are more likely to use the political process to injure their opponents than to seek absolute truth. In consequence, most democratic societies have very few ways to control politicians' lying. Politicians, of course, take advantage of this. Granted the possibilities for the government in power to use any legal process that punishes telling political lies as a means of punishing political opponents, we can see why laws against political lying are rare. Unfortunately, this means that the politicians are even freer to tell lies than they would be if we changed the institutions.

In the United States at the moment, the freedom politicians have to tell lies is partially offset by the fact that it is fairly safe to tell lies about politicians too. The Supreme Court has adjusted the laws of libel and slander so that it is almost impossible for politicians to sue anyone who has maligned them. There are special circumstances in which such a suit is possible, but they are extremely narrow, and most statements anyone might choose to make, either in print, on TV, or simply in conversation, are perfectly safe no matter how untrue they are. Unfortunately, although this may even things up with respect to the politicians, it does not mean that public communication on political matters is particularly honest.

Concluding Comments

In sum, then, lying and cheating, like most other human behavior, have positive payoffs, and they have costs. They also have moral implications, and for many people, these moral implications are more important than the economic calculation.

We might expect people who believe that an all-knowing, watchful, and vengeful God will exact heavy penalties (if not eternal damnation!) for any and every instance of cheating and lying to toe the line on what they do and say than people who do not believe in such a God or who believe God is constantly asleep at the watch.

Unfortunately, there are also many people for whom the economic calculation is the controlling one. Any set of social institutions for controlling lying or cheating should be based on firm recognition of that fact.

We understand our discussions about the relative amount of dishonesty in business and politics might cause some people to deduce that we think market-devised checks on cheating are all that are needed to achieve the efficient amount of dishonesty in business, or to wipe out dishonesty altogether. We would have our academic heads in the proverbial sand if we really thought that. We are inclined to believe, for economic reasons, that dishonesty in government is very likely more prevalent than dishonesty in business, but hardly because people in business are more moral (or more honorable or more religious) than people in governments. The market checks on dishonesty in business are likely stronger than the democratic and bureaucratic checks are on dishonesty in governments (as our good friend Dwight Lee has argued with some force[8]). However, dishonesty remains prevalent in business, and the threat of dishonesty is even more prevalent, as evidenced by all the means businesses have devised—including detailed contracts—to monitor and control the work of everyone with whom they must deal, customers, suppliers, partners, and workers. The housing and financial crisis in the 2000s brought to light rampant dishonesty in the world's housing and financial markets. Bernard Madoff, who in 2009 was given a 150-year prison sentence for swindling his investors of over $50 billion in the largest Ponzi scheme in the history of humankind, remains the poster child for how serious business dishonesty can be.[9] The prevalence of the court system speaks to the incompleteness of market-based checks. Our basic point is very general: dishonesty is a widely adopted human strategy for social and economic advancement. Economic or market checks on dishonesty only curb the *extent* and *spread* and *consequences* of dishonesty in human endeavors, but these checks are probably as important, if not more so, in advancing human welfare as other checks (legal, social, moral, and religious).

Chapter 12
Fat Economics

At mid-morning in a Panera restaurant in North Carolina, a slew of customers survey the confections displayed in the pastry bar. Obviously overweight customers—some massively so—with amazing frequency select one of the sugar-coated and cream-filled pastries that carry premium prices, but are surely bargains in price per calorie. Panera's pecan roll has 720 calories and 38 grams of fat; its cinnamon chip scone, 530 calories and 26 grams of fat; and even its "reduced fat" apple crunch muffin carries 470 calories if *only* 12 grams of fat (as reported by Panera). Those three items eaten together—if anyone would dare—would exceed the recommended daily calorie intake for an adult female, and their fat content would come close to the *maximum* recommended daily grams.

What economic and social forces are afoot that could bring so many overweight buyers to the Panera pastry bar, and at mid-morning? That is not an easy problem to address. Indeed, it is a highly complex problem. Probably every overweight person at the restaurant has a personal story on how they gained their weight, only to end up (again!) at the pastry bar. But the sheer complexity of the "fat economy" is precisely why the economic way of thinking can be useful in understanding the forces behind the worldwide weight-gain problem over the last half century. Economics unravels the puzzle (at least partially), addressing it in reduced form, and stripped of the multitude of complexities, as it examines key (and unheralded) forces at work on many people across space and educational and social classes and over both long stretches of time (the last two centuries) and shorter periods (the last thirty to fifty years), with the various forces being more or less isolated from one another.

And, make no mistake about it, *fat* is a growing economic and political problem in the country. A third of the American adult population is obese (meaning a combination of weight and height that yields a Body Mass Index of 30 or above), with American women having a slightly higher obesity rate than American men (and with over half of African-American women in the obese category). Another third of American adults are *overweight* (meaning they have a BMI of between 25 and 29.9). Excess weight has been associated, in any number of scholarly studies, with at least thirty-five diseases, the most serious of which are diabetes and heart disease.

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_12,

American adults today weight on average more than twenty-six pounds more did American adults did in 1960, which means that Americans today (on average) are carrying around with them on their butts and stomachs the equivalent of one of the largest Thanksgiving turkeys than can be purchased. Those extra pounds might not seem like a lot, but across all adults the added average weight totals three million tons! Those extra pounds are the equivalent of thirty-seven million 1960-equivalent legal aliens. The extra pounds are also equal to the weight of 120,000 tractor-trailer trucks that if lined would stretch from Los Angeles to at least St. Louis. Add in the added weight of infants, children, and teenagers, and the added trucks could extend all the way to Washington, D.C. These stark statistics have economic implications because the added weight has added to the demand for larger cars and gasoline and jet fuel. These statistics have political ramifications because the added medical problems are imposing an added burden on the nation's health-care system, with a sizable portion of the added medical costs due to weight being picked by government or by workers in the form of higher health insurance premiums. The country's extra tonnage has also given rise to a variety of food labeling requirements, as well as "fat taxes" and "sugared soda bans." The city council in San Francisco has considered banning toys in children's meals,[1] the Los Angeles city council has considered limiting the density of fast-food restaurants in poor areas of that city,[2] and the mayor of New York Michael Bloomberg and obesity scholars have long favored special taxes on sugared sodas within that city.[3]

Naturally, any analysis of the complex and burgeoning "fat economy" will focus on forces that have affected the relative prices of foods—including pastries—that Americans have been able to buy with their rising real incomes. Throughout, we have to pay attention to the *price tags* on groceries bought for home-produced meals and on the *menu prices* at restaurants like Panera, but we cannot forget to consider the many economic forces that have affected the *full price* of foods, which includes, most prominently, the labor and time cost of meal preparation.

After all, many customers might not go the Panera pastry bar (repeatedly!) if they could produce the same variety of pastries of equal quality and tastiness in their own kitchens at a lower *full price* (including their time cost) than Panera can and if they could recreate Panera's social setting, which is possibly as important to many customers as the food opportunities themselves. As we will see, the many economic forces that have shifted food production from small-scale home venues to much larger-scale plant and restaurant venues can go a long way toward helping us understand the country's and world's weight problem. Some of the forces at work are as counterintuitive as they are unrecognized.

All the while, many obesity researchers and media commentators continue to lay the blame for obesity on people's loss of control or businesses' excessive greed. There must be more to the nation's weight-gain problems than that. We suggest a number of economic forces have aggravated people's weight-gain problems. We can hope to cover all the forces at work in a single chapter, but we can surely show you how the economic way of thinking that we have employed throughout this book can improve our understanding of the nation's weight gain that is fully evident in

the sizes of Americans' butts and guts, observable from any urban street corner or from any bench in any shopping mall.

The Relative Price of Food

In 1950, a mother could give her kid a half dollar and send him off to the corner market for a loaf of bread and the youngster would have had change left over to squander on candy or a soda pop. Nowadays, a kid on the same errand would need a 5 dollar bill to buy the bread and have any change left for a treat. From a purely historical perspective, food prices (as in their price tags) have gradually escalated over time, but higher prices may not have deterred people from eating more because the prices of everything else, along with people's nominal incomes (the number of dollars they earn), have outpaced prices. This means that over time people's real (inflation-adjusted) incomes also have risen. Compared with all the goods and services a family must purchase, food—relatively speaking—may have been quite a bargain, especially in the last few decades. Bargains, the economic way of thinking tells us, drive greater consumption, and when it comes to food, greater consumption often means weight gain.

Cheap Food: In Comparison

Various studies agree that lower relative food prices provide a partial explanation for Americans' enlarging girths over the past thirty to fifty years, although some may quibble about how important a role relative prices have played. Surprisingly, a first look at the data shows that the price of food has risen similarly with those of all other consumer goods. The Consumer Price Index (CPI) tracks the prices of more than 80,000 goods in 200 product categories through monthly surveys of 25,000 stores in major urban areas across the country. Since 1913, the CPI-less food (which is an index for all the counted goods excluding food items) has marched steadily upward, increasing twenty-two-fold by 2010. But, surprisingly, the consumer price index for only food items for the same time period also rose close to twenty-two-fold over the full 1913–2010 span. Indeed, the rise in the CPI-less food and the food price indices have moved so closely together over that long period that you would not be able to distinguish the curves if both indices were put on the same graph for the 1913–2010 period.

Of course, the two price indices—CPI-less food and the food price index—did not move exactly in lock step. The relationship between food prices and the cost of all the other goods that families need or want have to be weighed. *Relative* food prices (or the ratio of food prices to the prices of all other items in the CPI) and not the *absolute* food prices (or the absolute index number) are important in assessing the economic causes of weight gain, especially over short periods of time when the

changes in the two price indices diverge. *Relative* food prices gyrated from 1913 to 2010, falling by nearly 30 percent from the end of World War I through the early 1930s, rising again during World War II, trending slightly downward in the 1950s and 1960s, only to jump upward in the early 1970s (an increase very likely spurred by a depreciation of the dollar in 1971 and to the OPEC-induced jump in oil prices in 1973). But since the late 1970s, relative food prices have been falling, with some stabilization in the 1980s and 1990s and a slight jump in the early 2000s. Relative food prices dropped fairly dramatically between 1970 and 2000, the very same period when American weight gain accelerated, and then moved up modestly in the first decade of this century.

When Food Costs Less, We Eat More

Clearly, when it comes to food, the law of demand reigns! When food is relatively cheap, we consume more of it, the result of which has been widespread weight gain.[4] More important, the rise in the obesity rate during the past four decades can be *partially* attributed to the significant drop in the relative price of food, a 17 percent decrease between its peak in 1975 to its low in late 2000. Then, in the 2000s, as relative food prices rose 5 percent, the rise in the obesity rate for adults slowed and the obesity rate for children may have fallen. Such a responsive relationship between relative food prices and weight gain has spurred weight researchers to take notice.

Economists Darius Lakdawalla and Tomas Philipson found during 1981–1994 that consumers' food consumption increased 0.6 percent when the relative food prices declined 1 percent. Although consumer response is small—the demand is "inelastic" in econ-speak—it is a response nonetheless.[5] During the same time period, other researchers found that lower relative food prices accounted for 55 percent of the growth in the average adult BMI (Body Mass Index).[6] They tracked lower food prices to technological improvements in agricultural production, which significantly increased the food supply on the market and dropped food prices. In a 2009 study Lakdawalla and his coauthors Dana Goldman and Zheng found evidence that the effects of a price drop for a calorie on consumption grows with time. Like other researchers, they found that in the short run, a 10 percent drop in the price of a calorie has a statistically significant effect, although a modest one. However, if the price drop persists for ten years, the 10 percent price decrease in the price of a calorie can give rise to a more than one point increase in the average BMI and to twice that effect if the time frame is made longer.[7]

Obesity researchers centered at Temple University followed 4,600 students from diverse backgrounds and ethnic groups from the beginning of their sixth grade until the end of their eighth grade, or from 2006 until 2009.[8] During the study, half of the students were given instruction on healthy living (covering "nutrition, physical activity, behavioral knowledge and skills, and communications and social marketing"), while the other half were not. At the start of the study, 30 percent of the students in both groups were classified as obese. The student group that received the

instruction improved its weight control more than the control group, but more interesting is the finding that both groups' rates went down during the time period and there was no statistically significant difference in drop in the obesity rates for the two groups.[9] One of the researchers told a *New York Times* reporter, "Something is going on in the environment that is leading kids to become less overweight or obese. We need to find out what it is and do more of it."[10]

Perhaps the researchers ought to examine the economic variables that were at work on the kids in their study. One such economic variable could be the *full* relative prices of foods bought, which include foods' price tags, but also their preparation costs and weight-gain costs. Another important variable could be the changes in the real incomes the students' families were earning. After all, the two out of the three years in the study period covered the end of the economic boom and the advent of the Great Recession in late 2007, which was declared officially over in mid-2009 (although the unemployment rate remained stubbornly high through early 2012).

In addition to technology, government policies also affect food supply, and in turn food prices and consumption—and, naturally, weight gain. However, the impact of the full scope of government farm policies on crop prices and weight gain has been mixed. Government subsidies of farm production, in the main wheat and corn, which have depressed their market prices, over the last half of the twentieth (and before) have fed into greater production and lower prices for a variety of high-calorie processed food products over the decades which have been a factor in Americans' weight gain.[11] Conversely, farm programs that have induced farmers to take land out of production for some crops and tariffs on imported foods have held up the prices of other potentially fattening food (beef, sugar cane, soybeans, and milk, for example) have muted any weight-gain effect of the subsidy-induced greater consumption of grain-based products.[12] The federal government's induced hike in demand for corn to produce subsidized ethanol, an additive for gasoline, has meant that percent of the country's corn harvest devoted to ethanol production rose from 7 percent in 1980 to 39 percent in 2010.[13] This artificial hike in corn demand has definitely contributed to the rising price of corn during the last decade, which has increased the price of corn-based foods (taco wraps and pastries, for example), perhaps contributing to the slower growth of weight gain over the past decade, and contributed to nutritional deficits and starvation for tens of millions of people in very poor countries who rely on corn-based products.[14] That is, the ethanol policy craze has put the world on a diet, indirectly. On the other hand, agriculture policies have, on balance, been holding up the prices of fruits and vegetables.[15]

More generally, the substantial worldwide rise in relative food export prices starting after 2004 and continuing through 2010 (attributable to, among other factors, increasing food demands in China and India with their rapid development and to relatively greater volatility in weather patterns across the globe) has probably contributed to a slowdown in people's weight gain across the globe and to "food insecurity" and starvation in parts of the globe. When the richest countries of the world pledged in 2009 to subsidize the food purchases of the poorest countries to the tune of $20 billion, the subsidies probably acerbated rising food prices,

especially for the developed countries, which means the subsidies were a force to further slow weight gain in the developed countries.[16]

Lakdawalla and Philipson also found evidence that state sales taxes on food can affect the relative price of food, and in turn, the quantity of food consumed, as the law of demand suggests. Those states that tax food have higher food prices and lower food consumption levels than those states that exempted foods from sales taxes. Consequently, those states that tax food tend to have lower percentages of overweight and obese residents than those states that do not.[17] Of course, it is no big leap to expect obesity rates to be affected by the rise and fall of real sales taxes within states (after adjusting for other forces that affect people's weight gain).

The rising price of healthful foods (carrots and broccoli) compared with unhealthful foods (hamburgers and pastries) might also explain some of the increasing weight gain and obesity rate. For most of the last half century, the prices of healthful and unhealthful foods moved upward together, aside for the years between the late 1980s and mid-1990s when the country experienced a jump in weight gain and the obesity rate. Sure enough, researchers have found that during the time period in which the ratio of the price of healthful foods to unhealthful foods rose by close to 50 percent, people consumed more unhealthful foods and became more obese as a consequence.[18] Surprise, surprise!

Contrary to what a lot of people seem to think, the researchers found that the effect of this relative price movement of healthful foods relative to unhealthful foods was meager, explaining less than 1 percent of the growth in people's BMIs and the incidence of obesity from the late 1980s to the mid-1990s.[19] But the minimal effect of the relative rise in healthful foods might be understandable, given the shortness of the time period in which the price ratio rose, only to start declining again after the mid-1990s. People could have been basing their food consumption during the mid-1980s/mid-1990s period on the longer term trend in relative prices, which shows little change in the relative price of unhealthful and healthful foods and little influence of the price ratio on people's pattern of food consumption. Researchers found that the changing relative prices of fast food and fruits and vegetables between the late 1990s and early 2000s might explain no more than 5 percent of the change in the BMIs and of the weight gains of the groups studied. Other more powerful economic and social forces must be at work.[20]

The important takeaway follows the law of demand: a decrease in the relative price of healthful foods means more healthful foods are bought. But the relative price of healthful foods has not changed enough in this time span to have much impact on the country's weight problems. To see a more dramatic effect, we might just have to wait on a long-term trend of greater technological improvements in the production of healthful foods relative to unhealthful foods. And, as we will see, the meager impact of "price" on food consumption and weight gain may be because the researchers focused on the *price tags* on foods, not on their *full prices*, an important distinction to keep in mind. The relative full price of unhealthful foods could be falling substantially while their relative price tags are falling little to none. Why? The time required to prepare unhealthful foods could be falling more than the time required to prepare healthful foods.

As real food prices have dropped, Americans' real income has grown, providing another explanation for why Americans were consuming, on average, 331, or more than 18 percent, more calories per day in 2006 than in the late 1970s.[21] With no increase in exercise (and only a minor increase in height), those extra daily calories *could* now be adding more than thirty-four pounds—two good-sized bowling balls—to each and every adult American *each year*! But, of course, not every American is overeating, which means that many have been going above and beyond, packing on several additional bowling balls a year.

Longer Lives Mean Bigger Gains

During the past century, many Americans have enjoyed not only lower relative food prices during some periods, but also increasing longevity and better health. Some weight gain surely indicates that many Americans have been eating better and living longer, and people who live longer also have more opportunities to pack on pounds.

A clear assessment of weight gain among *all* American adults during the entire twentieth century is difficult because data are progressively more elusive as we move back in time. As noted, careful data collection did not begin until the 1960s when the country's weight problems began to be widely recognized as a serious economic, social, and health issue. Moreover, the longer the time period covered by price series, the greater the opportunity for changes in the exact qualities and types of foods consumed.

Nonetheless, we do have a few indications of the growing weight problem. For example, researchers found that between 1890 and 1900, the average BMI of males fifty to fifty-nine years of age rose by 25 percent, with a disproportionate increase in males with higher BMIs.[22] Between 1894 and 1961, the average BMI of males in their forties increased about 10 percent, from 23.6 to 26.0, with a slightly smaller increase for men in their thirties.[23] But much of the weight increase during the first half of the twentieth century shifted many people from unhealthful underweight to progressively less healthful overweight, according to prominent economic historian and Nobel Laureate Robert Fogel.[24]

Moreover, Americans' life expectancy at birth increased from just over forty-nine years in 1900 to seventy years in 1960, an increase of more than 40 percent.[25] This increasing longevity during the twentieth century is very likely a cause of Americans' weight gain because people do tend to gain weight on average as they age, until they hit their sixties. But some of their weight gain also has very likely boosted their productivity and longevity, with both results boosting weight gain.[26]

Since 1960, the increase in Americans' average BMI has been much smaller, 0.9 of a point, and some of this can be chalked up to the increase in longevity. Life expectancy at birth in 2010 was more than seventy-eight years, a gain of eight years since 1960.[27] But as relative food prices dropped from the 1970s through the 1990s, more and more Americans gained unhealthy weight, that is, the added pounds were

being progressively concentrated on already overweight—especially obese—Americans. Since the 1960s, the increase in the average BMI of *obese* adult Americans has been double the average increase for all adult Americans.[28] And researchers will likely show that many heavy people might be living longer lives, but with greater medical impairments. One study found that a twenty-year-old man in 2010 could expect to live a year longer than a twenty-year-old man in 1998. However, in addition the extra year of life, this typical man will also face an additional year with a disease and two years in which he is unable to function normally.[29] We suspect that in the near future researchers will be able to link the greater physical problems of longer life with weight gain.

The Great Recession and the Tightening of Americans' Belts

As might be expected, the Great Recession (which officially lasted from late 2007 to mid-2009), like other economic downturns, had an effect on people's spending—and consequently, their weight and health, according to survey reports in spring 2010, but the effects were varied and modest. One researcher estimated that a one point drop in the percentage of the population employed reduces the prevalence of smoking, obesity, physical inactivity, and multiple health risks by 0.6, 0.4, 0.7, and 1.1 percent respectively. The decline in body weight is concentrated among the severely obese and groups with relatively high risk of early death (males, African Americans, and Hispanics).[30] All the while, public policymakers and commentators continued to lament the *growth* in obesity even as the rise in the country's obesity rate began to slow somewhat, and maybe to level off (which if the sluggish recovery continues, any number of forecasts of growth in the country's weight problems may have to be updated).

In recent decades, gym memberships have grown dramatically in step with people's real incomes, but possibly 80 percent of the memberships before the Great Recession were never or rarely used, making them expendable during leaner times. As the Great Recession hit, gym memberships fell precipitously, as much as 25 percent, according to an American Heart Association survey of a thousand respondents. In addition, the survey found that 32 percent of the respondents had reduced their expenditures on preventive health care (e.g., they stopped going to doctors and taking their medicine) and 42 percent had reduced their purchases of fruits and vegetables, all to stay within their declining budgets.[31]

Another survey found conflicting news on the good health effects of the Great Recession. First Command Financial Services surveyed a thousand adults ages twenty-four to seventy in early 2010 and found:

- 45 percent were eating more frequently at home and spending less on junk food
- 13 percent were walking and biking more and driving less
- 10 percent were boozing less
- 7 percent were growing more of their own food

Ninety percent of the respondents said that their recession-induced frugality was making them healthier.[32] But as is so often the case in weight research, not all of the findings about the impact of economic downturns are positive. Analyzing a massive nationwide database from telephone interviews data collected between 1990 and 2007 (before the advent of the Great Recession), economists reported in late 2010 that a 1 percent increase in a state's relative unemployment rate correlates with a 2 to 8 percent reduction in the consumption of fruits and vegetables and with an increase in the consumption of snacks and fast-food fare, which suggests that an economic downturn causes a substitution of unhealthy foods for healthy ones (more so for females than males and for the elderly than nonelderly).[33] In short, recessions in the economy can translate into people's expanded waistlines.

With all the evidence that food prices affect food consumption, we might anticipate the relatively rapid rise in the world prices of food staples (wheat, corn, and rice) during the last half of 2010—an astounding 26 percent—could be expected to have moderated food consumption and people's weight gain at least somewhat, and the more durable the food price increases, the more likely that the higher food prices will moderate weight gain around the world and in the United States.[34]

If food prices were all that were at work in Americans' weight problems, some manipulation of supply and demand would seem to fix the problem. But unfortunately, things are not that simple. Other forces—some economic, some not—also seem to be at work, although at first glance it may seem a little odd that these hidden and unheralded forces have anything at all to do with weight gain.

The Real Price of Gasoline

Drivers now fret about the high and rising price of gasoline. They often forget (or are too young to know) that the real price of gasoline (measured in 2010 prices) trended irregularly downward from $3.63 a gallon in 1918 to a historical low of $1.37 in 1998, a real price decline of close to two thirds.[35] No wonder Americans began buying bigger and more powerful gas-guzzling SUVs during the 1980s and 1990s. Charles Courtemanche, an economist with Washington University in St. Louis, reasons that such a long-term decline in the real price of gas affects weight gain for two principal reasons[36]:

- First, with lower real gas prices, businesses substitute gasoline and other carbon-based energy sources for human power, and as a result, jobs become less strenuous, and workers exert less energy. Also, as gas prices fall, people drive more and walk less, increasing their "positive energy balances."[37] By the early 2000s, only 3 percent of Americans walked to work (down from 6 percent two decades earlier), while 87 percent drove to work and 5 percent took public transportation.[38]
- Second, according to Courtemanche, when gas is cheap, people go out to dinner more frequently as they have more real income to spend on car travel to

restaurants and to pay for a meal once they get there. (Cheaper fuel also can marginally lower food costs since the cost of gasoline used in growing and distributing food will be lower.) Between the late 1970s and the 2000s, Americans more than doubled the percentage of their caloric intake from out-of-home sources.[39] And people tend to consume more calories in out-of-home meals than from home-cooked meals because out-of-home meal portions tend to be larger and to have more calories no matter the portion size than those prepared at home (although, as we will see, another study found that portion sizes decreased with a growth in the number of daily meals).[40]

Between 1979 and 2004, the obesity rate ballooned by more than 17 percentage points, and Courtemanche found that cheaper gasoline accounted for 13 percent of the obesity increase (or 2 of the 17 percentage-point increase). Of course, the converse is also true: a rise in the real price of gas can reduce, with a lag of years, weight gain and obesity rates. Courtemanche figures that over five years, a $1 increase in the price of gasoline can lower Americans' average weight by more than two pounds and the country's obesity rate by close to 15 percent. As the obesity rate declines, people's health can improve and result in 112,000 lives saved each year and a $17 billion savings in annual health-care costs, benefits that prompt Courtemanche (and others) to support an increase in gas taxes as a means of pushing up gas prices and pushing down the country's excess-weight problems.[41]

Between 1998 and 2010, the price of gasoline doubled, reaching a peak nationwide average of more than $4 in the middle of 2008, only to return to an average of $2.73 in June 2010 (with average gas prices back up to $3.11 a gallon in at the end of January 2011 with higher prices to come with the growing unrest in the Middle East and Northern Africa). Using Courtemanche's estimation methods, this gas price increase could have led to American adults losing an average of three pounds (compared with what their weight would have been)—if the 1998–2010 price increases were to hold for five years. Indeed, the increase in the gas price (along with the increase in food prices) during the 2000s can *help* explain why the obesity rate has been more or less level for men between 2003 and 2008 and for women between 2000 and 2008, although the obesity rate for men and women together was still rather high, at close to 34 percent, in 2008, with some indication that the obesity rate was returning to its upward trend after 2008.[42] Keep in mind that in Courtemanche's economic way of thinking, gas prices and people's weight interact together, each affecting the other. For example, he surmises that transporting heavier people makes cars less fuel efficient on average (because big people have to buy bigger cars and all vehicles have to carry more excess weight), increasing the demand for gasoline and pushing up gas prices.[43] In turn, any weight-induced gas price increase can moderate people's weight gain and their demand for large, gas-guzzling cars (although the effect would very likely be small). Why did large SUVs start becoming so popular in the 1980s? Consider two forces at work, falling real gas prices and increasing waistlines. Economists have, indeed, found that people's weight does put upward pressure on gas prices: the more weight people carry, the higher gas prices tend to be, and the more expensive food tends to be. And both

higher gas and food prices together tend to abate people's excessive weight that can, in turn, temper demand for large cars and gas.[44]

Obviously, the price of gasoline, per se, is hardly a direct cause of weight gain. People do not drink the stuff (for long!). But gasoline prices affect transportation costs, which indirectly affect weight gain. Other factors besides gas prices might lower transportation costs as well. The growth in the competitiveness of world automobile markets, with resulting quality and comfort improvements in cars that more than compensate for their higher sticker prices, can be expected to have some of the same effects on weight gain as a decrease in the real price of gas.[45]

As many countries, including the United Sates, have dropped import restrictions (tariffs and quotas on imports), world markets have become more competitive. Two international trade economists estimate that the U.S. tariff barrier fell from an average of 40 percent of the value of imports in the late 1940s to 4 percent in the early 2000s, resulting in substantial income gains for the rest of the world, as well as for the United States.[46] In addition, the telecommunication/computer revolution from the 1960s onward has enabled firms to produce their goods in lower cost venues and sell them with greater ease anywhere in the world.[47] As a consequence, international trade among all countries has risen dramatically, more so than domestic production. International trade for the United States rose from 6.5 percent of national output in 1960 to 20 percent in the early 2000s,[48] which affected the competitiveness of the U.S. domestic market, as well as the global economies, a force for growing prosperity and weight gain for many.

The documented growing economic freedoms of people across the globe is also a source of greater global competitiveness, higher real incomes, relatively lower real prices of food stuffs—and a potential nontrivial (albeit difficult-to-measure) source of weight gain.[49] A growing number of "freedom researchers" have found a decisively positive relationship between the "economic freedom index" (devised by the Heritage Foundation) and real per capital income with growing real incomes enabling people to eat more and gain weight. Indeed, when we plotted the economic freedom index for all Western industrialized countries against their obesity rates, we got a positive relationship, albeit a weak one.

Still, the more economic freedom people have gained, the fatter we all have become. Chinese have long been noted for being relatively trim people, but they are getting fatter (with the country's obesity rate doubling over just eleven years), and for good reason: they have been allowed to enjoy the fruits of a freer economy both at home and abroad.[50] And people around the world have become heavier because of the freeing of the Chinese economy. Freer markets have broken out everywhere, and the telecommunication–computer–transportation revolutions have made global markets all the more competitive and efficient, which have allowed people the luxury of eating more and gaining sometimes unwanted pounds.

Whatever the reason, when transportation costs are low, people tend to use more transportation rather than their own two feet, and consequently, they can gain weight. When real incomes increase and real food prices fall, more (not all) people eat more and gain more weight. Then, as more people's weight increases, so do the costs of health care and health insurance, which, of course, can have the effect of

driving more Americans out of the health insurance market (with the growing ranks of the uninsured giving impetus to the national health-care law passed under the Obama Administration). But never forget that some of our modern weight problems are a product of our good fortune.

Growth in Out-of-Home Meals

Casual observers who have lived through the last three or four decades know that fast-food restaurants have proliferated. Most sizable cities have rows of them in all quarters. Indeed, the count of fast-food and full-service restaurants per person in the United States increased by more than 60 percent during the last three decades of the last century.[51] In 2010, there were nearly twice as many fast-food restaurants in low-income/black neighborhoods than higher-income/white neighborhoods. By 2010, the typical American lived within a mile of at least one fast-food restaurant.[52] Of course, many Americans can walk out their front doors and find themselves in the midst of a flurry of signs for fast-food joints offering immediate (fatty and sugary) gratification prepared in various ways, all designed to appeal to our "fat genes."

Nowadays, Americans from coast to coast have greater access to a wide variety of out-of-home-cooked meals, and the choices are no longer just among burgers, fried chicken, and pizza. The menus are a United Nations of international cuisines—Thai, Chinese, Indian, Vietnamese, Korean, Mexican, Italian, Persian, you name it—as well as standard hamburger-and-potatoes American fare. More choices suggest a potential increase in real income, albeit unmeasured, but also greater food consumption, especially of fatty and high-calorie foods, as people seek to spend their added "real income" and strike new balances in consumption of everything—across ethnic gastronomical temptations, all the more palatable with added sugar, salt, MSG, and fat.[53] Americans need not go very far—or, more importantly, walk far—to get relatively more out-of-home meals, more frequently, that include a greater variety of foods with more calories and often served in larger portions.[54] Indeed, they have to walk nowhere. All they have to do is pull out their cell phones, look up local restaurants on Yelp (a smartphone app), and place a home-delivered order of virtually any food they can imagine (even upscale foods that may be no less a threat to weight gain as fast food).

In short, many people are getting heavier simply because they are adjusting very rationally to the ever changing relative prices of all things good and bad around them. In the process, they may be rationally accepting all the discomforts and possible lost days and years of life that might come with their weight gains. In addition, some people might even see themselves as more attractive to themselves and others because they have fuller faces. And some people may see themselves as looking unnaturally and unhealthily gaunt when they are in their healthy weight range, as defined by the Centers for Disease Control and Prevention (CDC) or others.

Not surprisingly, increased restaurant density has contributed to Americans' weight gain, and more so for women than for men, researchers have found.[55] From the late 1970s to the mid-1990s, a 1 percent increase in the density of restaurants led to a 0.09 percent increase in the average BMI of adult Americans.[56] More dramatic, U.S. Department of Agriculture researchers have linked increased restaurant density to more than two thirds of the growth in people's average BMI and obesity rate in the 1980s and 1990s.[57]

Restaurant density may also explain some of the increase in the average daily calories that American adults consumed between the late 1970s and mid-1990s (268 more calories for men and 142 more calories for women) either through additional meals or snacking (not so much through larger meal portions).[58] Calories consumed per day from snacking nearly doubled from the late 1970s to the mid-1990s. During the same period, Americans were eating more actual "meals"—15 percent more, according to one study.[59] Although the calories consumed *per meal* went down by 7 percent for males and 14 percent for females, researchers reported that American adults consume an average of 4.4 meals a day, plus snacks (would you believe!).[60] The researchers conclude that such findings draw into question claims that Americans' weight gain in the 1980s and 1990s was because of increased portion sizes and/or more fattening meals bought at fast-food restaurants.[61]

But then we should not be totally surprised if more meals are linked to fewer average calories per meal. When meals are difficult to come by but amply available intermittently, people will do what our prehistoric ancestors did, eat until they are stuffed, or close to it. But when a meal is readily available at any number of nearby restaurants, people need not consume as many calories at any meal to stave off hunger pains until the next one, which can be "just around the corner." And then why not push back from the breakfast or dinner table early when snacks are readily accessible in convenient, prepackaged, ready-to-eat form (just rip open the bag or carton)? The push-back can encourage its own greater consumption later in a snack, or unscheduled full meal.

The Fast-Food Economy

Fast-food consumption grew in dollar value in the United States during the last three decades of the twentieth century by eighteen-fold (while the country's population grew by less than two fifths).[62] Between the late 1970s and the mid-1990s, Americans increased their calorie intake from fast-food restaurants from 3 percent of all calories consumed to 12 percent.[63] Out-of-home eating expanded as restaurants of various types sprang up everywhere, but restaurant density is not the same for all types of restaurants or across neighborhoods. Fast-food restaurant density has grown faster than that of full-service restaurants, especially in low-income neighborhoods where weight gain has been more pronounced than in higher income areas.[64] As noted, the density of fast-food restaurants in low-income and black neighborhoods can be close to twice what it

is in white neighborhoods (partially because low-income and black neighborhoods are concentrated in densely populated urban centers whereas white neighborhoods are more likely to be in suburban areas where city planning codes or neighborhood covenants may ban restaurants of all kinds).[65]

Not surprisingly, research shows that the more dense fast-food restaurants are in communities (measured per capita or per mile), the greater the obesity rate—for young and old alike, but especially for low-income and black neighborhoods.[66] One Canadian study found that for every added fast-food restaurant per 10,000 residents across Canada's major metropolitan areas, the community obesity rate goes up by 3 percent.[67]

Fast-food restaurants also tend to serve calorie-laden foods, most notably hamburgers smothered in sauces and French fries coated with cheese. Increasingly accessible fast food led to a near tripling of the calories adults consumed in meals and snacks at these restaurants from the mid-1970s to the mid-1990s (from an average of sixty calories per day per person to 155), according to one research team.[68] Shockingly, among children, the calories consumed at fast-food restaurants during the same period increased fivefold, according to other research.[69]

No wonder Americans struggle with weight problems. With such an *increase* in average daily calories consumed at fast-food restaurants, each American adult potentially could have gained an average of nearly ten pounds per year, assuming he or she did nothing to increase exercise or reduce calories consumed at home or elsewhere. But do not look to curbs in calories consumed at home during that time period. Although calories consumed in home-cooked meals went down by an average of 203 a day, calories consumed in snacks at home went up by a daily average of 308, for a net increase of 105 cal consumed at home each day, some of which can be expended on the maintenance of more weight.[70] That "modest" increase is enough to add nearly eleven pounds each year, the equivalent of a modest-size bowling ball, to every American adult each year (which likely means greater energy expenditure somewhere, partially in storing and keeping alive the extra fat). What is amazing is that Americans do not now weigh far more on average than they actually do. Perhaps some of those gym memberships are working to good effect for many (but not all, of course).

The Minimum Wage and Weight Gain

Most economists oppose hikes in the federal minimum wage because in almost all of the more than 200 econometric studies undertaken over the last six decades, hikes in the minimum wage have been shown to have had negative effects on the employment of covered workers, as well as have undercut fringe benefits granted and increased the work demands imposed on covered workers.[71] Some economists have stressed that with the resulting unemployment of covered workers, crime rates go up (since crime is an industry not covered by minimum wages for obvious reasons). These arguments even led the editors at the liberal *New York Times* to

advocate in 1987 "The Right Minimum Wage: $0.00" in an editorial by that exact title.[72]

Economists' diligence in showing the detrimental effects of increasing the minimum wage clearly has impacted policy, beginning in the late 1960s. Before then, the real minimum wage (adjusted to 2010 dollars) rose steadily upward from its initial level of $3.92 in 1936 (when the first minimum-wage law was signed), increasing two and a half times by 1968. But then the real minimum wage began to fall irregularly over the following four decades or so, dropping from an all-time high in 1968 of $9.88 an hour (again, in 2010 dollars) to $5.83 in 2006—a decline of 41 percent (before the nominal federal minimum wage was hiked in 2007 for the first time in a decade).

What does the track record of the real minimum wage have to do with Americans' weight gain? More than you might think. The success of minimum-wage opponents likely aggravated, albeit indirectly and modestly, the nation's weight problems in the 1970s, 1980s, and 1990s in two ways:

First, a lower real minimum wage means many menial workers earn less and may have had to shift from eating higher quality, healthier, and higher-priced foods (vegetables and lean meat bought in grocery stores and cooked at homes) to lower quality, less healthy, and lower-priced fast foods (hamburgers and fries, again). Such a shift could easily have increased the calorie intake of many minimum-wage workers, especially fast-food workers who grew in number and as a percentage of the working population with the spread of fast-food restaurants. Many fast-food workers get discounts on their meals or can just take what they like when they like. Lower-income households tend to eat less healthy foods, but lower-income people improve the quality of their diets as their income rises, research shows,[73] but the long-term decrease in real wages can have less effect on the weight of low-income Americans (including minimum-wage workers) than on higher-income groups. This is because low-income groups spend very little of their tight food budgets on food outside of their homes—less than $250 a year for families of four, as reported in the mid-1990s.[74] Many high-income earners often spend that much in a single family meal at a nice restaurant.

The second way that a lower real minimum wage could have affected weight gain is more indirect. Labor makes up as much as a third of fast-food restaurants' total costs of operations, which means that the drop in the real minimum wage significantly lowered the labor costs for many fast-food restaurants (those that hire a significant number of minimum-wage workers).[75] With cheaper labor costs, fast-food restaurants could slash the real price of their calorie-rich menu items (or increase the calories without a price increase), driving up the demand for fast foods and encouraging a greater number of fast-food restaurants to spring up.

Indeed, with the drop in the real minimum wage many fast-food chains could have had all the more reason to divide their assembly-line food service into repetitive routine tasks that could be handled by ever-more menial workers (those who can only handle relatively simple tasks but are willing to work for the ever-falling real minimum wage). In turn, fast-food restaurants could enjoy a cost advantage leading to their even greater density in communities, especially urban

areas and doubly especially into low-income and minority neighborhoods where location restrictions are relatively more relaxed and land prices lower.

In fact, between 1984 and 2006, a $1 drop in the real minimum wage gave rise to an increase of 0.06 in the average BMI of American adults (when the BMI averaged 25.8 for all American adults), researchers report. The full decrease in the real minimum wage accounted for 10 percent of the change in the BMI between 1970 and 2006 (during which time the average BMI rose from 25 to 25.8). The causal link shows up across income classes and for both sexes, but the weight-gain effect of the real decline in the minimum wage is greatest for the most obese Americans.[76]

Again, low-wage workers were not alone in feeling the weight-gain effects of a diminishing real minimum wage. High-income Americans have increasingly patronized the dense and various restaurants, fast-food and otherwise, as real prices of calories on their menus have fallen along with reduced labor costs and technological improvements in fast-food assembly lines. Of course, the flood of legal and illegal immigrants into the United States has enabled many restaurants (not all by any stretch) to prosper, and grow their customers ever fatter, as some restaurants have been able to pay below the established minimum wage, knowing that illegal immigrants have good reasons not to report their employers for labor-law violations.

Weight gain and obesity can, in turn, drive up health-care and health insurance costs. As the decline in the real minimum wage has negatively affected American's weight and health, it also has contributed to a rise in health-related costs, even causing some Americans to remain uninsured. Reversing the argument, we can surmise that the increase in the nominal federal minimum wage from $5.15 an hour (where it had been stuck since 1997) to $5.85 an hour in 2007 and then in two more steps to $7.25 an hour in mid-2009 (a 41 percent real increase over the two-year period) may be expected to lead to relatively higher fast-food prices, some minor (yet-to-be-determined) average weight loss (or some slowing in Americans' weight gain), and possibly a decrease in health-care and health insurance costs—that can increase the rolls of the insured.[77] And higher fast-food prices have been linked to lower body weight through their negative impact on the consumption of fast foods and their positive impact on the consumption of fruits and vegetables.[78]

Women's Place Beyond the Kitchen

Women have always worked, but until recent decades, their workplace opportunities outside the home and farm and in business (especially at professional levels) have been limited and their workplace wages are significantly lower than men's, leaving women to be responsible for home-cooked meals and other household and child-rearing tasks. But mother at home minding the children and stirring the pot is largely a scene from the now distant past. With labor-saving home appliances simplifying housework and with antidiscrimination laws (marginally) affecting employment, women's participation in the workplace has steadily grown from 34 percent in 1950, 43 percent in 1971, and to more than 60 percent today.[79] More women are

now earning college degrees and using them to enter the job market. Before 1980, men earned a majority of college degrees, at which point the earned degrees were evenly split between men and women. But in 2010, women earned close to 60 percent of all college degrees, prompting talk of a newfound "gender gap" and a shortage of males (and dates for women students) on campuses, which has often resulted in favoritism toward male applicants to obtain a gender balance in enrollment.[80]

Working outside the home has become increasingly necessary for women, given the growing laxity of divorce laws, the increase in divorce, and, subsequently, the risk of relying on a husband's support through the child-bearing and child-rearing years. Working outside the home has become relatively more profitable for women, too. The annual median earnings of women working at least thirty-five hours a week have risen from close to 60 percent of men's annual median earnings in 1960 to 77 percent in 2008 (according to the way in which the U.S Census Bureau computes the gender wage gap, although the actual wage gap remains a matter of contention among economists).[81]

If Mom can earn a progressively more competitive wage at the office (or at the plant), her time in the kitchen can progressively become a costly (even losing) proposition as the cost of a home-cooked meal progressively rises. Instead of the chicken stewed all day on the stovetop, the family understandably opts more and more frequently for prepackaged frozen chicken fingers or chicken dinners at the nearby restaurant. Time and money may be saved, but not calories, as processed and prepackaged foods as well as restaurant menus tend to be more calorie-rich than home-produced meals without processed ingredients. In one study of 990 children aged eight to twelve, researchers found a positive relationship between the time children's mothers spent at work and children's weight and BMI. For every five months mothers worked, their children gained on average one pound beyond the weight gain of the children's classmates whose mothers did not work. The children's weight gain attributable to their mothers working is most pronounced in the fifth and sixth grades.[82] The early childhood weight gain attributable to mothers working can, of course, lead to eating habits that, in turn, lead to continued weight gain later in life.

But sending Mom home to cook is not the overarching solution to America's weight problems you might think it would be, as the effect of women's higher relative wages explains no more than 10 percent of the rise in obesity in the late twentieth century, according to one set of obesity researchers (at least according to the study just covered, plus one other study completed in the early 1990s).[83] This suggests that the major causes of people's weight gain must lie elsewhere, not so much in "women's workforce liberation."[84]

Breastfeeding and Weight Gain

There may be a more direct way in which women's growing employment outside the home is affecting the country's weight problems, especially for infants and children—the prevalence of bottle-feeding over breast-feeding. In 2010, three

fourths of mothers of newborns started out breast-feeding, with only 43 percent of mothers breast-feeding after six months at which time only 13 percent of babies are exclusively breast-fed. The breast-feeding rates for African-American mothers are much lower.[85]

Breast-feeding, which provides partial protection from adolescent and adult obesity,[86] and many other health benefits,[87] is obviously more difficult for women who work and place their children in child care centers or even with family members. Even if mothers begin feeding babies at the breast, many supplant breast-feeding for the convenience of bottle-feeding once they return to work, which is often within several months (if not a week or two) after delivery.

Not only can milk formula be more calorie rich than breast milk, bottle-fed infants can be given more milk than they would receive from the breast. Physiology of mother and baby limits breast milk—even when a mother pumps and stores her breast milk for later use—while bottle milk is limited only by the family budget and the price of formula.[88] Except in bygone eras when wet nurses were not uncommon and today when a mother goes to the trouble to pump her own milk, only the child's mother can feed a breast-fed baby. But the convenience of bottles and the plentitude of infant formula allow anyone—relative, home visitors, caregivers—to use a bottle to feed or comfort (and fatten) a crying baby.

In addition, there is a good evolutionary reason why women tend to gain weight during pregnancy: they can draw down their stored fat as they produce breast milk. When babies are bottle-fed, mothers no longer have the imposed diet that breast-feeding provides. Consequently, mothers, who got used to consuming more calories during pregnancy, may not lose the weight they gained and may even pack on extra pounds after delivery.

Also, out-of-home care not only can, but does, affect a young child's weight gain, or so researchers tell us. The earlier infants are placed in child care (whether in child care centers or with relatives) and the more hours the child spends in out-of-home placement, especially child care centers, the heavier they are at ages one and three.[89] In Washington State, from the period 1990 to 2002, the proportion of children in licensed child care centers more than doubled, with the child care for children of low-income parents being subsidized by the state in order to allow parents, mainly mothers, to work.[90]

Babies typically lose some weight a few days after birth, but bottle-fed babies tend to lose less weight and regain the lost weight sooner than breast-fed babies.[91] Bottle-fed babies also tend to begin eating solid foods earlier than breast-fed infants and toddlers, which potentially can lead to greater weight gain—and then heavier children and heavier adults.[92] At twelve months of life, bottle-fed babies and toddlers are heavier than those who are breast-fed, research shows, by between 1.3 and 1.4 pounds (which equals 5 to 8 percent more weight for year-old babies in the "healthy weight range" of 17–26 pounds), with no difference in height.[93] Bottle-fed babies are heavier still at three years of age.[94]

Breast-feeding offers not only some protection against excessive weight gain, but also added health benefits and the accompanying savings in health-care costs later in life. If 75 percent of mothers breast-fed while in the hospital and 50 percent

thereafter, as the U.S. Surgeon General recommends, the health-care costs for infants associated with only three infant diseases (otitis media, gastroenteritis, and necrotizing enterocolitis) would have been $3.6 billion lower in 2001 (more than $4.4 billion in 2010 dollars), according to estimates.[95] But that is the least of the health-care cost savings linked to healthier weight gain that could come from more prevalent breast-feeding.

The popularity of breast-feeding has gone through a major cycle between the 1940s and today, no doubt, buffeted by changes in cultural attitudes, medical research, levels of support for breast-feeding mothers, and vigorous advertising campaigns from formula companies. In the late 1940s, almost all newborns were breast-fed, but with the refinement of infant formula, those numbers were cut in half by 1956 and in half again by 1967, when only 25 percent of mothers breast-fed their infants at all. In 1982, breast-feeding was on the rise again, with 62 percent of mothers breast-feeding their infants. In 1998, 62 percent of mothers breast-fed their infants while in the hospital,[96] and more recent surveys showed, as noted, 75 percent of newborns started out being breast-fed in 2010, but only 66.3 percent in 2003.[97]

Although breast-feeding, at least initially, has risen in recent decades, the duration of breast-feeding may be short-lived once mother and baby are home following ever-more-brief birthing stays in hospitals and especially after the mother returns to work. As noted, only slightly more than four in ten mothers continue to breast-feed six months after the births of their babies, and nine out of ten are then relying to some degree on formula milk (although the percentage of mothers still breast-feeding at six months in 2010 was up nearly half from what it was in 1998). Formula may actually prevail over breast milk as the food of choice in babies' first years of life. The link between women's opportunities in the workforce and fewer babies receiving the health benefits of breast-feeding may also apply in another restricted sense: had fewer women entered the workforce during the last forty or fifty years, or had workplaces become more "breast-feeding friendly," breast-feeding could very well have grown by more than it did, affording even more children protection against obesity.

Of course, sending Mom home from the office to breast-feed is no more a solution to America's weight problems than sending her home to cook dinner. Women's contribution to their households' economic well-being and the greater economy is clear. Yet bottle-feeding has had some influence on the population's weight gain, and we can see the link between women in the workforce and an increase in bottle-fed children who may be at risk of becoming obese adults (who then confront an array of health problems that can lead to depression, which can have feedback loops on weight gain). No one can say exactly how much weight Americans may have added because of the growth in the workforce participation of women during the last fifty years. What we can do is speculate that maternity leave, which allows women to take leave from their jobs to care for their newborns, and greater overall support for breast-feeding can have important economic advantages: an increase in the prevalence and duration of breast-feeding and reduction in future health-care and health insurance costs, which can increase the number of people with health insurance, we remind you.

But then, these effects might also have been the case that had the divorce rate not risen so dramatically from the 1960s through the early 1980s (because of cultural and legal considerations). There might well have been more breast-feeding, less weight gain by infants over the past few decades—and fewer obese adults today.

Fat Mamas, Fat Babies

Even before birth, economic forces are very likely affecting people's weight. Heavier women give birth to heavier newborns. No one should be surprised if the weight of pregnant women correlates strongly with their babies' weight at birth.[98] And we should also not be surprised that the more weight women gain during pregnancy, the greater the weight of their newborns. A duo of health economists from Columbia University and Children's Hospital Boston have studied these issues by looking at the data for more than a half million pregnant women who gave birth to more than a million babies between the start of 1999 and the end of 2003.[99] Their central finding is intuitively plausible, "a consistent association between pregnancy weight gain and birth weight."[100] Indeed, they found that women who gained fifty-three or more pounds during full-term pregnancies doubled the chance of their babies' weight being more than nine pounds at birth over women who gained only eighteen to twenty-two pounds.

However, the increase in babies' weight relative to the weight gain of their mothers seems modest. The researchers found that for each 2.2 pounds expectant mothers gained during full-term pregnancies, their newborns gained on average one fourth of an ounce. This means that women who gained 80 pounds during pregnancy (no longer a rare occurrence) would likely give birth to babies that weigh on average about seven ounces more than the babies of women who gain twenty pounds during pregnancy. But those seven ounces represent a 6 percent weight gain for a seven-pound baby.

You might think that a baby's weight is potentially and fully genetic based. But to control for the influence of genetics, the researchers simply assessed the weights of a sequence of babies from the same mothers, with their central conclusion undisturbed: the greater the weight gain of mothers during different pregnancies, the greater the weight of their babies.[101] Moreover, the heavier the newborns, the heavier are the children at age nine, and the more risk factors they have for heart disease and immune system disorders.[102]

These findings suggest a cyclical process that's making us fatter. Women are getting fatter before they get pregnant, and for all the economic reasons enumerated. The heavier women gain progressively more weight during pregnancy because of these same economic forces at work, and then give birth to even heavier babies. The heavier babies complete the "fat cycle" by becoming heavier children, teenagers, and adults, and the cycle repeats and escalates.

The War Against Smoking and Weight Gain

Smokers who seek to kick the habit face a duel challenge: overcoming nicotine addiction and not gaining weight in the process. Nicotine dulls the senses of smell and taste, suppressing appetite and inhibiting weight gain. Smoking increases the body's metabolism, burning additional calories (as much as 200 cal a day for heavy smokers), and reducing calories stored as fat. Smokers who quit often gain five to ten pounds mainly because their appetites improve and metabolisms slow.[103] As smoking becomes less popular and more expensive, through cigarette taxes, weight gain can be expected to follow.

The law of demand applies to cigarettes as well as all other products, even addictive ones: when the price goes up, smokers curb their habits, at least somewhat, and some even quit.[104] Although smokers are not likely to be highly responsive to price increases in cigarettes, they can be expected to respond somewhat (or else what is the point of antismoking campaigns and higher cigarette taxes?).

Moreover, cigarette price increases can deter many prospective buyers from ever taking their first puffs, and the prospect of progressively higher future cigarette taxes and ever tightening restrictions on smoking can add to the curb in current and future smoking. How much smoking is reduced depends on just how high the *full* price of cigarettes goes, or is expected to go.

During the last decades, several forces—not just rising prices for packs of cigarettes—have been driving up the *full price* of smoking.

- First, average state taxes on a pack of cigarettes have risen dramatically, more than threefold at the state level just between 2002 and 2009. Federal taxes on cigarettes also more than doubled in 2009, rising to more than $1 per pack,[105] and cigarette taxes, as noted, have been shown to curb smoking through raising the price of smoking.[106] Most smokers can now reasonably anticipate states' trying to balance their budgets in the future off of their puffs (smokers have become the social pariahs of our age, partially because their political influence declined with their numbers).
- Second, since the 1960s, pervasive information campaigns have warned people of the health risks that go with smoking. Practically everyone now knows smoking increases the risk of lung cancer, respiratory disease, and early death (with average longevity of smokers cut by as many as eight to ten years).[107] These more widely recognized *risk costs* of smoking have increased the full price of lighting up.
- Third, information campaigns have stigmatized smoking as being an indulgence that only stupid people do, which has increased the *social stigma*—translated, *cost*—of smoking.
- Fourth, smoking has been gradually banned across states in restaurants, workplaces, and other public places (even outside of buildings close to doorways or on beaches). The difficulty in finding a convenient, comfortable place to smoke further increases the full cost of smoking.

- Smoking restrictions over time have become only tighter and taxes only higher, which can lead many smokers to reasonably expect these curbs and bans to become ever more troublesome into the future. In some states people soon might not be able to smoke legally in their own homes or cars, if children are near, because of the widely publicized and nontrivial health effects of second-hand smoke. In 2010, Santa Monica, California banned smoking within the city limits in all open-air public places, including beaches, playgrounds, and outdoor patios of restaurants.[108]
- Finally, we have noted how tobacco companies have had an incentive to hold their cigarette prices down to hook new buyers whom they could tap for added sales and revenues often for their lifetimes. As the government shows signs of continuing to raise cigarette taxes and to tighten smoking restrictions, tobacco companies can reason that they have less reason to suppress their prices, or, rather, they have a stronger incentive to increase prices to tap revenues from today's addicted smokers as best they can. In other words, higher cigarette taxes can boost cigarette prices by more than the imposed taxes (which is one reason economists found that tobacco company prices and profits were rising in the 1980s and early 1990s at the same time their stock prices were falling).[109]

Any expectation of further increases in the full cost of smoking will cause some smokers to quit today, and other nonsmokers to suppress any urge to start. The long-term demand for smokes can be more responsive to price changes than might be expected of an addictive good, which means that that higher cigarette taxes imposed today might have a "double whammy" effect on weight gain: smokers who quit are likely to gain weight in the near term and so are nonsmokers who never experience the appetite suppression of nicotine in the first place. People who never take up smoking will tend to have a higher trajectory of weight gain than would have been the case had they picked up the habit.

As the full price of smoking has increased substantially during the past forty years, the prevalence of smoking in the United States has been cut in half. In 1965, about 40 percent of American adults smoked. In 2007, fewer than 20 percent smoked, which, if the research is to be accepted, surely led to some weight gain for Americans.[110] Paradoxically, the campaign against the "smoking epidemic" of the 1960s and before has been partially responsible for the "obesity epidemic" of the last third of the twentieth century. The reduction in health-care costs and deaths from smoking has been traded, albeit partially, for a rise in health-care costs and deaths from excess weight. In short, some uncountable number of deaths from fat over past decades can literally be laid at the feet of the success of the antismoking campaigns.

No one to our knowledge (at this writing) has figured out whether health-care costs and deaths have, on balance, gone up, gone down, or remained the same from the crosscurrents of the smoking and obesity epidemics of five or more decades. What we do know is that health-care costs and deaths from obesity have been on the rise, and death from fat is now the leading cause of preventable deaths among Americans (at least the way obesity experts count, or rather "guesstimate," preventable deaths from weight, a subject of some controversy, because most

people do not die directly from fat per se, but from other problems, such as heart problems that might or might not have been caused by extra weight).

Medical Technology and Weight Gain

Improved medical technologies for dealing with the health consequences of weight gain can be partially responsible for people's weight growth precisely because they reduce the future health costs of overeating. Two economists have found that better treatments for diabetes, which is a nontrivial health problem associated with, if not caused in part by, excess weight, have led to increases in people's BMIs.[111] Again, the law of demand applies to eating—if the *full* cost of overeating is the focus of analysis. If the cost is lowered, either currently or prospectively, people will naturally gravitate (at the margin) toward eating more.

As odd as it may seem, new and improved medical treatments for problems associated with excess weight—including heart disease—may actually be found in future research to aggravate these weight-related health-care problems as economists would predict. Similarly, new and more effective diets, because of their implied reduction in the *full* price of overeating (extended into the future), will likely one day give rise to weight gain, at least for some groups of people. How can that be? Again the law of demand will be at work. The development of laser removal of tattoos has been a force behind the rise in the popularity of tattoos, because the laser technology lowers the lifelong commitment to tattoos. The development of safer cars has contributed to more unsafe driving, as measured in one study by the increased fatalities among pedestrians.[112] The imposition of state laws requiring children and teenagers to wear helmets when riding their bikes has had the intended effect of reducing fatalities from bike riding, but such laws have also had the unintended effect of reducing kids' bike riding, which could be a contributing factor in the weight gain of youth.[113] Similarly, many people can be expected to take greater chances with overeating knowing that their weight problems can be relieved more readily and with less pain with the new and improved treatments and diets.

Technological Advancements: Plentiful Food in No Time

All these sundry forces—decreasing real food prices, rising incomes, women's lib, smoking cessation, and the like—have contributed in some way to Americans' growing waistlines.[114] But these contributions are small when compared with what could be a major culprit—technology. What is really changed in the way Americans eat is the ease and speed of food consumption—often accomplished in no time at all.

Economists David Cutler, Edward Glaeser, and Jesse Shapiro stress that the effects of economic forces like the real minimum wage, gas prices, and excise taxes are relatively small, individually explaining no more than low double-digit portions of the growth in America's excess weight and obesity rate since the 1970s. These researchers have found:

- Portion sizes at meals did not change very much in the 1980s and 1990s (indeed, calories consumed in home-cooked dinners likely declined). The growth in calories consumed came from more meals, an average of 4.4 meals a day at the turn of the twenty-first century, and from more snacks taken between meals.
- People did increase their time spent watching television (an additional twenty-two minutes per day) during the last quarter of the last century, but that is a little over half the increase during the previous decade, 1965–1975 (forty minutes per day), which suggests that weight gain might have been greater in the 1960s than in the 1980s, which was not the case.
- The percentage of workers in "highly active" jobs did fall, but only by 3 percentage points (from 45 to 42 percent of the labor force in the 1980s), hardly enough to account for the pervasive weight gain, especially since gym memberships and exercise equipment were growing as people took on more sedentary jobs.

Yet, all the while, excess weight and obesity rates jumped upward.

Food price declines and household income inclines also do not seem to be the most significant cause for increased weight. Cutler, Glaeser, and Shapiro acknowledge that income gains can cause weight gain, but income and weight (and weight gain) over the last several decades appear to be inversely related. Low-income groups have gained weight in spite of no or limited real income increases during the last quarter of the twentieth century, and low-income groups have gained more weight than high-income groups. During the last several decades of the twentieth century, the relative price decline for food has been modest at best, and researchers have had a hard time finding a significant decline in the prices of unhealthful foods relative to the prices of healthful foods, as noted (aside for a ten-year stretch between the late 1980s and the mid-1990s).

What is to explain, then, all the weight gain in recent decades? What is been missed?

Cutler, Glaeser, and Shapiro "propose a new theory of increased obesity that has as its premise reductions in the time cost of food. This [time–cost reduction] has allowed more frequent food consumption of greater variety, and thus higher weights."[115] Dramatic technological advances in manufactured foods during the last half century have overcome critical problems in producing ready-to-eat and almost-ready-to-eat foods for home meals and, more importantly, in producing out-of-home meals. Among these advances are:

- Controlling the atmosphere in plants
- Preventing spoilage from microorganisms
- Preserving flavor and moisture while foods are distributed and then held in pantries and refrigerators until needed[116]

These and other advances have shifted food production from individual homes to manufacturing plants with all their benefits of specialization of labor and economies of scale, lowering the combined time cost of food preparation, all the while increasing the variety and quality of meals served in homes and restaurants—or in city parks, for that matter. And as time costs decrease, we eat more—it simply takes little to no time to fix a meal or snack.

Grandma's devices to peel, core, cut, and mash and otherwise prepare foods for cooking are all but foreign to today's home kitchen, replaced with the one necessity—a microwave oven. Developed in the 1940s, the microwave has spread throughout homes and restaurants since the 1970s, reducing snack and full meal preparation to a matter of minutes. Many foods are specially manufactured and packaged so they can be stored in the freezer and zapped in the microwave—no preparation needed.

Ease of preparation can drive our food preferences and choices. For example, French fries were not widely consumed in the home or even in restaurants before the 1950s, Cutler, Glaeser, and Shapiro point out, because making them was too labor intensive. Potatoes were largely eaten baked or mashed. But with the development of potato processing equipment in plants (where potatoes can be washed, peeled, cut into fries, and even partially or fully cooked at the rate of billions per day), the full price of French fries dropped precipitously, which is a good reason they are so much more widely consumed today (and, by the 1990s, constituted nearly half of the vegetables eaten by U.S. children[117]).

At least some of people's weight gain can be chalked up to equipment improvements in processing plants and food distribution systems, and not just to the greater efficiency in preparing the fatty fast-food fare at McDonalds and other restaurants and then eating the food on the fly (with an added reduction in the time cost of eating the fast food). But there, too, technological advancements in transportation have sped the delivery of partially and fully processed foods from tractor-trailer truck to restaurant to the stomachs of a growing (and fattening) customer base. And need we forget that insulation technology has made home-delivered pizzas (and fried chicken and moo goo gai pan), a multibillion-dollar industry, seductively accessible via smart phones with which a person may order his fondest (fatty) delights with a few keystrokes. Want a pizza or a Thai noodle bowl at your office desk or next to you on the couch? Just touch, again, the Yelp icon on your iPhone and then hit send! A mountain of calories will soon be on your doorstep, delivered with a smile.

Farm technology has obviously improved between the early 1970s and early 2000s, a span when American farmers increased their total output enough to provide every American with an additional 500 calories per day, and they accomplished that feat with far fewer farmers and less land under cultivation.[118] Competition among farmers, no doubt, depressed the price of farm products, which has contributed to food processing and distribution industries' ability to provide consumers with more calories in greater variety and at lower prices.

Remember: we are talking about the *full* price (including the value of food preparation time) of food here. Although the actual price (as stated on the tag or

label) a consumer may have paid for many foods may have risen during the past three or more decades, the *full* price dropped even as quality and convenience increased. And for these reasons, the decline in the full price of food is far greater than is suggested by price index measures. Although both the CPI and food price indices rose by about twenty-fold between 1913 and 2010, the Cutler/Glaeser/Shapiro line of argument suggests that the *full* food price index (if it could be constructed with reasonable accuracy, which it cannot be) probably increased far less than the CPI-less food. In short, the *relative full* price of food was, in all probability, much lower in 2010 than in 1913.

Technology is the main culprit in the overweight and obesity problem for Americans, as well as people around the world, and Cutler, Glaeser, and Shapiro point to an array of evidence to support of this claim:

- Quick, easy, and tasty snacks have made Americans fatter because snacks—chips and dip and ice cream—require little to no time to prepare and eat. Foods with extensive time costs in home preparation are not a significant source of people's greater calorie intake.
- Farmers' foodstuffs spend more time in food processing plants on their way from field to market in order to reduce the time cost of food consumption. In turn, as food processing has increased, so has our food consumption. The larger the amount of food processing across food categories, the greater the increase in consumption between 1970 and 1999.[119] Consequently, the farmers' share of food revenues during this time has dropped dramatically across many product categories. Even in vegetables and fruits, the share of consumer expenditures at grocery stores going to farmers declined from 34 and 33 percent, respectively, in 1982 to 19 and 20 percent in 2004.[120] Branded foods (chips, for example) tend to be more heavily prepared than unbranded foods (broccoli). The degree of branding is highly correlated with greater calories, and consumption of branded foods has grown relatively to unbranded foods. Some of the increase in calories consumed can be chalked up to incentives food preparation firms have to brand their foods and capture their preparation and branding costs.[121] Put another way, had marketers not found ways to improve the efficiency of the branding of foods, especially processed foods, we Americans could be a little less heavy.
- Low-income consumers have reaped the greatest time–cost savings from prepared and highly processed food because they have always had to spend more time preparing their own meals. High-income groups eat a greater percentage of their meals out, fully prepared, than low-income groups. Economic thinking tells us that the group benefitting the most from the reduced time costs of high-calorie processed foods will be the group that consumes more of these foods, and as a result, will gain the most weight. This is exactly the pattern of food consumption that Cutler, Glaeser, and Shapiro (and any number of other obesity researchers) have found. Also, because women do most of the cooking of home-produced meals, they benefit more from the time–cost savings in prepared foods than men, which should be expected to show up in women's relatively greater weight gain. Again, this is what Cutler, Glaeser, and Shapiro (and others) have found to have been the case.[122]

- Government intervention in food production can drive up food costs, and drive down weight gain and obesity. In fact, Cutler, Glaeser, and Shapiro found that the greater a country's food price controls (holding up food prices) and the tighter government food regulations, the higher the food prices and the lower the growth in obesity rates.[123] Government price controls and quality and safety regulations can increase the cost of food production and impair the development and implementation of technological advances in large-scale plant-based food preparation.[124] In turn, some of the time savings in food preparation (and the lower full price of food) can be lost. The deregulation movement that began with the Reagan Administration in the 1980s and continuing during the following two administrations could be an unsuspected, albeit indirect, cause of the America's weight problems. It follows that if President Obama remains true to his goal to reassert government controls over the economy, with more intensive regulation of the food industry, the real prices of foods can move upward and marginally affect the nation's excess weight and the obesity rates, which is to say that a government regime of greater food regulation can have a greater impact on the country's weight than a fitness campaign (depending on how stringent the food regulations are).
- Cutler, Glaeser, and Shapiro's investigation of the link between the price of a McDonald's Big Mac and a country's obesity rate clearly focuses the effect government policies can have on weight gain. They found that countries with the highest priced Big Macs—as a result of various government imposed market restrictions (food laws, import tariffs, special food taxes, and land-use controls restricting restaurant locations)—had the lowest obesity rates.
- Of course, it is a good bet that any environmental regulations that disproportionately affect agriculture and food processing (e.g., restrictions on chemical runoffs from fields and subsidies for ethanol production) can put downward pressures on weight gain, according to this line of argument and supporting evidence. Proponents of curbs on global warming also can be unwitting advocates of curbs on global obesity, because tighter restrictions on, for example, CO_2 emissions can raise the price of gasoline and many food prices (especially meats, since release of methane gas by cattle is a major greenhouse gas); higher prices for both gas and food can work to curb people's appetites for out-of-home, prepackaged, and processed foods and snacks that tend to be relatively high in calories. And if their efforts prevent a rise in global temperatures, they will also be preventing increases in the growing seasons (especially in northern regions of the world) and greater food production.

The Allure of Fat Labels and Taxes

Antifat advocates have been successful in getting their long-favored "fat-labels" regulations imposed on restaurants. Now, restaurant chains with 20 or more locations must post the calories in each of items served on their menus. The presumption behind the requirement was that the labels would make for better-informed

consumers who would substantially decrease their calorie intakes. Much to their regret (we can only suppose), such labeling requirements have had disappointing effects, at least to date across restaurant chains:

- Yale and NYU researchers concluded in 2009 that in New York City, "We did not detect a change in calories purchased after the introduction of calorie labeling."
- Stanford and National Bureau of Economic Researchers found in 2010 that the labeling requirement resulted in no more than a 6 percent reduction in calories consumed across foods and beverages purchases.
- Duke researchers concluded in 2011 that at Taco Time franchises in Washington state calorie posting requirement had "no impact . . . on purchasing behavior": "Trends in transactions and calories per transaction did not vary between control and intervention locations after the law was enacted."
- Another group of NYU researchers found in 2011 "no statistically significant differences in calories purchased before and after labeling."[125]

However, as these researchers recognize, the long-run response of consumers to the labels may be greater than these initial assessments. Moreover, the impact is likely to vary among restaurant chains.

If labels do not have much of an impact, will fat taxes have greater effects on the intake of calories and people's weight. The literature is full of studies, but consider the following sample of findings. Kelly Brownell and Thomas Frieden estimate, through their own statistical analysis, that a 10 percent increase in the price of sugared beverages can be expected to decrease consumption by at least 7.8 percent, rising to as much as 15 percent for major soda brands, which they tout as strong evidence of just how effective their fat tax will be. Other researchers have found that a 20 percent increase in the price of sugared sodas will result in reduction in adult's daily calorie consumption by 37 calories and in children's by 43 calories. These calorie-intake reductions can, according to researchers, be expected to reduce the weight of adults by 3.8 pounds and of children by 4.5 pounds over the course of a year, with the potential for reducing the obesity rate among adults by 3 percentage points.[126] Brownell and Frieden write, "Such studies—and the economic principles that support their findings—suggest that a tax on sugared beverages would encourage consumers to switch to more healthful beverages, which would lead to reduced caloric intake and less weight gain,"[127] a finding that, as is so often the case in such a research area, other researchers have strongly contradicted.[128]

Obviously, such studies show that the elasticity of demand for sugared sodas can be quite high, but we have to be careful to suggest that a high elasticity of demand for sugared sodas will have a comparable effect on weight loss, mainly because the high elasticity of demand may only indicate that there are a thousand and one ways for people to get their sugar fixes, and it may be "sugar," and not "beverages," that people seek to satisfy. They can get there fixes by moving from sugared sodas to non-taxed drinks like Kool-Aid or they can move to doughnuts. Also, soda drinkers could move to diet drinks, and some people who do that just might gain weight—because, as research has found, the artificial sweeteners in diet drinks can stimulate

appetites, causing people to actually gain weight and to come down with medical maladies. Moreover, research that followed 2,500 adults for 9 years and reported in early 2011 found an association between consumption of artificial sweeteners and "vascular events" (strokes and heart attacks). Indeed, after controlling for all a number of other likely causative factors, people who drank one diet soda a day had a 48% greater risk of having a stroke or heart attack.[129]

Moreover, pressing people to consume low-fat foods through regulations on the fat content of foods or through taxes on high-fat foods just might have perverse effects, at least from what researchers have found in a recent rat study. One set of researchers divided rats into three groups: a control group that was fed a healthy diet, one group of experimental rats were given full-fat Pringles to eat along with other foods, and a second experimental group of rats were given low-fat Pringles to eat. And guess what, the rats with the low-fat Pringle in their diets actually became more obese than the rats with full-fat Pringles in their diets.[130] The rats with the low-fat Pringles simply ate more of all other foods at their disposal, suggesting that the fat substitutes in the low-fat Pringles either stimulated the rats' appetites or the body somehow knows it is not getting the fat it seeks and does not send the required chemical signal from the stomach telling the brain, "I'm full!" Findings from studies with rats do not always apply to humans, but at least such findings should be a warning flag for policymakers: Weight control through government policies is a trickier economic (and social and medical) problem than many people seem to think.

And do be mindful that fat taxes and other controls on fatty and sugared foods and drinks that raise the prices of foods and drinks might not reduce the country's health-care costs by as much as imagined, and could increase total health-care costs. This is because such government market controls apply to all people, fat and trim and trim alike, and to the 15 percent of the American population that are "food insecure" or face economic difficulties in getting the number of calories they need to maintain their weights. And research shows that underweight people have as serious a problem with health-care expenditures as fat people do. If the government uses taxes to raise the price of calories, and discourage eating among heavyweights, they can do the same for people with food insecurities, which means that the medical-care costs of the heavy weights can fall while the medical-care costs of the food-insecure people rise. Even if food controls lower the overall health-care costs, do not forget that such policies can still make life tougher for people with food insecurities. In short, the "law of unintended consequences" will likely reveal itself as the country tries to devise its *physical* (not *fiscal*) policies.

Concluding Comments

The lesson learned from our study of "fat economics": the law of demand rules in televisions and cars—and in food! An array of statistical studies consistently have found that decreases in the price of food encourage eating. Ditto for calories and

ditto for pounds of weight. If the price of added weight goes down, many people will "buy" more pounds and gain more weight. The reverse statements are just as solid propositions about human behavior.

When the *full* price of any product is considered—especially food—the law of demand is all the more on full display. The *full* price of food includes a high time–cost component that has radically reduced the time we need to invest in gathering and preparing food, and thus, economic principles predict that we will buy more food (and eat more calories) even when the *price tags* on food remain constant or move upward in lock-step with the prices of other goods. And for more than a century, we have been doing exactly that.

People have been gaining weight because calories are now, more than ever, cheaper to come by, but not so much by lower price tags but lower *full* prices. People simply do not have to go very far to gather food by the cart load or the take-out-bag load.

And do remember our evolutionary past and our hardwired inclinations to eat when we can and as much as we can. As Southern Methodist University economist Dwight Lee, our mutual good friend, quipped when we were bantering about themes in the fat literature, "Yes, thousands of years ago when our ancestors took days and weeks to slay a wildebeest on the plains of Africa, they had a successful hunt. Today, we have a successful 'hunt' every time we push open the doors of a KFC or pass a vending machine."

People can now multitask, eating while driving and working as never before. And they can spend little to no time preparing their meals. Place an order at the drive-up window and go. Pop open a bag of French fries, throw them in the microwave for a couple of minutes, and munch away. Never in the history of humankind has gaining weight cost so little and taken so little time. Getting fat centuries ago was hard work; now it is child's play—and practically irresistible.

Armed with the law of demand, we can range widely for unsuspecting explanations for weight gain—from the decline in the real minimum wage and the real price of gas that boosted restaurant density and consumption of high-calorie fast-food meals to the tectonically rapid shift from home-based food production to the large-scale economies operating in food processing plants, restaurants, and restaurant chains that deliver increasing varieties of calorie-packed foods in a matter of minutes to the typical American.

By applying the law of demand to the food industry, we can venture a variety of deductions. For example, we can deduce that the management control systems that McDonalds and other fast-food chains, as well as Walmart and Costco, have refined to improve the quality and efficiency of meal production can be partially blamed for people's weight gain. As large-scale food distributors have instituted management-control efficiencies that have shown up in greater quality and variety of foods and as those distributors have become ruthless negotiators for lower prices for their customers, they have reduced the relative full price of foods and increased consumption.

Of course, even as efficiency improvements in food production and delivery play a role in people's weight gain, they also explain some of the growth in people's

weight-related health problems and the corresponding dramatic rise in medical and health insurance costs that very likely have priced many people out of the health insurance market.

Why in 2011 were there nearly fifty million Americans without health insurance? Consider as a partial cause the workings of the law of demand, which has meant that people have done what comes more or less "naturally": they have gained weight as the relative *full* price of various foods has fallen and the opportunities to eat have increased. They have increased their medical costs, which has fed into higher health insurance premiums, which have induced many Americans onto the rolls of the uninsured.

Of course, the law of demand, applied to food and weight, works worldwide, too. The efficiency in international commerce, whether founded on technological improvements or growing competitiveness of all markets, has contributed in varying degrees to weight gain and health-care and health insurance problems worldwide.

Despite human beings' neuronal limitations, the economic way of thinking makes understanding the truly complex problems of excess weight and obesity manageable. Moreover, the cost of future weight-related health problems is a component of the current full price of overeating, an insight that allows us to speculate that medical advances (or the prospects of medical advances) to deal with future weight-related health problems can lower that full price, allowing more people to relax about overeating, knowing that medical advances will fix their problems. Similarly, new and improved, and less painful, diets can have the same effect, which, interestingly, can increase the need for people to go on diets.

But we have hardly exhausted all economic-based explanations for excess weight, most of which are based on the assumption that people are *rational*.[131] We know, it is now fashionable for psychologically oriented scholars to deride economists for assuming that people are rational at all, much less as rational as economists assume.[132] Duke University behavioral economist Daniel Ariely is surely right when he states that "life is complex, with multiple forces simultaneously exerting their influences on us, and this complexity makes it difficult to figure out exactly how each of these forces shapes our behavior," implying that economists are mistaken to assume that people are capable of making the very precise rational calculations that the economic way of thinking requires.[133] Indeed, Ariely and other behavioralists insist that people are "predictably irrational," captured by an array of decision-making biases: "availability bias," "optimism bias," "status quo bias" or "inertia bias," "representativeness bias," "relativity bias," "loss-aversion bias," "anchoring bias," "planning bias," and the list goes on.[134] We need not go into the nature of the biases here (the behavioral economic perspective is covered with some care in Chaps. 24 and 25). The point is that people's decisions are heavily flawed. We can only agree that some of the country's weight gain has been due to flawed decision making, rather obvious, don't you think?

But, frankly, we have to wonder how analysts who firmly believe that people are pervasively (if not completely) irrational can expect to hold a decent rational

discussion with their readers concerning people's pervasive irrationalities, which, ironically, they seem intent on doing in their *reasoned* scholarly studies.[135] Why advise people to reduce their plate (or bowl) sizes and why recommend "fat taxes" (which behavioral economists and psychologists have done), if people are incapable of considering the advice or responding to the higher taxes—and their implied incentives? Is there not at least a partial contradiction in the critics' arguments?

Granted, people are imperfect decision makers, and asking people to consider the future costs of current food intake may strain many people's mental capabilities. But if people cannot consider the future consequences of their current food purchases with some tolerable level of rationality, then it seems to us that the modern "battle of the bulge" is truly a lost cause; no amount of education and antiobesity campaigns or higher prices spawned by "fat taxes" (a policy topic too large to be covered in this chapter[136]). Yet, obesity campaigns are heavily weighted toward informing ordinary people of the short- and long-term consequences of their eating habits, suggesting that the backers of such campaigns believe people are far more rational than critics of economics, including behavioral economists and psychologists and some obesity and nutrition experts might think. Advocates of "fat taxes" must believe that the law of demand is applicable to antiobesity campaigns. Otherwise, why use special taxes to drive up the price of fatty foods if the law of demand has no rational foundation or if incentives do not really matter? Well, we will leave a full discussion of the behavioralists' criticisms of conventional economics to later chapters.[137]

Part IV
The New World of Pricing Strategies

In most economics, a great deal of attention is paid to how prices are determined under competitive and monopoly conditions. Professors and textbooks stress how profits can be made from firms developing "better mousetraps" and from lowering their costs. In this section, we focus on how the pricing strategies' firms adopt can be as important to firm profits as the products they develop or the costs they eliminate. We stress that there is much more to the economics of, for example, the use of sales and coupons than meets the eyes. We also explain where and when pricing products at zero (or even below-zero) prices made economic sense. Conventional textbook on introductory and advanced economics make a great deal of how markets *clear* (or how the quantity demanded exactly matches the quantity supplied at the chosen market price). If that is the case, then why are queues observed everywhere, at concerts, in grocery stores, and at the time of the release of major new products (the next generation of the iPhone, for example).

Chapter 13
Why Sales

Why do retail stores use seasonal (after-Christmas) and intermittent ("manager's blowout") sales over the course of the year? Answers to such questions are no doubt many, given the diversity of researchers and practitioners in economics and marketing have worked on them. However, almost everyone is agreed that many sales (and other forms of pricing strategies covered in following chapters) are founded on two economic lines of argument, "price discrimination" (charging different consumers different prices for different units) and "peak-load pricing" (charging higher prices during hours and days of heavy demand and lower prices at other times).

As will be argued, the economic theory of price discrimination presumes that retailers who use sales (and all other firms that price discriminate) must have some degree of monopoly power that they are exploiting via differential prices (a claim we accept in this chapter to explore key points but dispute for some market conditions discussed later in the book). More importantly, as we will see, an investigation of the economics of price discrimination can provide an explanation for a host of other differential pricing strategies, including (but hardly limited to) college and university scholarships, airline fares, soft drink prices at fast-food restaurants, adult/children prices at the movies (see Chap. 14 on theater popcorn prices), and coupons (also considered in Chap. 15), as well as annual and seasonal sales at department stores (the heart of this chapter). First, we need to lay out the economic foundations of price discrimination methods in general. (Readers who are steeped in price discrimination theory can skip the following section.)

Price Discrimination Theory

Economists and marketers have long argued that firms can be more profitable by charging different consumers different prices rather than charging one uniform, market clearing price.[1] That is, firms should price discriminate wherever possible. Here, we will seek to understand the underlying economic logic of that position.

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_13,

Necessary Conditions for Price Discrimination

Price discrimination has a commonly understood definition: setting multiple prices for the same good across consumer groups and across time periods. Economists and marketers have understood that price discrimination requires that two conditions be met. First, a firm interested in price discrimination must have some degree of market (or monopoly) power, or the ability to choose among various price–quantity combinations (a claim we will consider critically for some forms of price discrimination, most notable in the printer/ink cartridge market). As noted in our earlier discussions, there is a much-heralded "law" in economics, the *law of demand*, or the assumed inverse relationship between the price of a good and the quantity buyers are willing and able to buy of the good (assuming all other market forces remain unchanged). If the price of the good rises, then less of it will be bought, and vice versa. Buyers might be willing to buy 1 unit at a price of $9, 2 units at a price of $6, and 3 units at a price of $3, and so forth. The seller must be able to search through the available price/quantity combinations with the goal of choosing that combination that maximizes profit. If the seller cannot do that (or is not a "price searcher" in econ-speak) or must take the price dictated by competition, say, $3 (or is a "price taker") as is the case in the wheat market, price discrimination is obviously not possible.[2]

Second, the product sold must not be easily resold (or resold at low costs). If a product can be resold with relative ease (or at low or zero cost), then buyers who are offered the product at a low price can turn around and resell the product to buyers charged a higher price, with the reseller pocketing a profit in the (arbitrage) process. If a publisher were to try to sell its economics textbooks to students at one university for significantly less than to students at another close-by university, students at the first university would soon learn that they could buy more books than they need and resell them at the second university. If students do not discover the profit opportunity from arbitrage, then surely one of the many used textbook buyers who prowl the hallways of faculty office buildings buying up "comp copies" of textbook would not likely hesitate becoming textbook arbitragers among school bookstores provided, of course, the price differential were sufficient to cover the resell costs. Alternatively, the students at the second university could walk or drive to the first university to buy the textbook. (We will return to the issue of price discrimination in the textbook market after we have developed a way of thinking about how firms can charge different consumer groups different prices.)

Price Discrimination Among Buyers

If different buyers are willing to pay different prices, then the seller can make more profit by charging different buyers different prices. For example, consider

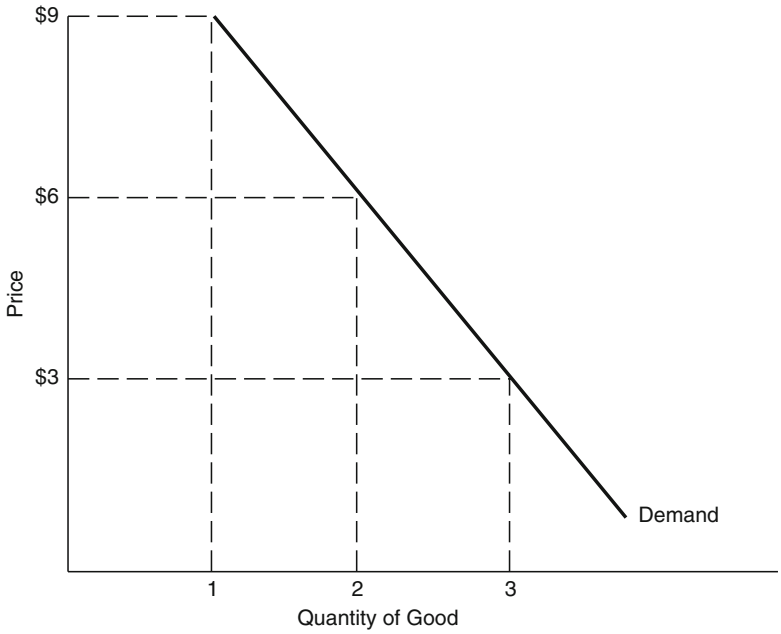

Fig. 13.1 The demand curve

Fig. 13.1 with a downward sloping demand for a good that captures our earlier example of buyers willing to pay prices of $9, $6, and $3 for the first, second, and third units of the good. If the seller prices the good at $3 to sell three units, then the seller can take in only $9 in revenues. However, if the buyers of the first through third units are willing to pay the prices indicated—$9, $6, and $3—each for a unit, then the seller can obviously make more money by charging the individuals those prices. Total revenue will then be $18 ($9 + $6 + $3), and profits will rise by the same amount as revenues, $9. This is the case because under both pricing strategies, the production run is the same, three units, which means production costs do not change with a switch from a pricing strategy of a constant price, $3, for all three units to a strategy of price discrimination among buyers, different prices for the different buyers.

Again, if the firm has no choice over price to be charged and/or if the good can be resold, then price discrimination will not work. If the firm offers the good to one buyer for $3 and to another for $9, then the $3-buyer will buy two at $3 each and resell one unit to the first buyer for something less than $9. Ditto for resells to the buyer charged $6. Of course, we must add the caveat that the cost of resell in each case has to be less that the difference between the buyer's purchase price, $3, and the resell price. This type of price discrimination—different prices charged different buyers—abounds in the world we all encounter on a daily basis.

College and University Scholarships

Colleges and universities are renowned for providing students with "scholarships," supposedly all distributed for "merit" and "need." Without question, some undetermined amount of scholarship money is allocated for those intended purposes. However, private colleges and universities often charge extraordinarily high prices (now, often more than $40,000 for tuition, fees, and room and board), and many of them often grant more than half of their students some form of "scholarship."

For example, in 2007, Amherst charged $41,600 in tuition, fees, and room and board and provided need-based grants to 78 percent of incoming students that averaged $29,400. Duke charged $41,200 and provided need-based grants to 86 percent of incoming freshmen that averaged $24,000. In a survey of 107 private colleges and universities, *The New York Times* found that 95 percent gave more than half their students need-based grants.[3] We have to wonder why so many students are meritorious and needy with their scholarship awards being handled on a case-by-cases basis.[4]

If merit and need explained their prices and scholarships, why do not the universities just lower their prices and save the administrative costs? The fact of the matter is that colleges and universities, especially private ones, use scholarships as a method of price discriminating and "maximizing revenues," a buzzword often used by admissions officers (not just economists). They post a high price for all, and then grant scholarships based on the universities' estimate of the difference between their posted prices and the amount students are willing and able to pay. Indeed, the spreading acceptance of price discrimination among colleges and universities helps explain, as we shall see, the dramatic increase in the average tuition at four-year private colleges and universities during the last half century. During any seventeen-year period between 1958 and 2001, tuition at the nation's colleges and universities rose 1.2 to 2.1 times the rate of inflation.[5]

Indeed, colleges and universities often determine the allocated scholarship by asking prospective students (or, perhaps, more accurately, their parents) on the financial aid applications exactly what price would cause them to matriculate. The universities then simply send out a congratulatory letter, announcing the "scholarship" which happens to be close to the difference between their posted prices and the prices the prospective students indicated would cause them to matriculate. And admissions officers are willing to negotiate on price, as indicated by the sentiment in a letter that Carnegie-Mellon University's admissions office sent applicants, "If you received a financial aid package from us that was not competitive with other offers, let us know".[6]

Admissions officers, of course, love to have students apply for "early admission," which means that students can be accepted as early as, say, November before their following fall enrollment. To validate their early admission request, early admit students must agree to turn down all future acceptances. Such an argument means that early admit students are less likely than other students to be offered scholarships *because* they have declared themselves to be willing to pay the posted price if admitted and have cut off later lower-price options. Effectively, early admit

students give up any bargaining power they might have, and consequently likely pay a higher price, than students who not ask for early admission.

Admissions officers have also found that prospective students, especially in-state ones, who visit their campuses before applying or who affirm their desire and intentions to attend once they have been put on "wait lists," are less price sensitive than others. As a consequence, they are less likely to be offered scholarships.[7]

Price Reductions Over Time

The pricing strategy that universities use in their scholarship allocations can also be found in the sale of electronic gadgets, for example, USB thumb drives. Each successive generation of thumb drive introduced over the last few years has had a greater storage capacity (128 MB, 256 MB,. . .,1 gig and so on). Generally speaking, a given size drive has been introduced at a relatively high price—for example, several hundred dollars for the first 1 GB drive on the market—only for the price to decline precipitously over following months. In April 2006, the online price of a 1 GB Imation Clip Flash Drive had fallen to just under $60. By August of that year, the price had fallen to about $35. At the time of this writing (early 2011), Imation sold 1-GB drives on Amazon for $21. However, you could get a better deal elsewhere, a 2-GB Imation drive for as little at $12 (and off-brand 1-GB drive for less than $8).[8]

Without question, some of the price decline in USB flash drives over time can be attributed to cost savings from technology improvements, growing production runs, and growing competition in the industry. Still, it makes sense for producers in markets with any degree of competitive imperfections in markets, to introduce their products at a high price, sell to buyers who are willing to pay those prices, and then lower their prices over time to appeal to people who will not pay the initial high prices (and are further down the demand curve for the product). Seen from this perspective, the price reductions are not the major source of increased expected profits from charging declining prices with time. Rather, the major source of expected added profits is the initial high prices that could not be extracted if sales started at lower price levels, because those willing to pay the higher prices would buy at the lower introductory prices. The price reductions with time can be planned and scheduled when the firm's production plans and release date are set.

Admittedly, this form of price discrimination is necessarily imperfect. This is because buyers can begin to *expect* price reductions with time. Some buyers *willing* to pay the initial high prices will learn to hold on their purchases, but their shifts in purchases will leave the impatient buyers willing to pay the initial high prices all the more exposed to high initial prices because of their impatience and price insensitivity. The delays in purchases of some buyers with moderate price insensitivity can cause the posted price to rise, with the seller taking advantage of buyers who, by their failing to delay their purchases (or just careful attention to firms' pricing strategies over time), reveal their high price insensitivity.

Price Discrimination with Individual Units Bought by Buyers

Our earlier discussion of the market demand—with prices of $9, $6, and $3 for the first, second, and third units, respectively—can be the demand covering three different buyers, as discussed, or it can be the demand for a single buyer who sees the value of successive units of the good falling as more of the good is bought and consumed. That is, the value of the first unit is $9 to the buyer; the second, $6; and the third, $3. If the firm can structure sales so that the different buyers pay those prices separately, then the firm can, of course, earn more profits than would be earned if the three units were sold for one price, $3. The decline in prices of additional units sold is often seen as giving the buyer a "break" on the price for additional sales. Alternatively, this pricing strategy can be viewed as a hike in the initial price, from which the price "breaks" can be given.

Drink Prices at Restaurants

Stores charging different prices for different units sold can be seen everywhere. Jack in the Box, a fast-food restaurant, offers customers three sizes of soft drinks: small (12 ounces), medium (20 ounces), and large (32 ounces) with prices of $1.39, $1.85, and $1.95. This means that the cost per ounce for the small drink is 11.6 cents. The cost per *additional* ounce (over the ounces received in the small drink) on the medium drink is 5.8 cents, and the cost per *additional* ounce on the large drink is 0.6 cents.

Note that the restaurant is not giving customers who buy the large drinks a price break, which the drop in the marginal price per ounce might suggest. Even when they buy the large drinks, customers are still paying $1.39 for their first 12 ounces. They get the price break on the additional ounces, but only then because the restaurant believes that it has to lower the marginal price to entice them to guzzle more ounces. The restaurant makes more profit off the large drinks than the small ones. This is because restaurant makes the rather large profit off the first 12 ounces, plus some smaller profit off the additional 20 ounces in the large drink.[9]

Other Products

Jack in the Box's pricing strategy for drinks is found throughout the food industry and for a variety of items. The same strategy can be found in pricing of popcorn and candy bars whether sold at movies or in airports and is no less common in grocery stores whether the items are cans of beans, rolls of paper towels, packages of candy, or cartons of milk. Some of the price differences for various sizes can be chalked up to differences in cost of packaging (a widely recognized explanation), but some of it

also can be because stores are "walking their customers down their demand curves" (a not-so-appreciated explanation). Just how rapidly the price declines is, of course, dependent upon how responsive—or *elastic*—customers' demands are. The lower the responsiveness of buyers to a price cut—the lower the *elasticity* of demand (or the higher the *inelasticity*) of demand—the more rapid the expected decline in the price for the marginal units of the good.

Market Segmentation

Our discussion to this point has a theme: Sellers would love to be able to figure out the demands of individual customers, carefully crafting their prices so that each and every customer pays the maximum price he or she is willing to pay for each and every unit. The last thing a seller wants to do is charge everyone the same price. Often, however, sellers must do that, but only after no other pricing or promotion strategy can be devised. The finer the price discrimination among buyers and the units sold, the better for the seller.

It might be easy to view price discrimination as a strategy *option* that can be taken or set aside—and it is that to a degree, but only a degree. This is because price discrimination can add to firm profits, as explained, and therein lies a compelling reason firms can be *pressed* (if not *forced*) to price discriminate. If firms that can price discriminate but do not do so, their stock prices will be suppressed below what they could be because profits will be lower than they could be. In the absence of price discrimination, savvy investors can buy the stocks at low stock prices by way of a friendly or hostile takeover, change the firms' pricing structures to include price discrimination, and sell their stocks at capital gain as the firms' stock prices rise to reflect the greater profit with the installed price discrimination strategies.

Many firms will not be able to adopt the kind of finely tuned pricing structures implied in our foregoing examples. The problem is that figuring out the demands of individual customers and charging each customer a different price for different units can be costly, or the costs can exceed the greater revenue potential from price discrimination strategies. It is very tough for many restaurants, for example, to identify the price sensitivity of individual customers (say, by their looks or dress) as they walk through the doors. This does not mean that they cannot price discriminate; they only have to develop a less ambitious strategy than charging every customer a different price for each unit bought.

One such strategy can be to recognize that different *groups* of buyers have different demands, with different price sensitivities, which means that firms can charge the different groups different prices according to their price sensitivities. Consider the problem of price discrimination through so-called *market segmentation* in the simplest of possible cases, with buyers being divided into only two groups. One group of buyers—Group A—is highly *insensitive* to price changes. They will buy more when the price falls and less when the price rises, but the changes in both directions will not be all that great. This group's demand curve is

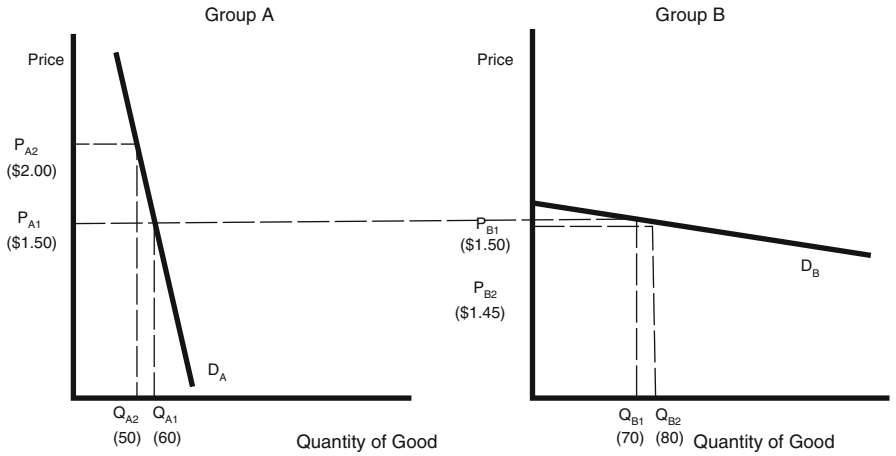

Fig. 13.2 Pricing by market segment

said to be *inelastic* (which means that the percentage change in the price will bring forth a lower percentage change in the quantity bought). Group A's inelastic demand is represented in left-hand panel in Fig. 13.2.

The other group—Group B—is highly *sensitive* to price changes, meaning that a price change, up or down, will lead to a relatively large change in the quantity purchased. Its demand is said to be *elastic* (which means the percentage change in the price will give rise to a greater percentage change in the quantity, for example, a 10 percent increase in the price will lead to a 5 percent reduction in quantity). Group B's elastic demand curve in represented in the right-hand panel of Fig. 13.1.

To start, suppose that the producer of widgets is selling a total of 130 units at the same price, $1.50, to both Groups A and B. Members of Group A (left-hand panel) buy 60 widgets, and members of Group B (right-hand panel) buy 70 widgets. If the seller raises the price to Group A by a third to $2, sales will go down by only a sixth, or by 10 widgets, from 60 to only 50 units. The seller gains revenue in raising the price when the price increase is relatively greater (in percentage terms) than the quantity reduction. The producer had initial revenues from Group A of $90 when the price was $1.50 and the quantity sold was 60 ($1.50 × 60 = $90). When the price to Group A is raised to $2, revenues from that group rise to $100 ($2 × 50 = $100).

Suppose the producer takes the 10 widgets not sold to Group A and offers them to Group B, lowering the price from $1.50 to $1.45, a drop of slightly more than 3%. Sales, however, rise by 14 percent, from 70 to 80. Sales revenue drawn from Group B also rises from $105 ($1.50 × 70 = $105) to $116 ($1.45 × 80 = $116).

The producer has increased profits by shifting the 10 widgets from Group A to Group B since production costs must be the same, given that output remains steady at 130 widgets. However, total revenues from both Groups A and B have

risen—with total revenues going from \$195 (\$90 + \$105 = \$195) to \$216 (\$100 + \$116 = \$216). Since production costs are unchanged, the shift in sales from A to B increases firm profits by the increase in revenues, or by \$21 (\$216 − \$195 = \$21).[10]

The producer should obviously raise the price charged from Group A and shift sales to Group B so long as revenues from both groups rise. A little less obviously, the producer should go further and continue to shift sales of widgets from Group A to Group B so long as the combined revenues from both group rise—which is to say, so long as the revenue from both group rises *or so long* as the rise in revenues from either group is greater than the fall in revenues from the other group.

The working rule for the price discrimination is probably now transparent: the greater the price sensitivity of the group—or the higher the elasticity of demand—the lower the price. Conversely, the greater the price insensitivity of the group—or the lower the elasticity of demand—the higher the price. If customers can only be put into two groups—or *market segments*—then the more price sensitive customer group (Group B) should be charged a lower price than the less price sensitive group (Group A). The difference in prices charged the two groups will reflect the difference in the groups' price sensitivity. The greater the difference in price sensitivity of the two groups, the greater the price differential.[11]

Tailoring prices to the price sensitivity of buyer groups is commonplace. Consider these examples:

- The prices of McDonalds' drinks and hamburgers are higher in airports (as illustrated for members of Group A) than in places around town (for members of Group B).[12]
- United (and every other airline) charges passengers who book their flights early (three or more weeks in advance) and who have Saturday-night stayovers (Group B) less than it charges passengers who book their flights just before they leave (Group A).
- In 2006, Apple charged buyers of its all-white MacBook (Group B) \$1,399. The company charged buyers of its laptop configured the same way but in solid black \$1,499 (Group A), a difference of \$100. In 2007, we can only surmise that the relative price sensitivity of white laptop buyers increased as white laptop became commonplace, given that Apple lowered the price another \$100, to \$1,299 with no price change in the black model and only modest improvements in the model's specs.[13] (However, Apple has since discontinued its solid black version, perhaps because its popularity also faded or because it discriminatory pricing strategy was no longer profitable with a merging of the elasticities of the demands for the two colors of laptops.)
- Ralph's (and virtually all other) grocery stores provides customers with "frequent-buyer" or "club member" cards that entitle holders (Group B) discounts not provided customers without cards (Group A), on the argument that people who tend to buy frequently (and/or buy in large quantities) have good reason to comparison shop and to obtain the frequent-buyer cards: they can prorate their search costs over a large number of purchases.[14]

- In early 2011, Tully's Coffee Cafes sell a tall drip coffee for $1.79. They sell a café latte for $2.89. Granted, café latte may take more expensive ingredients and more labor than a tall drip, but hardly close to $1.10 in added price. The customers who buy the tall drip tend to be price sensitive (Group B), whereas buyers of café lattes tend to be price insensitive (Group A), with the two groups selecting into the two groups when they order their drinks at the counter.
- In 2011, Whole Foods Markets sold organic bananas to shoppers (Group B) for $0.99 a pound. They sold nonorganic bananas to shoppers (Group A) for $0.59 a pound. The price sensitivity of the two groups of banana buyers goes a long way toward explaining the price differential, with the cost differential hardly explaining the price differential, or else Whole Foods would not likely carry, and provide shelf space, for both types of bananas.

A Textbook Case of Textbook Price Discrimination

A classic example of price discrimination is the international differential in the price of college and university textbooks. The ability of the publisher to charge different prices at different universities is understandably a function of the cost of moving books between two university markets: the higher the cost of moving books between university markets, the higher the price differential between the markets can be. This means that a lower cost of moving textbooks should lead to greater arbitrage opportunities, given price differentials, and to a narrowing of the price differential over time as students (and used book buyers) discover and exploit the arbitrage opportunities.

In the past, textbook publishers have sold many of their textbooks in the United States for much higher prices than they have charged in the United Kingdom. One study found that after adjusting for the length of textbooks and their formats (hardback versus paperback), the prices of 268 textbooks (outside of economics textbooks) at the Amazon site in the United States averaged 31 percent higher than at the Amazon site in the United Kingdom. The prices for 204 economics textbooks on Amazon-US averaged 49 percent higher than on Amazon-UK.[15]

Consider one vivid example of the price differential in textbook pricing at Amazon-US and Amazon-UK. On the day these words were typed, Robert Pindyck and Daniel Rubinfeld's textbook on *Microeconomics* (6th edition)—that, by the way, carries a lengthy discussion of price discrimination—was "on sale" on Amazon-US for $159.33. The same book was listed "on sale" on Amazon-UK for the pound equivalent of $77.95—half the U.S. price![16] The price differential cannot be chalked up to cost differentials, given that almost all textbooks sold on Amazon-UK and covered by the study mentioned above, were printed in the United States.[17] Indeed, if there is a cost differential, the U.K. textbooks costs were higher because of the cost of shipping the books from the United States to the United Kingdom.

For years Amazon has been preventing U.S. students from buying books on Amazon-UK (or other European Amazon sites). Now that restriction has been

abandoned. Students have gradually been discovering that they can buy their textbooks from Amazon-UK, and have been doing so in growing numbers, mainly because the price differential is often substantially greater than the transatlantic shipping costs.[18] The expected growing shift in textbook purchases between the U.S. and U.K. sites can be expected to increase the demand for textbooks on Amazon-UK and decrease the demand for textbooks on Amazon-US, causing a narrowing of the price differential toward a differential that reflects the shipping (and any other reselling) costs. You can imagine that textbook publishers will see a need for raising their U.K. prices because, otherwise, they will end up forgoing higher priced U.S. sales for lower-priced U.K. sales (and perhaps incurring the added costs of dealing with international transactions).

Obviously, the difference in textbook prices on the two Amazon sites is a textbook example of price discrimination, attributable, as suggested by our foregoing analytics, to differences in the price sensitivity of students in the United Kingdom and the United States. But that observation raises the question: why might U.K. students be more price sensitive than U.S. students? It's hard to give a complete answer, because of the multitude of differences between the British and American students and their markets. But we can offer tentative observations that might provide a partial explanation for the difference in price sensitivity. The differential might be explained in part by income differences. Incomes in the United States are generally higher than in the United Kingdom, which could result in U.S. students not caring as much as U.K. students about the prices they pay, especially since textbook expenditures come on top of the relatively higher costs of public and private higher education in the United States than in the United Kingdom (which, for public universities, comes free of tuition for students who are admitted).[19] Textbook prices are, therefore, more salient, and constitute a higher percentage of students' out-of-pocket educational costs, in the United Kingdom. It could also be that the used book market is more developed (because the textbook market is far larger) in the United States than in the United Kingdom that could lead to lower resale costs and higher used textbook prices in the United States than in the United Kingdom. Indeed, the lowest "used price" on Amazon-U.S. for the Pindyck/Rubinfeld textbook mentioned above was $98 (at the time of this writing). The lowest "used price" on Amazon-U.K. was $35.16 (at the going exchange rate). Hence, U.S. students could recoup about 62 percent of their new book purchases, whereas U.K. students could recoup only 45 percent, which helps explain why U.S. students might be less sensitive to new book prices than U.K. students. Still, there is money to be made (or, perhaps more accurately, saved) by U.S. students buying their books on Amazon.co.uk for $77.98 and selling in the U.S. used market.

There are obvious potential (and real) interplays between new and used book markets. If textbook publishers hike their new book prices, then student demand for used books can be expected to rise, driving their prices up. A good working rule is, the higher the new book price, the higher the used book price (all other considerations equal).[20] Of course, the development of the used book market means that the elasticity of demand for a given textbook should be expected to rise *after the first year of adoption*. Without the used book market, publishers might

have good reason to hold their prices down on the first year of sales of a new edition, because they can imagine that the lower initial price can stimulate future adoptions (to the extent that some, perhaps only a few, professors consider the prices of the books they adopt) by creating "market buzz" about their text. With the emergence and development of the used book market, publishers have less reason to hold their prices down for future sales. Hence, publishers can be expected to exploit whatever inelasticity of demand they have in the first year of a new edition, meaning that the used book market can drive up the prices of new textbooks. In addition, publishers can be expected to try to kill off the market for used books by bringing out revised versions of their textbooks with shorter sales cycles. The added cost of more frequent editions can feed into higher prices for the first year of new editions. (We admit that we remain puzzled why publishers do not systematically drop their prices after the first year of an edition to better compete with used books.)

Of course, another explanation for the differential in U.S./U.K. textbook prices can be that U.S. students care relatively less about the prices of their books, because a higher percent of their book expenditures are covered by their parents than is the case in the United Kingdom. To the extent that parents pay for books, students have less incentive to find out what texts are required for their courses early enough to order their books online, much less from a foreign Web site from which the texts may have to be shipped with a delay. The longer students wait until they learn of their assigned textbook, the less price sensitive they will be, and the higher the prices publishers can charge.[21]

One study suggests that one of the more prominent reason for the U.S./U.K. price differential is that textbooks in the United States are the focus of courses of study and are generally required. In the United Kingdom, textbooks are far less frequently required. U.K. students are more frequently assigned a variety of readings than is the case for U.S. students. To the extent that textbooks constitute a less important component of course assessments, U.K. students can more easily forgo textbook purchases with less damage to their grades and standing in their classes. Hence, they can be more responsive to textbook prices than U.S. students.

Given ongoing changes in educational technology, including the delivery of printed material, and the lowering of international transaction costs (via Amazon and other online booksellers), we have to expect a significant narrowing of the U.S./U.K price difference over time. Students in both the U.S. and U.K. can now download digital versions of many textbooks to laptop and desktop computers, chapter by chapter, at modest prices per chapter ($1.99 each). That's only $59.70 for a thirty-chapter textbook. At iChapters.com, there are at least a couple dozen microeconomics textbooks for download at such prices, drawing into question the long-term viability of the $159 price for a new printed version of the Pindyck/Rubinfeld microeconomics test.[22]

Textbooks can be easily pirated already, especially when they can be converted (through downloading and scanning) to digital formats. Pirated textbooks, whether in paper or digital form, represents a serious competitive threat to textbook publishers, perhaps a more serious threat than used book buyers (who must also be threatened by the emergence of the pirated copies). Pirated copies of books

should be expected to impair publishers' ability to charge high prices and to price discriminate.

Perhaps the biggest competitive threat to textbook prices, especially in the U.S. market, is the option of nonpurchase that students have. At many major universities, it is not uncommon for less than half of the students enrolled in some classes to actually buy their assigned textbooks.

Even with technological advancements that depress textbook sales and prices, a price differential could still persist. While the elasticity of demands might be expected to increase in all markets, differences in market elasticities can remain, which can leave a price gap between markets. However, again, we should expect the price gaps across markets to narrow. That is, the price gap can be expected to move toward (but not necessarily to) the added cost of transacting across markets.

Before leaving the book example, we must note that publishers can also segment their market and price discriminate by producing different formats—hardback and paperback versions—of books with identical content. They might reason that people who buy paperback editions might not have good reason to hold their books for as long as do buyers of hardbacks. They might also reason that people who buy hardback books when the books are first released are more eager, and less-price sensitive, than buyers who can wait months, or more than a year, to buy their paperback versions. Understandably, paperback editions of books that are released after hardback editions almost always carry a lower price than the hardback editions, and the price differential between hardback and paperback editions has been found, as expected, to be greater than the difference in production costs.[23]

The Logic of After-Christmas Sales

When we have asked our students, maybe after a mid-year break, "Why do so many online and offline retailers have after-Christmas sales?" the students generally are quick to respond something to this effect, "To get rid of all the unwanted winter and Christmas merchandise" or "To reduce inventories for tax purposes." The students might explain that after-Christmas sales are a consequence of store buyers' misjudgments on the market demands for various products and mistakes in ordering.

If we press our students to pose other reasons, they often respond with palpable silence and a look of puzzlement on their faces, as if there could be no other explanation. We grant them that misjudgments and mistakes can explain many things that happen in business, but surely storewide sales—year after year after year—cannot possibly be chalked up solely to errors. If such were the case, we have to wonder why store buyers at Nordstrom's (or any other prominent department store chain) are retained—year after year after year? Should they not be fired and replaced with people whose errors are not as pervasive and persistent? After all, we are talking about stocking "errors" at Christmas that are systematic, that is, extend across the stores and result in table after table and rack after rack of "excess

inventories" that are discounted by 50 percent or more. Indeed, many stores announce "storewide" after-Christmas sales with price cuts of "25 percent or more."

By our raising the puzzle of after-Christmas sales in this chapter, you might rightfully conclude (as our students do—eventually!) that the logic of price discrimination, which we have developed for transatlantic textbook sales, is also intimately linked to after-Christmas sales and perhaps all other seasonal and intermittent retail sales, to lesser or greater extent. That is to say, retail stores have after-Christmas sales (often deep ones) because the price insensitivity of their customers takes a plunge between the day before Christmas and the day after.

Before Christmas, many customers *need* the goods they buy to be able to stand witness to the considerable (often only imagined) joy of their love ones and friends who receive their gifts on Christmas morning. Before Christmas, many customers are working and have high opportunity costs of their time; they also might have low storage costs. They have not yet filled their cabinets and closets with countless gifts, most wanted but some kept only out of respect for the givers. After Christmas, many buyers are often fully stocked with more goods than they need, or want. Many are often on holiday breaks at Christmas time, with low opportunity time costs.

More to the point, before Christmas, buyers' demands are highly inelastic. After Christmas, they are highly elastic because they have time to consider more carefully the prices charged by any number of sellers, and they have to see significant price reductions to stuff their cabinets and closets with more products. As pointed out earlier (in our discussion of the price responsiveness of Groups A and B), firms can maximize profits only by playing to the different elasticities of demand, which means that they should charge relatively higher prices before Christmas *in anticipation* of charging relatively lower prices afterwards.

Stores should be expected to order earlier in the year with both market—pre- and post-Christmas—demands in mind. After all, buyers often cannot wait until the week of Christmas to place their orders for after-Christmas sales, especially when the goods have to be produced in remote corners of the globe. Seen from this perspective, after-Christmas sales on most items are *planned*. That is, many storewide sales are not matters of misjudgments and mistakes. The so-called "price cuts" after Christmas are not that at all, at least not in the sense that they are unanticipated and unplanned. The higher before-Christmas prices fit the higher demand and lower price elasticities of demands that stores then face. The after-Christmas prices fit the then lower demands and higher price elasticities of demand. Christmas allows stores to segment their markets with the prices charged before Christmas being higher than they would be if a constant price for both market segments had to be charged.

Of course, the elevated before-Christmas prices, followed by expected after-Christmas sales, can cause many price sensitive shoppers to postpone as many purchases as they can until after Christmas. But such postponements are not necessarily all bad for stores because the postponements further segment their markets into price insensitive and price sensitive shoppers. Purchase postponements can leave the before-Christmas market dominated by highly price insensitive customers, giving rise to some additional price increases tailored to the demands of the before-Christmas shoppers. And shoppers who delay their purchases can increase the after-

Christmas demands for goods, thus tempering the extent of the after-Christmas price cuts.

One reason for the growing popularity of gift cards at Christmas is that gift givers understand that the gift card recipients can get greater value from a given dollar amount on the cards because the cards can be used in after-Christmas sales.[24] Are gift cards advantageous to the givers and recipients? It's not easy to say, considering the crosscurrent of market forces cards can put in motion. Still, it might be helpful to highlight a few of the forces.

Gift-card givers can avoid the difficulty (cost) of honing individual gifts to recipients when the recipients' preferences are not known very well. Many gift givers might give more in terms of dollars on gift cards than they would in "real gifts," since givers do not have to incur the search costs of finding a real gift and might want to assuage recipients' hurt feelings from not having real gifts to open on Christmas morning.

On the other hand, if givers are themselves price sensitive, they might give fewer dollars on the card than they would spend on real gifts, given that the givers can anticipate that the recipients will be able to buy merchandise at lower prices after Christmas. The recipients might miss the joy of having real gifts under the tree on Christmas morning, but they can be more than compensated by the knowledge that the gift cards allow them to buy what they know they want and by the knowledge that the gift cards hold more real (price-adjusted) dollars than would have been spent on more expensive real gifts before Christmas.

Sales and the Economics of Information

We can now address a more general question: why do stores have intermittent sales, some of which are as predictable as after-Christmas sales (for example, end-of-summer sales)? Why do stores have other sales that are less predictable than after-Christmas sales (for example, "managers' blowout mid-season sales")? Again, without question, some sales of some items can be the consequence of buyers misjudging market demands for goods. Consumers are often fickled in what they will buy.

However, following the late George Stigler's "economics of information",[25] Hal Varian has argued that many sales across the year are devices by which store managers can (again!) separate the price sensitive from the price insensitive customers.[26] Many buyers are price sensitive because they have low opportunity costs, both in time and in storage. These buyers have ample time to monitor newspapers and television programs (and other media) for sales announcements.

In short, Varian takes note of an unheralded fact of market life: there always exist in markets a dispersion of informed and uninformed buyers, with the degree of information shoppers have on prices related, as we have explained, to their search and storage costs. When sales are announced, informed buyers can be expected to show up at stores and to load up on the goods that are on sale. Once informed, price

sensitive shoppers have loaded up on goods, there will be time between sales in which stores can hike their prices for the buyers who are (rationally) uninformed about sales and who are willing and able to pay higher, nonsale prices.

This line of argument also helps explain why in any geographically spread market—say, a city—the same good can be sold at widely varying prices. Some sellers face shoppers who are informed about prices across the market, because they have low search costs, and are, hence, price sensitive. Other sellers face shoppers with high opportunity costs of becoming informed and, hence, face inelastic demands; among these sellers, relatively higher prices can persist (a line of argument that Steven Salon and Joseph Stiglitz have developed[27]). One might conclude that the uninformed, price insensitive shoppers are being "ripped off." They are, but only in the sense that they are charged more than their informed counterparts. The price insensitive shoppers can still *be better off than they would have been had they incurred the search costs*. They can rightfully believe that their *effective* prices paid—lower sticker price plus the search costs—would be greater than their actual prices paid—higher sticker prices but no time investment in comparative shopping.[28]

Earlier in the book, we noted that Audible.com had announced a "Summer Clearance Sale" of an extra 25 percent off its low prices for those of its audio book titles. We also suggested that Audible's "clearance sale" was something of a puzzle because Audible does not have an inventory, aside for the digital master copies of its more than 30,000 audio book. It would hardly want to get rid of its masters because that would greatly limit its sales to one copy per book. It could obviously do far better by keeping its masters (which cost precious little to inventory) and sale digital copies (which cost little to nothing to reproduce). Then, why did Audible announce its clearance sale? Maybe there is some marketing gimmick to the use of the word "clearance," but our guess is that other Audible subscribers are no less savvy than we are. They realize that "clearance" is irrelevant to the announcement (and to similar word usage by other brick-and-mortar stores); what is important and eye-catching is the "25% off." Our discussion of sales in this chapter reveals the most likely explanation for the announced "summer sale": Audible has either detected a difference in the elasticity of its demand in the summer vis-à-vis other seasons of the year or it has detected that some Audible site visitors pay attention to its sales announcements and respond to them. Others not seeing them leave themselves open to higher prices when they return later to the Audible site download audio books.

Concluding Comments

Economics can be a fascinating subject in one unheralded regard: a single simple model of market behavior can explain much of what we observe in the world about us. You really do not need to know a lot (in the ways of principles) to do some hard-nose economic analysis. We hope readers will agree that our model of

market segmentation and price discrimination is very elementary, but explains many observed price differences.

Firms can obviously make a lot of money by creatively designing "better mousetraps." From the perspective of this chapter, we hasten to add, they can also make a lot of money from creatively designing ways of segmenting their markets.

Readers should not deduce that the resulting price discrimination is simply a means by which sellers can take advantage of buyers. Sometimes consumers can be worse off, but sometimes such is not the case, especially in the long run. In creative methods of market segmentation and price discrimination are economic (above-competitive) profits that can stimulate the development of more products than would otherwise be available for consumers.

In chapters to come, we will often repeat with variation and amplifications the lessons learned in this chapter. Having stressed the gains to be had from matching prices with buyer price sensitivity, we need to end with a caveat. Just as competition can cause producers to improve their products' quality and features, competition can also undercut, with time, the profit potential from creative methods of price discrimination. As noted in our discussion of textbooks, with time students can be expected to learn that they can lower their out-of-pocket textbook costs by buying online and then by going to sites for textbook sellers in far-removed markets, thus undercutting the ability of publishers to price discriminate. As more and more informed shoppers begin to delay purchases until they can take advantage of after-Christmas sales and then give store gift cards on Christmas morning (so that the recipients can take advantage of after-Christmas sales), sellers will have growing reasons to extend their sales backward to before Christmas. Sales (at times other than after Christmas) by a few sellers can lead to a proliferation of sales by a growing range of sellers, and eventually to the emergence of some sellers who dispense with sales altogether. Such sellers can be expected to promote "everyday low prices." Welcome to Wal-Mart!

Chapter 14
Why Popcorn Costs So Much at the Movies

Going to the movies and downing a tub of popcorn and an oversized soda is as American as . . . well, going to a baseball game and getting several hot dogs and beers. Both outings can now put a nontrivial dent in any family's entertainment budget.

There are two notable features of family trips to movie theaters:

- First, theaters charge nonelderly adults and children (generally, under the age of thirteen) and seniors (generally, no younger than fifty-five) different prices for admission tickets but not for popcorn (and other concession items). Why?
- Second, theaters (in Southern California) charge $7 for large tubs of popcorn, which contain only seven ounces, or close to a dollar an ounce (with an ounce of popcorn equaling about three cups in volume).[1] In addition, the price of a tub is nearly three quarters what the theaters' charge for a (nonsenior) adult ticket and over 90% the price of a child or senior ticket. Again, why so much when a bag of popcorn kernels is so cheap? At this writing, popcorn costs $0.85 a pound in two-pound bags at local (Southern California) grocery stores, with a pound of popcorn kernels making (according to rough estimates) slightly more than three theater-size tubs of popped popcorn. Add in the cost of vegetable oil and the cost of materials, and a theater-size tub of popcorn made at home costs only $0.55.[2] This means that a theater-size tub of popped popcorn bought in theater lobbies is nearly thirteen times the materials cost of home-popped popcorn and that the profit margin for theaters on materials alone must be well over 90 percent (especially considering that theaters can buy their popcorn and oils with substantial quantity discounts).

The easy and most frequently cited explanation for these pricing strategies is that theaters are taking moviegoers to their monopoly cleaners by their discriminatory pricing on tickets for adults and children (along with senior citizens). Indeed, discriminatory pricing is *prima facie* evidence of monopoly market power, or so economists have conventionally argued.[3] Moreover, theaters effectively trap consumers once they go through their ticket turnstiles, thus permitting extortionist pricing on popcorn (and other concessions).

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_14,

Without question, movie theaters often have a measure of monopoly pricing power. After all, some theaters are the only theaters in a town or an area of a city, at times because of zoning restrictions and at other times because of shopping malls' interest in reducing competition in order to increase their rental payments. Also, distributors' license movies to theaters within identified "clearance zones," with one theater in each zone getting a particular film, for example, any one of the movies in the *Harry Potter* series.[4]

While there is a measure of truth in claims that theater prices reflect an equal measure of monopoly power, we will see in this chapter why that easy answer is hardly the whole truth of theaters' pricing strategies. What we will find, among other things, is that popcorn prices are high in part because of the reduced prices for children. In addition, because theaters cannot be owned by movie producers and distributors (because of a series of court orders that date to the late 1940s), theaters have an incentive to hold down (relatively speaking) all ticket prices in order to increase the demand for popcorn (and other concessions), thus allowing theaters to hike their prices on popcorn and other concessions and their profits. Along the way, we will find that theater popcorn is actually pretty cheap—on the margin!

Differential Theater Ticket Prices

At the time of this writing, the Regal Theater chain in Southern California charged nonsenior adults $10.50 for tickets and charged children, 12 and under, and seniors $7.50 for tickets. The differential in ticket prices for adults and children has been easier for economists to explain than the high price of popcorn (and other concession items), mainly because of the several lines of available standard monopoly arguments economists can and have tapped, no one of which is likely to provide a full understanding of theater pricing.

One line of argument is well worn among economists: the differential pricing for adults and children can simply be chalked up to price discrimination by market segments introduced in the last chapter. To review that earlier discussion, adults are (supposedly) less price sensitive—or have more inelastic demands—for going to the movies. That is, adults do not change (in percentage terms) the number of movies they see in theaters as readily as do children when their ticket prices are hiked. Why?

Reasons for Adult–Children Price Differentials

One plausible (albeit partial) explanation may be that adults' time is more valuable (given their paying work opportunities), which has a threefold consequence.

- First, adults' higher incomes can hike their demand for going to the movies, which *can mean* (but does not necessarily mean) that they are not as pressed to respond to a ticket price increase. This can mean that any given increase in the ticket price can have a lower percentage reduction in sales to adults and that theaters experience an increase in box office revenues and profits, given that attendance will not materially affect the costs of providing the theater seats.[5]
- Second, (nonsenior) adults incur greater (opportunity or time) costs than children to search out alternative prices for different movies at different theaters, which implies that adults may be less aware of lower prices of movies elsewhere and alternative forms of entertainment and, therefore, are less able to respond to a price hike out of simple ignorance (albeit a level of ignorance rationally sought).
- Third, because of adults' much greater time cost, any given hike in the movie ticket can represent a lower (percentage) increase in the *total cost* of going to the movies for adults than for children. And marketing research does show that any given dollar change in the price of a good can affect the willingness of buyers to respond to a low-price product relatively more than a higher priced product.[6]

To see this point, consider an adult who earns $40 an hour (or the equivalent of $83,200 a year) and is typically asked to pay $10.50 a ticket for a two hour movie—$3 more than the child's ticket. If (for purposes of explanation) the adult's wage is a rough approximation of his or her opportunity for going to a two hour movie, the adult experiences less than a 4 percent increase in the total effective cost of seeing the movie when the adult ticket price is raised by $3, from $7.50 to $10.50. How is that? The total cost of going to a 2 hour movie for an adult earning $40 an hour is $87.50 when the ticket price is $7.50 [($40/hour $\times$ 2 hours) + $7.50 ticket price = $87.50]. A hike in the ticket price by $3 to $10.50, or 36 percent, raises the total cost of the movie experience to $90.50, or by a mere 3.4 percent.

The same $3 increase in the admission price for children, whose opportunity cost of time is far lower—say, $2 an hour (a generous pay rate for young children, which we use only for purposes of illustration)—than the opportunity cost of the adult, would represent, in our illustration, more than a one-fourth increase in the total cost of seeing the movie. The total cost of a child going to a 2 hour movie is $11.50 ([$2/hour $\times$ 2 hours] + $7.50 = $11.50). A $3 increase in the child's ticket price represents a 26 percent increase in the total cost of the child going to the movie. This means that, everything else being equal, we should not be surprised if young children are more sensitive to any price increase than adults, given that the price increase for children is larger in percentage terms and more salient in terms of their reference cost.

We grant you that people's wage rate is not always a good measure of opportunity cost. People tend to go to movies in their off-work hours, *because* their opportunity costs can then be (but not necessarily will be) lower. We should not allow the particulars of our example to deny the larger points at issue: the cost of going to the movie can be some multiple of the ticket price, because of the value of time involved. The opportunity costs of people's time can rise with age, because of their growing skills and experience and job opportunities. As the opportunity cost

of moviegoers' time rises, their sensitivity to a ticket price increase can fall (everything else being equal). One explanation for theaters setting an upper age limit for children's tickets at 12 is that by such an age, children's opportunity time costs have risen to the point that they, too, have become significantly more price-*insensitive*, which is reason enough for the theaters hiking the ticket prices of children above 12.

The differential pricing for adults and children can also be explained by the fact that, like it or not, many parents value seeing movies themselves more than they value their children seeing them (especially when movies contain rough language and violence). In such cases, the theaters have to lower children's ticket prices in order to encourage parents to take their children to the movies or to send them off to the movies by themselves. In this latter regard, movies have to compete with babysitters who often charge less per hour than the federal minimum wage, and who sometimes charge less for two hours of babysitting than the adult ticket price for two parents.

Of course, we recognize that studios produce movies solely for children, with *Toy Story 3*, a 3D animated film from Disney/Pixar being a grand example (especially since it was up for five Oscars, including Best Picture, in 2011). In such cases, parents care more about their children seeing the films than they, the parents, care about seeing them. This might suggest that parents' tickets should be lower than their children's tickets. Perhaps so, but only in some cases. As all parents know, children have ways of pressuring their parents to take them to the movies, and to feed them at the concession counters. That pressure can translate into reduced price sensitivity among the parents. Besides, the crucial issue to parents in such cases is not so much the *relative* prices of adult and children's tickets, but with the overall cost (including all ticket and concession expenditures and their time costs) they incur from going to the movies. It is no accident that family/children's films are released during times (for example, summer school break, Thanksgiving, or Christmas) when many parents are off work and their children are out of school. The total cost of family trips to the movies is then lower than at other times of the year, because of the lower opportunity costs of all family members, which means that studios and theaters can charge more for tickets and concessions than at other times of the year, or fill more seats at constant prices.

Peak-Load Pricing

Another alternative explanation for the difference in the price of adult and children tickets starts with the proposition that the main goal of movie theaters is to fill as many seats as possible at all times of the day. Seats that go empty at various times of the day represent revenues that can never be recaptured, and theaters' costs vary little with how many seats are filled when the projector is turned on. As economist Steven Landsburg has pointed out, the lower price for children may have nothing to do with the form of pure price discrimination (and the implied monopoly power)

just discussed.[7] Rather, the price differential may have everything to do with the fact that children (and senior citizens) tend to go to the movies during periods of slack demand, in the afternoons and early evenings, when the cost of providing the added seats for children (and seniors) is relatively low, if not zero. The gain in revenues from the added seats sold to children (or seniors) from their lower ticket prices more than offsets the reduction in revenues from the lower ticket prices for children who would have gone to the movies at the adult prices. The net increase in revenues goes largely to theater profits, again, because extra seats that are filled do not materially affect virtually any of the costs (other than cleanup).

From this perspective, the adult and children's ticket prices are a rough form of "peak-load pricing." The prospect of this explanation having validity can be seen in the fact that at Regal Theaters children's ticket prices ($7.50) are often close to, if not identical with, adult ticket prices ($8.00) for matinee showings (before 5:30 p.m.).

Concessions Sales

Perhaps an even more incisive explanation for the difference in adult and children's ticket prices is that children buy more concessions—popcorn, sodas, and candy—or that they cause their parents to buy more concessions than they, the parents, would otherwise be inclined to buy. Given that the profitability of the concessions can be crucial to the overall profitability of the theaters, theaters have an added incentive to lower the price of children's tickets. The lower children's price can be seen as a way the theaters can increase the demand for and price of concessions. What the theaters lose on children's ticket prices (much of which would have gone to the movie studios, as we will see) they can recoup on concession revenues. The lower the cost of the concessions and the more theaters can charge for them, the more the theaters should be willing to cut the price of admission. From this perspective, we have a partial explanation for why theater popcorn costs so much: the exorbitant cost of popcorn can be chalked up in part to the cut in the price of admission for children.

Uniform Popcorn Prices

Why do not theaters also charge children less for popcorn and other concessions than they charge adults?

One explanation could be that, in contrast to their demands for tickets, adults and children are, more or less, equally responsive to changes in the price of popcorn (they have the same *elasticities* of demand). This means that theaters have nothing to gain from using a lower price of popcorn to lure children to buy more of it.

Perhaps an even better explanation is that a lower children's price on popcorn would only cause parents to send their children to buy the popcorn instead of going

to the concession counter themselves. We can imagine that if there were a significant price discount for popcorn for children, enterprising children would buy up extra tubs at the concession counter and then hawk them in the aisles to adults, splitting the price differential with their older customers. For example, if a large tub of popcorn costs adults $7 and children $4.50, children could more than cover their cost of admission by buying several tubs of popcorn and reselling them to adults for $5.50.

Price discrimination works for ticket prices because theaters can post ticket takers at their turnstiles. The ticket takers can ensure not only that everyone who enters has a ticket, but also that only children (or those who *look* to be age twelve and under) are admitted with children's tickets.

The High Price of Theater Popcorn

A large tub of theater-popped popcorn (which, by the way, has close to 1,700 calories and up to 130 grams of fat when buttered!) sold for $7 in Southern California at the time these words were typed (and probably more by the time these words are read). As noted, if a comparable size bowl of popcorn were popped at home, the popcorn would cost, in terms of out-of-the-pocket expenditures, a little more than half a dollar, with the raw materials for commercially popped popcorn costing substantially less than home-popped popcorn because of the price breaks commercial vendors can get from their quantity purchases.

One commercial popcorn machine vendor estimates the cost of a popper full of popcorn made on its machine to be no more than a nickel. Add in eight cents for the paper tub at the theater, and the theater's profit margin from material costs alone is obviously very high.[8] Assuming that a theater-quality commercial popper can make about a tub of popcorn, the material cost represents less than 2 percent of the cost of a $7 tub of theater popcorn, leaving a profit margin from material costs alone of over 98%.

However, like so many other goods, the material cost is hardly the most consequential cost consideration for theaters offering popcorn. The labor required to make popcorn is far more consequential. If it takes 15 minutes (on average) for a worker to make, fill, and sell a tub of popcorn and the typical worker behind the concession counter makes $9 an hour (which is close to the entry-level retail pay rate in Southern California), the popcorn costs the theater upward of $2.40 in material and direct labor costs (not accounting for the cost of plant and equipment and indirect labor costs for doing all the other things that need to be done in theaters in order for moviegoers to want to buy the popcorn: taking tickets, running the projector, and cleaning the theaters, just to name a few labor costs). Still, the profit margin on popcorn appears high no matter how the costs are calculated, and the *marginal* cost of making and selling additional tubs of popcorn is much lower than the *average* cost, which makes popcorn sales very profitable *on the margin*, which is the key reason theaters push popcorn sales.

Still, why so much in terms of price and profit margin for in-theater popcorn? One transparent response is that home-popped and theater-popped popcorn are not the same products. They taste and smell different. Indeed, theaters have an incentive to offer a different product from what moviegoers can make at home. They also have an incentive to accentuate the smell and sound of the popping popcorn in their lobbies, thus increasing moviegoers' assessments of the value of the theater-popped popcorn (and their market demand) and, at the same time, reducing moviegoers' price sensitivity.

When popcorn was first sold in movie theaters in the 1930s, it was trucked in, after having been popped in remote locations, primarily because of the fire hazards the available popcorn poppers then presented. Sales of popcorn in theaters did not take off until the late 1940s when the popper technology improved, reducing the fire hazard, and moviegoers' senses were teased by the sound and smell of popcorn in the lobbies. Theaters deliberately sought to enhance the smell and sound of the popping popcorn, making them "audible and smellable edibles." They further sought to increase the demand for popcorn (and other concession items) by using yellow popcorn that pops to a greater volume than white popcorn, but also gives the appearance of having been buttered (which means theaters' butter costs could be curbed).[9] If theaters could not offer a different product worth more than home-popped popcorn or could not manipulate the demand in their lobbies by the smell, theaters would be unable to charge so much because far more moviegoers would sneak in their own popcorn with them to the movies.

Another transparent answer to the popcorn pricing riddle is that the profit on theater popcorn is not nearly as high as the above-cited figures suggest—when all costs are considered. After all, unlike other retail establishments, the floor space and equipment dedicated to popcorn popping are expensive and used only a few hours of most days (largely in twenty-minute segments between film showings). Very likely the theater's more important costs are those incurred in the labor (wages, fringes, and taxes) involved in both making the popcorn, standing around doing nothing when no one is at the concession counters, and cleaning up after movie patrons who take tubs of popcorn to their seats, only to occasionally spill them (and almost always leaving crumbs behind).

If labor were not an important cost factor, surely more moviegoers would make their own popcorn at home, bag it, and sneak bags in with them to the movies. If our moviegoer who earns $40 an hour (and values his time at home and in theater by that amount) were to make a large bag of home-made popcorn to take to the movie and if the time involved were as little as twenty minutes (it took McKenzie twenty-three minutes to fill a theater-size tub, taking two rounds of popping in his sizable home popcorn popper), the labor (opportunity) cost alone for the home-popped popcorn would be $13.33, more than the cost of a tub at the theater's concession counter!

Granted, theaters have prohibitions against bringing outside food into their theaters (for the obvious purpose of increasing the demand for and prices of their concessions). However, if the true full cost differential between theater-popped popcorn and home-popped popcorn were as stark as appears to be the case in a comparison between the purchase price of theater popcorn and the *materials* cost of

home-made popcorn, then surely many moviegoers, especially children, would take full advantage of opportunities to hide their bags of home-popped popcorn on the way into the theaters. And hiding is hardly difficult, as some movie patrons can attest. All one needs is a jacket in cold weather and a large purse or just a shopping bag that gives the appearance of being filled with purchases in warmer weather. Even when stopped occasionally by the ticket taker, smuggling home-produced popcorn could still be a highly paying proposition over a sequence of trips to the movies—*if popcorn were as excessively priced for the value provided as moviegoers popularly lament.*

As it is, one researcher found that a major reason theater popcorn might appear more expensive than popcorn sold elsewhere is that the theater portions are larger.[10] The average price of buttered popcorn *per quart* sold in 21 suburban and metropolitan theaters in the Mid-Atlantic states was actually close to 10 percent *below* the average price of popcorn per quart sold in 18 large shopping malls.[11] However, the researcher also found that the average price per ounce of medium-sized soft drinks sold in theaters was 37 percent higher than the average price per ounce sold in twenty-four convenience stores. The average price per ounce of four different candy bars sold in theaters was nearly double the price per ounce in convenience stores.[12] Given the relatively greater price and smaller size of candy, no one should be surprised if more candy is smuggled into theaters than popcorn.

The Misguided Entrapment Theory of Overpriced Popcorn

When asked why popcorn costs so much in movie theaters, many people who believe they understand the problem with full clarity have a pat answer: "The movie theaters lure moviegoers into their lobbies with hit movies. They are then trapped and effectively forced to buy what the theaters offer at their counters, since there are no competing sellers allowed in the lobbies. Hence, the theaters are, for all practical purposes, monopolists, which necessarily means the theaters can charge anything they want for popcorn."

Surely there is at least a grain of truth to such a line of argument. Like almost all businesses (other than grain farmers in the Midwest), theaters have some control over their prices. Markets are hardly perfectly fluid (as economists' market model of perfect competition, idealized in all microeconomic textbooks, suggests[13]). If there were as much truth to this argument as its proponents think, we have to wonder why the theaters stop at charging $7 (or whatever) for a tub of popcorn? Why not $10 a tub? For that matter, why not $20 or $50 a tub?

Pricing Limits for Monopolists

One of the more fundamental errors in the argument's logic is that moviegoers do have a choice over whether to buy popcorn. This fact alone suggests another fundamental error suggested by the claim that monopolists "can charge anything they want for popcorn." That simply is not true, and never has been. Monopolists

are, like all firms, constrained in the prices they charge by their products' market demands. The demand for any good is an inverse relationship between the price of the product and the quantity sold: the higher the price a monopolist charges, the lower the quantity that the monopolist will sell—a rule of market behavior we have deferred to in every chapter to this point in the book.

Granted, at a very low price, a monopolist can raise its price and sell less, but with revenues (achieved from the price times quantity sold) and profits rising. For example, suppose that a monopolist charges $1 for its "widgets" and sells a hundred of them. If the monopolist raises its price to $1.25 (or by 25 percent) and the quantity falls to 90 units (or by 10 percent), revenue will rise from $100 ($1 × 100 units) to $112.50 ($1.25 × 90 units). Profits will rise by *more* than the $12.50 increase in revenues. This is because (in most production processes) there will be some reduction in production (materials) costs with the drop in sales from 100 to 90 units.

However, as the monopolist raises its price, there is bound to be some higher price beyond which any further increase in the price will lead to a drop in revenues. We know this will be the case simply because we know there is some extraordinarily high price (for an extreme example, $500 for a tub of popcorn) at which point even the most powerful of monopolists will sell absolutely nothing because even a monopolist cannot force consumers to buy its good at such a ridiculous price—especially not popcorn. At that very high price, the monopolist will then have absolutely zero revenue ($500/popcorn tub × 0 sales = $0) and, necessarily, zero profits. If an increase in price can initially lead to greater revenues and eventually some very high price will yield zero revenues, then as the price is gradually raised, there has to be a price beyond which an increase in price will lead to a decrease in revenues that exceeds the reduction in costs from the curb in sales. Profits must then decline.[14]

The entrapment theory of high popcorn prices is flawed in another important way: People do not have to go to any particular movie theater. They also do not have to go to the movies, or they can eat a bowl of popcorn before going in the theater. They can do any number of other things with their time. People have choices, plenty of them. To this extent, movie theaters are hardly the monopolists they have been made out to be. Theaters must face the fact that their prices both on admission and on popcorn can affect how many people go to the movies and then buy theater-popped popcorn. As with so many other businesses, theaters clearly must be mindful of their costs and what they charge on all fronts, as evidenced by the fact that in recent years, several major movie theater chains that have not been so mindful of their business basics have filed for bankruptcy.

Movies as Bundled Experiences

Most theaters understand that they are not simply in the business of selling seats to watch particular movies. Movie theaters are selling "experiences" or "entertainment bundles" in one-and-a-half to three-hour segments. These bundles include several components, with, perhaps, the movie and popcorn being two of the

more important.[15] For these *bundles*, theaters can charge some overall price. Our law of demand applies again: the higher the price of the bundles, the lower the quantity bought. Assuming the theater is pricing its bundles in accord with what the market will bear, this means that if a theater decides to raise the price of popcorn, it must lower the price of admission to hold attendance constant. It also means that theaters can manage their demand for and price of popcorn through the price they charge for admission: the lower the price of admissions, the greater the ticket sales, and the greater the demand for and price of popcorn. Needless to say, theaters can be expected to seek to optimize on the overall price of their entertainment bundles, and the prices of the bundles' separate components—all with the goal of maximizing their profits.

As an aside, we are certain some readers will object to our assumption that theaters will charge all that the market can bear for their bundles. We make that assumption for the patently obvious reasons that theaters' high prices on tickets and popcorn suggest that's what they are trying to charge—what the market will bear, within limits of what they can know about their market demand. Moreover, there are market pressures that encourage theaters to charge as much as they can and make as much profits as they can. If they systematically charge significantly less than what the market can bear, the theaters' profit streams into the future will be undercut. Their stock prices will also suffer on financial markets. As noted before, savvy investors who believe they know better what the market can bear can be expected to buy controlling interests in the companies, charge what the market will bear, and raise the companies' profit streams. The investors can then sell out with a handsome capital gain as the stock prices rise to reflect the greater future profit stream.

Why is the price of theater popcorn so high? If theaters could easily tell who among the people who reach the ticket windows loved popcorn, they should be willing to let those people in with a price break on tickets (which they do for children, as we have noted). However, among adults, it is not always easy for people at the ticket windows to spot the heavy popcorn eaters (although overweight people might prove to be good candidates for popcorn sales). By charging a high price for admission, theaters could be excluding from their lobbies many potential popcorn lovers, and denying themselves profit on their popcorn sales. In addition, theaters would have to lower their price of popcorn to compensate for the higher ticket prices in the overall price of their entertainment bundles they have for sale. Economists David Friedman and Steven Landsburg have argued, (apparently) independently of one another, that theaters' best pricing strategy is to try to hold the price of tickets down and raise the price of popcorn on the grounds that the popcorn lovers get more benefits from their movie experience than the nonpopcorn lovers.[16] They should be willing to pay more, and do pay more through such a pricing arrangement. By holding down the price of tickets and elevating the price of popcorn (and other concessions), theaters are able to increase the number of potential popcorn buyers, with popcorn (as we will see) having a higher profit margin than tickets. If theaters were to do the reverse, raise ticket prices to lower popcorn prices, then they could not only curb ticket sales, but also popcorn sales.

Economists Luis Locay and Alvaro Rodriguez have an alternative way of explaining the high price of popcorn.[17] They reason that a film is a fixed good in the sense that moviegoers cannot buy more or less of it. They buy their tickets and watch what comes on the screen. The ticket price is an admission price to do two things (1) see the film and (2) buy popcorn (and other concessions). Moviegoers' demand for popcorn varies greatly. Theaters could sell popcorn to all who pay the admission fee. Why not simply focus on those moviegoers who have high demands, charging a very high price for the "small" bag of popcorn and then "walk those buyers down their demand curves" by lowering the price for additional increments of popcorn (a pricing strategy we discussed when talking about the pricing of drinks at fast food restaurants). Seen from this perspective, the high price of popcorn can be attributed, not so much to the market power of theaters, but to the intense demand for popcorn within a segment of all moviegoers. Moviegoers with a less intense demand for popcorn might as well blame their fellow movie patrons, not the theaters, for pricing them out of the popcorn market in the theater lobbies.

Movie Screening Contract

A point that Friedman and Landsburg and other economists have missed is that theaters have an added incentive to lower the price of admission and hike the price of popcorn built into their contracts for the movies they show. Theaters often bid for movies in terms of the percentage of their box-office receipts. Theaters regularly bid 55 percent (and sometimes as much as 95 percent) of their box-office receipts for the rights to show a movie.[18] Theaters could, and have, bid a fixed amount—say, $100,000—for the rights to show a movie for a multiple-week engagement. However, because, as entertainment economist Arthur De Vany has argued, the success of a movie is very unpredictable (even when a movie has star power and is a sequel to a successful movie), a fixed amount bid means that the theaters would assume a great deal of risk, which explains why fixed bids alone are rarely used in contracts negotiated between theaters and studios.[19] Making the bid in terms of a percentage of box-office receipts increases the incentive studios have to make popular movies, which can give rise to greater ticket *and* popcorn sales and which, in turn, can give theaters a reason to hike their bids for movies. Bidding for movies based on percentage of box-office receipts shifts the theaters' risk costs, thus allowing for gains to both the theaters and the movie producers and distributors.[20]

Obviously, because of contractual provisions that cause the theaters' to fork over a major share of their gate receipts, theaters have a built-in incentive to keep their ticket prices low in order to raise their popcorn and other concession prices. If the theaters cut their ticket price by a dollar, they reduce the box-office receipts they get to keep by as little as five cents per seat sold, and usually by thirty cents. But they can then raise the price of popcorn by a dollar (to keep the overall price of their entertainment bundles constant). By cutting the price of admission, theaters will not only sell more seats, they will gain the high marginal profit on the greater popcorn

sales due to greater ticket sales. The profit margin on additional popcorn sales is substantially greater than the relatively few cents they would have gotten to keep on a lost ticket sale.

You can bet that there is a constant struggle between movie producers (and distributors) and theaters over admission pricing, with the producers understandably wanting higher admission prices than are optimal from the theaters' standpoint. When movies are released for showings, movie producers' costs are pretty much fixed. This means that the movie producers whose receipts are a percentage of the theaters' box-office receipts want the movie theaters to charge that price that maximizes theater revenues (not theater profits). Given that the producers are paid a percentage of box-office receipts, that one price that maximizes box-office revenues would therefore maximize the producers' revenues and profits (again, given that their costs are more or less sunk costs, which means they have been incurred and cannot be changed). On the other hand, theaters have an incentive to charge less than the revenue-maximizing ticket price because more seats sold means more popcorn sold.

Of course, the conflict between theaters and producers can be ameliorated in two basic ways. First, producers can be given a share of the theaters' revenues on concessions. Second, movie producers and movie theaters can form what are called vertically integrated firms (meaning the production, distribution, and theater components of the movie industry would all be controlled by a single firm organization). Such firms could then juggle their ticket and popcorn (and other concession) prices to maximize their organizations' collective profits. Such vertically integrated firms would not have to deal with the so-called transaction costs involved in producers and distributors negotiating rental prices for their movies with theaters. All parties would not then have the hassle—meaning incur transaction costs—of dealing with the pricing conflicts, given their different objectives as separate firms. The integrated firms would not then have to incur the monitoring costs that studios have to incur to make sure theaters accurately report their box-office receipts (and with theaters having to fork over 70 percent or more of every dollar reported, the temptation to falsify reports is obviously substantial). Not only would integrated firms have lower costs and greater profits, but because of the cost savings, ticket and popcorn prices could also be lower.

The Supreme Court and the High Price of Theater Popcorn

Indeed, before the late 1940s all major movie studios—for example, Paramount, Fox, and Warner Brothers—owned chains of movie theaters, very likely in part to minimize the hassle factors or transaction costs we have noted. Because, at that time, the studios required their theaters to charge customary admission prices and restricted showings in nonowned competing theaters, the U.S. Department of Justice took the studios to court for monopoly price fixing, arguing that the studios were clearly violating the nation's antitrust laws (specifically, the Sherman Act).

After a series of lower court decisions, the studios were required by the U.S. Supreme Court in 1948 in *the United States v. Paramount* to divest themselves of their theater chains. The presumption underlying the ruling was that divestiture would lead to greater competition in the theater market and lower ticket prices; however, the exact opposite occurred. In the two decades following the divestiture decision, movie ticket prices rose substantially relative to the general price level.[21] To be exact, between 1948 and 1958, movie ticket prices rose by more than 36 percent (despite the incentive theaters had to try to substitute concession revenues for ticket revenues), while the consumer price index (CPI) rose by only 20 percent. Between 1958 and 1968, movie ticket prices rose by almost 69 percent, while the CPI rose by between 15 and 16 percent.[22] In short, the *Paramount* decision probably increased industry costs that showed up in ticket prices that spiraled upward.

The decision also created tension between the producers and theaters on ticket and concession pricing discussed above: freed of direct studio control, the theaters sought to curb the rise in ticket prices in order to elevate their popcorn prices. Put another way, the price of popcorn is probably today higher than it needs to be, or should be. However, a measure of the inflated popcorn prices can be chalked up to an ill-conceived antitrust ruling back in the late 1940s and to continuing legal restrictions on the ability of studios to hold ticket prices up.[23] This means that were studios allowed to freely reinvest in theater chains (and organize their contracts with theaters as they did before the *Paramount* decisions), the price of popcorn would likely fall relative to the price of tickets (with the overall real price of the movie bundle going down). The popcorn lovers would no longer be subsidizing (albeit indirectly) as much as they now do the ticket prices of the nonpopcorn lovers.

The Cost of Theater Popcorn: On the Margin!

In the foregoing analysis, we have calculated the cost of popcorn the way many moviegoers are inclined to do so, in terms of *average* price, say, per ounce. Such a take on the price of theater popcorn is instructive, but it still misses a key insight about the price of theater popcorn that the price of theater popcorn is not all that expensive *on the margin*. Consideration of the marginal price of additional ounces of popcorn can tell us much about moviegoers' responsiveness to the price of popcorn (or their elasticity of demand) and also something about theaters' marginal cost of popcorn production.

As it happens, Regal Theaters sell three sizes of popcorn, "small," "medium," and "large" (with the large being the "tub" we have used in calculations to this point). The prices of the three sizes, which are structured the way we might expect, considering the analysis of price discrimination covered in Chap. 13, are $5.50, $6, and $7, respectively.

According to McKenzie's own rough estimates (developed from actually buying several containers of each of the three sizes from local Regal Theaters), the small bag of popcorn contains (on average) close to four ounces of popcorn (not counting the weight of the bag), which means that the average price per ounce is $1.375.[24] If

you buy the medium size, you will spend fifty cents more, but you will get about twice the ounces of popcorn (about eight ounces). The price of the *marginal* ounces is therefore about 12.5 cents—which makes those ounces pretty darn reasonable, at least on the margin (don't you think?). This way of looking at the popcorn pricing structure also suggests that Regal must be figuring that its actual *marginal cost* of producing additional ounces of popcorn in the medium bag is something less than 12.5 cents. It is unlikely that Regal would sell additional ounces of popcorn if its production cost were not less than 12.5 cents. If the additional costs of the additional ounces were, say, 22.5 cents, then Regal would be losing a dime on every additional ounce sold. No profit-maximizing theater would want to sell more popcorn to lower its profits.

What makes Regal popcorn pricing strategy really interesting is that while the tub filled with popcorn is actually heavier than the filled medium bag (because the tub itself is more than twice the weight of the bag), the tub of popcorn contains 12 percent fewer ounces of popcorn (seven ounces for the "large" tub versus eight ounces for the "medium" bag, again, according to rough estimates). However, the fewer ounces do not mean that the tub is a worse deal for *all* moviegoers—*because the tubs are refillable while the medium bags are not.*

We can attest that the tub looks as though it holds more popcorn even when the tub is positioned side by side with the medium bag. However, from samples of containers, the tub is clearly a worse deal for those moviegoers who buy a tub and believe (wrongly) that they are spending an additional dollar to get more popcorn. The tub is also a bad deal for those moviegoers who do not know that the tub is refillable.

The tub can be a great deal for groups of hungry teenagers and large families who have learned to share, and do not mind trotting off, in the middle of the movie, for refills. For the groups that refill the tub twice, the marginal cost of the additional ounces of popcorn is really quite low, perhaps as low as five cents an additional ounce (which, again, suggests that the marginal cost of popcorn popping is very likely lower than five cents).

Even moviegoers who buy tubs of popcorn intending to go after one or more refill but who never avail themselves of the opportunity can still look on the large tub of popcorn as a better deal than the medium bag of popcorn because they view the value of having the *option* of refills is worth more than the additional dollar cost.

You should not infer that the groups that refill the tubs are avoiding paying the high price for popcorn embedded in the small bag. Everyone who buys popcorn by the medium bag or the large tub pays that price for those first four ounces in their containers, and everyone who buys the tub pays the 12.5-cent marginal price for each extra ounce embedded in the medium-size bag of popcorn.

Again, what the theater is doing is walking its patrons down their proverbial demand curves. They are not so much lowering the marginal price of the additional ounces as they are hiking the price on those first few ounces. And this kind of pricing structure allows theaters to effectively charge all popcorn buyers some "admission price" for concessions, which can be used to cover their many overhead costs in providing concessions and cleanup. The pricing structure, which has a

rapidly declining price for the marginal ounces of popcorn, indicates that theaters are convinced that moviegoers are relatively insensitive to marginal price charges (or they have fairly inelastic demands for popcorn), or else the drop off in the price would not have to be so great to induce moviegoers to move to the next larger size. Alternately, the pricing structure for the small and medium sizes suggests that Regal can hike its price per ounce 11 times—from 12.5 cents per ounce for the added ounces in the medium bag to $1.375 per ounce for the small bag—before moviegoers will cut their consumption of popcorn in half. This observation, in turn, suggests that moviegoers' major problem with the high price of movie popcorn is not that they are dealing with a seller that is trying to earn as much profit as they can from buyers; sellers do that all the time. Rather, moviegoers get hit with a high price on the first few ounces because they, as a group, are relatively price insensitive. Whose fault is it for the high price of popcorn at theaters? We lay the blame more on fellow moviegoers than the theaters, if "blame" is appropriate in such matters.

Concluding Comments

Popcorn is, supposedly, a cheap product to make at home, but only because most people think only of the few cents the kernels of corn cost. They overlook the opportunity cost of their making a bowl of popcorn, and that is not a bad oversight for home-produced popcorn when popcorn is typically made in the evening when all family members are settled in for an evening of, say, watching a movie from a DVD—that is, when people who make the popcorn have few other opportunities, and their time typically has little monetary value. When people are preparing to go to a movie, they may have an array of alternative activities, including continuing to work at the office. Then, the time cost of popcorn can escalate such that, as explained in this chapter, home-produced popcorn can be quite costly, which leads to a lesson from this chapter: one reason theaters can charge a lot for popcorn (at least on the first few ounces) is that home-produced popcorn is expensive to make. And we can extrapolate: to the extent that people's time costs of making popcorn at home increases, theaters can hike their popcorn prices. Moviegoers might feel a sense of entrapment at the movies when they notice the price of popcorn, but any sense of entrapment can probably be chalked up more to the constraining force of people's time cost than their being physically inside the theater with no popcorn sellers other than the theater.

One portion of the ounce of truth, not well recognized, is that consumers in many (if not most) product markets rarely ever consider (or even think to consider) their own costs of producing the goods they buy, because such consideration would be a waste of time. Their personal cost of producing a good they seek to buy (for example, a laptop computer) is usually far removed from the price that they are charged by someone else for the good. Consumers have grown accustomed to comparing prices of producers (other than themselves) and picking the best price.

In theaters, when moviegoers go through the turnstiles they do not usually have a choice of alternative suppliers. That means, at the point of purchase, moviegoers are left without a choice. Their beef with the price of theater popcorn is probably that they see themselves as more than competitive on cost (without considering their opportunity-of-time cost), something that is not usually the case. They may think they should be able to get the same kind of deal on theater popcorn as they get on so many other goods and services they buy. In this regard, moviegoers may see theater popcorn as a "bad deal" only because it is not a far better deal than it is. But then we suspect moviegoers do not think the matter through, to see where the "truth" of the matter ends, abruptly.

Suppose on going through the turnstile, the walls of the lobby were lined with popcorn vendors, all seeking your business. They would clearly compete on price, and the price would likely fall to competitive levels, as it is supposed to do, which would be somewhere close to the marginal cost of popcorn production. That price would mean that vendors would not be able to recover some nontrivial costs of popping popcorn, not the least of which would be the lobby space, much less marketing and administrative overhead, a consequence that could lead to no one selling popcorn. In short, the restriction on alternative sources of supply inside the lobby is probably a policy that enables theaters to cover overhead costs, and then some, all of which can be welfare enhancing for moviegoers in the long run.

That digression aside, the main point of this chapter remains that the entrapment theory of movie popcorn pricing leaves much to be desired, mainly because almost all (other than brain-dead) moviegoers are aware that popcorn prices (and other concessions) are higher (on the first few ounces) at movies than elsewhere. If popcorn prices were truly higher than the cost moviegoers would incur to make popcorn at home, we would observe them finding creative ways of sneaking home-produced popcorn into the movies. The fact that such is very infrequently observed (even among moviegoers who complain about the high price of popcorn at the movies), we have got to believe that the price of theater popcorn is not all that far out of line, and is cheaper to buy than home-produced popcorn is to make.

Having said that, there has been a legal force in the theater/movie industry that has probably inflated the price of theater popcorn somewhat, the Supreme Court's forcing theaters to divest themselves of their theaters, which has given theaters a profit incentive to suppress their price of movie ticket prices (as much as they can) in order to inflate popcorn prices. As studios are gradually given greater freedom to reacquire theaters, or vice versa, we might expect the price of popcorn to fall, but the fall in popcorn prices will likely be at least *partially* offset by higher ticket prices. We have italicized "partially" because if movie studios do acquire rights to buy and sell theaters freely (which they are gradually acquiring), the industry will likely operate more efficiently. The greater efficiency in the industry can translate into, on balance, lower prices for the bundled experience of having a night out at the movies (which includes the cost of both the tickets and the popcorn).

Chapter 15
Why So Many Coupons

Coupons—those slivers of papers that offer price breaks on so many of the products we buy—seem ubiquitous. They fall out of Sunday newspapers like confetti. They stare at us on almost every page of magazines we peruse. They cover the wrappings and boxes, inside and outside, of foods and other products we buy. Postal workers stuff our mailboxes with them. And they line the shelves of grocery store aisles. Many families have organized banks of them.

Indeed, coupons are a major worldwide business, with the United States a major player in the distribution of coupons. In the 2000s, businesses distributed several hundred billion coupons a year, the count slight declining year to year. The total count of distributed coupons has become gradually more difficult to gauge as Americans, especially tech-savvy young adults, are increasingly downloading their coupons from online coupon distributors rather than clipping them from newspapers and magazines.[1] The worth of the all *distributed* coupons during the first half of 2006 (the latest available data at this writing) was an average $1.27 (generally speaking, the value of the coupon rises with the price of the product),[2] and half of surveyed households that year reported redeeming at least one coupon. However, those households that used coupons redeemed close to a dozen during the three months prior to the survey. The mean value of the *redeemed* coupons was $1.01, with the redemption in coupons in a steady long-term decline since the late 1990s.[3]

Coupons have traditionally come in a variety of forms, several major categories of which include the following:

- *Free-standing inserts*, which are coupons that are unattached to publications
- *Package coupons*, including
  - *Peel-off coupons*, which must be used at the time of purchase
  - *On-package coupons*, which can be seen on a purchased product, but must be used with a future purchase (of the same or different product)
  - *In-pack*, which are similar to on-package coupons, aside from the fact that buyers may not be aware of them until they use the products purchased

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_15, © Springer-Verlag Berlin Heidelberg 2012

- *Online*, which are coupons that can be printed from Web sites set up to distribute coupons for various sellers or Web sites, such as Groupon, that distribute via daily emails discounts at local stores and restaurants for people on their registered (an electronic force that no doubt is significantly undermining the use of printed coupons)
- *In-ad*, which are printed in advertisements in newspapers and magazines
- *On-shelf* or *shelf-pad*, which are coupons that can be found along store aisles, often just below the couponed product
- *Electronic checkout and discount* and *instant redeemable*, which are coupons that are automatically redeemed at the time of checkout

The overwhelming majority of distributed coupons (88 percent) are the free-standing inserts. The second most widely used form is the in-ad coupon, constituting a distant 3 percent of all coupons distributed.[4]

As is perhaps transparent from household trash bins, the redemption rate on coupons is meager (and falling), a scant 0.8 percent for all distributed coupons during the first half of 2006.[5] The redemption rate generally rises with the dollar value of the coupons,[6] and, as might also be expected, the redemption rate for peel-off and on-shelf coupons is, on average, several times the redemption rate for all coupons, and sometimes above 50 percent.[7] Frequent-shopper discounts, given to shoppers who have their store cards scanned, have begun to supplant coupons at many stores, especially grocery stores.[8]

Why so many coupons, if so few are actually used? One nonconsequential answer is that coupons are a relatively cheap form of product promotion, costing firms less than a penny ($0.007, according to one report[9]) per distributed coupon, but such a small price per coupon results in a total cost of more than $1 billion for manufacturers. Obviously, the relatively few coupons redeemed must generate a lot of value for manufacturers. But how can firms generate value—profits—from cutting their prices in a consequential way to shoppers? Why do not they just cut their prices and avoid all the printing and redemption costs associated with coupons?

If coupon distributors make a lot of money from coupons, why would they ever collude (as they have) to suppress couponing? Why would consumer groups and the antitrust enforcers oppose (as they have) collusive arrangements among coupon distributors? If you have no idea why those questions involve serious pricing puzzles, then you need to read on.

Without doubt, coupons serve many business purposes. They can, and have been used, for market research, to assess the price sensitivity of buyers in different parts of the country (by sending out coupons with different dollar values to different groups of buyers), to determine how "deal prone" different consumer groups are, to determine the appropriate prices firms should charge in the future, and to induce trials and repeat customer business.[10]

Coupons that are received on one purchase and must be used to buy the same product on the next purchase can increase buyer "switching costs" and can foster brand loyalty, which is another way of saying they can increase the inelasticity of

consumer demand, permitting a rise in the before-coupon, posted price. To the extent that competitors follow with similar coupons that increase the switching costs of their buyer base, the market becomes more segmented and the demands facing all manufacturers can become more inelastic, making price reductions by all less profitable.[11] However, the most common lines of argument developed by economists to explain the pervasive use of coupons are twofold: First, coupons allow for price discrimination. Second, they allow for peak-load pricing.

Coupons and Price Discrimination

Our discussion of price discrimination in Chap. 13 permits us to quickly lay out a prime economic reason for coupons: coupons are an ingenious marketing invention that enables sellers to segment their markets into different buying groups with divergent price sensitivities and then to price discriminate, charging the price-insensitive group more than the price-sensitive group.

Coupons may be rightfully viewed as *ingenious* because they enable sellers to hide their role in hiking the price to the price-insensitive buyers. Sellers simply set a posted price that is higher than it would otherwise be absent the distribution of coupons. The higher posted price is the price that will be paid by people not redeeming coupons who, presumably, are relatively price-insensitive buyers (and must be if coupons are to work their magic on profits and to continue in use). The seller might not be able to tell price-sensitive from price-insensitive customers as they walk in the door, but the seller need not do that. The seller can simply count on the price-sensitive buyers to self-identify themselves by presenting the coupons. We can expect buyers presenting coupons to be relatively price sensitive because of the time and effort they devote to finding the coupons, clipping, storing, and retrieving them, and then presenting them for redemption. By virtue of their going to such trouble, "couponers" declare their interest in getting price breaks, and the lowest prices possible. They also demonstrate, by presentation of coupons, which might be worth only a few cents, that the opportunity cost of their time is minimal, which means that they likely have time on their hands to engage in extensive comparison shopping on price from online and brick-and-mortar sources. Just being aware of alternative products means that they can be relatively responsive to price breaks. (Even consumers who show up at stores with their printed discounts received through emails from online discounters, such as Groupon, have demonstrated their price sensitivity. They have taken the time to register with the online discounter, and then they have taken the time to present the coupon to the store, which is reason enough for stores to deduce that customers without printed discounts are less price sensitive.)

By identifying themselves as price-sensitive customers, couponers reveal, inadvertently, the rest of buyers as being less concerned with price (at least not sufficiently concerned to develop a bank of coupons). In a sense, buyers with coupons effectively enable sellers to stick price increases to buyers without

coupons. Many buyers without coupons must, indeed, be really unconcerned about finding price breaks, given that they often go through checkout counters without coupons, even when the coupons are on multicolor peel-off pads just below where couponed products are shelved. According to one study, something over half of the units of products with coupons on pads just below the products are bought by people who do not go to the trouble of peeling off a coupon and taking it to the counter.

There are several good reasons for expecting buyers without coupons to face a posted price when a coupon promotion is going on that is higher than the posted price prior to the coupon promotion.

- First, the coupon can increase the demand for the couponed product, even among buyers who do not use coupons, because the coupons can
  - Draw attention to advertisements
  - Create "market buzz," especially for new products that, by their newness, have not been experienced by buyers who enticed by the "trial price" after coupon can use the couponed product and pass along their assessment to friends, colleagues, and family members, and
  - Give rise to future purchases, especially when in-packaged and on-packaged coupons are tied to future purchases or to the purchases of other products.[12]
- Second, once buyers with coupons have been identified, then the old prior price, founded on some average of the elasticities of the price-sensitive and price-insensitive buyers, will be lower than the profit-maximizing price that is appropriate from the isolated price-insensitive buyers.

No one should be concerned about buyers without coupons, we hasten to add. Those buyers *can* have—and *do* have, according to research—relatively high opportunity costs.[13] The monetary value of their time that they would have to devote to couponing over a range of products could be greater than the monetary value of the coupons clipped, stored, retrieved, and redeemed. They are simply better off taking the higher prices, just as the buyers with coupons are better off by redeeming coupons the monetary value of which is greater than the monetary value of their time devoted to couponing.

Coupons and Peak-Load Pricing

Coupons enable stores to engage in another form of price discrimination, "peak-load pricing" (a generally unrecognized argument among economists, but briefly explained by economist Steven Landsburg[14]). Grocery stores are usually very busy during the week in late afternoon and early evening. In those peak shopping hours, time-constrained, price-insensitive shoppers on their way home from work dominate store customers. Customers who shop in mid-morning often do not have jobs and are more likely than late-afternoon shoppers to be price-sensitive because they

have time on their hands to search for the lowest prices on the products they buy. Coupons are a device for cutting prices for mid-morning shoppers, which means coupons are also a device for hiking prices (before coupon redemptions) for relatively price-insensitive shoppers during peak hours, reducing prices during off-peak hours, thus allowing a given number of customers to be served with a smaller number of checkout counters than would otherwise be required.

Evidence on Couponing

Marketing and economics researchers have spilled a great deal of ink on the market and bottom-line effects of coupons. One of the strongest empirical findings is, as noted, that buyers who use coupons tend to have lower opportunity costs of time and, as a consequence, have higher elasticities of demand.[15] More concretely, working parents, who are often seriously time constrained from the demands of work and family, tend to be less frequent users of coupons than nonworking women. Senior citizens tend to use coupons more frequently than younger adults.[16] Buyers with cars can take advantage of coupons—and, in general, can be more "deal prone"—than those buyers without cars because buyers with cars often have lower costs of getting to stores with "deals" (with or without coupons).[17]

It also follows that buyers with low opportunity storage costs (in areas of the country with low housing costs) can be expected to be more responsive to coupons. They can stock up on products when coupons are offered.[18] Hence, we might expect that coupon distributions and redemptions will be lower in places like New York City that has high land and building space costs than in places like rural Grundy, Texas, that has low land and building space costs. Indeed, because of difference in land and space costs, we might expect coupon distributions to be greater in the U.S.A. than in Japan.

If coupon redemption is negatively related to opportunity costs, it follows that, from both economic theory and evidence, redemption rates should be positively affected by the dollar value of the coupons and the shelf prices of products, and this is precisely the general conclusion from empirical research on coupon redemptions.[19] Not surprisingly, buyers who were most likely to buy products, before coupons, were most likely to redeem their coupons for those products.[20]

Numerous researchers have indeed found that coupons have been used to segment markets with the end result being what theory predicts. The price-insensitive buyers are charged a higher price than was charged absent the coupon promotion. The price-sensitive coupon redeemers are charged an after-coupon-redemption price that is lower than the price before the coupon promotion, just as the theory of market segmentation predicts.[21] The coupons do what they are supposed to do, not so much as raise total firm sales as to bolster profits, although coupons could do both, which researchers have found to be the case.[22]

If a chief aim of coupon promotions is to get price-sensitive buyers to self-identify themselves, then it is understandable why some retailers will happily take coupons issued by competitors. Indeed, they might prefer to accept the coupons of

competitors than distribute their own, because doing so allows the retailers to free ride on the promotional costs suffered by their competitors (an economic force that can be expected to lead to "too few" coupons issued, just as "too little" will be reduced in the presence of "external benefits"). Also, once the price-discrimination logic of couponing is understood, there is no reason retailers (independent of what dollar value manufacturers place on their coupons) should not start offering "double (or even triple) coupon" deals (meaning the cents off the price is multiplied by two or three).[23] Whether retailers' double coupon depends, as might be supposed, upon exactly how price-sensitive coupon redeemers are. By offering double coupons, retailers can further segment their markets by first redeeming the coupons of buyers who accept the enticement of the original value of the coupons. Once those customers have been served, double coupon offers can then be used to appeal to buyers who need a greater price enticement to incur their higher opportunity and storage costs. Double and treble couponing, in other words, enables sellers to charge different buyers at different points on the sellers' demand curves different prices (a form of price discrimination).

Coupon Collusion

The foregoing analysis of coupons is built around one theme: coupons are a creative way for firms to exploit their market power to generate extra profits. Coupons may for some firms in some markets be promotional devices for extracting extra profits, and only that; however, we should not slide down the slope of assuming that the distribution of *all* coupons in *all* markets is a promotional device that serves no competitive purpose. We stress that caveat because real-world coupon strategies seem to suggest that coupons can be founded on good old market competitiveness.

In the mid-1990s major coupon distributors began trying to curb their coupon distributions, an action that is inconsistent with the theoretical presumption that coupons allow everyone to increase profits. General Mills announced in 1995 that it intended to do away with coupons in favor of "everyday low prices." But when other cereal manufacturers did not follow their lead, General Mills abandoned its termination of coupons.[24] The following year, Procter & Gamble and nine other major coupon distributors agreed to terminate the distribution of all coupons in three cities in upstate New York. Consumer groups protested, going so far as to organize boycotts of P&G products. P&G terminated its coupon cartel when antitrust prosecution was threatened, paying out $4.2 million in penalties to close the antitrust investigation.[25]

This case is interesting because the particulars do not square with the type of monopoly, price-discrimination theory of coupons developed to this point. If coupon promotions do nothing more than enable manufacturers to generate monopoly profits, why would manufacturers want to suppress their distribution? The transparent answer is that suppression makes no economic sense—*if coupons are not used in competitive market environments*. The antitrust enforcers should not

want to break up a cartel, because such a break-up would send the conspirators back to extracting monopoly profits through price discrimination embedded in their coupon distributions.

The Economics of Information and Coupons

Again, the P&G coupon cartel case makes no sense from conventional monopoly, price-discrimination theory but does make sense from a different theoretical perspective, the economics of information. The late George Stigler argued in his 1961 seminal paper on "The Economics of Information" (briefly mentioned in Chap. 13) that one of the most unrecognized but widespread features of markets is "price dispersion," which means that product prices (and qualities) can differ across markets.[26] The extent of price dispersion can be influenced by, among other economic considerations that affect buyers' search costs, the information consumers collect on prices, a point that led Stigler to several important deductions:

- The greater the size of the market (in terms of geographical breadth and count of products), the greater the search cost and the greater the degree of price dispersion across the market
- The more buyers spend on a good, the more incentive they have to incur search costs and the lower the price dispersion
- The greater the number of repeated purchases, the more extensive buyers' searches and the lower the price dispersion.[27]

According to Stigler, consumers will necessarily be driven to acquire some optimal amount of information on prices (and other product features), given search costs, which means they will remain uninformed about some prices in their markets. Buyers can also be expected to acquire more information on the prices of more products when search costs fall.

Stigler's argument suggests that search costs can fall for any number of reasons, not the least of which might be the advent of new and more effective means of advertising product prices (and features). Why? Because advertisements can contain easily accessible information on prices, which can ease the search costs of buyers, causing them to know more than they would know without advertisements about where to find the best buys. Advertisements might be costly, but they can still lead to lower (average) prices because they induce price competition as buyers move to the lower price sellers in their markets.

Coupons can be seen not only as means of competitively lowering prices, but also as one more effective form of advertising product prices, which means that more consumers are alerted to more prices across their markets that, in turn, can intensify price competition among all firms (both those that distribute coupons and those that do not). Coupons might still result in a gap in the prices paid by relatively price-sensitive and relatively price-insensitive consumer groups, but the gap can emerge at a price base that is lower than would have been realized if coupons were

never created and widely used. In short, the profits of firms in given markets can, because of coupons, be lower than they would have been without coupons, or if coupons, as a form of spreading price information, were suppressed.

According to Stigler's information economics, coupons can increase market efficiency in two ways: First, they make advertisements more cost effective. Second, by increasing consumer information of the existing price dispersion, coupons can foster greater price competition among manufacturers. From this perspective, P&G's coupon cartel makes economic sense, for P&G and its conspirators, but not consumers. P&G, no doubt, would like nothing better than to suppress any force that encourages price competition.

This perspective also makes understandable an array of research findings on an important effect of coupons on many shelf prices, namely that shelf prices have often gone down—not up—with coupon promotions.[28] Faced with a lower market demand for their products, manufacturers may use need to implement a price cut of some sort,[29] and coupons can be used to make sure that all consumers do not receive the full price cut. Coupons also tend to be used most heavily at the end of manufacturers' fiscal years, when they may be trying to lower their inventories and to boost revenues to improve their profit picture.[30]

Coupons can also add to store efficiency by allowing stores to expand their customer bases and engage in peak-load pricing. The customers induced by coupons to shop at stores in off-peak hours enable stores to spread the cost of their plant and equipment over more sales. As noted earlier, stores might even be able to reduce their employment of plant, equipment, and checkout counters. Such efficiency improvements can show up in increased market supply of available outlets and greater downward competitive pressures on prices, which can lower posted shelf prices, as well as lower prices after coupon redemptions at times other than off-peak hours.

Sellers (both manufacturers and retailers) may, in short, be using a two-prong approach to cutting prices and improving sales. Instead of cutting prices across the board, they cut prices to price-insensitive buyers somewhat, but then offer price-sensitive buyers an even greater price reduction through coupons. In effect, the price charged by price-insensitive buyers is still higher, *relatively speaking*, than the price charged price-sensitive buyers.

Shelf prices could also fall with the issuance of coupons because of market reactions of competitors. Marketers Aviv Nevo and Catherine Wolfram have presented this argument: Let us suppose that Kellogg wants to increase its sales of Raisin Bran with a narrowly targeted coupon promotion among relatively price-sensitive college students. General Mills might try to protect its market share in breakfast cereals with a lower shelf price for Cheerios, or with a coupon of its own for college students just to match Kellogg's coupon promotion effort.[31] But then Kellogg might respond by broadening its coupon distribution to professors, and then to students' parents, and so on. The end result can be that coupons are spread so widely that Kellogg gives up on coupons and decides to lower its shelf price.[32] This is to say, efforts to price discriminate to bolster profits can, under some market

conditions, lead to across-the-board shelf-price reductions and to lower, not higher, firm profits.

Concluding Comments

For a long time economists have told their students that coupons are a creative mechanism by which price-sensitive consumers notify sellers of their price sensitivity, enabling sellers to segment their markets and to charge consumers without coupons more than they charge consumers with them. The presumption has always been that coupons elevate sellers' profits. While we have developed the standard argument in this chapter (and still believe that it has a place, albeit limited, in monopoly/price-discrimination theory), we caution that competition has a way of nullifying the profitability of the most creative pricing and promotion schemes, including coupons.

Chapter 16
Why Some Goods Are Free

Economists spend a great deal of time explaining how market prices are determined, and almost all of that time is spent explaining why prices are positive (above zero). Their price analyses almost always reinforce an often-repeated quip: "There is no such thing as a free lunch."

Economists' emphasis on positive prices is understandable because most goods cost something to produce, and most production processes are constrained at some point by the old and familiar *law of diminishing returns*, which simply means that when more and more of a variable resource like labor is added to a fixed resource, like an individual plant or parcel of land, beyond some point the additional output from the additional labor must diminish. If the additional output did not begin to diminish beyond some point, then the world's production of a good such as tomatoes could be grown on a single acre of land (or really in a flower pot). All that would be needed is for the number of workers to be continuously expanded. Since we know that growing the world's tomato supply on an acre of land is not possible, it follows that for most production processes additional output from each additional unit of labor added will begin to diminish beyond some point. It follows that beyond some point, the additional or marginal cost of production will begin to rise, at least for most goods and services. The positive and increasing marginal production costs will place a lower bound on the price that can be charged.

Granted, the plant and land size do not have to remain fixed for all time. All resources can be expanded with resulting *economies of scale*, or falling production costs, at least over some initial range. However, firms can become so large that they run up against organizational and communication constraints. Workers' and managers' incentives to contribute as productively as possible to firm efficiency and profits can be undercut by the fact that their individual contributions can, beyond some size firm, become hard to measure. The number of employees and size of the firm's output can obscure a workers' lack of contribution. Hence, *diseconomies of scale* can be expected beyond some point in firm growth, which raises again the prospect of positive rising marginal production costs and a lower bound to the price that can be charged. That is, profit-maximizing firms can be

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_16,

counted on to resist charging prices below their (positive) marginal cost of production, which means that the competitive price will be something above zero.[1]

We would not normally expect a business to sell a good for a price below its marginal cost of production. If the price for the good were $5 and the marginal production costs were $6, the firm would be losing $1 on the last unit produced. Hence, the positive and rising cost of production will usually ensure that the price charged will be positive.

Having learned these lessons with care, many students might understandably be puzzled on leaving their introductory courses by the prevalence of so many goods that have *zero* prices, or are "free." All they have to do is look around for free goods, from parking to Internet access at their universities and in coffee shops, to any number of sources of information on the Web. Microsoft has for more than a decade given away its browser, Internet Explorer. For several years, Dwight Lee and McKenzie gave away one of their textbooks over the Internet, until a publisher asked to publish it, at which time they removed it from the Web site. Even now that the textbook has been published, anyone can download, free of charge, the more than 60 video modules, which review key components of the textbook.[2]

Free goods: what a good puzzle to face! We will not be able to explain zero (or even below-zero) prices of all goods that carry them, but we can present arguments other economists have developed to explain some of them, and add some new arguments, as well. The discussion is necessarily wide ranging, starting with an explanation for free wireless access in coffee shops and ending with a discussion of why some "piracy" can be good for producers. In between, we explain why the pricing strategies of Microsoft and street-drug dealers have much in common.

Profits from Zero Prices

Puzzlement over zero prices can be relieved often by a simple fact of business life: many firms can increase profits by providing customers a valuable service and not charging them for it, at least not directly. A good example of zero pricing is the wireless Internet access provided in many coffeehouses. This access makes it possible to enjoy a cup of coffee while catching up on e-mail or the news from a favorite Web site. The wireless access is obviously costly to provide, but it is also a valuable service to coffeehouse customers, one for which many would no doubt be willing to pay more than enough for the coffeehouse to recover its cost. But because of the nature of wireless Internet access, not charging for this service can benefit the customers and, at the same time, increase the profits of the coffeehouse.

First, consider the customers' benefit from cups of coffee. Coffee consumption is said to be "rivalrous"; that is, when one person benefits from a particular cup of coffee, someone else is denied those benefits. Charging for the coffee by the cup makes sense because the charge ensures that the person buying the coffee by the cup places a monetary value on the cup of coffee that is at least as much as the value that someone else who could also drink that cup would place on it.

In the case of Internet access, on the other hand, once access is provided, it is simultaneously available to everyone in the coffeehouse. There is no rivalry in consumption. When one person is "consuming" Internet access, her consumption does not reduce the access available to others. In this case, charging a customer for Internet access would reduce her use, and benefit, without benefiting another customer and without reducing the cost to the coffeehouse. So, once the access is provided, charging for it directly will reduce the total value it provides consumers. Customers are better off without a charge.

It is tempting to think that this is such an obvious point that it is silly to make it. Are not customers always better off getting things they value without paying? Actually, no, they are not. Clearly, people are better off not paying for goods if those goods are still made available. But how many hamburgers, shirts, and cars would you get without paying enough to cover their costs and provide suppliers with a reasonable profit? We are better off paying for the goods we want than not paying and going without.

But, in the case of Internet access, the local coffeehouse can profit by giving away the access. Indeed, it can actually profit more by giving away access than by charging for it (with a slight exception considered in a moment). Since the more consumers who use the access, the greater value they realize from patronizing the coffeehouse, the more the coffeehouse can charge for coffee (and whatever else it sells). Also, once Internet access is provided, there is no additional cost to the house when another customer logs on. So, if the coffeehouse charges for Internet access, it reduces the use of the access, the value to consumers, and therefore the total amount it can charge them without reducing its cost. The best strategy is then to make the access free of charge and let the customers pay for the value received in the price of the coffee.

There is a parallel here between a service like Internet access in a coffeehouse and the decorations in, and general ambiance of, restaurants and stores. It is costly (easily running into the hundreds of thousands of dollars) to provide an attractive look and feel to a restaurant, but when done well, customers value it by more than the costs. It would not pay for the restaurant to charge for ambiance directly, however, since once it is available there is no extra cost to the enjoyment another customer receives from it. The better approach is to charge for the ambiance in the price of the meals, which people are willing to pay because of the pleasant surroundings.

There is a qualification to the above pricing strategy that leads to considering situations that make it profitable to completely reverse the strategy by charging for admission into an establishment and then giving away what is served inside. To see this, let us go back to the coffeehouse and Internet access. When stating that once the access is provided, it costs nothing when another person uses it, we ignored an important limitation—space. Coffeehouses have only so much space and if they have an attractive feature like Internet access, then some will come primarily for the access, linger excessively, and crowd out others who are also interested in the coffee. Obviously, the more popular a coffeehouse, the more of a problem space is likely to be. This may explain why Starbucks initially charged for using its wireless

"hotspot" service, which was as much a charge for the use of a table as it is for the use of the Internet access.[3] However, Starbucks discontinued this charge, probably because other coffeehouses provided wireless access at no charge. Clearly, more and more hotels are providing Web access at no charge—more accurately, no direct charge. And such is to be expected. Back when "social networks" were in what now seem to be the electronic dark ages, just a decade or so back, few people used the Internet. Now, Internet use is ubiquitous and, for many people, all the time with multiple electronic devices.

Space limitations are important in the pricing of many goods and services. For example, the fee universities charge for taking courses commonly depends on the number of units taken.[4] Students are obviously paying with their tuition checks (or credit cards swipes) for the right to sit in class and benefit from the knowledge and lectures of their professors. Use of the university facilities such as the library is made available at no additional charge. But, there are other facilities on campus that are likely to be more popular than the library, and more subject to space limitations, such as the recreation center, the parking decks, and the campus movies. Not surprisingly, students are typically charged extra for the use of these facilities.

Space limitations also provide part of the explanation for why the prices on dinner menus are higher than those for the same, or almost the same, meal at lunch. People typically do not linger over lunch as long as they do over dinner, so at least some of the higher dinner prices are charges for the extended use of the limited restaurant space.

When the facility itself is the main attraction because, for some reason, it is special, if not completely unique, then it may be appropriate to charge for admission to the facility and give away many of the things consumed in it. Few people go to a restaurant or coffeehouse just to enjoy the décor, even when very nicely done. The food and coffee are the dominant attractions, and so it makes sense to let people enter the restaurant for nothing and charge only for the food. This is not true of cruise ships, however, even though they are occasionally thought of as floating restaurants. The main attraction of cruise ships is the cruise, not the food. If people were allowed to board cruise ships free of charge, they would quickly be full of passengers, with, no doubt, a long line left at the gangplank as the ships pull away from the dock. It would require outrageous prices for the food served on board to cover the cost of building, operating, and maintaining the ship. Under such a pricing arrangement, cruise ships would be overcrowded with dieters and provide less value to the typical passenger than they now do, and therefore generate less profit. Cruise ships create far more value and profit by charging people on the basis of the quantity and quality of the space they want (more for a large cabin with a view than for a small cabin without one), and including the food in the price of the cruise.[5] Of course, there are services on board, like massages, haircuts, and skeet shooting that are paid for separately.

Disney World and Disneyland are also good examples of facilities that are major attractions in their own right, quite apart from what patrons do once they get inside. Many people would enjoy walking through Tomorrow Land and along Main Street in Disneyland without going on any of the rides, so it makes sense to charge admission to the park but not for the individual rides. Amusement parks or carnivals

with less ambience, on the other hand, might charge no admission fee but sell tickets for the individual rides, simply because there is no value to being there except to go on the rides. There are, of course, plenty of things for sale in Disneyland and Disney World, including food. As opposed to a cruise ship, it makes no sense to include the price of food in the admission fee to an amusement park because people remain in the park for various lengths of time. Some people stay long enough to get breakfast, lunch, and dinner, while others get only lunch. If food were covered in the admission price, those who got only lunch would be effectively subsidizing those who downed three meals.

The point of this section is charging for everything a firm sells, at least directly, is not always a good idea. Providing services for "free" is often more profitable because doing so increases the value of complementary services on which firms can set prices at levels that generate more revenue than would be achieved by charging directly for everything. Charging one price for a group of related services also eliminates the expense of collecting fees, while increasing customers' convenience and reducing their transactions costs.

The Nature of Products and Pricing Strategies

When economists talk about positive prices for goods, they typically mean what might be called "regular goods." In order for a good to be considered "regular" consumers must know its value; its value must be unaffected by how many other consumers are buying and using the good, and current consumption of the good will not affect future consumption.

There are three classes of goods that do not fit the usual theoretical mold economists use:

Experience goods
Network goods
Addictive goods

The inherent characteristics of these goods can provide producers with an incentive to lower their prices, if not give them away or even *pay* prospective consumers to buy them, at least for an introductory period of time. Of course, producers can be expected to make price concessions in the short run, but *only* if they can reasonably count on future payoffs that more than cover the initial below-cost pricing, which they can rightfully view as a part of the required investment in developing the market for a new good.

The Pricing of Experience Goods

Experience goods are goods whose value cannot be fully known before using them. When we contemplate buying something new—say, a new laundry detergent or the first published work of a budding novelist—we have, by definition, precious little

information on the quality and usefulness of the good, and may have even less of a basis on which to judge the good's subjective value to us, a fairly obvious point that economist Phillip Nelson brought to economists' attention nearly four decades ago.[6] True, we may have used products from the manufacturer of the laundry detergent or the publisher of the novel, but the value of such information can be limited since a substantial majority of new detergents and books introduced in any year are disappointing in one or more regard, and many fail miserably before the end of their first year on the market.

Hence, trying new products of any kind can be a gamble for consumers just as for producers. Producers might introduce ten products in the hopes that one or two of them are sufficiently successful to cover their own costs, plus the development and production costs of the eight or nine products that are poor financial performers, or that fail altogether. Similarly, consumers might have to try ten products in order to find one or two products they like sufficiently to make all ten purchases worth their prices plus the search costs incurred. Because of the gambles involved, many producers put only the most promising products into production—those that seem to be a quantum leap ahead of any available products or those that pass the assessment tests of focus groups or reviewers. Consumers often do the same thing by staying with products they know or similar products. This means that producers often have to go with an even more restricted set of new products: those that can cause consumers to change their entrenched buying habits (patterns or rules) because they are perceived to be only marginally different from established products. Consumers often confront an array of "new" products touted as "improved," which all too frequently are not, and will understandably be guarded in the products they test. For this reason, "For new technology to replace old," the late management guru Peter Drucker is widely reported to have once quipped, "it has to have at least ten times the benefit."

Consumers' ignorance of new products is, however, not an insurmountable barrier to consumption; rather, it is just another economic (cost) barrier for both producers and consumers to overcome. And, there are gains to be had by both consumers and producers from overcoming consumers' ignorance barrier.

Consumers can, of course, diminish their own ignorance of the intrinsic value of new products by experimenting with an array of new products and by searching out media reports of the products and objective and subjective evaluations of experts, such as product reviews from the laboratory technicians at publications like *Consumer Reports*. Consumers can also seek the advice of friends, family members, and colleagues about their new product experiences. Indeed, many family, collegial, and friendship groups, who have grown to know each other's preferences and who share their acquired information from experiencing new goods, can serve two economic functions:

- First, information-sharing groups can reduce the number of new products each group member needs to experience, thus reducing each member's search costs.
- Second, an information-sharing group can increase the diversity of the group's "portfolio" of new goods, because of the enhanced information provided through

members' objective and subjective evaluations. Just as selecting a diverse portfolio of financial securities can reduce the risk investors face and can increase the rate of return for the risk takers, so groups who share information about the value of new goods can reduce the risk members face in buying them.

With people accustomed to obtaining product information from others, it should be no surprise that television ads, especially "infomercials," rely heavily on "testimonials" about products. Consumers might rightfully fear that the testimonials have been corrupted by payments made to the people who testify to products' worth, and therefore can be expected to discount the testimonials' value, but that hardly means that they can or will *totally* dismiss them. After all, testimonials can be remembered in compressed form without specifically remembering the people giving them.

Consumers might also give a testimonial some credibility since the spokesperson did think enough of the product to endorse it for a fee. Nevertheless, consumers' reluctance to give credence to aired evaluations for unknown products from unknown people helps explain the value of brands and "star power" on consumer purchases. Well-known brands can corrupt their own values by asking people/actors to provide fraudulent evaluations. Established "stars" can likewise undermine their own credibility (and future income stream) if they endorse seriously flawed products.

That is to say, consumers are likely to give more credence to product endorsements for established brands from celebrities (or anyone else whose reputations are a significant source of their future incomes) than to unknown people because the stars have more to lose from misrepresenting their true assessments of the products they are endorsing. Consumers can also reason that producers are paying "big bucks" for celebrities' endorsements, which can suggest that the producers have confidence that the products being endorsed are superior to others and will measure up to the stars' claims.

Naturally, the value of information about new products depends on the prices and variety of similar products, as well as the frequency of purchases and durability of goods. Consumers may seek little information about the experiences of others with, say, penny gumballs, since it is cheaper for most consumers to try several different gumballs than to take the time to ask others for evaluations. On the other hand, if the options are expensive—say, plasma or LCD screen televisions—then experience sharing is likely to be common. If there are few options in a product category—say, cans of mixed nuts—consumers might find trying all options to be less costly than seeking others' evaluations. However, when there are many options, as is the case for new fiction and nonfiction books (a market in which tens of thousands of new books are released each year), then product reviews and word-of-mouth information sharing can be expected to be important to the success (and failure) of books.

If consumers expect to purchase a product frequently or if the product is highly durable, then consumers have a strong economic motivation to engage in information searches, including obtaining the personal assessments of others in their relevant groups. For a good that is bought frequently, such as bread, there are

greater gains to be had from finding the right product, and substantial reason for incurring search costs. Or, if a good is durable (and especially if the good is expensive, as is the case with a car), then an extended search can alleviate substantial costs of making mistakes.[7]

Regardless of how they seek to overcome their ignorance, we can expect consumers to extend their search for information about prices and the objective and subjective values of new products so long as the additional gains from searches exceed the additional search costs. And, we should expect the additional gains from an extended search for information on prices and product quality to fall, at least beyond some point, since consumers will initially focus their attention on the most productive avenues of search. Additional costs of searching for information will probably escalate when a search is extended, since consumers will usually start their searches by giving up their least valuable activity. Since, by definition, the cost of searching is the value of what could have otherwise been done in that same amount of time, consumers make the cost of the initial search as low as it can be. To extend their searches, consumers have to give up more and more time to do other things, which means that the additional cost of extending their searches (and the value of what is given up) will rise.

The point is that as a search for information is extended (and the additional gains fall as the additional costs rise), there is some rational limit to how much people will do to allay their consumer ignorance, which means that there are economic limits to how many goods people will experience. As a result, consumers will remain, to some degree, rationally ignorant of the prices and the objective and subjective worth of many products, and buying mistakes will abound. But the costs involved in these mistakes are expected to be less than the costs of avoiding them.

Since the cost of searching out pricing information is typically far lower than the cost of searching out information about product qualities (given that experiencing a good can be far more time consuming than reading and comparing prices), we would expect consumers to be far more knowledgeable about the prices of an array of new (and old) goods than their objectively and subjectively assessed qualities. To the extent that consumers restrict both their searches and their experiences with new goods, we should expect consumers' search costs and the costs of experiencing new goods to somewhat limit the entry of new competitors. Limits on entry should give producers of established, long-experienced goods a market advantage, meaning a monopoly edge, or the ability to charge more for these products than if search costs were lower.

Put another way, the higher the search costs for information on the worth of new goods (and bad experiences with new goods are part of the search costs), the more producers of established products can charge. This is because consumers can reason that it is less costly for them to continue to consume a known good and pay a higher price for it than to incur the search costs necessary to find alternative products that are better deals.

Consumer search costs can also create an upper limit on the prices that producers of established products can charge. Producers of established products must understand that price hikes can lead to extended consumer searches and more consumers

defecting to new products that prove to be "improvements" over the established (overpriced) products.

The Internet (along with other forms of media) has been a boon for consumers seeking pricing and product quality information, mainly because the Internet has lowered search costs for comparative pricing and for objective and subjective assessments of product quality. Many Web sites now provide comparative prices for just about any good or service. Product reviews by experts and users are also easily accessible on the Internet. As a consequence, the Internet has undercut the strength and duration of any monopoly pricing position that established products might have had.

How can producers of new products get around consumer inertia grounded in risk aversion and search costs? For a growing array of producers, the solution has been to allow consumers to "experience" the good by giving away the product initially or by passing out samples of new products bundled with Sunday newspapers or offered at "taste booths" in stores. Costco now has so many sample booths in its warehouses on Saturdays and Sundays that shoppers can practically eat lunch by sampling foods as they move about the aisles. Car dealerships offer extended test drives that may last for days. Newspapers often offer free trial subscriptions to new residents. Music buyers can go online and stream samples of performers' music. Many studios offer movie trailers both in theaters and online. Publishers now allow prospective buyers to download the first few chapters of new books for free.[8] Many professors now stream video lectures through YouTube, Apple's iTunes university "store," and their own universities' Web sites, almost all without charge.

Why the "freebies"? For producers, freebies can have both competitive and monopoly intentions. The competitive intention is perhaps obvious. Producers of new products use freebies to lower consumers' search and experience costs, thus encouraging consumers to move away from established brands, as sampling increases sales.

According to one study, 92% of in-store shoppers prefer free product samples to cents-off coupons.[9] Another study found that 70% of shoppers will try a sample when asked and 37% of those who try the sample will buy the product. In-store samples can boost sales on the day the samples are given out by as much as 500%.[10] Such sales results explain why stores and manufacturers spent in the early 2000s $1.2 billion providing free product samples.[11] While another study did not find a difference between the increase in product sales to samplers and nonsamplers, it did find that sales of sampled products to the samplers goes down as the number of samplers increases at any one time.[12] Costco store managers we've casually and briefly interviewed have an easy explanation for the growing number of sample booths they have scattered throughout their stores. Daily sales for almost any product that is sampled can rise 30% above the sales bases for days when the samples are not provided. For meat samples, daily sales can "easily" more than double.[13]

However, sampling can also have monopoly intentions and effects. Any increase in demand can translate into the producer being able to charge more for purchased

products than they would otherwise. Indeed, some producers may hike their prices during the time they are handing out freebies. Producers can also reason that by giving consumers free samples, they will cause consumers to truncate their searches for objective and subjective evaluations of other products, which suggests that producers can hike their prices somewhat because their sampling encourages consumers to remain ignorant of other products. The sampled product can then become the established product, which means that producers can hope that sampling lowers consumers' sensitivity to a price increase. Of course, the sampling advantage might not last for long because other producers will have reason to follow suit and provide samples or otherwise offer free trials.

Producers' use of freebies is necessarily limited by the ability of other producers to benefit from the experience consumers get from the freebies. If consumers can sample a new product—say, a new set of earphones—and then buy the exact same product from someone else, then producers are going to be very reluctant to provide the samples, for the simple reason that producers providing the samples incur costs that producers not providing samples do not have to incur. Producers not providing the samples still reap gains from greater sales, which can be further expanded because these producers can charge a lower price than those providing samples.

Hence, one market condition that helps to explain the prevalence of "free goods" is, ironically, restrictions on competition. Because branding is one market entry restriction, branding (or at least the potential for branding) can encourage the distribution of freebies (or just samples). Brand loyalty can restrict consumers from switching to other producers and can restrict the entry of potential competitors (or duplicators).

Such entry restrictions should not be viewed as all bad, if they encourage freebies and sampling—and, for that matter, encourage the development of new products and their markets. We have copyright laws that restrict market entry precisely to provide requisite economic inducements for the development of products and their markets. Publishers would not be likely to release nearly as many new books each year and provide for sampling on the Web if, once the books and their markets are developed, anyone could pirate the books and sell copies more cheaply than the originating publishers who incur the book and market development costs.

Indeed, pirating of digital (or electronic) goods—digital books, digital music, digital movies—is a major threat to the development of such goods precisely because the reproduction (marginal) cost of digital goods is either zero or close to zero. That means that pirates can make money at prices slightly above zero. The problem of piracy is compounded by the fact that all buyers of digital goods can potentially become distributors by giving away, via the Internet, numerous free copies to friends, family members, and colleagues who themselves can become relay pirates. Piracy kills off original producers' incentives to develop digital goods in the first place. "Free (digital) goods" could come with a huge societal cost—the nondevelopment of goods that, if they were developed, could improve human welfare far more than free goods.

The Pricing of Network Goods

Consumers obviously receive value from the candy bars they eat. The value of their candy bars is not consequentially affected by the fact that other consumers may (or may not) be buying candy bars. A *network good* is categorically different. It is a good the value of which is affected by how many other people are buying and using the good. The greater the number of users of a network good, the greater is its value to all users.[14] The classic example of a network good is the telephone. Telephones require a real-world, physical network through which calls can travel. A telephone is of no value to the owner if the owner is the only person with a phone. If someone else owns a phone, then the value of the phone goes up for both phone owners because they can call each other. As the sales of phones increase, the value of the individual phones can increase because each in the growing number of phone owners has an expanding array of calls he can place.

The operating system for desktop and laptop computers is also a network good with "network effects" (or benefits to users from the prevalence of other users) that could rise even more rapidly with the number of users than is the case for the telephone. Unlike the telephone, anyone with a personal computer can get some benefits from owning an operating system even if no one else owns one, because the computer owner does not need to involve anyone else to use his or her computer. However, if other people use the same operating system, then all users can share their work and perhaps more effectively develop projects together. Thus, the value to all users can rise with the number of users.

In addition, with a rising number of users of a given operating system, software developers have a growing incentive to write applications for the operating system, which increases its value to all users, and thereby its demand. The increasing demand for the operating system can stimulate the development of even more applications for the operating system, which can further increase its sales.

If a given operating system shows signs of becoming dominant, then the market can "tip" toward the system as everyone starts buying it in *anticipation* that application developers will write more applications for it. Application developers can write more applications for the operating system in *anticipation* that users will all want to use the operating system, all because people begin to believe that the system will be dominant and will have a greater array of more valuable applications than alternative operating systems. The developer of the operating system to which the market tips will see its demand escalate, with its market share expanding *because* its market share is expanding, while other operating system developers will see their demand and market shares contract as their operating systems' value for their users drops with the contraction in the number of their users and available applications.

For a network good such as an operating system, there are economies of scale on both the supply and demand sides of the market. There are scale economies on the supply side since an operating system is a "digital good," which means its reproduction costs are close to zero, if not zero, because software is (largely)

nonmaterial, made of nothing more substantive than 1s and 0s, or electrons. A digital good can be duplicated by pressing a few buttons on a computer.

There are scale economies on the demand side because, as noted, the value realized by users escalates with the growing number of other users and applications. Under such market conditions, we should initially expect the competition among existing operating system developers to be aggressive, if not fierce, because the payoff can be so big: dominance of the entire market. The loss is also potentially large—elimination from the market—as consumers and application developers move to the dominant operating system.

Producers of regular goods, such as the candy bar mentioned earlier, have the usual reasons to lower their prices. They face the ever-present law of demand, or the inverse relationship between price and quantity. If a regular-good producer lowers its price, it can sell more units to more consumers. The consumers who buy the regular good individually gain because of the lower price, but not because of the greater sales to more people. The demand, along with buyers' value of the good, stays put with a reduction in price. Hence, when considering regular goods, economists stress, in effect, a rule to their students: "Price does not affect *demand* (or the functional relationship between price and quantity). Price affects the *quantity demanded*. Other market considerations—for example, income and weather—affect demand (that is, the position of the demand curve when graphically illustrated)."[15]

Producers of network goods face the usual incentives to lower prices in the near term since lower prices can lead to greater near-term sales. However, they have an additional incentive to lower prices: the greater current sales can increase the value of the network good to all consumers. Therefore, greater sales can hike future demand. Moreover, an even lower current price for the network good can lead to even greater current sales, which can lead to an even greater hike in the future demand.

Following the inherent market logic of network goods, there is no reason why producers of a network good such as the operating system should stop lowering its price to something that is "low." Why not "charge" a zero price? For that matter, why not "charge" a below-zero or negative price (which means the developer pays the users to buy the operating system)? Such lower prices can also stimulate initial, short-run "sales," raise current use, increase the array of applications, and hike future demand even further than future demand would be with only a "low" price.

Of course, zero and below-zero prices cannot be expected to last forever because the operating system developer must ultimately be able to cover development costs. Indeed, the developer can be expected to charge zero and below-zero prices only because such prices enable the developer to eventually raise prices with the expansion in the future demand. With the higher future price, the developer can more than cover current and future production costs and any initial outlays made in the form of below-zero prices.

That is to say, to justify initial zero and below-zero prices, the developer must anticipate some monopoly or market power that will enable it to charge above-competitive prices going forward. In the case of an operating system, the developer

might acquire an ability to charge above-competitive future prices because users can become "locked in" to the operating system, but only to the extent that users confront the prospect of incurring "switching costs" to move to another operating system. To switch operating systems, users may have to buy and learn another operating system and maybe even a new computer. Users will also have to forego the benefits of belonging to the established operating system network with all other users and with the array of available applications. Because of such switching costs, alternative operating systems may have a tough time entering the market and attracting users.

While restricting entry, switching costs can have benefits not only for the established operating system developer, but also for consumers. First, the switching costs can hold the network together, with the network benefits continuing to flow to all users. Second, the prospects of the operating system developer being able to charge above-competitive prices and to reap monopoly profits in the future can heighten the operating system developer's incentive to lower its price initially for the purpose of developing the network and to aid application developers in writing programs for the operating system. A reasonable working pricing rule could be: the greater the expected future profits, the lower the initial price—and the more likely the current price will be zero or below zero.

Third, switching costs can be expected to impose an upper bound on the price the established operating system developer can charge in the future—and, consequentially, a lower bound to the initial price. If users perceive that the price that will be charged in the future is greater than the perceived switching costs, then users can be expected to make the switch to another operating system.

The established operating system developer's ability to charge a high price can also be checked by new entrants proposing to cover some of the users' switching costs. Why would any new entrant do such a thing? The answer has already been laid out above in the discussion of the interaction between the current price charge and future demand: a new operating system entrant might cover some switching costs with the intent of building its own network, thus enabling the entrant to charge above-competitive prices in the future. This line of argument means that any established operating system developer might dominate its market—indeed, it might be the only operating system developer—but can still face strong competitive pressures to contain its future price that, again, can restrict the incentive the operating system developer has to lower its initial price.

And, the operating system developer has to recognize user fears that he will in fact charge an exorbitant future monopoly price, making users reluctant to take the initial bait in the form of low, zero, or below-zero initial prices, and will not join the network. That is, user fears of exorbitant future price hikes can make it difficult for the operating system developer to build the network and become the dominant, or only, operating system developer, all of which can, again, check the ability of the developer to charge a monopoly price in the future, which can also check how far it can lower its initial price.

Network Effects and the Microsoft Antitrust Case

The foregoing line of argument obviously helps to explain why Microsoft's Windows now dominates the operating system market, with more than 80% of the world's personal computers running Windows. In fact, Microsoft's chairman Bill Gates laid out the forgoing pricing logic for a network good like an operating system in 1981 in a conference talk. Gates asked his audience of Microsoft executives at a retreat:

> Why do we need standards? It's only through volume that you can offer reasonable software at a low price. Standards increase the basic machine that you can sell . . . I really shouldn't say this, but in some ways it leads, in an individual product category, to a natural monopoly: where somebody properly documents, properly trains, properly promotes a particular package and through momentum, user loyalty, reputation, sales force and prices, builds a very strong position with that product.[16]

In mid-1985, Gates wrote John Scully, then CEO at Apple, asking if Apple would consider licensing the Mac operating system to Microsoft. Gates explained to Scully that the Mac system needed to be disconnected from a particular computer and then sold to *all* computer manufacturers at a low price in order to build a network of users and application developers. Scully turned down Gates, and Gates followed the strategy of offering Windows at a low price and, to overcome switching costs, easing the problems new and established application developers faced in writing for Windows by freely giving away application development kits.[17] The rest is history. The Mac operating system lost its market dominance and IBM was never able to get market traction with its OS2 operating system, while Windows took over the operating system market.[18]

Consequentially, Microsoft became what the Justice Department viewed as a monopoly. In its antitrust complaint filed in 1998, the Justice Department charged Microsoft with being the "sole entry point" to the operating system market and having "no viable competitor,"[19] all founded, the Justice Department attested, on the special economics—network effects and switching costs—of the operating system market.[20] The federal district judge presiding over the antitrust case concurred totally.[21] Moreover, Microsoft was protected from competition by the "application barrier to entry," the tens of thousands of applications that had been written for Windows, which "would make it prohibitively expensive for a new Intel-compatible operating system to attract enough developers and consumers to become a viable alternative to a dominant incumbent in less than a few years."[22]

Economic legal consultant Franklin Fisher gives more details of the Justice Department's network theory of market dominance in his testimony for the government:

> Where network effects are present, a firm that gains a large share of the market, whether through innovation, marketing skill, historical accident, or any other means, *may* thereby gain monopoly power. This is because it will prove increasingly difficult for other firms to persuade customers to buy their products in the presence of a product that is widely used. The firm with a large market share *may* then be able to charge high prices or slow down innovation without having its business bid away (emphasis added).[23]

Fisher adds later, "As a result of scale and network effects, Microsoft's high market share leads to more applications being written for its operating system, which reinforces and increases Microsoft's market share, which in turn leads to still more applications being written for Windows than for other operating systems, and so on."[24]

When Microsoft began giving away its browser Internet Explorer and "paying some customers for taking IE [Internet Explorer],"[25] the Justice Department charged Microsoft with "predatory" pricing, a strategy that could only be designed to destroy Netscape, the then-dominant browser on the market, and to protect Microsoft's monopoly in the operating system market.[26] The Justice Department argued without qualifications in its filing of facts with Judge Jackson that Microsoft's business practice, including its pricing strategy, "makes sense *only if* there is a monopoly to protect."[27]

What is really baffling about the Microsoft antitrust case is that both the Justice Department and district court judge failed to understand that Microsoft's zero price for Internet Explorer could be justified by the network-effects arguments on which the lawyers and economists at the Justice Department had founded their original antitrust complaint. First, unlike in the traditional definition of monopoly, consumers could benefit not only from getting Internet Explorer free of charge, but also from having Internet Explorer integrated into their Windows operating system and not having to install a separate program. Microsoft's aggressive marketing strategy could also yield benefits to Windows users by holding the network together and, consequently, by having application developers continuing to write for Windows.

By integrating Internet Explorer into Windows free of charge, Microsoft was trying to maintain and expand its market for Windows, and it was trying to take over another adjacent market: browsing. A *monopoly* is expected to do much the opposite by restricting market supply in order to raise its price. There was no evidence introduced at trial to indicate that Microsoft had acted like the monopoly it was charged with being, but these points are only the tip of a host of arguments considered in one of the author's earlier book on the Microsoft antitrust case (and, hence, we need not dwell on any further here).[28]

Optimum Piracy

With all of the hullabaloo surrounding the free downloading of all digital goods—music, books, movies, software—via Napster in the 1990s and the Internet ever since, you might think that piracy is an unmitigated scourge in the digital era. But, might piracy be a mixed blessing for firms, especially those that produce digital goods with potential network effects? Should such firms not seek some *optimal* level of piracy?

Without question, piracy is much more problematic for modern digital goods than for old, material-based industrial goods. Additional units of industrial goods like cars are very costly for buyers to reproduce, mainly because their production

requires a mammoth investment in plant and equipment. On the other hand, as already noted, digital goods can be reduced to 1s and 0s (or electrons), and once the first unit is produced, it is very cheap for buyers to reproduce their own units for personal use and resale. Indeed, every copy of a digital good sold has the potential for being a master that, with no more equipment than a personal computer and an Internet connection, can be used to produce and distribute an endless number of exact replicas at little or no marginal production cost. Every user of a digital good, in short, is a potential pirate—and a potential competitor.

Hence, not surprisingly, the Business Software Alliance found that "35% of the packaged software installed on personal computers (PCs) worldwide in 2005 was illegal, amounting to $34 billion in global revenue losses due to software piracy," with the median piracy rate among the 97 countries studied estimated at 64%.[29] Central and Eastern Europe had a piracy rate of 69%. The Asian/Pacific region had a piracy rate of 54%, while North America had a piracy rate of a "mere" 22%.[30] Vietnam had the highest piracy rate of 90%, while China ranked fourth among countries in its piracy rate, which was 86%.[31]

Before Napster was declared illegal in 2001, the file-swapping, Internet-based company had fifty million users freely swapping songs. The count of CD albums sold rose by a scant 0.4% between 1999 and 2000, after rising at a compounded rate of 14% per year from 1991 until 1999. Between 1999 and 2000, sales of CD singles fell by 39%, after rising at a compounded rate of 33% per year between 1991 and 1999, according to the Recording Industry Association of America.[32]

Does it follow that piracy should be altogether stamped out? Of course not, and no business would ever try to do so—because of the enormous cost that would be incurred in even trying for a zero piracy rate. At some point, as piracy is reduced, the cost of reducing piracy even further would be higher than the added revenues from greater legitimate sales. Perfection on any economic front is simply not, and cannot be, optimal, much less a viable option.

In addition, for many goods, some piracy can actually add to legitimate sales partially because piracy can create network effects. For example, people might start buying a particular computer program because they want to be compatible with others who are using pirated, as well as purchased, copies of the program.

Piracy can also generate its own form of "marketing buzz," which can convince some consumers that the pirated software will be widely used and raising the demand for legitimate copies. Indeed, some consumers might reason that if the good is not subject to at least some piracy, then it is not likely to be sufficiently popular to become the industry standard. For example, one explanation given for WordPerfect's rise to the top of the word processing market in the 1980s was that the program could be more easily copied, illegally as well as legally, than other word processing programs. Back then, when most word processing programs could not read the files of other word processing programs, having a lot of pirated copies around very likely stimulated sales and increased WordPerfect's market share.

Another example comes from researchers who reported in the *Journal of Marketing* that with the elimination of copy protection for spreadsheet and word processing software programs in England, sales went up between 1987 and 1992 by

one copy for every six copies that were pirated. These researchers also concluded that when the software was introduced, pirating was very limited (as expected, given that there were few copies to pirate). Eighty percent of the copies actually bought were very likely attributable to the growing network effects of the pirated copies. Over time, the count of pirated copies decreased to 15% of all available copies.[33] Other researchers have argued that "counterfeiters" help producers identify useful technologies.[34]

Similarly, other researchers have found that illegal copying of printed publications has actually increased publishers' profits, mainly because the publications (journals, for example) that can be copied are more valuable and because the publishers can price discriminate between individual users (who might have limited needs for copying and therefore are charged a low price), and libraries (which have a demand for allowing their patrons to copy their holdings and which are therefore charged a much higher price to offset that copying).[35]

Piracy can, no doubt, present real problems for producers of digital goods. Beyond some point, piracy can eat into sales. Moreover, the potential for piracy can constrain legitimate firms' price increases, given that their price hikes can increase the demand for and price of pirated copies—and the incentive the pirates have to generate more copies. In addition, a firm that lets it be known that it looks upon piracy as an acceptable business expense, not a moral wrong, can expect to have more piracy problems. At the same time, firms must understand that their objective should be to regain control of pirated copies, not to stamp out piracy altogether. Some piracy can be good for any number of businesses.

While it is widely recognized that too much piracy can be bad for business, it can also be bad for the pirates themselves as well as the users of pirated digital goods (not the distributors of pirated goods, although too much piracy can be bad for their business, also). The problem with unchecked piracy is that the developers will have a tough time competing with pirated copies, since their effective price is close to zero. To compete for users, developers might have to lower their prices so much that, while they can cover their reproduction costs, they will not be able to cover their product and market development costs. This means that developers, seeing the prospects of rampant piracy and close-to-zero prices or close-to-zero sales, will curb the array of digital goods they produce (and will curb the continued development of new editions). Digital-goods users will then suffer the value they could have had from products that go undeveloped and underdeveloped.

Granted, with protections against piracy (in the form of copy-protection technology-based "locks" on digital goods or in the form of patents and copyrights, which means that pirates can suffer legal penalties), digital goods developers can make a lot of money, as have Microsoft, Oracle, and (lately) Apple. Pirates and users may rightfully reason that their copies cost the developers nothing. Besides, the prices developers charge are far too high, a point pirates might surmise (mistakenly) from their own low copying costs. It may in fact be true that *successful* developers make far more than a competitive rate of return. Hence, their "exorbitant" profits are in some sense "unjustified."

At the same time, we have to stress that "exorbitant" profits for *successful* developers may be a necessary precondition for a continuing flow of innovative digital (or nondigital) products. The problem developers face is that coming up with *successful* products is a major crap shoot, meaning that developers need the prospect of exorbitant profits on the few successful products in order for the *expected* profits (with potential profits discounted for risk of failures) to be large enough to spur development.

To clarify the point, suppose that the total product and market development costs for a digital product total is $9.9 million. Suppose also that only one in a hundred digital products can be expected to yield an "exorbitant" profit of $1 billion. The problem developers face is that they do not know which one of their products will be successful. Hence, the *expected* profits on the development venture will be $10 million (0.01 × $1 billion), or slightly more than is required for the developer to incur the up-front $9.9 million in development costs for a given digital product. Put another way, if the profit *potential* for a successful product were a "mere" $900 million, the product would not be developed because the *expected* (discounted-for-risk) profit of $9 million would be less than the development cost of $9.9 million. Therefore, piracy can undercut product innovation because it can wipe out the "exorbitant" profits that are essential for product development in risky market environments—and, we stress, all markets have elements of risk and uncertainties precisely because they are evolutionary processes with most everything important that emerges being the product of a gazillion interactions, only a small portion of which can be under the control of any firm, even a dominant firm in its industry.

The Pricing of Addictive Goods

Because they give rise to a chemical, bodily dependency, *addictive goods* inspire, to varying degrees, their own continued and expanded consumption. That is, the consumption of the good today creates a need for the consumption of the good into the future, perhaps, for some people, at an increasing rate.[36] Classic examples of highly addictive goods (for many people) include heroin, cigarettes, and alcohol. The list of mildly addictive goods (for many people) might include chocolate and television shows.

The analysis for addictive goods can follow our analysis of experience and network goods in several important respects, because current consumption of all three types of goods can lead to increases in future demand. A reduction in the initial price of the addictive good can increase sales initially, but because the good is addictive, future demand for the good can be expected to rise. The lower the initial price, the greater the future demand. The more addictive the good, the greater the future demand for any given reduction in the price. This implies that the more addictive the good, the more responsive (or elastic) the long-term demand.

With the tie-in between current and future consumption, zero and below-zero initial prices should be open pricing options for producers of addictive goods (as is

the case for producers of experience and network goods). Producers might want to give away their products initially, or pay consumers to use them, in order that they can become chemically hooked. Once they are chemically hooked, users' (subjective) switching costs can rise. Indeed, users can become *locked in*, unable to switch out of the good's consumption. Once users are hooked, producers can jack up the price, which, of course, is a strong motivation for giving the product away in the first place. Accordingly, the stronger the addiction, the lower the initial price that can be justified.

Cigarette companies in the 1960s and before followed the give-away strategy. They hired college students to walk their campuses passing out packs of cigarettes. Heroin dealers are renowned for giving users their first hit (or hits). Stores that sell boxes of chocolates often give away samples, partly to allow prospective buyers to *experience* the good, but also to create a *need* among buyers to eat more of their chocolate.

Giveaways cannot be expected to be prevalent in highly competitive markets, ones with a large number of sellers and with virtually open entry into the market. In such markets, sellers who provide giveaways can cause consumers to become hooked. However, the consumers can then move to any of the other sellers, which means sellers who give away samples ("hits") cannot capture many of the future sales. Also, in highly competitive markets, sellers cannot raise their future price sufficiently to recover the costs of the free samples.

So, the more monopolized the market, the more likely free samples can be expected. In fact, we should expect sellers of highly addictive goods to work hard at eliminating the relevant competition through, in the case of cigarettes, extensive focus on branding their products and through, in the case of heroin, expunging the competition from given territories (markets) through threats of violence, including murders. The more addictive the good, the greater is the effort to monopolize the market. And violence and threat of violence is common in street-level heroin markets because the good is so addictive, giving the dealers strong incentive to protect their markets from intruders.

With all the problems people have with addictive goods (health problems, early death, and a miserable life before death), we might rightfully wonder why people—"addicts"—would take free samples in the first place. A prominent, often-heard reason is that some people are stupid or, less coarsely, irrational. Many people just do not properly consider the future consequences (either costs and/or benefits) of their current actions.

People also vary in their inclination to become addicted to a good. Some people can smoke and never develop a compulsion to smoke one cigarette after the other. Some people cannot take a sip of wine without downing the whole bottle. The problem is that people often do not know before they take those first free samples how addictive they are to various goods. That is, some people who take the free "hits" are quite rationally gambling that they are not among the easily addicted class of consumers. Some first-time users win the gamble; others do not and pay handsomely for their taking freebies, not so much for the effects of the free sample as for the gamble they took, willingly and, maybe, rationally.

Rational Addiction

Discussions of addictive goods are generally narrowly focused on the behavior of users who have already become addicted. Addicts have, within that narrow framework of the analysis, lost a degree of their ability to make rational choices about their future consumption of the addicted good. The addicted users are thus, in that constrained reality, subject to exploitation by the sellers because their chemical dependency and the absence of competitive sellers do not allow them to respond with ease to price hikes.

However, University of Chicago economists Gary Becker and Kevin Murphy have argued that there is another perspective on addiction that can give addiction a rational interpretation.[37] Their perspective is the choice framework for *potential* users *before* they take the first free samples. Before they become addicted, Becker and Murphy suggest, future addiction can be a choice that consumers can make quite rationally by considering and discounting the stream of future benefits and costs from consumption of the addictive good. If the expected, discounted future benefits exceed the expected, discounted costs, then the first free samples are taken. If the reverse is the case, then the free samples will not be taken. This is not to say that all users make rational choices; however, it is to postulate that *some* (maybe many, if not most) users might *become* addicted quite rationally, with a reasonably complete consideration of the consequences.

Who might such rationally addicted people be? The group could include people who do not become highly addicted to the good, such as moderate drinkers who are able to maintain some control over their future consumption and can contain the future costs. The group might also include users who already have poor life prospects. For example, they are terminally ill, depressed, or suicidal. This group might reason that the addiction cannot do much to shorten their lives or make living significantly worse. And, the group might also include people with substantial resources who rightfully calculate that if they get into trouble with an addiction, they can buy their way out of the addiction through expensive and exclusive rehabilitation programs before their lives are destroyed. Any number of celebrities (for example, Britney Spears, Mel Gibson, and Lindsay Lohan) have fallen prey to one or more addictions, only to go into "rehab." Indeed, given all the free publicity given to stars who have gone to the brink of ruining their careers, only to find the fortitude to correct their ways, an addiction could be a valuable career move. Any number of celebrities' careers seemed to have been revived by their downfalls and recoveries.

This is not to say that addiction is a rational move for everyone, but only for some under some circumstances. From the Becker/Murphy perspective, what we can say is that to the extent we heap praise and valuable air time on recovered stars, we might reduce the addiction among people in the general population who see the problems the stars face, but we could also increase the tendency of stars to take their chances with addictive goods.

The Becker/Murphy perspective also allows us to argue that the more addictive the good, the more responsive consumption can be to price changes *over the long run*, which can be orchestrated through excise tax policies. If the market for an

addictive good is assumed to be limited only to the currently addicted users, a higher tax on the good—for example, cigarettes—might elevate the price of the good but also can be seen as not having much effect on consumption. After all, addicts have to have their "fixes."

However, if the market for the good is expanded to cover *prospective* users—those who are not yet addicted but who are rationally considering consumption of the addicted good—then a higher tax and a concomitant current and future price increase can be viewed as having a much greater effect on curbing consumption over time. This is because prospective users will include the higher price (caused by the higher tax) they will have to pay for the addicted good for some time into the future as a part of their cost calculations.

For some prospective users, the expected stream of future costs from the addiction can rise above the expected stream of the good's benefits. The cut in consumption for these prospective users in response to the projected price increase will be sizable, since they will be cutting their consumption not only in the current time period, but also for all future time periods. If taxes on the addictive good have been raised in the past, and prospective users begin to anticipate further tax increases into the future, then we can anticipate that even more prospective users will not take those first attractively priced samples.

Interestingly, Becker and Murphy joined with Michael Grossman to show empirically that the price responsiveness of consumption of cigarettes is substantially greater in the long run than in the short run than has been traditionally assumed.[38] Their line of argument suggests that the antismoking lobby has had a serious effect on cigarette sales because of the lobby's work to increase the future costs of smoking through the *prospects* of increasing cigarette taxes and tightening controls on where people can smoke. Many young *prospective* buyers must now be thinking that they will eventually have to pay through their noses for smokes and then will only be able to smoke in designated areas of even their own homes, where second-hand smoke cannot be a health threat to others, especially children (even the smokers' own children).

Concluding Comments

In taking up the topic of why so many things are free, we have had to be selective as to explanations covered because of inevitable space constraints. We have tried to explore explanations many readers will view as unconventional, possibly eye-opening. We have intentionally paid little attention to the argument that free goods are devices that businesses use to snare and exploit hapless consumers, not so much because such an explanation has no validity (people's stupidity probably explains much of what people do and do not do, as we have conceded all along in this book), but because such a discussion of hapless, unthinking consumers would add little to what readers probably already know. However, there are additional, more or less transparent conventional explanations for free goods (with additional

explanations covered in a whole book that goes by the title of *Free*, the author of which argues that many producers, especially musicians and authors whose products come in digital form, should gave to the obvious trend and give away their products).[39]

An implication of the analysis in this chapter is that buyers often get things "free" because producers can charge more for some other product that must be purchased in order to take advantage of whatever is free. Many universities allow parents of students to park on campus free of charge, but only because the free parking increases the value of the on-campus education to students and their paying parents—and increases the prices the university can charge. Bars offer cheese cubes and crackers at happy hours because they can charge more for drinks (or they can avoid lowering their happy-hour prices for drinks by more than they do).

One of the more common explanations for free goods, especially on the Internet in the form of information and other digital goods, is that it costs nothing to produce more units of such goods for additional consumers to use. Moreover, the quantity of some goods is so great that the cost of additional units is close to zero. The collective value of all infra-marginal units (all but the last unit) can be high, but in competitive markets, prices tend to be pressed down to the cost values of the marginal units. Information on almost any topic is so abundant on the Internet that it is simply difficult, if not impossible, for many producers of the information to do anything other than give away the information they produce. Once the information is available, producers incur little-to-no additional costs from allowing free viewings and downloads to all Web site visitors.

True, the *Wall Street Journal* has been able to make money by charging subscriptions to its article database, but few other newspapers in the country—not even *The New York Times* (at this writing)—believe that they can charge for their articles. So, almost all newspapers give away their articles with the hope that their Web advertisements will cover their production costs (as well as cover their reductions in ad revenue from the decline in the subscriptions to their printed papers, caused in part by online articles). And even the *Wall Street Journal* might start allowing free access to its Web site, not that it is not making money from the sale of subscriptions, but because it might make its new owner, Rupert Murdoch, more money by increasing its daily hits with free access and downloads of articles, and be able to collect more from advertisers on its Web site than it collects from its subscribers.

Many goods are given away by producers because the producers themselves get personal benefits from seeing their products used more widely than would be the case were a positive price charged. Many musicians allow free downloads of their Web-based music because they value knowing that more people than otherwise will be listening to their music or because the download will lead to "market buzz" and greater future sales of other songs and tickets to their concerts. As noted, Dwight Lee and McKenzie allow free downloads of our text-based video modules because we receive pleasure from the thought that the downloads allow us to extend our "classroom" to all points on the globe. Our textbook publisher has agreed to the free downloads because the downloads might stimulate market interest and sales in

the textbook at no added cost. Besides, when we tried to sell the modules, we were unable to sell enough copies to cover the transaction costs of managing the Web-based sales. Then, why not "sell" them for nothing? There really was no better price available to us.

Chapter 17
The Question of Queues

University of Chicago Professor Gary Becker is our kind of economist. Over his long and illustrious career, he has applied economic reasoning to an ever-expanding range of topics before other economists thought to do so: education, race and gender discrimination, crime, marriage and family, baseball, household production, suicide, altruism, fertility, addiction and habits—and our list is hardly complete.[1] He has been a force within the profession to redefine *economics* not so much by the topics covered (money or markets or business), but as a *way of thinking* about human behavior. He has coauthored a book with a title that captures the expansive range of his analytics, *The Economics of Life*.[2]

For his considerable creativity in extending the boundaries of the discipline in virtually all directions, he won the 1992 Nobel Prize in Economics.[3] His central methodological concern in virtually all of his writing has never been that economics explains *all* behavior, but he is obviously convinced that economists should try to see how much of the observed differences in people's behavior can be productively explained by the prices they face (whether explicit or implicit), the incomes they receive (whether in monetary or nonmonetary forms), and the wealth they have (whether assessed in work and social skills or financial and physical assets).[4]

More directly for the purposes in this chapter, Becker has shown a knack for recognizing ordinary, day-to-day experiences we all encounter that are puzzling, especially in light of conventional economic analysis. He then often offers counterintuitive solutions to the puzzles.

For example, Becker notes in one of his journal articles that when he taught at Columbia University, he puzzled with his students in class over why in Palo Alto, California (where he has long been a senior fellow at the Hoover Institution), there was a seafood restaurant that did not take reservations and that always had long queues for tables at dinner time.[5] A similar restaurant, with a similar menu and meal prices, across the street often had empty tables (even though the food was more or less the same quality in both restaurants, or so Becker surmised). His students were not able to offer a satisfactory solution for the difference in the wait time for the two restaurants. We are sure almost all readers have waited for a half-hour or more for a

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_17, © Springer-Verlag Berlin Heidelberg 2012

table, which should be confounding for those who believe restaurants can be expected to seek maximum profits.

McKenzie has also posed a similar puzzle to his MBA students at the University of California, Irvine, many of whom had significant management experience, involving queues in a different retail sector. At the time, McKenzie needed about 18 strips of sod to cover an area bare of grass in his backyard. He went to Home Depot because, at the time, sod was selling there for $1.69 for a four-feet-by-eighteen-inches strip. When he arrived at 8:30 in the morning, a clerk at the garden shop said the store had sold out, admonishing, "You have to get here by 7:30 to be assured of getting sod because we almost always sell out by 8:00," an assessment she made with complete confidence. He arrived at the store the next morning at 7:25, only to learn that the daily shipment of sod had already been sold. The clerk's reaction, "Yes, some days our daily shipment is gone within minutes after the load is dropped just after 7:00." He tried other Home Depot stores in the area that day, and they were also sold out of sod. He went back to the first Home Depot the next morning at 7:00, only to learn that the sod shipment was late. He observed a line of pickup trucks with crews ready to pounce on the sod shipment when it arrived.

Readers might rightfully wonder why Becker, other economists, and we have been puzzled by the queue at the restaurant, the home supply store, and elsewhere, as if queues are an oddity. They really are not. They are indeed common, at grocery stores, at concerts, at airports, at fast food restaurants, at bank ATMs, at—well, all over town. They are so common that many of us spend a nontrivial amount of time trying to avoid queues. Indeed, you might be forgiven for wondering whether queues or prices are used more frequently to ration goods and services. Because of the prevalence of queues across so many markets, no one should be surprised that economists' explanations for queues are varied and run the gamut from psychological and sociological forces at work, to ethical considerations, and to market forces that cause many queues to be mutually beneficial for sellers and buyers.

Queues as a Pricing Puzzle

Why queues? That question reflects a pricing puzzle for economists and others on two levels. First, on a personal level, McKenzie wasted a lot of time in his attempts to buy sod, going to the several Home Depots and returning three times to the store closest to his home, which was eight miles away, before he was able to buy the amount of sod he wanted. He simply could not understand Home Depot's *modus operandi*. He would have gladly paid substantially more (maybe two or three times more than the selling price per strip) for the sod because, at a much higher price, his total expenditure on sod would have been less than the total cost he incurred from the wasted time and the gasoline used in the search. He would have been happier with a higher price (assuming the higher price discouraged others from buying sod at the time he wanted it), and Home Depot would have pocketed more dollars. Home Depot was leaving money on the table and was forcing McKenzie to incur more

costs than the money left on the table, or so it seemed to him at the time. But is that always the case when consumers confront a shortage?

From a professional perspective, the sod shortage was a puzzle because at the time McKenzie posed the puzzle to MBA students he had recently reviewed supply-and-demand analysis in class. Central to that analysis is the widely accepted and parroted deduction that the price of a good in a competitive market will move to where the "market clears," or to where the "quantity supplied exactly matches the quantity demanded"—and he had every reason to believe the market for sod in the area was reasonably competitive (given that its price seemed to be, so to speak, dirt-cheap).

Figure 17.1 captures the basic graphical argument that all good economics professors teach and rely on to understand the world about them. As the conventional argument goes, the demand curve is downward sloping, showing that the value of additional units falls as more and more is consumed and, hence, that the price must fall to induce a larger quantity consumed. The supply curve is upward sloping, showing that the price must rise to induce firms to produce more of the good (because their marginal cost of production rises with expanded output). In this simple model, the shortage of restaurant seats and sod strips, and the resulting queues, can be explained by the fact that the price of each was at, say, P_1, below the intersection of the supply and demand curves. At that price, the quantity supplied is Q_1 and the quantity demanded is Q_2. The shortage (positively related to the length of the queue) is the difference, Q_2–Q_1.[6]

Why do not sellers facing such a market condition raise the price charged to P_2? By raising the price from P_1 to P_2, they obviously gain revenues, while not incurring more costs for the Q_1 units that they are willing to sell at P_1. Of course, at P_2, they can justify selling more units, Q_3 instead of Q_1. The shortage is relieved and any queue that has developed is eliminated, totally. Had Home Depot charged the market-clearing price, McKenzie would not have had to waste time going to the store several times.

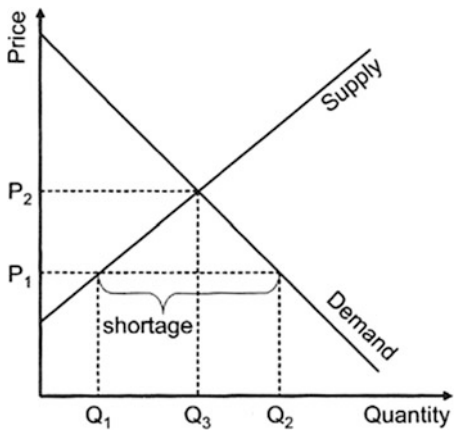

Fig. 17.1 A market shortage with a below-equilibrium price

The Easy Solutions for Queues

Some queues have easy explanations, not the least of which is that markets are imperfect, or do not always work with the fluidity and foresight that economists assume in their classroom discussions.

Time for Market Price Adjustments

One of the easiest explanations for queues is that market-clearing prices just do not magically *happen*. They *emerge* from the interactions of real buyers and real sellers, and the interactions between buyers and sellers take time. In Fig. 17.1, the demand curve may have, for any number of reasons (for example, a change in consumers' evaluation of the good), shifted outward and rightward; and/or the supply curve may have, for any number of reasons (for example, an increase in production costs), shifted upward and leftward. P_1 could have been, in other words, the market-clearing price before the shifts in supply and demand. The result of the shift? The market shortage is illustrated at P_1 in Fig. 17.1. In economists' supply-and-demand model developed on their blackboards, the price adjusts instantaneously, but such adjustments in the real world necessarily take time. During the time, it takes for the price to be pushed up, a shortage—and a queue—will be apparent.

With time, as the price adjusts upward, the queue will be eliminated. If the producers in the market do not systematically raise their prices, eventually, for a wide range of goods in short supply, then those producers will be bought out by investors who see a missed opportunity. As it so happens, in the five years since McKenzie tried to buy sod at Home Depot, the price of sod has been raised to, at this writing, $2.69, a real (inflation-adjusted) increase in the price of sod of 45 percent over the five-year period.

Of course, some queues for goods emerge because when the good is introduced, sellers have little to no knowledge of the good's demand, and the price that can be charged, until the good and its initial price are tested on the market. Markets are processes by which buyers and sellers learn from experience. Many sellers simply try a price, observe a shortage, and correct the error of their ways by gradually, if not abruptly, raising the price charged. But such a learning process takes time during which queues should be expected.

Fairness in Prices

Researchers have found that many buyers are turned off from buying goods that they consider unfairly priced. For example, researchers have asked respondents to assess the fairness of a hardware store that raises its price for snow shovels from $15

to $20 the day after a major snowstorm. Eighty-two percent of the 107 respondents felt it was unfair for the store to take advantage of the short-run, snow-induced increase in the demand for shovels.[7] The implication is that unfair pricing strategies can alienate buyers, which means stores that pursue short-run profit gains can suffer a reduction in their long-run demands. Hence, it might be argued that queues emerge more frequently in markets than supply-and-demand curve analysis suggests because producers are reluctant to charge "unfair prices" and run the risk of upsetting the customers and losing greater long-run profits (appropriately discounted) for short-run profits.[8] Queues may also carry a subtle but valuable fairness message: "The price is so reasonable (which may, in many people's minds, equate with fairness) that lots of people want to buy it." The longer the queue, the more powerful the fairness message.

While appealing and perhaps relevant in cases in which markets are hit with sudden and temporary supply and demand shocks (as might be the case when hurricanes or tornadoes, as well as snowfalls, temporarily destroy supply chains serving communities), we are with Becker in believing that "fairness" concerns alone can be expected to fade over the long term with gradual increases in prices.[9] If consumers adopt "references prices" by which to judge the fairness of price increases, then surely, as time passes, memories of lower prices will fade and the then higher prices can become the new reference prices. In the very short run (a day or week), the price increase in response to changing demand and supply forces may not be able to affect the quantity of the good available. Buyers may, therefore, not see anything about the price increase that offsets their fairness concerns. Sellers have done nothing other than force a transfer of income from buyers to themselves.

Moreover, throttling all price increases on fairness grounds will no doubt bring forth a level of economic pain in the form of shortages and lots of wasted time standing in lines for lots of things (as was true in the former Soviet Union) that could seem more unfair than higher prices. In the long-run, prices can do more than reallocate income from buyers to suppliers; they can induce an increase in supply, which can, and should, be seen by those using reference prices as having some socially redeeming value. This should be the case especially if the greater supply of a product implies a more efficient allocation of the community's (and world's) resources, which can translate into higher incomes for virtually all.

Variability in Demand

The standard discussion of market-clearing prices associated with Fig. 17.1 implicitly assumes that demand and supply are stable. That is, demand and supply do not move from time period to time period.

For many products, the opposite is descriptive of the markets: demand is variable, sometimes highly variable, from season to season, or even from week to week, if not day to day, with much variability in many markets random and, then sometimes, hard to predict. The variability of demand can be especially troublesome for sellers

in local communities, and most retail products are sold locally. This certainly is surely the case for sod at Home Depot. During any given time period, Home Depot can surely predict with greater ease its sales of sod across all of the local markets it serves than it can in any particular local market, say, Statesville, North Carolina. Demand in Statesville can be affected, temporarily, by such factors as weather and the opening of new developments, as well as the opening of other home supply stores in the area.[10] Supply of many products can also vary with the weather and supply-chain disruptions that have their source in political problems around the globe. The costs of producing final products can rise and fall with the variability in the demand for key resources.

Figure 17.1 suggests a straightforward answer: if the price is at P_1, it should be raised to P_2. The price increase implies greater profits. That is not necessarily the right diagnosis, *if there is demand variability within and across local markets*. A price hike can be ill-timed, set just as demand falls for some unexpected reason, in which case the higher price can leave sod unsold, drying out on the pallet, only to be thrown away the next day with a disposal fee tacked on by the local dump (which actually can be as great as the selling price of the sod, according to a Home Depot manager).

Put another way, underlying suggestions that the market-clearing price is the "right" (profit-maximizing) price, there is the presumption that price increases have no costs. Under variable demand conditions, however, as Home Depot raises its price above P_1 toward P_2, it runs a greater and greater risk that the price set will be "too high." It incurs, in short, a risk cost, which can mean that its real, economic profits (book profits minus unrecorded risk cost) can be lower at a price above P_1 than at P_1. And do understand that risk cost is not some imagined cost that never gets captured in a company's books. Risk cost becomes real cost when sod is left unsold and must be thrown away at a cost.

Considering the risk cost afoot in the sod business (and other businesses) raises the issue of whether adjustments in the price always to the market-clearing level is the most efficient way to allocate all goods and services. That is, allocation by queues can, in many instances, involve costs, but still queues can be more cost effective than allocation by price. If so, then buyers are getting a break in the effective prices they expect to pay across an array of products.

When McKenzie asked the Home Depot clerk why the store ran out of sod with such consistency, the clerk said, "Sod is perishable." If sod could be stored for as long as nails, we might expect the shortages of sod to be no greater at Home Depot and other home supply stores than the shortages of nails, which are rare (attributable mainly to such considerations as occasional mistakes in ordering that are difficult—that is, costly—to avoid completely).

But sod is not the only good that is perishable. When the clerk responded "sod is perishable," McKenzie could not resist quipping, at the time somewhat mystified, "Doughnuts are perishable, but Mag's Doughnuts does not run out of doughnuts by 8:30 every morning!" Obviously, he had not then thought through the difference in the market for sod at Home Depot and doughnuts at Mag's Doughnuts. Mag's workers can produce doughnuts in relatively small batches throughout the day as

the stocks of the various doughnuts in their showcases dwindle. Home Depot, and their suppliers, cannot do the same with sod, at least not with the same facility and at the same costs. Sod must be transported to Home Depots from miles away on sizable flatbed trucks. Replenishment of the sod stock several times a day is costly. Hence, Home Depot must estimate the demand for sod over a longer time period—a day—than Mag's must estimate the demand for doughnuts—maybe hours at most. We should expect the longer the time period for estimating the demand for a highly perishable product, then the greater will be the risk and uncertainty in estimating the demand and the more likely mistakes in prices (all other considerations equal). To avoid the costs of having unsold sod and having to incur a disposal charge, Home Depot can be expected to adopt a safer pricing strategy, one that errs on the side of having too little sod on many days.[11]

Inventorying Customers

There are good reasons stores hold inventories. The demands for their products are variable (sometimes highly so) and not very predictable during any short period of time. It is cheaper to cover the carrying costs of the inventories than to incur the costs of missing sales. Indeed, inventories, even the stocks of products stacked on stores shelves, can be seen as queues on the supply side of the market, with the items lined up waiting to be sold. Not many economists would dare conclude that these queues on stores shelves mean that the products' prices are necessarily too high.

Stores sometimes have queues of customers for the same reason they stock products they sell: queues can be seen as a readily available inventory of customers to deal with the variability and inability to predict demand for any short period of time (days of the week or hours of the day). And it is cheaper for the stores to incur the costs of not charging exactly the market-clearing price at all times than to incur the costs of foregoing sales or of frequently (if not constantly) computing and announcing prices that cause the market to clear at all times.[12]

Queues as Profit-Maximizing Rationing Mechanisms

Standard supply-and-demand-curve analysis assumes implicitly (really explicitly when presented in its most technical terms) that all buyers are equal, and are the same in all important regards to sellers. Under such market conditions, the price charged cannot alter the composition of actual buyers. Buyers are all alike regardless of whether P_1 or P_2 is charged in Fig. 17.1. And if all customers were just alike, price discrimination across buyers would not work.

Needless to say, most real-world markets differ radically from the standard model, as casual observation of buyers in any store and at concerts will verify.

Buyers differ substantially in their enthusiasm for the product, and for other complementary products, which can explain why concert venues often charge prices so low that in order to be assured of getting tickets, concert goers will camp out for hours (if not days) in long queues that sometimes extend hundreds of yards from the box offices. As explained by economist Ken McLaughlin (and reported by Steve Landsburg), when concert tickets are priced below the (presumed) market-clearing price, the concert promoters ration out of box office queues potential concertgoers who have little enthusiasm for the performance.[13] The people who buy their tickets weeks in advance or who stand in line for hours on end and get the tickets will tend to be relatively enthusiastic (if not wildly so). Their enthusiasm can enhance the value of the concert for all goers, which can fuel the enthusiasm and demand of all. The attendees who endure wait time in the queues will also likely be inclined to buy the performers' albums, T-shirts, posters, and other paraphernalia that are sold inside the concert halls, at inflated prices, of course. Indeed, it is not unreasonable to expect that the lower the ticket prices and the longer the queues, the greater the prices of the products sold after admission can be.

The Economic Logic of Queues

Grocery (and, for that matter, many other) stores are notorious for having long queues at their checkout counters at the end of most workdays, say, between 5:00 and 7:00 p.m., when people drop in to buy their meals for that evening or week. Queues are common at other times of most days, also, simply because at "nonrush hours" grocery stores regularly close one or several of their checkout counters.

The Economics of Queues

Again, why queues? By that question, we really mean to ask about the economic logic realities underlying queues and their lengths. That is, why are queues as long as they are, and no longer? Clearly, mistakes in estimating store traffic at various times of the day and in planning the work schedules of checkout clerks explain some queues, and their varying lengths. Instead of raising and lowering their prices, grocery (and other) stores deal with the variation in traffic by allowing their queues to lengthen and contract. Having said that, however, both shoppers and store managers must plan for queues with some *expected* (mean) length and some *expected* (mean) waiting time. They both understand that queues can be longer than expected, but also shorter than expected during different times of the day and different days of the week. If the queues are longer than expected *consistently*, then shoppers can be expected to revise their expectations and maybe shop elsewhere, where their grocery bills plus opportunity cost of waiting in line is lower. Managers

can be expected to adjust the number of checkout counters they have open to minimize the incentive their customers have for moving to other stores.

The crucial point is that queues have a rational, economic foundation, grounded in the costs and benefits of people waiting in them. In planning their trips to grocery stores, shoppers can be expected to weigh the benefits of getting the food items they need and want against their prices *plus* the opportunity cost of the time they *expect* to stand in line. They should be willing to pay higher prices for the benefit of having to spend less *expected* time standing in line, at least beyond some point. And they should be willing, up to a point, to spend more time standing in line if they are adequately compensated by the store in terms of lower prices for the products they buy. However, as behavioral economists maintain (see Chap. 24), consumers tend to place a greater subjective weight on an out-of-pocket expenditure of a given dollar amount than on an equivalent opportunity cost also measured in dollars.[14] This means that shoppers can be expected to be willing to incur more than a dollar in opportunity cost waiting in line to save a dollar on the prices of their food items.

Similarly, store managers (and their executives and owners) can be expected to see queues at their checkout counters as an economic problem, and as a source of greater profitability, at least up to some point. Store managers also should be expected to weigh the costs and benefits of having queues. The benefits to managers from eliminating queues are transparent: the elimination (or just shortening) of queues can make shoppers happier (because their total cost of getting what they want goes down), can increase their store traffic, and can raise the prices they can charge.[15]

The managers' management problem is that cutting the length of the queues is costly. Managers would have to set up more checkout counters, open more of them for more hours of the day, and incur a greater wage bill for the greater number of checkout clerks. The greater floor space used for checkout counters is costly because of the greater construction and land costs and because the expansion of checkout counters will force the contraction or elimination of product lines. And managers must recognize that checkout counters are fixtures that cannot easily and quickly be removed, which is to say that many counters, and the floor space under them, can go unused for hours each day, giving rise to nontrivial opportunity costs where land and floor space come at premium prices.[16]

Optimum Queues

Neither grocery store managers nor shoppers would want zero queues if such were even possible. No queues at all would mean lots of costly floor space taken up with many checkout counters, a number of which would not be used during many hours of the day, if not days of the week. No queues would likely spell high prices for shoppers. Both shoppers and managers are obviously interested in facing queues of some *optimum* (expected) length.

Store managers can be expected to add checkout counters so long as they can raise prices on the products sold by more than the rise in the cost of their additional checkout counters. And managers should be able to raise their prices because shoppers will spend less time in line. If the stores can incur $50,000 for an additional checkout counter, but can increase their expected (net) revenues through higher prices and greater sales by $60,000, then they should be willing to add the checkout counter. Otherwise, they would be leaving $10,000 in added profits on the table.

Managers, however, are constrained in how many checkout counters they can profitably add. As they add a growing number of checkout counters, they will have to contract or eliminate product lines with growing profitability. In short their costs will grow with additional checkout counters. Moreover, as they shorten their lines, managers lower the opportunity costs of their shoppers, but they also have to increase the prices on the products their shoppers buy. Beyond some point, the added price paid by shoppers will exceed the shoppers' falling opportunity cost of standing in line. And as noted above, shoppers tend to have a preference for incurring a dollar of opportunity cost over a dollar in out-of-pocket expenditures on food products.

This analysis means that the *expected* length of the checkout queues will never likely go to zero (at least not for most run-of-the-mill neighborhood grocery stores). If the *expected* wait-time were zero, then managers would likely see an incentive to take out checkout counters, save their stored costs, impose opportunity/wait-time costs on their shoppers who could then see a reduction in their grocery bills (because of the stores' lower costs and prices).

How long should the queues be? The answer is, necessarily, it all depends on the actual costs and benefits as perceived by the stores and their customers. The manager needs to balance the costs and benefits for both the store and shoppers. As the line is lengthened, the store saves costs and can lower prices. Shoppers incur more wait costs but can benefit from the lower prices. As the store takes out checkout counters one after the other, its cost savings from doing so are likely to fall (given that it will likely take out the counters that are least costly at the start); the price reductions can, as a consequence, be expected to fall as the queues lengthen. As the queues lengthen, shoppers will see the prices fall by smaller and smaller amounts at the same time their wait costs begin to escalate (since shoppers can be expected to give up their least costly opportunities when they start their wait, only to forego more and more costly opportunities as their wait time lengthens). The store manager can be expected to allow the (expected) wait times in the queues to grow so long as the (subjectively weighted) opportunity cost of the additional wait time for shoppers is lower than their savings on the prices of the things they buy. Store managers will work to avoid extending their queues until the wait time costs that their shoppers incur is greater than their savings from lower prices.

The central point of this line of analysis here is that there is some *optimum* queue for every store, with one important determinant being the opportunity costs of stores' shoppers. We would tend to expect that stores that serve shoppers with relatively high opportunity costs will have shorter queues at their checkout counters

than stores that serve shoppers with lower opportunity costs. That is to say, "down-market" grocery stores in low-wage neighborhoods—for example, Food4Less and Food Lion common in the Midwest and South—can be expected to have longer lines than "up-market" grocery stores in high-wage neighborhoods—for example, Gelson's, a high-end grocery store chain in Southern California.

For that matter, down-market Marshall's department stores, which cater predominately to low-income and price-sensitive shoppers, can be expected to have longer lines than up-market, boutique stores like J. Jill, which caters to much higher-income, and less price-sensitive shoppers. Hence, we can predict that as the wage rates in a shopping area rises (relative to the cost of floor space in stores), we should not be surprised if the lengths of queues fall, and vice versa.

Premium Tickets

Many people standing in many queues have different opportunity costs, as well as different incomes and sensitivities to price changes. High school students typically have lower opportunity costs than working adults. Hence, as a general rule, they should be willing to accept longer queues than working adults. Working adults might also be expected to want higher prices on the things they buy than high school students, because the higher prices can cause high school students (and everyone else with lower opportunity costs) to buy what they want elsewhere, or just go without. By pricing the high school students out of the market, the older adults can then get what they want at a lower *total* cost (a higher price but a lower opportunity cost). By the same token, high school students might want prices below their market-clearing levels because such prices effectively price working adults out of the market. The lower money price more than compensates high school students for their opportunity (wait-time) costs.

With differences in the willingness of buyers to stand in queues, there is a clear opportunity for firms to price discriminate among buyers with the result being that both low and high-opportunity-cost buyers can get deals better suited to their economic circumstances, and the sellers can make more profits in the process. Tailored correctly, a high price accompanied by a short wait-time for high-opportunity-cost buyers can be superior to some standardized price and expected wait-time for all. Similarly, a low price accompanied by a long wait-time for low-opportunity-cost buyers can be superior to a standard price and wait-time for all buyers. When the price increase for the high-opportunity-cost buyers exceeds the price reduction for the low-opportunity-cost buyers, the result has to be greater profits for the sellers (which is clear when the same number of buyers are served).

Interestingly, for a long time, airlines have recognized that they can make money by charging different segments of their markets different prices through classes of passengers: first and coach (and sometimes business) classes. Granted, first-class passengers get larger seats and better meals (along with free drinks) that passengers in the "cattle-car" section of planes do not get. First-class passengers pay a higher

price because they receive a "higher level" of service, but they are also allowed to "cut line," since they have their designated area for checking bags and are allowed to board first, in spite of being at the front of the plane.

More recently, theme parks have begun to recognize the profit potential from allowing some park guests to effectively break lines at their various attractions. They have pulled off this feat, without (apparently) alienating many park patrons, in part by allowing guests to self-select into longer lines with lower prices and shorter lines with higher "premium" prices and in part by having two segregated lines, with those buying the premium tickets allowed to use a separate gate for the line, which obviates the problem of premium-ticket holders actually having to butt in front of anyone.

For a one-day pass, Universal Studios amusement park in Hollywood charges $61 for guests eight years of age and up ($51 for ages three to seven). Universal charges $109 for a one-person "front of the line pass" for one day, which, to keep the queues at attractions in check, is limited in supply. It goes one step further and charges $199 per one-day ticket for its "VIP Experience," which includes front-of-the-line privileges and a guided tour of the back lots of its movie studios. Similar pricing plans have been introduced at Universal Orlando, Six Flags Over Georgia (Atlanta), Disneyland (Anaheim), and SeaWorld (Orlando).[17]

Why do not grocery stores provide similar front-of-the-line service? One obvious difficulty they confront is that they do not charge admission, but they could sell "tickets" over the Internet or at store entrances to shoppers who want to go to the front of the line. Granted, shoppers with such tickets might be reluctant to use them if they had to actually break in front of other shoppers at the checkout counters, but that problem could be solved by the store setting up a special checkout counter apart from all the others (perhaps reached by going into a separate room). Grocery stores can avoid selling tickets and simply have a separate checkout counter with an electronic sign at the entrance that reads something to this effect: "Anyone going through this checkout counter will have 10 percent added to their total shopping bill" (with the percentage added changing for peak and off-peak times of the day). Both the ticket and sign methods of price discriminating might seem like a totally bad idea for both shoppers and the stores, unless it is realized, conceptually, that there is at least the *potential* for mutually beneficial trades. Many shoppers might want to pay money to save more of their highly valued time, and the stores might be able to generate more additional revenues than they incur in added costs from operating the separate "premium" checkout counters.[18]

The obvious problem with such "premium" pricing schemes for grocery stores is that no stores (that we know about) use them. Why do airlines and amusement parks sell means by which their customers can save wait time, but grocery stores do not? Is it that they have not thought of the idea? Maybe so, but we doubt such could be the case, given how many grocery store executives and managers are, because of competitive pressures, constantly trying to devise ways of making more money with little in the way of added costs.

A more likely explanation for the difference in the pricing strategies among airlines, amusement parks, and grocery stores comes from the observation that

airlines and amusement parks on the one hand and grocery stores on the other differ dramatically in one important regard, the degree of diversity in their customer bases. Airlines' and amusement parks' customers are highly diverse along any number of social and economic dimensions, but for our purposes, their customers appear to differ most prominently in terms of the opportunity costs of their time. Airlines and amusement parks, whose customer base can extend over the entire country and all economic classes, can sell front-of-the-line, premium tickets because there are any number of passengers who are willing to pay more than other passengers are willing to pay in order to save time.

Grocery stores, on the other hand, tend to be situated in neighborhoods with residents who have self-selected to live in their neighborhood because of shared values and similar household incomes—which can be construed to mean similar opportunity costs. Grocery stores simply do not consider differential pricing because their customers tend to want the same things—and want more or less the same prices and are willing to accept more or less the same wait times (which, in economic terms, simply means the additional revenue collected from the limited price discrimination cannot cover the added cost of the checkout counter). This does not mean that grocery stores cannot and will not price discriminate by opportunity costs. They do, but they impose different prices in *different* stores—in different neighborhoods, across which the residents' values and opportunity costs can differ markedly.

Note also that grocery stores have serious competitors for the dollars of customers who have high opportunity costs and low tolerance for long queues in the form of convenience: liquor and drug stores, and a host of restaurants that provide take-out meals, all situated within given neighborhoods. Grocery store holding companies also own different store chains that have different quality and pricing levels, and different wait times. For example, the Kroger Co. owns Ralph's grocery stores, which have moderately high quality products and prices and moderately short checkout queues and tend to be located in neighborhoods with above-average incomes. Kroger also owns Food4Less grocery stores, a chain that has lower prices and longer queues. Food4Less stores tend to be located in low-income neighborhoods.[19]

Shoppers with high opportunity costs can simply choose to patronize any of the higher price outlets that have lower *expected* wait times. If grocery stores were to try to institute the equivalent of "premium shopping tickets," shoppers can go elsewhere for the same length lines. "Going elsewhere" is not nearly as easy for guests of amusement parks and passengers of airlines, which helps explain why they can charge premium prices for shorter queues.

Contrived Shortages and Buyer Loyalty

Northwestern Law School Professors David Haddock and Fred McChesney reason that many market shortages and queues emerge because businesses do not want to risk raising their prices and losing loyal customers in the face of transient surges in

demand or contractions in supply.[20] Their argument for privately contrived shortages and queues builds on points made earlier about the variability of supply and demand over time, but they develop their argument by starting with the costs buyers and sellers must incur to form long-term mutually beneficial relationships.

Before settling on products to purchase, Haddock and McChesney posit, with good reason, that buyers undertake market searches at some cost, judging the price/quality ratios of available market options. Similarly, firms incur some costs in trying to reduce the costs of prospective buyers' market searches and in assuring prospects that their products are the best available in terms of their price/quality ratios and will remain the best options into the future. Once buyers and sellers settle on each other, they develop relationships often organized around unwritten contracts with both parties assuring each other of some loyalty. Sellers commit to holding the line on prices and product qualities while the buyers commit to continuing their purchases at the stores by truncating their market searches.

Because of their investment in devising their expected-to-be ongoing relationships, both buyers and sellers have reason to want to maintain their relationships, or not break them for essentially transient considerations. Sellers do not want to give buyers a reason to renew their searches of market options because of the costs involved in replacing loyal customers, and buyers do not want to have reason to renew their costly searches of market options. Hence, if demand increases because of what is believed to be a passing fad or production costs spike, sellers may not raise their prices because they want their customers' loyalty and long-term business. Sellers might earn more short-run profits by hiking the price in response to an increase in demand, but a price increase can destroy customer price expectations and undermine their "goodwill" that, in turn, can cause their most loyal buyers to renew their market searches and, perhaps, take their business elsewhere.[21] Accordingly, as Haddock and McChesney note,

> When natural disasters like Hurricane Andrew occur, many merchants choose shortages and queues over price increases. Foreign and domestic auto companies have sometimes maintained prices below market-clearing levels, rationing their product among dealers and discouraging them from increasing price, an episode reminiscent of Henry Ford's underpricing of the original Model T. L. L. Bean once responded to an upsurge in demand by refusing to send catalogs to those who were not already on its mailing list. Newspapers typically do not vary the number of papers printed or the price charged, even on days when a particularly newsworthy event makes it likely that the issue will sell out.[22]

The law professors point out that Parisian restaurants count on their loyal local patrons to fill their tables when tourists are not around. Hence, the restaurants do not raise their prices during the high tourist season. Queues may arise during the tourist season, but the queues can be managed by the restaurants giving priority to local patrons and by taking reservations only from French-speaking (especially frequent and loyal) customers.

Haddock and McChesney draw several important deductions that can explain why sellers often ration by queues rather than by higher prices:

- First, they point out that established firms should be expected to hold the line on prices in face of transient shortages more so than transient firms. As *The New*

York Times reported on the aftermath of Hurricane Andrew, "The big companies performed far differently than the price-gougers selling ice, water and lumber from the back of pickup trucks at wildly inflated prices. . . . But unlike the carpet bagging vendors, who drove away at sunset, the big companies have a long-term stake in the South Florida market. For them the good will of local customers . . . is a valuable asset."[23] The "big companies" that hold the line on prices, however, invariably limits the quantity any one customer can buy in part to serve more loyal customers but also to prevent shoppers reselling at higher prices.

- Second, the inclination of firms to use price to deal with shortages depends upon customer search costs. If search costs are low, as is the case with gasoline, then prices can be expected to bob about with the changing and transitory forces of supply and demand: "Consumers obtain information about gas prices almost costlessly, as a by-product of just driving past gas stations, rather than searching out prices. Under the model here, there would be no reason for gas stations to 'hold the line' on price as demand and cost changes occurred."[24]
- Third, high and variable rates of inflation can be expected to cause businesses to use prices to eliminate shortages. This is because inflation forces buyers to continually engage in searches for price information on the levels and relative positions of various product prices. Inflation itself can, consequently, be a source of shorter queues but added inflation.[25]
- Fourth, Haddock and McChesney conclude, "Intentional shortages will more likely emerge when (a) customer demands or input costs are rising unexpectedly but the seller can predict they will move back toward long-run equilibrium levels, or (b) unexpected demand increases are believed to be permanent but will later be matched by long-term production" increases.[26] This means that even when temporary shortages exist, firms can be expected to continue to stimulate demand with advertisements. They might continue to advertise because they want to make the short-run increase in demand permanent and/or they anticipate expanding their capacities and want to achieve a sales volume that will result in the efficient utilization of the capacity coming online later.
- Fifth, firms that hold the line on prices in face of shortages and queues can be expected to manage their shortages. They can refuse orders from new customers. They can also limit the amount purchased by each customer, in part to allocate the available stock among more loyal customers but also in part to prevent some customers from buying up large quantities of the stocks only to resell what they have purchased to others at a higher prices (from the backs of their pickups). Of course, this means that the greater the ease of resale, the less willing firms will be to hold the line on their own prices, and the shorter the queues will be.

Bandwagon Effects and Queues

Gary Becker has postulated that for some goods—meals at the (Palo Alto) restaurant mentioned at the start of the chapter, books, concerts, and theatrical performances—shortages occur because the profit-maximizing price is *above*, not

below, the market-clearing price. While this is not always the case, it can be true, according to Becker, when the consumption of the good is sufficiently *social* in nature, that is, the demands of individuals is positively influenced by the number of other people enjoying the good. That is, people can jump on the "consumption bandwagon" for certain goods because other people are either on the bandwagon or are expected to make the jump. A sufficiently strong bandwagon effect can mean that the price can be positively related (within a range) to quantity of the good consumed. In Becker's words, "Suppose that the pleasure from a good is greater when many people want to consume it, perhaps because a person does not wish to be out of step with what is popular or because confidence in the quality of the food, writing, or performance is greater when a restaurant, or book, or theater is more popular."[27] He postulates, in other words, that in addition to the bandwagon effect, consumers can also buy the good because of the "snob" and "conspicuous consumption" effects, not just because of the intrinsic use value of the good by itself.[28] He notes that Stephen Hawking sold over a million copies of his book *A Brief History of Time*, "yet I doubt," Becker probably correctly muses, "1 percent of those who bought the book could understand it. Its main value to the purchasers has been a display on coffee tables and as a source of pride in conversations at parties."[29]

Becker organizes his formal argument around the Palo Alto restaurant that regularly has queues in the evening for its fixed seating capacity, represented in Fig. 17.2 by the vertical supply curve at S_1. This means that the (short-run) seating is unaffected by the price, clearly an assumption Becker makes to simplify and facilitate the development of his argument. Assuming the demand, D_1, is downward sloping, as is conventionally assumed, the market-clearing price is P_2. The only way a queue can emerge in this model of the market is for the price to be below P_2, say, at P_1 (which readers will note is similar to the line of argument developed in Fig. 17.1, with only a change in the slope of the supply curve). The shortage in this figure is the gap between the quantity demanded, Q_2, and the quantity supplied, Q_1.

This line of argument implicitly assumes that the demands of individual restaurant patrons (or book buyers or theatergoers) is unaffected by the enjoyment of other patrons, by the number of patrons, and by the characteristics of the other patrons—which will not always be the case, especially when the goods are consumed socially, and meals at restaurants are social happenings, necessarily.

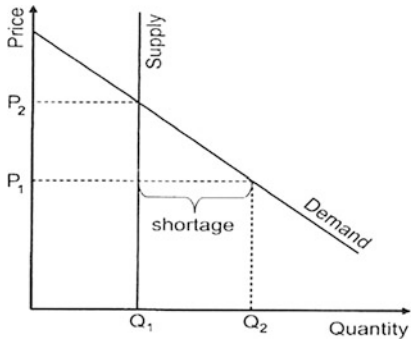

Fig. 17.2 A market shortage as a market signal

Restaurant goers acquire information on the quality of the restaurant's food by taking notice of who and how many others want to eat there. Book buyers buy books because others are buying them and talking about their themes in social situations. Concertgoers can feel ill at ease if the hall is sparsely filled, and can feed off the rapture that others around them express on seeing and hearing the performance.

Hence, Becker argues that demand for eating at a restaurant can build on itself, as the number of buyers increases: First, the value all initial buyers receive from consuming the food can rise with the number of buyers. Second, as the number of buyers increases, more patrons will want to join the market. Hence, if the social interaction is sufficiently strong, Becker postulates, price can rise with quantity demanded, and the result can be that the total quantity bought can go up with price. The price increase itself can further stimulate an increase in the value of the good demand because, as Dwight Lee and McKenzie have argued, the price rise can change the composition of the restaurant patrons.[30] That is, the price increase can force out of the restaurant's markets "undesirables" (however the actual and prospective patrons define them), increasing the value of the restaurant experience for the remaining patrons and causing more people to want to go to the restaurant. Do you doubt the validity of this assumption? Consider that many people go to pricy restaurants precisely because they can have a high degree of confidence that unruly and loud children and babies will not mar their dining experience.

The central point Becker seeks to make is that there is no necessary reason that demand for *socially consumed* goods will be, throughout the entire range of possible prices, always downward sloping. There can be an upward sloping range, as depicted by D_1 in Fig. 17.3 (which is drawn directly from Becker's work[31]). The demand curve might reasonably be expected to bend downward beyond some point, Becker summarizes, when the restaurant becomes excessively crowded and noisy and the queue becomes excessively long, with the service and food quality possibly also suffering. The supply curve is S_1, the same as in Fig. 17.2.

In this graphical illustration, supply and demand intersect at the restaurant's capacity, Q_1, which makes the market-clearing price P_1. But P_1 is hardly the revenue-maximizing price. This is because the price can still be raised from P_1 toward P_2 with the quantity demanded continuing to expand. P_2 is the profit-maximizing price, simply because P_2 necessarily yields more revenue than P_1: $P_2 \times Q_1$ is greater than $P_1 \times Q_1$. With costs remaining the same, when quantity is held at Q_1, a price of P_2 increases profit above what can be had at the market-clearing price.

There are two interesting points drawn from Becker's line of analysis.

- First, a shortage, which translates into a queue, emerges at a price *above* the market-clearing price. The shortage at P_2 equals the number of seats demanded, Q_2, minus the number of seats available, Q_1.
- Second, the restaurant owner (or seller of any such social good) has to choose the price with some care. A price above P_2 can have a dramatic impact on the number of people wanting to eat at the restaurant. A price higher than P_2 can

cause the number of patrons who show up to collapse to zero. The "demand curve" in the figure bends down beyond Q_2 because of the crowding, beyond Q_2, lowering the value of eating at the restaurant for all patrons.

Although we are somewhat reluctant to accept Becker's upward sloping demand curve, his theory does seem to describe what is so often observed, shortages and long queues at many restaurants in the face of what appear to be relatively high prices. However, his analysis is short on explaining exactly how the price that is above the market-clearing price, along with a shortage, can be achieved. Some restaurants might be fortunate in choosing an initial price of P_2 with the quantity demanded magically equaling Q_2 in Fig. 17.3, which results in the maximum shortage (or length of queue) at the restaurant. But in real market settings sans magical influences, such a high initial price might preclude a pronounced bandwagon effect, because there may be few initial patrons. There is a real chicken-and-egg problem for providers of socially consumed goods subject to bandwagon effects, which reduces to an important question: how can sellers get the bandwagon rolling?

Restaurants might start the bandwagon rolling by doing as we suggested in our discussion of network effects earlier in the book (with the network effects being similar to the "social effects" Becker has in mind): initially, the firm can charge a low price that can stimulate the initial demand and create queues, with the queues signaling that this is the "in place" that, in turn, causes an increase in the value of dining at the restaurant to all patrons, resulting in more patrons being attracted to the restaurant. But such a strategy is problematic, given that a low price might attract many customers who can . . . well, pay only a low price, which can turn off celebrity and other A-list customers who can signal to many others that the restaurant is on its way to being the "in place." Moreover, while there can be some value in such a pricing strategy, problems can emerge when the price is later raised. The price increase can be seen as "unfair." Then again, it might signal the

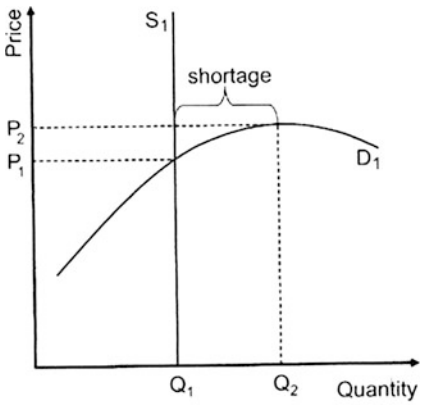

Fig. 17.3 Consumer demand as a function of price

Source: Gary Becker 1991, p. 1113.

growing value of dining at the restaurant. We really cannot say a priori how the restaurant can pull off the above-market-clearing price with a queue.

Perhaps Becker is correct to effectively "punt" on how to solve the chicken-and-egg problem. He suggests that restaurants (and other firms) who can build queues with high prices would be expected to advertise a lot, as well as pay attention to amenities that make a lot of people conclude that patrons will be coming to the restaurant because a lot of others will be there. Becker writes that such advertising expenditures can "have a multiplier effect when consumers influence each other. Advertising that raises the demands of some consumers also indirectly raises the demands of other consumers since higher consumption by those vulnerable to publicity campaigns stimulate the demands of others."[32] He also suspects that such restaurants will be subjected to faddism, or large and rapid swings in buyer tastes, a point that has a ring of truth from casual observation of the restaurant industry.

Setting aside the problems associated with Becker's bandwagon theory of queues, it seems transparent that some restaurants do (for a short time at least) solve their dilemma of building demand. Sometimes they do it by reputation. At one time Planet Hollywood was an "in" place to dine in Hollywood, partly because of the novelty of the movie set décor and partly because movie stars and producers founded the restaurant. When the company opened another Planet Hollywood restaurant, the queues were initially long, in spite of the fact that patrons were asked to pay relatively high prices for mediocre food. But in a few short years, the restaurant closed as fickled patrons tired of theme-based restaurants.

The initial demand for Apple's iPhones is, perhaps, a prime example of what Becker had in mind in drawing the upward sloping demand curve and the resulting shortage at a "high" price above the market-clearing quantity. As we noted earlier in the book, Apple announced in January 2007 its planned introduction of the iPhone the following June. In the interim, there had been so much media buzz about the cell phone, mainly because the phone had the look and feel and some of the capabilities of Apple's wildly successful and "cool" iPod, that the queues outside of Apple and AT&T stores began to form days before the June 29 release. When the doors of the stores opened, the stock of iPhones were quickly depleted. AT&T stores around the country reported selling out of its two to three dozen iPhones within forty-five minutes in spite of the iPhones prices—$499 and $599, depending on storage capacity—being far above other smartphones.[33]

Ditto for the long lines at Apple stores when it introduced the first generation of its iPad tablet in spring 2010. In spite of selling worldwide over fifteen million iPads over the following year, there were even longer lines outside Apple stores when the company open sales for its modestly jazzed-up iPad 2 in March 2011, turning away customers after depleting its initial stocks in stores around the country (after selling as many as 600,000 in the United States in the first three days).[34] Clearly, Apple has managed to make having its electronic products a social experience, with purchases of them a mode to informal membership in what appears to us as something of an cool electronic "cult." Many members want to be seen by friends and foes alike as enduring the long hours in lines as a mark of their allegiance to the in-group, fortified by their being among the first to have whatever product Apple offers,

which translates into inelastic demands for Apple products, high company profits and (in late summer 2011) gave Apple the highest market evaluation in the world.[35]

Single Versus Multiple Queues

Firms should not only try to optimize on the length of their queues, but also seek the best structure for their queues. The two most prominent queue structures are the single queue, under which buyers form a single line and move from the front of the line to the next open service counter, and multiple queues, under which buyers form several lines, one for each service counter. Airlines and banks generally use the single-queue structure for coach passengers (along with a single queue for first-class passengers). Grocery stores and fast food restaurants typically use multiple queues.

Perhaps the most important economic advantage of the multiple-queue structure is that multiple queues tend to be faster than the single queue. That is, more customers can typically be checked out in a given amount of time, which also means that the *expected* (average) wait time for customers is lower, than for single queues. Multiple queues tend to have shorter *expected* waits because customers have to pay attention only to one service clerk and can be expected to move forward to be checked out with little delay. A single queue, on the other hand, requires customers to be attentive to all service counters, and many customers fail to notice open counters and move to an open counter except with some delay. Indeed, customers often have to be prodded to move to an open counter. Then, time is soaked up as the customers move what is usually a longer distance to the open checkout counter than is true for multiple queues.[36] Multiple queues offer customers more control over the time spent standing in line, given that multiple queues give customers opportunities to choose their queues based on their assessments of the transactions to be made by customers ahead of them and of the speed of the service clerks.[37]

But multiple queues have one disadvantage: the variability in waiting times across the service queues is often greater for multiple queues than for single queues.[38] Yes, customers may know that their *expected* wait time will be shorter in multiple queues, but they also understand that from time to time they will be caught in queues with wait times far above what they expected. Granted, they might also be in queues from time to time in which their wait times are far below their expected wait times, but customers might notice the unusually long waits, and weigh them subjectively more heavily than the unusually short waits. The single queue might be longer but can be expected to have more movement. Hence, in spite of the longer *expected* wait times, many customers might prefer single queues because of the sense of some progress and a reduction in the anxiety felt from the variability (and unpredictability) in the wait time.[39] Moreover, stores that once used multiple queues and switched to a single queue, as did Marshall's and TJ Max in 2009, solved the delay time in customers noticing open registrars by simply having

announcements of open registrars, identified by number and blinking light, which clerks triggered when they finished with each customer.

Since variability of relative wait times in single- and multiple-queue structures can differ substantially across retail (and other) sectors of the economy, we should not be surprised that different industries favor different structures. In general, we would expect the single-queue system to be used where the complexity of customer transactions can vary markedly, making the wait time in the individual service queues highly unpredictable. We would expect multiple-queue systems to be used where the variability of customer transactions is usually limited. Airline passengers can vary greatly in the complexity of their transactions at the service counters. They may need only to get their boarding passes and check a bag or two (all by computer), or they might have to change their tickets and find a place to stay after their flights have been canceled. Hence, all airlines use a single-queue system.

On the other hand, the variability of the orders of fast food customers can be limited, making multiple queues more economical. Why so many queues at grocery stores? Grocery stores often use special checkout counters for customers with fewer than ten or twenty items, reducing the variability for the rest of their checkout counters. Still, despite the fact that checkout times can vary greatly depending on how full the shoppers' carts are and how many coupons they redeem, grocery stores tend to use multiple queues simply because of the difficulty shoppers have in identifying and moving to open counters. Checkout clerks are often hidden from view by magazine and candy racks, and maneuvering grocery carts around counters and coiled queues can be cumbersome. (But no one should be surprised if some grocery stores adopt the Marshall's/TJ Max's system, given its obvious success.)

Businesses have an obvious incentive to pick the queue structure that their customers generally prefer. The greater the preference customers have for the chosen queue structure, the longer businesses can allow their queues to become (all other considerations the same), the more costs they can save on checkout counters, and the higher the prices they can charge and the higher the profits they can earn, relative to what they would otherwise earn. Of course, competition among businesses to adopt the most preferred queue structure will ultimately check the prices charged and profits earned.

Last-Come/First-Served, a Solution for Queue Length?

Steven Landsburg, an economist we have cited before, assumes that his readers will readily concur in his claim that we all "spend too much time waiting in line. That's not some vague value judgment; it's a precise economic calculation" (with the "precise economic calculations" left unreported in his discussion).[40] He explains, drawing on the conceptual work of other economics, that the shopper who gets in line first imposes a wait cost on all others who get behind her.[41] Since shoppers at the front of the line do not consider the wait costs they impose on others (but do consider the wait costs imposed on them by others in front of them in the queue),

Landsburg readily accepts the conclusions of another economist who more than two decades ago asserted that queues are not "generally socially optimal."[42] Landsburg suggests two solutions for the presumed inefficiency of the queues we all see around us.

One potential solution tendered is for shoppers in the back of the queue to pay shoppers closer to the front to change places with them. That way, the shoppers close to the front will experience a cost of holding up others in line. If shoppers keep their places in line, they will forego the opportunity cost of the buyouts. Landsburg, however, quickly dismisses this solution as being uneconomical: the required negotiations would be a "hassle," resulting in "mutually beneficial trades" going unconsummated. We agree. If such exchanges were not such a hassle, with few gains to be had from them, then we should commonly observe people making such trades, which we do not (although some older people do pay young kids to stand in line to buy tickets for concerts, thus reducing the overall wait costs, and others buy tickets from scalpers at inflated prices to avoid the wait costs).

Landsburg's next solution is one economist Rafael Hassin proposed in 1985: switch from the common rule of queue formation of *first-come/first-served* to a rule of *last-come/first-served*. That is, latecomers to queues would have rights of breaking line.

Bizarre, you think? Landsburg suggests your problem can only be that you are forgetting that the last-come/first-served rule would reduce the length of queues in general because shoppers in the back of queues would soon get out of the queues. Their withdrawal from the queues would thus lower the expected social (wait-cost) waste that first-come/first-served queues foster.

To make his point, Landsburg asks readers to imagine a line-up at a water fountain, say, in a public park (using economist Barry Nalebuff's example[43]). If latecomers have the right to go to the front of the line, then many people toward the back of the line will feel the cost of having to spend more time standing in line. Some of them will, eventually, give up on getting a drink, reducing the length of the queue and the wasted time in the line. Landsburg happily muses, "That keeps the line short, which is good. In fact, it's better than good: it's ideal."[44]

Everyone else would be happy, too—right? Hardly. Not the people at the back of the line, you can bet. They might be as distressed with line breakers as they are with petty muggers. As a consequence, there need not be a movement toward queues that are "socially optimal" in terms of length. This is because the optimal queue length can be a function of more than people's objective or subjective value of their expected wait cost. People might simply view the higher expected wait cost from a first-come/first-served queue rule as being superior to the lower expected wait cost associated with the last-come/first-served rule. Why? The latter could have a higher variance (as well as longer wait-time for some people) and could be considered less fair, and further from Landsburg's presumed goal of making queues more "socially optimal."

Landsburg recognizes one big flaw in the last-come/first-served rule. People would quickly learn to game the system. They would quickly learn to drop out of the queue and return as a newcomer, with the right to cut in front of everyone else.

You can imagine lots of time would be wasted as people scramble to exit and then to re-enter queues. You might also imagine that the gaming would quickly, in many queues, break down into fighting. Such prospects no doubt damn the last-come/first-served rule, and explain why the rule is rarely seen in operation.[45]

But there is a bigger, more fundamental economic problem with Landsburg's (and others') proposed last-come/first-served rule. Queues need not always and everywhere be "socially suboptimal." Notice the setting in which Landsburg chooses to elucidate his proposed rule—a water fountain in a park, which is not a business. No one has any incentive at all to constrain the length of the queue at the park water fountain. That is hardly the case in our grocery store (and concert arena) examples. Stores can make money by always standing ready to move the queue length closer (if not) to some "optimal" level. They can do it, as stressed in this chapter, by varying the number of checkout counters or box offices and the prices of the many products they sell. One reason few, if any, businesses use the rule of last-come/first-served is that the rule can cause discord squared, but also because such a rule can easily shorten queues and, in so doing, make them socially suboptimal. No doubt shoppers want shorter queues, but shorter queues come with added costs for both shoppers and sellers.

Concluding Comments

Supply and demand are powerful forces in markets and highly useful concepts to economists as they teach their students about how competitive markets operate and the role prices play in allocating scarce resources and goods and services among buyers. But, as evident from this chapter, there is far more to market interactions of buyers and sellers than can be captured by supply and demand as price/quantity relationships, described as two curves on a graph. When shortages and queues are as prevalent as they are in real-world markets, we have to think that there are good economic reasons for them. All shortages and queues cannot be chalked up to mistakes of market participants or aberrations of market forces. As we have argued in several ways, queues can make a lot of sense. By that we mean, they can promote the economic and social goals of both buyers and sellers, which means that shortages and queues can be mutually beneficial to both sides of the market, buyers and sellers. If that were not the case—if both buyers and sellers were not better off—we would expect competitive market forces activated by alert entrepreneurs to correct the problems. Shortages and queues would surely not be so common.

Part V
The New World of College and University Education

This section should be of particular interest to many readers of this book since it deals with education or, more specifically, college and university education that is the reason for this book. As we hope has been usual, we provide a different take on student learning. By applying the rudiments of economists' choice theory, we are able to explain how productive (technological and personnel) changes in particular classes may not show up as added learning in those classes, but can show up in classes where the changes have not been instituted (and can show up in more time students spend, say, playing video games). We also explain how colleges' and universities' success in sports can enhance learning standards and toughen grading standards and how and why professors can "buy" higher student evaluations with relaxed grading standards. We offer a contrarian views on the extent to which college and universities "exploit" their student-athletes and on why professors have life-time tenure and business people do not.

Chapter 18
The University Economy

Typically, universities catch hell from their students. Students frequently complain about the quality of food; they deplore meaningless general education requirements and criticize professors who are more concerned with their research and professional standing outside the classroom than they are with the quality of their classrooms, and some tire easily of humbling themselves before the lords of the university, the administrators.

Students beef about poor or remote parking facilities or about regulations that prohibit cars on campus altogether. A half century ago, when they were in college, the parents and grandparents of students reading these words today very likely grumbled about and demonstrated against (would you believe?) petty rules—such as dress codes, curfew hours, and sign-outs that restricted their social conduct, as well as rules that threatened expulsion for returning to campus with just the smell of beer on their breath. In the 1970s and 1980s, the hot issue on some campuses has been whether or not coed suites within dormitories should be allowed—or even whether men and women students should be permitted to bunk together in the same dorm rooms. With all those issues having been largely settled—in students' favor, we might add—student protests tend to be about more world issues, such as whether Muslim students should be penalized by their university and the county prosecutor for repeatedly interrupting an on-campus talk by the Israeli ambassador to the United States (which actually happened at the University of California-Irvine in 2010), whether one potential presidential candidate or another should be allowed to speak at graduation, or whether university prices should be pushed up several times the rate of inflation in tough economic times (which was happening all across the country in the 2000s with the advent of the Great Recession).

On the other side of the desk, professors are not without their complaints. They bemoan what they sense has been a deterioration of academic standards. They are very concerned with what has come to be known as grade inflation, or the gradual increase in grades given to students. Now, more than ever, there is concern over pay raises not keeping up with the cost of living. As one professor recently complained at a faculty meeting, "I wish the administration would stop talking about 'annual raises'; I have not had a real raise in years."

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_18,

In this chapter, we are not concerned with the legitimacy of student and faculty complaints. Nor will we spend much time evaluating the tactics employed by students or faculty to get what they want. We prefer to consider the more interesting question of why the university can operate the way it does. At the start, we readily admit that part of the basis for much student and faculty discontent may simply be an unbridled attempt on their part to get more and more for little or nothing. However, we think a fuller understanding of modern university operations requires some reflection on the institutional setting of the education process.

University Pricing

The modern public university has one notable feature: it typically is funded partially from state appropriations and/or grants, endowments, and charitable contributions. The rest, generally less than 50 percent, comes from students (or their parents) in the form of tuition and fee payments (although state subsidies have been contracting in recent years as state budgets have tightened with the economic downturn, an issue to which we will return).

At most of the better colleges and universities, there has traditionally been a shortage of openings for students; that is, more students have wanted to get in than could be admitted. The reason for past shortages, as we will show, can be traced to the way in which education has been financed. Many of the problems students have confronted in their college careers can also be linked to state and federal government subsidies given to education. That may be a mouthful, but we intend to explain in detail. First, we need to lay out the framework for the analysis, which means the market for education.

In Fig. 18.1, we have scaled the number of university openings (that is, the number of students who can be admitted) along the horizontal axis and the price (which amounts to the marginal value of education) along the vertical axis. The student demand for education, labeled D_1, is viewed as the horizontal summation of all students' individual demand curves. It is the market demand for education, and it is a function of anything that gives value to being an educated person, such as the inherent satisfaction from learning, the additional lifetime income the educated person can receive, and any change in social status that may be experienced by students and attributable to education. In the discussion, the demand is assumed to have its normal negative slope. (Is that not a reasonable assumption?) This means that more people will want to enter college if the price falls.

The supply of education (how many openings will be offered at each price) is a function primarily of the number of faculty members and/or classroom seats available and of the teaching technology being employed; that is, the greater the number of faculty members employed and/or the greater the number of classrooms and seats, the greater the supply of university openings students can fill. Also, if television or large lecture rooms are used, then more students may be accommodated. The advent of ubiquitous laptops, smartphones, and tablets has increased the potential supply of

university slots because lectures can now be streamed or downloaded and watched as students sit on a campus bench or in the campus pub, sometimes downing a beer as they take notes. The new technology has allowed students to skip class, which has, in turn, enabled their universities to increase the sizes of their classes and to sign up more students for the classes than there are seats in the lecture halls (confident that with increased absenteeism there will always be empty seats). And, we should note that student absenteeism rates of more than 50 percent are now common (and 75 percent or more are not rare) in large lecture-hall classes on many large campuses (one of those "dirty little secrets" of modern public education few administrators wish to acknowledge or try to rectify).

But back to the model: to give some realism to the model, the supply of education, S_1 in Fig. 18.1, is assumed to be upward sloping but highly inelastic

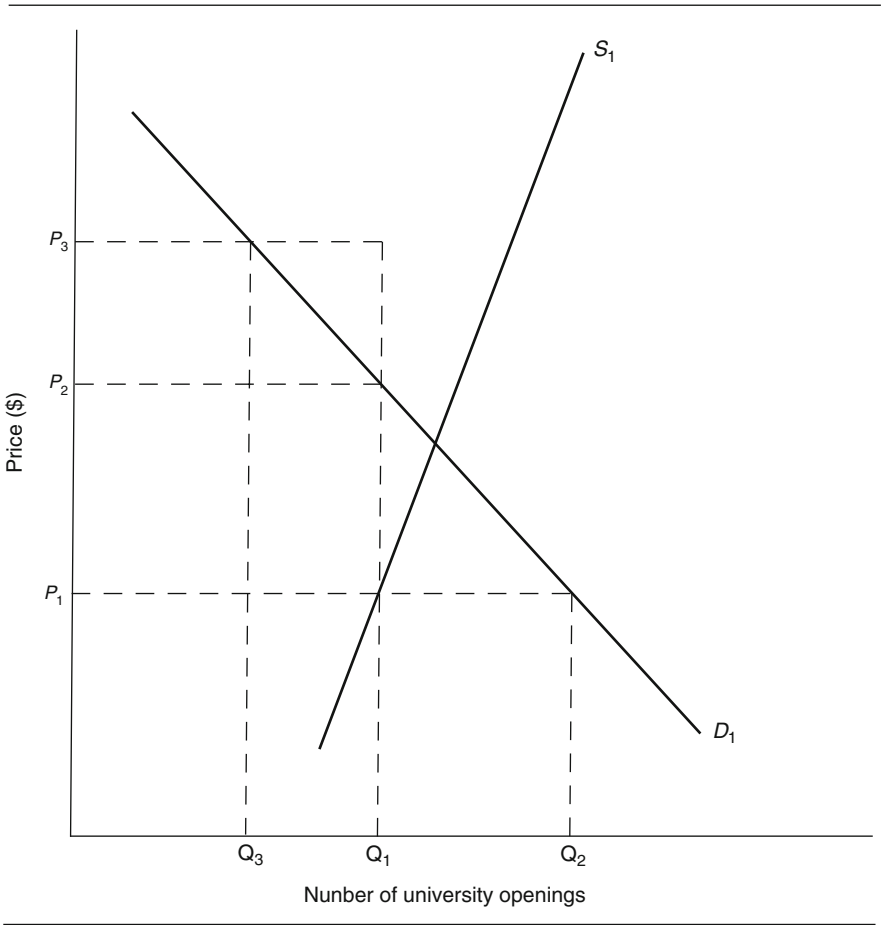

Fig. 18.1 The University Market

with respect to tuition and fee payments from students. We make this assumption recognizing that the number of students universities can admit is determined in large measure by decisions of state legislatures or, in the case of private institutions, charitable organizations. They are the ones who make appropriations for dormitories and classroom buildings. However, it seems reasonable to assume that schools can and do respond to a limited degree to changes in the price they can charge their students. Hence, the upward sloping curve.

If education were provided on a free-market basis, the market clearing price will tend to be the price at which the supply and demand for education intersect in the graph. On the other hand, assuming that the legislature both subsidizes the students' education and limits the physical size of the university, the price charged from students in the form of tuition and fees will be below the market clearing price—for example P_1. (For simplicity, we assume all universities charge the same price.) Note that at P_1, the number of student openings in universities will be Q_1; however, the number of students wanting to enter will be much greater, Q_2. In other words, given the supply and demand and price of education in this illustration, there is a shortage of openings for college students ($Q_2 - Q_1$), and this, we believe, fairly accurately describes the situation of most reasonably good universities and colleges to date (which could be in the process of changing as tuition and fees are being hiked to offset the decline in state support). If this were not true, one must wonder how else we could have experienced a shortage.

The existence of the shortage goes a long way toward explaining the behavior of universities. Because of the shortage, the available openings must be distributed among those who want to be admitted in some extra-market manner. Because there are more students knocking at the doors than can be admitted and because the students are not paying the full cost of their education, the university certainly has incentive (when a shortage exists) to pay much attention to the wishes of the students. It is also clear why the admission criteria has traditionally favored the most intelligent students and those who are the best or most efficient learners. Not only do such standards permit the faculty to fashion students after their own idea of what an educated person should be, they may make life in general a little easier for the instructors. It is often much easier to teach an intelligent person than one who may not be so well endowed mentally. By saying it is easier to teach better students, we mean that professors not only can increase the better students' achievement levels but also can divert more of their time to nonteaching duties, for example, research and consulting.

Those students who want to go to college but cannot get in represent a threat to those students who are admitted. If admitted students do not conform to the requirements (standards) of the university or faculty, they may be replaced by those who would otherwise be a part of the shortage. Therefore, as opposed to accepting a total payment of P_1 from each student, the demands of the optimizing university can be raised. The effective price, meaning the money price plus the nonmonetary payments the university will charge, can in fact be raised to P_2 in our illustration. P_1 is paid by the students in the form of tuition and fees, and the rest, $P_2 - P_1$, can be extracted from the students in any number of forms. And do note

that the further below is P_1 from the equilibrium price, the greater the university charges in forms other than tuition and fees.

The university can impose general education requirements the student may not appreciate and can impose unpopular social regulations. The university can also neglect the quality of the accommodations, such as food and dormitory facilities, and it can require students who want to drive cars on campus to park in a remote area. The university can expand the sizes of classes to accommodate several hundred students or whatever the lecture halls and auditoriums will accommodate even when the students may find them less valuable and when universities realize they are less effective venues for student learning. The professor can require more work than students will freely choose and can require that they learn material that is of little interest to the student but of considerable interest to the professor. If students do not like the way they are treated in or outside the classroom, they can be replaced or, less severely, penalized with low grades.

Notice that P_2 is the highest price that can be charged. If the university attempted to extract a higher money and nonmonetary price than P_2, for example, P_3, the number of students wanting to go to college would fall to Q_3. Given that Q_1 openings will be available, a surplus of openings ($Q_1 - Q_3$) will exist; universities can anticipate a cutback in funds from students and state appropriations, and professors will be threatened with a possible loss of jobs and income.

In such a situation, what can we expect to happen? Being economists and university professors and recognizing that competition does exist among faculty members and universities, we would anticipate that the demands placed on students would fall back to P_2. This means that something would have to give, such as the extensiveness of general education requirements, the toughness of courses, the attitude of university personnel, the quality of food, and so on.[1]

From this analysis, we may conclude that what professors and universities view as their standards may be primarily an expression of their market position and their ability to extract a nonmonetary price from students. It also follows that their ability to lay claim to standards and induce compliance from students is dependent in part on public subsidies; this is revealed in the gap between P_1 and P_2, and their ability must rise and fall with the difference. For example, suppose that the university raised the tuition and fee payment to something above P_1 and there is no offsetting increase in demand. The result would be, barring a change in supply and demand conditions, a reduction in the shortage and, more important for our present purposes, a reduction in the gap between P_2 and the price charged for tuition and fees. Here again, if something did not give, the number of students wanting to enter college would drop, and we would have the surplus problems discussed above. The anticipated results would be, as above, that the optimizing university would have to concede some of its demands in other areas of university life. Having to make such concessions is one possible constraint on universities' abilities to raise their tuition and fees.

If the university does not concede in areas such as rules governing social conduct and parking, then a reduction in demands may have to be realized in the area of expected academic performance. The reader may think professors have their

standards and will maintain them at all costs, and we agree that there are professors who are like that. However, visualize for the moment a professor who may have a family to support and very few employment opportunities outside the university. Consider also that this professor may not have tenure. If there exists a surplus of university openings, such as $Q_1 - Q_3$, then there will be unfilled seats in someone's classroom, portending a possible cutback in the number of faculty members needed. If the university cuts back on faculty, who would you guess would go first? Given the attention administrators pay to student-credit-hours generated by faculty and departments, it is quite likely that if a cut is made, it will be where the number of students in class is low.

Recognizing this prospect and remembering that faculty members are not all irrational when it comes to their own welfare, the individual faculty member can attract more students to his or her classes in two basic ways. He or she can attempt to change the nature of the course, improve its inherent value to the students, and increase the demand for the course. (This option has the disadvantage of requiring more work from the professor.) Or, the professor can cut back on demands of the students. In other words, the students' costs for taking the course can be reduced by lowering requirements or raising the grades students can expect to receive for any given level of achievement.

If one professor, by such methods, attracts more students, then other professors, who may not have originally been caught with an enrollment problem, may now be saddled with unfilled seats and the threat of job loss. The result can be a competitive devaluation of academic standards and inflation of grades. This is not necessarily bad for the students, for remember that we originally said that professors may have been imposing on the students what they thought was important, and they may now be catering more to student desires. At the same time, we must recognize the possibility that the public (and parents) may have been subsidizing college education in order that the professors' will (which is thought to be more in the long-run interest of students and society) could be imposed. Because tuition and fee payments can influence the ability of professors to extract work from students, it is understandable why they may side with students in opposing higher tuition payments and in promoting government subsidization of education.

We can complicate the analysis a little by considering the effect of changes in demand and supply conditions. If the demand for college education increases while the supply remains constant, as described in Fig. 18.2, the expected result is an increase in the shortage of openings from $Q_2 - Q_1$ to $Q_3 - Q_1$. Note also that the effective price universities can charge can go up from P_2 to P_3, meaning the universities can increase their tuition and fee payments or increase their demands in other areas of academic life or both. (Similar conclusions could be drawn if the supply increases but the demand increases by more than supply. Try showing this on a graph of your own.)

This situation of increasing demand (relative to supply) may have been reasonably descriptive of almost all universities from the late 1950s through maybe the 1990s. The value of a college education was definitely on the rise during that earlier period. In addition, incomes and the population of potential college

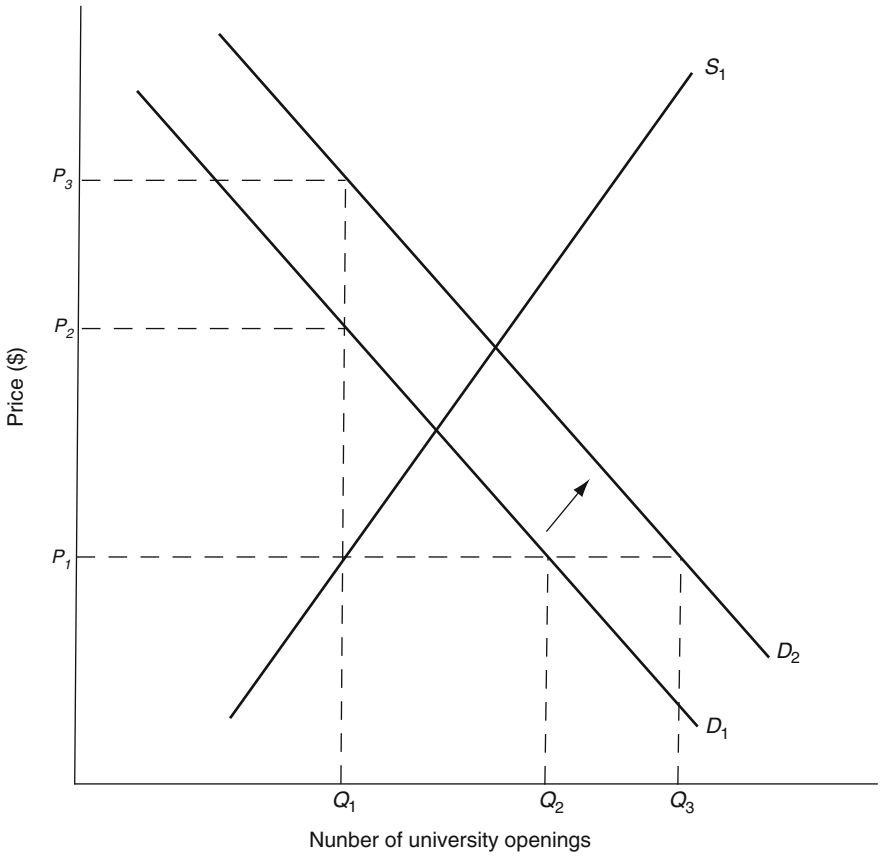

Fig. 18.2 An Increase in the Demand for Education

students were increasing. In the 1950s and 1960s, especially, the college diploma was generally considered a surefire ticket to the pie in the sky that all young people and parents dream about. All of these factors were increasing the demand for college education faster than openings could be made available.

In the late 1960s, however, the supply and demand conditions in the university education market began to change dramatically. The growth in the number of potential college students began to taper off, the college diploma became much more common and its prestige value began to drop, and surpluses of college graduates, especially in teaching fields and engineering, began to emerge—all of which led to a significant drop in the growth of demand for college education and, in some states or areas, to an absolute drop in the demand.

On the supply side, state appropriations for classroom buildings and dormitories gained momentum; community colleges and technical schools and for-profit colleges and universities began to proliferate. As a result, in many areas of the

country the growth in the supply of student openings outstripped the growth in demand. Shortages of college and university openings at first fell and then later evaporated all together; surpluses of openings emerged on many campuses. Moreover, the value of a college education likely began to deteriorate for another reason: During the last half of the twentieth century and into the twenty-first century, the percentage of high school graduates going on to college more than doubled, to where more than 60 percent of high school graduates seek a college degree in one form or another. That must have meant that the average "quality" of college students must have declined (especially with the concomitant erosion of high school education in many public school systems). Students and the public might like to think that professors have the liberty of establishing their learning standards for their courses, independent of the quality of their students, but from long years of experience as university professors, we know that is not possible. Professors must design their courses and teach not so much to the elite students in their classes, but to the "median" or "average" student. We understand that we could not possibly hold to the same instruction standards when teaching economics to students in a community college with an open-enrollment policy than in an elite selective university. And when the average quality of students has fallen, do not be surprised if professors (especially those who do not have tenure or are hired by the course) dumb down their courses, both in terms of the sophistication and quantity of assignments and in terms of the grading scale applied to papers and tests.

To illustrate the consequences of a greater increase in supply than demand, consider Fig. 18.3. The initial supply and demand conditions are depicted by S_1 and D_1. We have increased the demand and supply curves to D_2 and S_2, but notice that the increase is more for the supply curve than for the demand (that is, supply has been moved further to the right). For purposes of simplicity only, we assume that tuition and fee charges remain constant.[2] The graph may appear on the surface to be a little confusing; but if you look at it carefully, you may see that the results of the changes are a reduction in the shortage from $Q_2 - Q_1$ to $Q_4 - Q_3$ and a reduction in the effective price universities can charge, from P_2 to P_3.

Given this latter reduction and the constant tuition price, the university or faculty must reduce their demands on students. We would predict that the changes that occurred in the educational market during the late 1960s would be reflected in one or more of the following areas: reduced social regulations, a relaxation of general education requirements and other restrictions on students' college programs, a change in the attitudes of administrators and professors toward students, and perhaps lower academic standards, however defined.

Interestingly enough, those of us who have been a part of university systems during the past several decades (which is true of both authors) have seen almost all of these changes come about. Especially in the late 1960s and early 1970s, colleges and universities began reducing their general education requirements, and some eliminated them altogether. Universities began turning more and more toward student evaluations of faculty and courses as a means of evaluating faculty performance and ensuring that faculty members pay more attention to the desires and feelings of students. Social rules, which used to be very stringent on the activity of

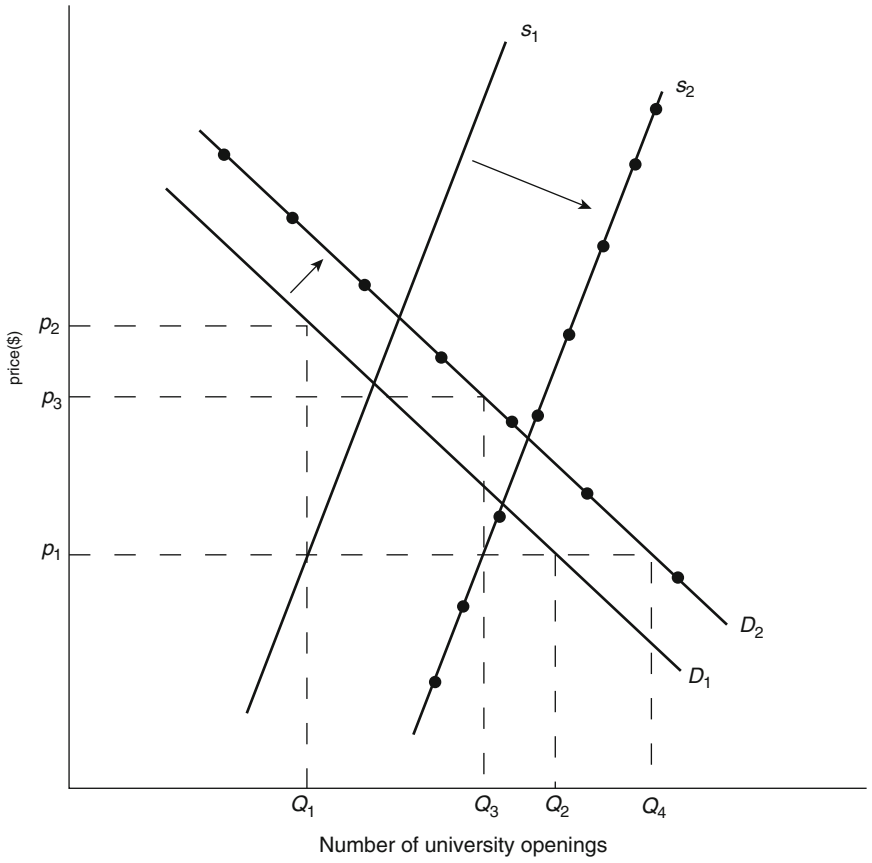

Fig. 18.3 Increase in Supply and Demand for Education

women in particular, have been abolished.[3] Students were given much more freedom in taking independent study courses and in designing their college programs to meet their own needs. Grades began going up in the late 1960s and early 1970s—so much so that on many campuses more than two thirds of all grades given were As and Bs. On many campuses, the dean's list became a joke to those who knew what had been happening. *Newsweek* magazine reported the following on grade inflation:

> In 1961, about half of the seniors at Harvard College graduated with honors; this month, when the class of 1974 received their diplomas, degrees cum laude or better went to an astonishing 82 percent. The average University of Colorado student in 1964 maintained a grade-point average of 2.4 (out of a possible 4 points), but his counterpart today has a GPA of 2.82. Between 1962 and 1972, the University of North Carolina doubled the percentage of As it handed out. The average grade at the University of Wisconsin has soared from C-plus to B-plus in just 9 years. And the dean's list at the University of Virginia included 53 percent of the student body last year—compared with 21 percent in 1965.[4]

In addition, one should realize that grades went up in the face of a downward drift in Student Achievement Test scores of entering freshmen. Employers, graduate schools, and organizations such as Phi Beta Kappa no longer looked upon high grades as clear evidence of superior ability. At one time, employers looked to colleges and universities that screened the bad students out and graduated the people who were markedly better than those who failed to make it through. In the 1970s, however, with rising grades and a growing uncertainty over what they meant, more and more employers were turning away from seeking college graduates and were turning toward training their own people. To the extent that these trends were evident, the value of the college degree deteriorated, reducing the demand for education further.

Before closing this section, we need to stress three points. First, we have discussed the problem of education in the context of an environment in which the shortage of openings has been reduced. The rise in subsidized student loans over the decades could have been a force to increase the shortage (or to lower the reduction in the shortage) in college and university slots. Of course, no one should expect students to be the full beneficiaries of the subsidies in student loans. The greater demand that subsidized loans causes can lead universities to do what comes naturally to them, raise their prices and lower their quality, which is why college and universities are big supporters of expanded subsidized student loans and why they lobby hard against cuts in student loans. Of course, their lobbying message is that the harm is always done to students, not colleges and universities. (Indeed, the rise in subsidized student loans can be one plausible explanation for why college and university prices have risen as fast as they have over the decades.)

Moreover, there may not have been a reduction in the shortage of students across all universities. Indeed, the rising prices and lowering quality of college education in public universities could be driving up the demand at private colleges and universities, which could be causing them to tighten their academic standards at the same time they have been able to raise their prices.

Second, we recognize that many of the changes that have occurred in education are in part the results of fundamental social changes in attitudes and preferences of people toward what education is and should be. We merely submit that the market has played a significant role in the development of educational policies and attitudes.

Third, the faculty of any given university could get together to put restrictions on the grades any given faculty member could distribute to his students. However, such a move is likely to run headlong into the opposition of those who believe that such a policy would be a violation of academic freedom. In addition, if one university restricts its grades and others do not, the result can be a movement of students to other universities, jeopardizing jobs in the university that restricts faculty grades.

From the advent of the Great Recession in late 2007 through the ongoing sluggish recovery (at the time of this writing in early 2012), states have been strapped for cash, which has caused them to cut their subsidies to their universities. The reductions in state support have forced public universities to raise their tuitions

and fees, shed many courses and whole departments, and increase the number of years students must spend in college to meet the graduation requirements. We cannot help predicting that their financial exigencies will cause many top-ranked universities to become mediocre universities. And we expect that state universities will begin to discriminate against students from their own states. The reason? They charge out-of-state students and foreign students far more than in-state students, which will enable the universities to reduce their budget shortfalls. However, what this will mean is that a student from Nevada or Montana with a SAT score of 1400 (on the math and verbal portions of the test) will have a better chance of being admitted to UCLA or UC-Berkeley than a student with the same SAT score from, say, Sacramento. If that is the case, do not be surprised at the howls that will surface in the media when an out-of-state or foreign student with a 1350 SAT score is admitted to UCLA or Berkeley while a student from Sacramento with a 1400 (or higher) is turned down.

Rankings and Championships

Many colleges and universities pay great heed to their rankings, and changes in their rankings, by publications such as *US News and World Report*. One good economic reason for doing so comes out of our analysis of an increase in education demand in Fig. 18.2. An increase in a school's ranking can increase its admissions demand, which opens up economic and academic opportunities. The school can increase its tuition and fees by the increase in demand (up to a limit of P_2 to P_3 in Fig. 18.2), which is to say that no one should be surprised if ranking and tuition and fees go hand in hand. The school can also take out some of the increase in demand in non-price forms, say, higher standards in the classroom, which can be extracted for two reasons: First, with the greater demand, the school will have a greater pool of applicants, which means it can be more selective. The greater selectivity alone can give rise to higher class standards. (Remember professors adjust their standards to fit their students' abilities.) Second, with the greater pool of applicants and more highly qualified admitted students, professors can tighten down on grades, which can force all students to work harder to rise through the ranks of their fellow students. The school can also be less lenient in allowing poorly performing students to remain enrolled and on probation. After all, the school can more easily replace expelled students with a lower likelihood of losing tuition and fees. (And do remember that schools have to pay heed to making budget, which means they can feel the pressure to allow poor students to remain enrolled, and to continue to make their tuition and fee payments.)

Many colleges and universities that win national sports championships (most notably football and basketball) may also experience the same market effects. With the national recognition that accompanies championships (or just winning records and high sports rankings), the affected schools' demand for admissions can rise, which can enable the schools to extract a higher price in the several ways already

noted. It follows that for some school, admitting highly touted athletes with limited (or no) academic abilities can be a paying proposition, both in terms of higher tuition and fees and in terms of higher academic demands on students who are not athletes (not to mention the higher athletic and academic donations from alumni and fans).

We have indicated that the analysis of the effects of winning sports teams may apply to most major colleges and universities, but not to all. A number of elite schools—for example, Cal Tech, Chicago, Princeton, Yale, and Harvard—have such stellar academic records with such strong demands from top students that they need not compete on athletics fields and courts. Their draw of top students (and faculty) can be self-perpetuating, as it no doubt has been. Indeed, elite schools very likely cannot compete for national athletic rankings and championships because of the limited number of top athletes who can make it through the these schools' admission standards and even tread water in their classes, given the large number of admitted students with near perfect SAT scores.

Faculty Salaries

An increase in demand for faculty members corresponded with the tremendous growth in universities during the last half century, especially during 1950s and 1960s. Salaries rose substantially and graduate schools geared up to satisfy the increasing demand for persons with doctorates. Because education appeared at the time to be a sound investment, many persons eagerly sought advanced degrees. The usefulness of the graduate programs that sprung up, however, was predicated on a strong growth in university systems, and when this growth began to level off, graduates continued to be pumped out. The eventual consequence of a system in which salaries could not be readily adjusted downward was a surplus of prospective faculty members. Since the 1970s, many with PhDs, especially in the humanities, went begging for jobs and ended up selling hot dogs and driving trucks.

Although money wages of existing faculty members could not be easily reduced, salaries of beginning faculty members began to stabilize in the 1970s and, in some areas, to fall. In a situation in which more faculty members abound than can be hired, one might anticipate state legislatures and university administrations taking every opportunity to reduce the real income (that is, the purchasing power of money income) of the faculty members. As a result, pay raises in most states did not keep pace with inflation in the 1970s and 2000s. (If legislatures had not permitted this to happen, they would have had a difficult time, perhaps, explaining the rather high salaries of faculty members to their constituencies.)

One might also expect universities to reduce the faculty members' income by putting greater demands on them. And so we had in the 1970s a growing trend toward eight-to-five days for faculty, whereas in the past they have been relatively free to come and go as they pleased. Administrations began imposing standardized evaluation on faculty and raising their demands in the areas of research, publications, and

community and regional service. In the 1960s, tenure was offered to prospective faculty as a fringe benefit; in the 1970s, however, the probationary period before one can receive tenure was being lengthened. Faculty began slowly but gradually to lose the benefits of free parking and football tickets. All of these changes and cutbacks in graduate programs were working to reduce the surplus of PhDs on the market. Of course, as expected, when in the 1980s the supply of faculty began to fall in many academic areas and when the demand for education began to rise once again, many (but not all) faculty members began to recoup some of their income losses.

In the foregoing analysis, we have been discussing the broad market for faculty. When the market is segmented by discipline, these generalizations do not always hold. They do appear to hold very well for professors in the humanities and education but not so well for professors of accounting and finance, engineering, and medicine. Herein lie potential pitfalls for university administrators who may attempt to make sweeping rules for all faculty members. If the administration dictates that all faculty raises are to be the same, the university may hold on to those faculty whose employment market is glutted, but they may lose, for example, their accountants whose market wage rate may have risen by more than the standardized salary increase. If the university does not pay the market wage to those accountants it has, it will then have to enter that same market they tried to ignore and hire other accountants at the going market wage, incurring in the process the cost of searching for replacements. If they refuse to incur those costs, their accounting program can suffer.

This is one aspect of market forces many administrators fail to appreciate. As an illustration, and as discussed above, some universities have put more reliance on student evaluations in determining salary increments. This may mean that the mean scores received by the different faculty members in different disciplines are ranked and raises are dispensed accordingly. To reveal the inherent problems of such schemes, suppose that all of the accountants are basically "crummy" teachers in the eyes of their students, but they are typical of others in the profession. (Believe it or not, some of our best friends are accountants!) In the college of business, let us suppose that they score relatively low among other faculty in the college; economists (being inherently superior in all aspects of university life!) score relatively high. The evaluation scheme of allocating raises on the basis of student evaluations would mean that the economists receive more than the accountants. However, suppose that the market for accountants is much tighter than the market for economists; the market wage of accountants would rise comparatively more. The market would dictate that the accountants receive a higher raise.

If the university or college employs student evaluations as a criterion for raises, what do you think would happen? You can rest assured that unless the accountants were bound to the school for nonmonetary reasons, the college of business would lose their accountants. The school would then have to enter the market to hire the accountants at the higher wage. The university could avoid all of the expense associated with faculty turnover by simply looking to market as a guide for adjusting salaries.

Concluding Comments

The reader should understand that the foregoing analysis does not necessarily reflect the way we think university students, administrators, and faculty should behave. As has been our goal throughout the book, we have only tried to explain why they have behaved the way they have and how they might be expected to behave, given changes in market conditions.

We fully understand that (as we write) academe is in the midst of a major transformation. This is especially true for public colleges and universities. At one time, the designation "state university" connoted major state support for both instruction and research. Perhaps 75 percent of state university revenues came from the state. Now, many state universities get less than 25 percent of their budgets from their states. As UC-Irvine Business School Dean Andy Policano and former University of Iowa President Gary Fethke argue, the best that we can now say about many so-called state universities is that they are "state located."[5] State universities are in binds. They have bureaucratic and decision-making processes that are at best antiquated. They are heavily constrained in much of what they do by state legislatures, which are cutting support at the same time they are keeping cost of operations unnecessarily high. Do not be surprised if, in the not too distant future, any number of state universities seek to go "private," which means they will be able to shuck their state controls and attendant costs and increase their tuitions and fees to market levels.

Chapter 19
The Economics of Learning

Psychologists and educators have been concerned with learning behavior for some time. We now know a good deal about the learning process, particularly among the lower-order animals; however, it is abundantly clear from experience that educators have a long way to go before much can be said about how "students" learning within a classroom setting can be improved. The federal government and foundations such as the Ford and the Rockefeller have spent literally billions of dollars over the past several decades researching the learning and educational processes. Unfortunately, researchers have all too frequently concluded that there is no difference between their experimental and control groups—that nothing appears to work in the classroom.

For example, Robert Dubin and Thomas Taveggia found this to be so in their examination of ninety-one major studies that evaluated different techniques, methods, and classroom conditions.[1] Herbert Kiesling concluded, "It is striking to note that such pay-parameter variables (as teacher experience and training) were seldom found to be related to pupil performance."[2] After a decade of actively funding projects to change education in the public schools, the Ford Foundation in the 1970s concluded that very little that was done had made much difference.

Where there has been a favorable difference between experimental and control groups, researchers have been very reluctant to suggest that their conclusions be generalized to other similar (but not identical) situations. Policymakers have readily questioned whether the small benefits achieved were worth the cost incurred.

The inability of educators and psychologists to demonstrate how learning in the classroom can be upgraded stems in part from the terribly complex nature of the classroom environment in which students are constantly bombarded with thousands of bits of information (stimuli). And if one assumes that a change in the flow of any particular type of information will actually have a material effect on student learning, he or she may rightfully be guilty of presumption. As widely recognized, the efforts of educators and policymakers to find avenues to improve student learning in recent decades have in many areas of the country given way instead to finding avenues to slow the decline in student learning, especially in public school education.

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_19,

We believe, however, that the failure of the educational establishment to explain the educational process may be more fundamental in origin—that is, it may be at least partially the result of the way those doing the research have perceived the learning process. This can mean that the wrong questions have been asked and the evidence has been misinterpreted. We suggest that the economics of the learning process must be appreciated to interpret data gathered from the educational environment.

The Traditional View of Learning

The dominant view of learning among educators and psychologists appears to be a very mechanistic one, and perhaps overly so. The subjects or students receive stimuli and respond accordingly. The task of the teacher is to provide the right stimuli so that the right response can be imprinted in the students' behavior. In this way, the students learn by connecting stimulus and response.

From the perspective of traditional learning theories, it appears to us that the students do not have real choice in the sense that the theories allow them to choose in some rational manner from among viable options. This may be because students are not credited (from a theoretical point of view) with having a preference that is independent of the stimulus–response mechanism and that can operate on or alter that mechanism. They merely respond. Once the imprint—that is, the connection between stimulus and response—is made, students can be likened to a computer: the data can be typed in and a printout is received without any intervening creative thought process.

The main reason this mechanistic approach to learning may be taken is because the admission that students and teachers can make active choices serves to muddy the theoretical waters. One purpose of any social science, such as education or psychology, is to make predictions regarding human behavior and, more specifically for our purposes, the learning processes. If choice is admitted to the discussion, then educators may fear that it will be impossible to say anything about learning. That is to say, if choice is to be real choice, then it must be unpredictable. If choice is predictable, then one must wonder how it can be real choice. Seeing this conceptual roadblock, psychologists and educators may have tended to avoid the subject of choice altogether.

In these few pages, we want to show you how student and faculty choice can be introduced into the discussion of learning process.[3] The individual student or instructor is not viewed as an academic robot, responding mechanistically to stimuli from the environment, past and present. We accord the individual a preference that is, to a degree, independent of environmental factors. The student or faculty member can therefore choose from a range of options or combinations of goods and services, which may include learning or education.

Our approach to learning is different from conventional views in one important respect. Educators, in an attempt to explain the learning process, are inclined to

point to genetic and environmental conditions (such as sex, age, race, class size, and method of instruction) as causes of student learning behavior. Such factors are not unimportant. Nevertheless, in applying the economic approach to thinking about learning, we look to the choice calculus of the individuals as a primary explanatory factor and one that tends to be overlooked in more conventional studies. This is not to say that environmental and genetic conditions do not constrain the choice process; however, we may come upon unexpected insights into the educational process by taking a different tack.

The Rational Student

We begin by assuming that students are rational in the conventional economic sense of the term. As noted repeatedly in earlier chapters, this means that students know what they want and attempt to maximize their satisfaction by consuming from a range of commodities that are available. Perhaps, the reader feels that an assumption of rationality is inappropriate in any discussion of education. A person can only make rational decisions among those alternatives that are known. By definition, what is to be learned is not known; and therefore, a person cannot make rational decisions regarding learning he or she knows little about.

The fact is that people make decisions that involve unknowns and uncertainties all the time. The decision to research involves what is yet to be found. People regularly buy cars and appliances (often used ones, at that) they know virtually nothing about. It is certainly questionable whether the public knows more about the costs and benefits of the cars they buy than they know about, say, a course in economics before they enter the class.

Remember, students are not completely in the dark about the classes they sign up for; they do spend a significant amount of time attempting to acquire information about courses and professors they take. People make decisions on the basis of the information they have at hand and can rationally justify acquiring, and this goes for the decisions to learn.[4]

At any rate, if you can accept our assumption, you may further recognize that rational students will fully allocate their resources—that is, time and material and monetary wealth—and will equate the ratios of the marginal utility of the goods they buy to their respective prices. (These points were covered in Chap. 1.) Including knowledge (k), which is the end product of the learning process as a good that students can consume, the marginal condition is reformulated as

$$\mathrm{MU}_a/P_a = \mathrm{MU}_\mathrm{k}/P_\mathrm{k} = \cdots = \mathrm{MU}_n/P_n,$$

where MU denotes marginal utility, the subscript a can represent any good such as an apple, and subscript n can stand for any other good. P denotes price, which in the case of knowledge may mean the money and time expenditure required to obtain a unit of knowledge.

If the equality has not been attained (for example, $MU_k P_k > MU_a/P_a$), then the students have gotten more utility for the last \$1 (or resource) spent on knowledge than on apples. They can consequently increase their utility by shifting resources from apples to the acquisition of knowledge. In other words, if they are rational, we can expect them to choose to learn more and to continue to expand their knowledge until equality is attained among the ratios.

Here, knowledge has been treated as a composite good, whereas we know that it comes in many diverse forms. This means that the actual utility-maximizing condition is a little more complicated. Letting subscripts e, f, and h denote knowledge in the fields of economics, French, and history, the marginal condition becomes:

$$MU_a/P_a = MU_e/P_e = MU_f/P_f = MU_h/P_h \ldots = MU_n/P_n.$$

If, instead, $MU_e/P_e > MU_f/P_f$, students can increase their utility by learning more economics and less French.

Another way of saying the same thing is that Paul Smith, a student, will purchase knowledge or any particular kind of knowledge up to the point that the marginal benefits equal the marginal costs. He will purchase only so much, and he will vary his consumption of any kind of knowledge, such as economics, not only with the price he himself pays (that is, the demand curve for economic literacy is downward sloping), but also with changes in the marginal utility and price of other goods.

For illustrative purposes, suppose that the marginal utility of apples (which, by the way, is totally outside of formal classroom setting) increases; this means that MU_a/P_a will become greater than MU_e/P_e. It would then be rational for Paul to consume more apples and less economic knowledge. If, on the other hand, P_e were to rise, it would be rational for Paul to spend less on economics and more on other goods, such as apples, or even more on other subjects. If he does not do this, assuming equality among the ratios before the price increase, MU_e/P_e will be less than the other ratios. (To test your understanding of what has been said, what would the student choose to do given the following changes: an increase in MU_e, a reduction in P_f, and an increase in P_a.)

A simple conclusion that deserves special note is that the amount of knowledge Paul acquires may not be the same the professor believes he should acquire; or in other terms, any disagreement between what Paul does in fact accomplish in class and what the professor expects him to accomplish may simply be due to a difference between what the professor perceives the benefits to be and what Paul perceives them to be. Also, recognize that in our view of student behavior, Paul does not automatically respond to stimuli; rather, he is viewed as receiving information about relative costs and benefits about matters to be learned and about matters that are outside the educational environment, weighing this information in terms of his own preference, and then choosing an appropriate response. The extent of his response depends on what happens to the marginal utilities of the goods as more or less is consumed.

For example, going back to the situation in which $MU_e/P_e > MU_f/P_f$ we concluded that Paul would choose to learn more economics, but how much depends on the rate at which MU_e falls as more is consumed. If MU_e diminishes rapidly, he will learn less additional economics than if the MU diminished slowly. Keep in mind that he will increase his knowledge in economics until the ratios are equal. This leads to the point that a new classroom device or technique can, from a technical point of view, increase the ability of the student to learn economics. However, because of the cost involved and perceived benefits to the student, the student may choose to increase his understanding by less than what is technically possible.

To illustrate this last point with more precision, assume for simplicity that two subjects, French and economics, are open to Paul, that both subjects yield positive benefits, and that he has allocated a given amount of time to the study of these subjects.[5] In Fig. 19.1, we have scaled his achievement in economics along the horizontal axis and achievement in French along the vertical axis.

We do not know a great deal about Paul, but we do know that if he allocates all of his time to the study of economics, he can achieve only so much in that field.[6] We have arbitrarily selected E_1 in Fig. 19.1 as that limit. We also know that if he chooses to achieve E_1 in economics, he will learn nothing in French. This, of course, assumes that learning French requires some time and that learning economics has nothing to do with learning French. The same can be said about his ability to learn French. If he devotes all of his time to the study of French, he can learn only so much; we have indicated this limit by F_1.

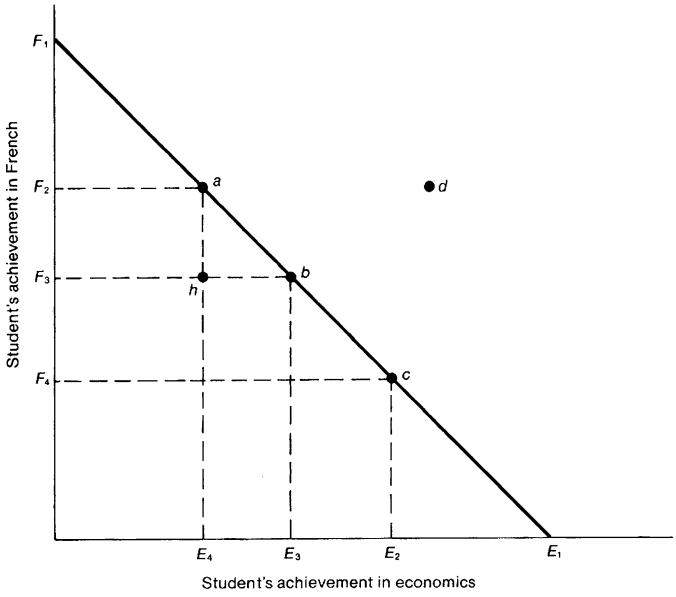

Fig. 19.1 Student Achievement in French and Economics

Alternatively, Paul can choose to divide his time between the study of French and economics in any number of ways, changing the relative achievement in the two subjects. By taking time away from the study of French and applying it to the study of economics, he can increase his achievement in economics while giving up achievement in French (that is, the cost of achieving in economics). It is from this line of reasoning that we have drawn a line between F_1 and E_1. This line (or more properly, transformation curve) depicts the numerous combinations of French and economics achievement that Paul can accomplish. He can, therefore, choose to consume any combination along F_1E_1.

Although it does happen, it is doubtful that the typical student will choose either combination F_1 or E_1. Assuming that Paul must pass both courses, he cannot afford to have zero achievement in either field. Consequently, we would expect him to choose some interior combination, such as *a*, *b*, or *c*. Combination *d* is out of the range of possibilities; it requires the use of more resources than Paul has available for education. (For some other student, who may be more efficient at learning economics and French, *d* might be possible. Why?) If Paul chooses combination h, he will not be fully using his resources; he can have more achievement in French and/or economics. Therefore, the rational student will not choose any combination inside, and not on, F_1E_1. Hence, Paul's task is to sort through all combinations along F_1E_1 for the one combination that will maximize his own satisfaction. If he chooses *b*, it must be because he prefers it over *a* and *c*.

The professor's task is twofold. First, the professor of economics can attempt, by various persuasive techniques, to change the student's preferences toward economics. The result may be that the student prefers combination *c* over *b*. The student learns more economics, but notice that the greater achievement in economics in this case is at the expense of achievement in French. (The efforts, on the other hand, can induce the student to allocate more time to education, in which case the transformation curve will move out to the right.)

Second, the economics professor can attempt to increase the efficiency with which the student learns economics. If he accomplishes what he sets out to do, the student can achieve more in economics; the limit of the student's achievement can move, for example, from E_1 to E_2 in Fig. 19.2. Assuming that the French professor does nothing to improve learning in his discipline, the student's transformation curve will, pivoting on F_1, move to F_1E_2.

The student can then choose any combination along this new curve. He can choose combination r; his achievement in economics increases while his achievement in French remains constant. On the other hand, the student can choose combination s, in which case his achievement in French would rise and his achievement in economics would remain constant. If we had put some leisure activity, such as golf, on the vertical axis instead of achievement in French, the result of the efficiency change in economics could have meant more rounds of golf for the student. The commonsense explanation for this is simply that because the student can now learn more economics in the same amount of time, he can reduce study time for that subject, learn the same amount, and spend the extra time on some other activity such as golf or studying French.

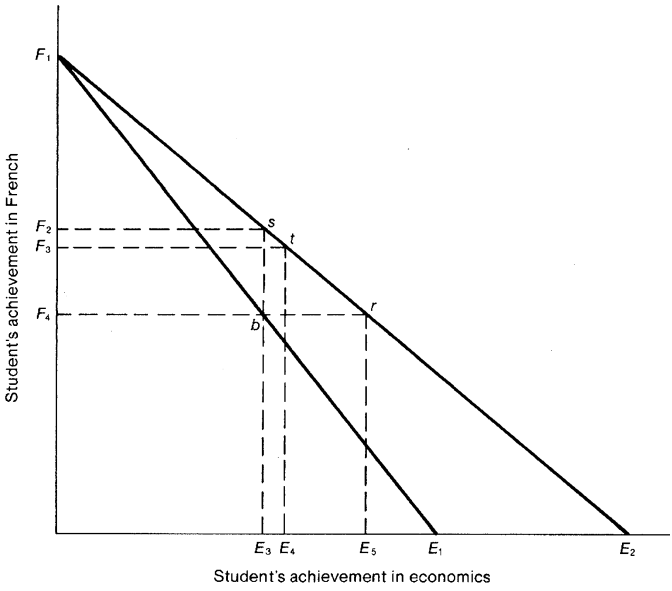

Fig. 19.2 Increase in Student's Efficiency in Learning Economics

The student can also choose combination t in which case he increases his achievement in both subjects. However, in our example, the increase in economics is much smaller than the increase in French. This might be the expected result for the student who is a French major and is taking economics as a means of satisfying his general education requirement.

This analysis suggests a possible explanation for educators' experiments that appear to have no impact. The researcher can have two classes of students. In one class, the instructor teaches the conventional way, and the mean student achievement may be measured at level E_3. In the other class, the instructor does something that is innovative and in effect moves the transformation curve out to F_1E_2. However, the instructor really does not know if, or how much, the curve has moved. Besides, she may not even think in terms of the students' transformation curves. All she does is measure their new mean achievement, which may be E_4.

Because the difference between E_3 and E_4 is quite small, the instructor may conclude that the experiment was a failure. While it is possible that what was done did not have any effect on learning efficiency (that is, the curve actually does not move), the instructor could have failed to recognize and measure the increase in the student's achievement in French or the greater amount of time the student spent goofing off or out on dates. If the instructor had broadened her research and had considered the possibility that students may have been choosing to do something else, her conclusion may have been different. This is only a possibility—derived from economic analysis—but one that researchers in education should not pass by lightly.

Before leaving students' maximizing behavior, one additional, important point can be made. We have implicitly assumed that the marginal utility of knowledge, MU_b, is positive, which is in accord with the paradigm that there are benefits to education, and the student is willing to pay some price to acquire some finite amount of knowledge. Some types of knowledge, however, may have no perceivable benefits to the student. This may be descriptive of many of the courses included under general education requirements. In such a case, the student must be paid before he can be expected to bear freely the cost of learning the subject.

Of course, one way of paying the student is to impose a cost on him if he does not voluntarily learn the material, such as making the course work a requirement for graduation or entry into a profession. The student also can be penalized with low grades, damaging his future income-earnings ability. If he takes the course work, he is permitted to obtain his degree, and the degree then becomes the payment. Such tie-in sales can be made to the student as long as the price charged in the form of tuition and fee payments is below the market-clearing price.[7]

The Rational Professor

The professor can also be viewed as a rational human being who faces a transformation curve. In Fig. 19.3, we have put the leisure time of the professor on the vertical axis. Assuming that the professor's field is economics, we have scaled the mean achievement of the professor's classes along the horizontal axis.

If the professor does nothing with her students except walk into class, she will have only so much leisure time available for doing other things, such as playing golf or undertaking research. We have arbitrarily indicated this limit as L_1. On the other hand, she can use all of the time raising her "students'" understanding in economics. In this event, the students' mean achievement can rise to E_1.

Like the student, the professor can divide her time between leisure activity and academic activity (for the professor, increasing her students' achievement), in which case she will have open a number of leisure-achievement combinations, described on the graph by L_1E_1. Also like the student, the professor is faced with the problem of choosing the combination along L_1E_1 that will maximize her utility. Remember, the professor does have academic freedom, which gives her considerable leeway in deciding how she will use her time.

If she chooses combination b, the student's mean achievement level will be E_2. This implies that the students will, given their abilities and effort, learn only so much, and this is, in part, the result of the utility-maximizing behavior of the professor. If the professor had chosen to work harder, the students would have learned more, possibly as much as E_1. However, the professor would have had less leisure time available or less time for research, and she apparently, in this example, did not believe the additional achievement was worth the costs in terms of leisure time.

Fig. 19.3

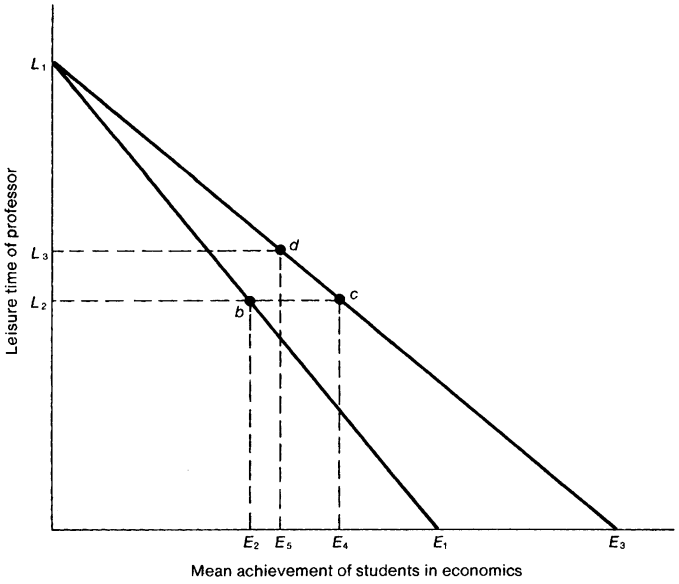

Fig. 19.4 Professor's Benefits from Improving Student's Learning Efficiency

If we now introduce some innovative technique into the classroom that can improve the efficiency of the learning process, the professor's transformation curve will, pivoting on L_1, shift to L_1E_3 in Fig. 19.4. The professor can now choose any

combination along this curve. She can choose combination c, in which case the full benefits of the change in classroom efficiency is revealed in student achievement, which rises from E_2 to E_4.

On the other hand, the professor can trade some of the gains in learning efficiency for additional leisure time. She can choose combination d, or any other between c and L_1. If the combination chosen is d, the net increase in student achievement from the innovation is very slight. If this were a part of an experiment, the researcher might conclude that the innovation was ineffective. Recognizing the possible range of student and faculty choices, and recognizing that most educational experiments are undertaken in public schools and general education courses at the college level, it may be understandable why researchers so often may have found that their experiments have had little effect.

Student Evaluations

Increasingly, universities have turned to student evaluations as a means of evaluating faculty performance; however, the issue of whether student evaluations can be influenced by the grades the professor gives students is unsettled. Allen Kelley, in a study in economic education, found a positive relationship between grades and student evaluations, but concluded, "Providing students with high course grades does not appear to exert an important impact on evaluations."[8] Furthermore, he suggests that if the instructor had raised his quality point average from 2.27 to 3.50, the mean ratings for the course would have increased by only two to three percentage points. Conversely, Dennis Capozza, in another study in principles of economics, came to a dramatically different conclusion:

> The results indicate that every 10 percent increase in the amount learned reduces a professor's rating by half a point. On the other hand, if a professor's grades average 3.5 instead of 2.5, she improves her rating by one and a half points. Another way of expressing the relationship would be that if a professor wishes to receive a perfect rating of 1.0, then he should teach nothing and give at least two thirds of the class As.[9]

In this section, we will demonstrate how economic (choice) theory can contribute to our understanding of the subject.

On student evaluation forms, students are typically asked to respond to such questions as "What is your overall appraisal of the way in which your professor conducted the course?" The students are asked to rate the professor on a scale that may range from "far below average" to "far above average." At best, student evaluations reflect the degree to which the course and instructor agree with the student's preference for such factors as grades, leisure, course content, and, we might add, classroom entertainment. We can reasonably assume that the higher the relative utility (or the lower the relative disutility)[10] the student acquires from attending class under one professor, the higher the relative evaluation of the instructor and course.[11]

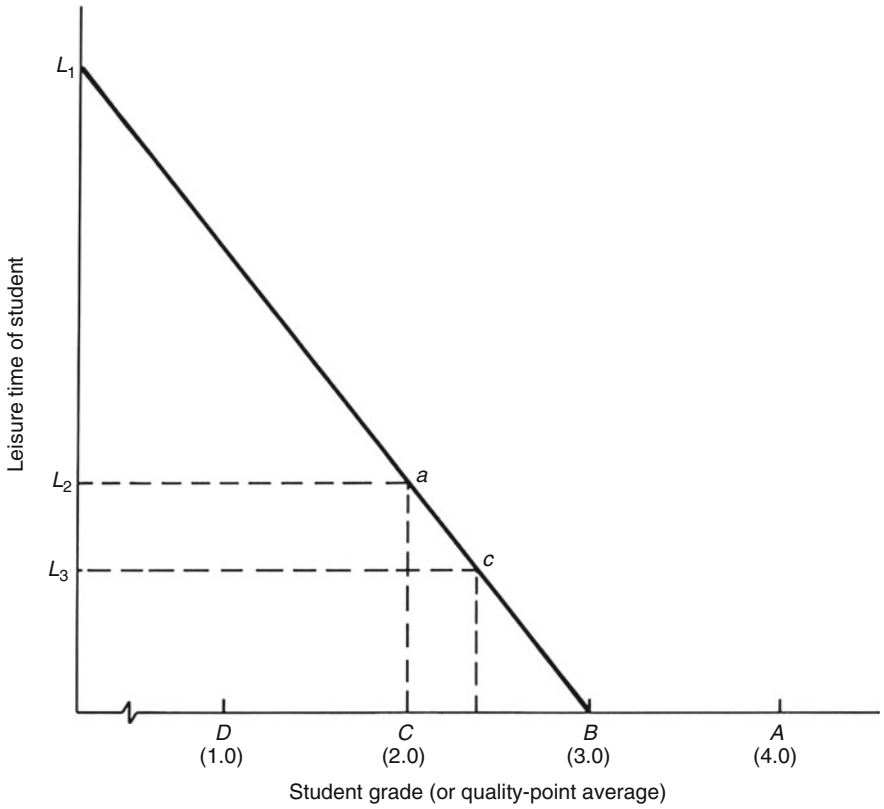

Fig. 19.5 Student Trade Off between Grades and Leisure

Setting aside the multidimensional nature of student preference, assume for the time being that all professors, other than the one with which we are concerned, hold their grades constant and that the student is rational and views grades (or quality point average) and leisure time as goods from which he receives some utility. Assume also that higher grades (As and Bs) are preferred to lower grades and that leisure time (which can be used for anything inside or outside academic life) available to the student is limited to L_1 in Fig. 19.5.

These assumptions appear to us to be reasonably descriptive of the typical student. Grades (or quality point averages) in an economics course are scaled along the horizontal axis.

Given the professor's standards and assuming the student has to work for his grades, we know that the student will have to forgo leisure time to raise his grades. Because other things may be important to him, we would not expect him to spend all of his time studying and attempting to raise his grade to the highest point possible, which in this case is *B*. The student may choose combination *a*, at which he makes a grade of *C* and has L_2 leisure time available for studying other subjects or going out on dates. (He uses the difference between L_1 and L_2 for

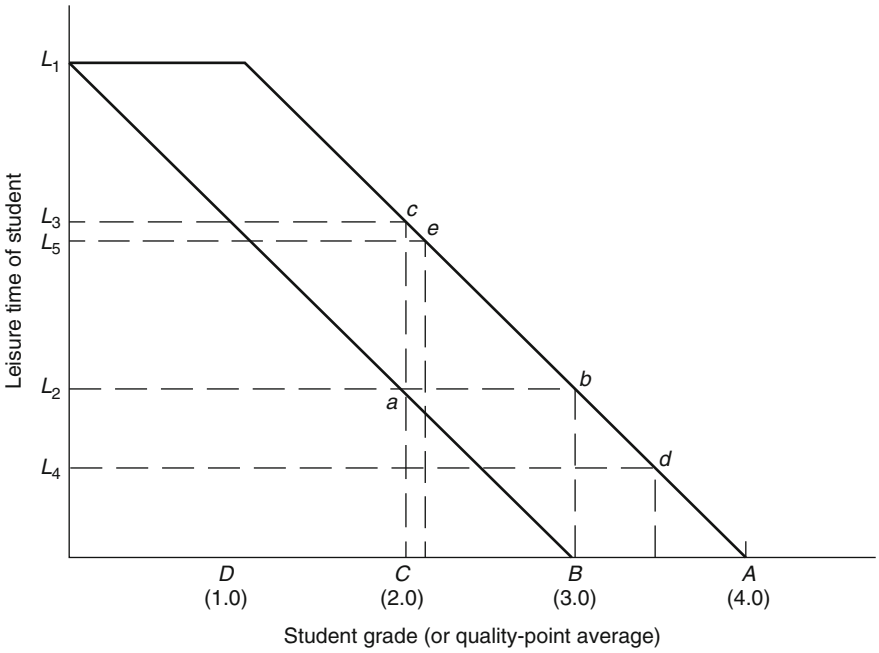

Fig. 19.6 Grade Inflation and Student Choice

studying economics.) The student may choose combination *c*—that is, he could have made a higher grade—however, since he did not, we must assume that the additional time spent studying (L_3–L_2) was worth more to him than the marginal increase in his grade.[12]

The professor can change the grading structure in any number of ways, but to keep the discussion short and simple, we will focus attention on one way and assume that the professor will give the student the opportunity to make a higher grade for the same amount of effort. Furthermore, we assume that the professor eases up in such a way that the student's transformation curve between grades and leisure time shifts out in a parallel manner, from L_1B to L_1A in Fig. 19.6.

Given the shift, the student has the opportunity to move from combination *a* (on L_1B) to any point on L_1A. He can move to *b*, in which case he will have a higher grade (*B*) and the same amount of leisure time. This means that his effort (L_1L_2) and achievement in the course should remain constant. On the other hand, the student could choose combination *c*; there he would end up with the same grade (*C*) but with more leisure time. If he chooses *c*, he will spend less time studying economics and presumably will achieve less.

Alternatively, the student can choose any combination between *c* and *b* and end the course with a higher grade and more leisure time. Since he can have more of both if he wishes, we must assume that from the student's point of view, he is better off and conclude that the professor's rating will rise because of reduced standards.

How much, however, we cannot say. Even if the student chooses a combination like *d*, in which event he would have a higher grade but less leisure time, we would still expect the professor's rating to rise. The student can choose, say, combination *e*—that is, more of both—and in the event he chooses *d*, we must deduce that *d* is preferred to *e*. Since *e* is obviously preferred to *a* (because there is more of both at *e*), *d* must also be preferred to *a*. Therefore, the instructor's rating should be up at *d*. (This is a little tricky and you may want to reread this paragraph to ensure that you follow it.)

There are two points that fall out of the graph that need to be especially stressed. First, if the students as a group choose a combination like *e*, it means that the grade they receive under the new grading structure may rise by an insignificant amount, but the instructor's ratings will still be up. If a researcher correlates the grades that professors give with their student evaluations and never looks at what the student achieves in the course or what he does with his leisure time, the researcher may find very little or no correlation. He may actually conclude that higher student ratings cannot be bought with changes in the grading structure. However, there are professors who in fact may be buying higher student ratings with an easing of their standards. The problem is that the researcher has failed to see that students are taking the benefits of the professors' lower standards in terms of more leisure.

Second, as noted above, it is possible for the student to choose a combination like *d* (less leisure and a higher grade). If he does, he will be studying and achieving more in the course; however, it is interesting to note that Capozza, in the study quoted in the first part of this section, found an inverse relationship between achievement and student evaluations, meaning that the students may be choosing combinations like *e* (more leisure). The suggested inverse relationship between achievement and student evaluations was also borne out in studies by Attiyeh and Lumsden[13] and by Rodin and Rodin.[14]

Interestingly enough, most studies on the relationship between student ratings and grades have been, for the most part, undertaken in courses like principles of economics, which are required for one reason or another. In such courses most students may not want to be there in the first place, and under such conditions, if given the chance, they may move from *a* to, say *c*—that is, they may take the benefits of the higher grading structure in terms of more leisure time. If the course is one that students want to take because they like the subject or because they believe the knowledge acquired can be used to bolster their income, then one may more likely find a strong positive relationship between achievement and student ratings of the professors.

Real Grade Inflation

Grade inflation has been a hallmark of academe since the 1960s, when, coincidentally, student evaluations of professors took hold and spread. At that time, professors were encouraged to have their students evaluate them and their classes

with forms often devised by individual professors. The voluntary evaluations quickly morphed into required evaluations of professors with, at first, professors administering their evaluations. Because of the possibility that professors could influence the scores and rankings among their colleagues, most professors today are forbidden to be in the class when an appointed student or staff member administers the evaluations. Not surprising, economist Richard Vedder estimates that the average grade given by professors has risen from a range of 2.5–2.6 in 1960s to 3.0 in 2010, an 18 percent increase.[15] But then, Vedder's estimate of grade inflation is likely conservative, given that in some departments of some universities students have much higher grade-point averages. In the Department of Education at the University of Wisconsin, Madison, the average grade-point average was damn near perfect, 3.9 on a 4.0 scale.[16] The reality is that UW-Madison has lots of company among universities in terms of having eased the grading skids for students (just Google "grade inflation" and see the volume of reports on how grades no longer mean what they used to mean at many colleges and universities).

In the discussion in this chapter up to this section, we explicitly assumed that other professors held their grades constant; however, if all professors inflate their grading structure, which has obviously been an ongoing problem for decades, the value to the student of any absolute grade falls. This is because the student's own ranking among his classmates falls if he continues to receive the same grades while their grades go up. The student's utility from taking a course under a professor who does inflate should fall and so should the student's rating of the professor. Therefore, if student evaluations are used in determining salary increases, the professor who does not inflate can experience a drop in relative income. Also, if grade inflation is the general rule among professors, a professor, to raise his rating relative to that of other professors, may have to inflate grades relative to the general trend.

Testing any hypothesis regarding the impact of grade inflation on student ratings of professors and performance of students in the course is fraught with difficulties. Ideally, a given set of students should be taught a course under a given grading policy, and their ratings of the course and professor should be taken. They then should be given the same course with the only change being in the grading policy. The results of such an experiment would have meaning only if we could assume that in the process, the students' preferences and opportunity sets are not changed, which is, of course, a totally unrealistic assumption.

A number of years ago, in order to obtain some idea of the result of grade inflation, economist Paul Combs and one of the authors (McKenzie) took a second-best approach, which was to conduct a control group-experimental group study.[17] Combs taught two sections of the same introductory course in statistics, and McKenzie taught two sections of the same course in introductory economics. Combs and McKenzie both gave their two classes pretests and posttests, taught the two sections as similarly as possible, and gave the same tests during the course. The only difference in their instructional methods was their grading policy. Each designated one class as being the *easy class* and one as the *hard class*. In the case of Combs, the easy class was given partial credit for incomplete answers, but the hard class was not; the difference in the numerical grade on the last day of class was

approximately one half of a letter grade. McKenzie, on the other hand, gave the same numerical scores on the tests of the two classes; the difference was that his grading scale was much lower for his easy class. That is, a *B* began at a lower numerical score for his easy class than for his hard class. The difference between the mean grades given in his two classes was a little over a full letter grade on the last day of class.

As Combs and McKenzie have hypothesized, Comb's mean student ratings were approximately 10 percent higher in his easy class than in his hard class. However, the students in his hard class had a greater improvement in their understanding of statistics; their improvement was approximately 10 percent greater. Because McKenzie had a much larger differential in his grading distribution in the two classes, one might expect a much larger differential in student ratings and performance, and this is exactly what was found. The students in McKenzie's easy class gave him a 25 percent higher mean rating than did the students in his hard class. On the other hand, the improvement in economic understanding of students in his hard class was 85 percent greater than for students in his easy class. In our preceding analysis, all we could possibly say is that we should have found an inverse relationship between student ratings and performance, given a difference in the grading structure. Frankly, we did not anticipate the difference to be so dramatic.[18]

Our finding from our classroom experiment undertaken sometime ago, that grades and effort are inversely related, has been supported recently with work by economists Philip Babcock and Mindy Marks, who in a study for the National Bureau for Economic Research found that in 1961, college and university students spent an average of forty hours a week studying. By 2004, the average hours spent in study were down to twenty-seven a week, a one-third decline.[19] Babcock and Marks add, "Declines were extremely broad-based and are not easily accounted for by framing effects or changes in the composition of students or schools. Study time fell for students from all demographic subgroups, within race, gender, ability, and family background, overall and within major, for students who worked in college and for those who did not, and the declines occurred at four-year colleges of every type, size, degree structure, and level of selectivity."[20]

Although the authors did not do the required regression analysis to establish causal effect, it is no big stretch to suggest that some of the decline in time spent studying can be chalked to easier grading, as our analysis predicts. And there is no longer much doubt that professors can "buy" higher student evaluation by making life easier for students that allows students to "buy" more leisure time and, at the same time, a higher grade (than students could decades ago).[21]

Concluding Comments

At this point, the reader may believe that we look upon student evaluations of professors as a totally perverted device for evaluating teaching. On the contrary, we recognize that students can see good qualities in teachers. We believe that students

can tell fairly accurately when a professor is prepared for class and if she is sufficiently competent to teach the course. They can also make judgments about her treatment of themselves and other students. All of these judgments can be reflected in their rating of the professors they have.

The main point we have been trying to make in this section is that, given the quality of the professor, economic theory suggests that the professor's grading structure can distort student evaluations. If two professors are equal in every other respect, we would predict that the professor with the higher grading structure (in the sense that we have used the term in this section) will tend to receive the higher student ratings. In a similar manner, if two professors are distinctly different in the eyes of the students, one being better than the other, our analysis suggests that the professor who would otherwise have the lower rating can (partially) offset the differential by easing up on his grades.[22]

Chapter 20
Does the NCAA Exploit College Athletes?[1]

The National Collegiate Athletic Association (NCAA) is under increasing attack for its rules governing the recruitment and retention of athletes. Few inside or outside colleges and universities seem to be satisfied with the NCAA's rules, criticizing the NCAA for being both too strict and too lenient in the rules it makes and enforces. And cheating on NCAA rules appears to be widespread, if not rampant, as evidenced by the number and prestige of colleges and universities that have been penalized for rule infractions in recent years. Most recently, in mid-2011, an athletic supporter of the University of Miami revealed that he had provided substantial aid and gifts to as many as seventy-two former University of Miami football players, causing the launch of an NCAA investigation of wronging on the campus that if the revelations of cheating are supported could result in the "death penalty" for the university, which means that the school has to abandon football for some yet-to-be-determined years.[2] The University of Southern California was hit in 2010 with multiple penalties (including the loss of bowl game opportunities for 2010 and 2011 and the loss of thirty scholarships) for, among other violations of NCAA rules, making payments of cash and a car to its star running back Reggie Bush (who ultimately won the Heisman Trophy) and for providing his parents with a house.[3]

Most academic administrators and much of the general public appear to be worried that the NCAA has failed to establish reasonable academic standards that college athletes must meet to attend college and to restrict the payments, overt and covert, that member colleges and their supporters can make to athletes.[4] As columnist Frederick Klein has noted:

> Young athletes (we're talking about teenagers here), some with meager academic credentials, are enticed to campuses with the promise of an education, and then tied to team-practice schedules that do not give them time to pursue one. Many are placed in Mickey Mouse courses, awarded grades they do not earn, or both. When their eligibility for sports expires, they are cast adrift.[5]

On the other hand, many members of the media and economics profession appear convinced that existing NCAA rules represent an egregious, as well as

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_20,

inefficient, attempt by colleges to monopolize their athletic labor markets and to suppress the wages and fringe benefits paid to student-athletes.[6]

After the U.S. Supreme Court found in 1984 that the NCAA violated antitrust laws with its rules governing the televising of football games, University of Chicago economist Gary Becker stressed "the NCAA's real monopoly power is over athletes":

> This is why the association's rules on payments to athletes are a more serious restraint of trade than were its restrictions on televising football games. The NCAA limits not only the number and size of scholarships but also such matters as compensation to athletes for summer employment, when colleges can approach high school players, and when transfer students from other colleges are eligible to play. These rules are designed mainly to reduce the competition among colleges for players in football and basketball—the two top revenue-producing college sports.[7]

Almost all critics detect significant hypocrisy in the NCAA's enforcement activity; several have called for reform including outright payments to student athletes on the grounds that "[m]aintenance of the present system can only continue to produce victims, not beneficiaries. A young athlete who could not get in the door of a college otherwise is underpaid while he is there and too often denied compensation that any school can afford, an education with which he can discern hypocrisy and avoid its consequences."[8] After listing several colleges recently found guilty of violating NCAA rules, *The New York Times* editorialized for open payments to athletes:

> The full roster of known wrongdoers is much longer [than the seven colleges listed], and for every college actually caught, dozens go undetected. The rules require pretending that the players are really students, a patent lie at many institutions. So why not just let universities hire players to wear their colors and earn a decent living while they prepare for the pros? Selfishness is one reason. . . . But if the country won't go cold honest, let it at least recognize that many players are not serious students, need to be recruited with money and paid at least something while in school.[9]

The hypocrisy in the NCAA system is, according to some, patently evident in the differential treatment of a music student and a student-athlete. Both may have narrow academic goals, but only one—the student-athlete—is not permitted to sell his or her talents at market value.[10] As columnist Edwin Yoder has noted,

> If you are a college student working on the student newspaper with a view to a career in journalism, taking a bit of pay for it will not affect, let alone impair, your "eligibility" or your eventual marketability as a professional. But if you are a basketball player, participating in what is theoretically a parallel "student activity," all hell breaks loose if you openly take a dime for doing it.[11]

Yoder added that while outright payments might "dash the phony romance of 'amateurism,' . . . a bit of honest corruption would be a drastic improvement over what we have now."[12]

The criticisms of the NCAA are plentiful; our purpose in this chapter is not to add to them. On the contrary, our central purpose is to reassess economists' conventional claims that the NCAA suppresses the wages of student-athletes, as evidenced by the existence of NCAA rules and the persistence of flagrant cheating.

Our reassessment leads to strikingly unconventional conclusions: most importantly, athletes' wages are not materially suppressed. Indeed, NCAA rules likely enhance the demand for student-athletes and increase their wages and employment opportunities in college athletics. We conclude that market economists have overlooked important checks on the NCAA's power to exploit athletes and that current moves to force the NCAA to permit its member colleges to pay athletes' competitive wages are misguided. Athletes' wages can be expected to be adjusted over time in response to market forces.

We begin by reviewing the conventional economic argument on how an employer cartel, which the NCAA is alleged to be, can suppress worker wages. This cartel theory relies on the uncritical acceptance of an unfounded presumption that 850 or more colleges can form through the NCAA an effective, workable cartel and that this employer cartel can be maintained even without legal restrictions, barring entry to other sports associations that might permit competitive wage payments to athletes in the athletic labor market. We find no legal barriers to the emergence and entry of alternative sports associations into athletic labor markets.

In the absence of legal barriers to entry, the NCAA rules are prudent measures by colleges to increase the demand for intercollegiate athletics and college education. The NCAA rules are an efficient contract among participants in a joint venture; they are similar in character and purpose to the rules franchisors impose on their franchisees.

In fact, the observed cheating on NCAA rules is to be expected, as it is in franchise markets, because of the common benefits the colleges' joint sports venture entails. Cheating by colleges is evidence of the public-goods character of the objectives of the NCAA rather than prima facie evidence of a cartelized labor market.[13] Penalties on violators of NCAA rules are no less necessary, and no less expected, than penalties franchisors impose on franchisees.

The Conventional Cartel Argument

Economists have leveled three major charges against the NCAA. First, the NCAA operates as an employer cartel that suppresses athletes' wages. Second, it creates market inefficiency and transfers income from athletes to coaches and colleges. Third, the NCAA breeds hypocrisy and cheating on rules. Implicit in these criticisms is the charge that temporary problems of overpayments or underpayments to athletes are not subject to self-correction through market pressures. Hence, the presumed monopsony power of the NCAA must be corrected from outside the collegiate athletic market through, for example, antitrust prosecution or new laws that would correct the NCAA's market power and force colleges to pay higher wages to athletes.

The NCAA as a Cartel

The argument that the NCAA is a working cartel that suppresses athletes' wages (including fringe benefits) is grounded in the conventional microeconomic argument that labor market competition among independent employers dissipates quasi-rents that would otherwise go to employers.[14] Athletes' wages are raised as all colleges bid against one another in an effort to employ additional athletes when the wages are below the athletes' marginal value. Competition may help employ more athletes than otherwise would be employed, and the efficient employment level may be achieved.[15]

In the competitive process, however, revenue from sporting events is transferred from colleges (or, more precisely, their athletic departments) to athletes. In technical terms, the labor market competition results in reciprocal *pecuniary externalities* imposed by colleges on each other.[16]

For colleges contemplating the formation of a labor market cartel, the competitive results are an unnecessary increase in the wage bill and an unnecessary reduction in the profits from college athletics. If they were not dissipated, the sports profits could be used to increase the salaries of coaches and athletic directors or could be transferred to nonathletic programs.

To keep the potential sports profits out of the hands of athletes, according to the NCAA's critics, colleges have an understandable desire to suppress their intercollegiate athletic competition. The NCAA's rules on the employment and payment of athletes are seen by some as workable devices for suppressing colleges' demand for college athletes and, thereby, labor market competition and wages.[17]

Ideally, the NCAA should form a cartel and act as a monopsony to *maximize* profits. Through the development of appropriate employment rules (such as market restrictions on the payments that can be made to athletes and the number of scholarships that can be granted), it should depress the intercollegiate demand for student-athletes below competitive levels until the marginal cost of the last athlete hired equals his or her marginal value.[18]

Market Inefficiency and Income Transfers

The expected market consequences of the NCAA rules include reduced wages and employment opportunities for student-athletes, greater profits for colleges, market inefficiency, and a transfer of income from many low-income athletes to higher-income coaches and other members of the athletic staffs.[19] Because of the suppressed labor market demand, wages and employment opportunities for athletes will fall, and fewer athletes will be hired because fewer will be available for employment at the lower wages.[20]

Because student-athletes are paid less than their market marginal value, colleges will collect monopsony (or single-buyer) rents. The intercollegiate athletic labor market exhibits inefficiency because the number of athletes actually hired is less than the competitive level and the marginal value of additional athletes will exceed

their opportunity costs. The gap between the marginal value and opportunity cost of athletes necessarily means that some athletes are forced to employ their talents where they are less valuable than in college athletics.[21]

In addition, critics say that the NCAA as an employer-cartel suppresses the incomes of some of the more disadvantaged college students because many athletes are black and come from low-income backgrounds. Economists, who typically maintain analytical neutrality, occasionally have denounced these income transfers. For example, Professor Becker writes:

> The NCAA's efforts to justify its restrictions on competition for athletes should be viewed with suspicion because they increase the financial benefits colleges receive from football, basketball, and other sports. I would have expected greater hostility from Congress and the courts to a policy that lowers the earnings of young blacks and other athletes with limited opportunities.[22]

And Professor Robert McCormick notes:

> Some student athletes, especially blacks, come from very poor families. The NCAA only allows school scholarships to pay for tuition, room and board, and books, and prohibits students from working during the school year. One would think that administrators would be ashamed to prevent these students from being given small sums that would allow them to dress and socialize like the more well-heeled students. Perhaps it salves the consciences of some university presidents to deplore the plight of black workers in South Africa because of the exploitation they promote on their campuses.[23]

Cheating on NCAA Rules

If the NCAA is perceived as a cartel, cheating on NCAA rules is to be anticipated. Each school can reason that because athletes' wages are below their market value, additional profits can be made by skirting the NCAA rules and paying more than the NCAA allows, thereby attracting better athletes, larger attendances, more lucrative television contracts, and greater national publicity. Understanding its own incentives to cheat on the cartel rules allows each college to further reason that other colleges will be induced to cheat and that it must cheat to remain competitive.

Indeed, the coaches who may benefit through higher-than-competitive market salaries from the cartel rules will have a real personal incentive to cheat or to allow cheating to persist by those around them. Coaches who do not cheat or allow, and even encourage, cheating may lose their salaries laden with economic rents to others who are willing to cheat and, therefore, are better able to attract larger attendances, television coverage, and national prominence.

The Counterarguments

Although it is clear that a monopsony can suppress worker wages, it is not at all clear that the NCAA is a monopsony or even an employer cartel capable of acting like a monopsony. As argued below, proponents of the cartel theory of NCAA rules

draw several highly dubious, if not seriously defective, conclusions founded on the unsubstantiated presumption that the NCAA is a monopsony.

The Mistaken Presumption of Underpaid Athletes

Proponents of the cartel theory implicitly, if not explicitly, conclude that resources are misallocated because athletes are underpaid for their services. The presumed prima facie evidence is the NCAA rule that restricts colleges from offering more than the equivalent of room, board, and tuition. However, the critical pay variable determining the allocation of resources is the *expected,* not *actual*, pay of athletes. The expected pay of college athletes is typically greater than their actual pay by an amount equal to their scholarships plus the present discounted value of future income from professional employment.

Granted, few college athletes make professional teams. Many football and basketball players, however, could turn professional before their college eligibility is finished.[24] The fact that many athletes—including most of the better athletes—voluntarily use up their college eligibility before turning pro suggests that their extra year or years spent in college sports provide valuable on-the-job training and media exposure, and a resulting increase in their expected lifetime income that more than compensates for the loss of income during their college years.

Herschel Walker, for example, played his junior year at the University of Georgia when he could have turned professional and earned several hundred thousand dollars, if not more than a million dollars. Because he stayed at Georgia his junior year, he must have expected the nonmonetary benefits of an extra year in college (including the prospects of receiving the Heisman Trophy, which he did receive) and the added lifetime income from the greater experience exceeded the professional salary he would have received had he turned professional.[25]

For athletes with less talent than Herschel Walker, the years of college experience may be more valuable because they offer more opportunities for improvement of skills, media exposure, and education. The increase in the present discounted value of the less-talented athletes' future income may be greater than for many of the more talented athletes.

The Mistaken Interpretation of Cheating

Proponents of the cartel theory of college sports mistakenly conclude that the existence of cheating is prima facie evidence of an employer cartel that exploits athletes by materially depressing labor market demand and athletes' wages. The existence of rules and the persistence of cheating, however, could be the product of voluntary collective efforts of member colleges to engage in a demand-enhancing joint venture. The joint venture may be characterized as the enhancement of the

colleges' competitive athletics and internal and external support for nonathletic, as well as athletic, programs, which can be most effectively accomplished by ensuring that college athletics remain amateur. The members may believe quite correctly that the creation of professional or semiprofessional collegiate sports would significantly reduce the public's demand for college education.

The joint-venture problem and the rules that emerge may be comparable to the quality-control problem faced by most sellers of brand names and franchises. For example, McDonald's restaurants collectively produce a joint product—fast service of a certain kind of food having a particular quality and provided in reasonably clean facilities. Like the NCAA, the McDonald's Corporation has detailed rules and restrictions for their franchises to follow. These restrictions cover such details as cleanliness of the kitchens and dining areas, the recipes for the products served, the parking facilities, and the customers' wait time. The restrictions establish uniformity in product and service with the intent of enhancing the restaurants' reputation, increasing the demand for McDonald's products at all outlets, and increasing the corporation's profits.[26]

The individual franchises are willing to consent to the prospects of paying the penalties for violations because they understand that McDonald's overall reputation across all franchises is important to their own individual franchise profits. The franchisees willingly accept the restrictions on their own behavior to ensure that there are limits on the behavior of others.

At the same time, each franchisee has an incentive to cheat on the restrictions. By cheating—for example, not cleaning regularly or adding soybean meal to their hamburgers—an individual franchisee can lower its own production costs and can raise its own profits. Each also can rightfully reason that its own violations may only marginally, if not inconsequentially, damage the franchisor's reputation in general. Each franchisee understands, however, that all other franchisees have a similar incentive to cheat. If the benefits of improved market demand did not more than compensate for the added costs franchise owners incur to avoid penalties, the restrictions would presumably never be accepted. (And franchises would not command such high prices.)

Similarly, NCAA rules and regulations can be viewed as a means to enhance the reputation of all associated with college athletes—including athletes and nonathletes—by keeping college sports nonprofessional.[27] NCAA members willingly accept restrictions on payments to athletes to enhance the demand for college athletics, college enrollment, and contributions to athletic and nonathletic programs. Each NCAA member understands, however, that every other member has an incentive to cheat on the rules of the joint venture. From this perspective, penalties are required because, as in the case of McDonald's restaurants, cheating can be expected when the benefits from the joint venture are common to all participating members.[28]

To the extent that the NCAA's system of rules and penalties enhances the demand for college athletics, the demand for athletes will increase their sports opportunities. More college teams will survive and prosper.[29]

The Mistaken Presumption of Monopsony Power

Proponents of the cartel theory mistakenly assume that because the NCAA includes 850 members—virtually all major collegiate sports teams—it has significant monopsony power that enables member colleges to suppress athletes' wages. The proponents acknowledge that colleges have substantial private incentives to cartelize their markets. They overlook, however, the critically important and patently obvious fact that the NCAA members are not a *single unified* firm, but are a collection of many independent firms with different cost structures and different market demands. They have the same incentive to improve their profits by cheating on the cartel—even forming alternative collegiate or semiprofessional sports associations that permit explicit wage payments to athletes—as they do to form the cartel in the first place.[30]

In other words, the proponents of the cartel theory fail to explain how any effective, exploitive sports cartel can be maintained in the long run without forced membership or barriers to member colleges' leaving the NCAA or to alternative sports associations' entering the market.[31]

If the NCAA seriously depresses athletes' wages, the temptation of member colleges to drop their membership and form another association that permits competitive wage payments would appear to be overwhelming. Proponents of the cartel theory cannot escape with the argument that several teams must agree to form an alternative association. Their argument that the NCAA actually is an effective cartel suggests that such an endeavor is a viable possibility. In addition, conferences and the College Football Association (CFA) that are a part of the NCAA are already well organized to secede from the NCAA as a unit and to establish alternative sports associations that would allow payments to athletes if the NCAA is not responsive to market forces and member schools. The existing associations—the National Association of Intercollegiate Athletics (NAIA) and the National Little College Athletic Association (NLCAA)—could take advantage of the NCAA's alleged exploitation of athletes and allow payment.

If athletes were seriously exploited under the NCAA, the seceding teams or conferences may reasonably expect that their exit would induce other teams and conferences to follow suit.[32] Those that do secede will be the ones attracting the more sought-after athletes and presumably would benefit from larger attendance and television contracts to the detriment of remaining NCAA colleges. In fact, entrepreneurs outside of college athletic departments searching for sports profits should be willing to organize the necessary critical number of schools.[33] The openness of the association market is important because the emergence (or the threat of emergence) of alternative sports employment opportunities would cause athletes' wages to rise to approximately competitive levels.

The logical extension of the proponents' own cartel premise leads to the inescapable conclusion that if there were not something intrinsically important to colleges in their efforts to maintain the pretense, if not the substance, of amateur

athletics in colleges, the NCAA rules would not last long, without significant—and legal—barriers to leaving the NCAA or to forming alternative associations.[34]

College Athletics as an Open Market: A Legal Review

A review of antitrust law supports our central thesis that the NCAA acts not as a cartel but as a demand-enhancing joint venture. Court rulings on collegiate athletic restrictions are not only compatible with our view of the function and purposes of the restrictions, but they also indicate that no legal barriers exist in antitrust law to prevent entry of rival leagues, conferences, or associations of leagues and conferences. Experience and legal approval confirm that colleges voluntarily enter conferences and join the NCAA for the purpose of producing an entertainment product of a certain kind and quality through joint control and regulation.

The fact that colleges join the NCAA or combine in conferences to implement rules and regulations governing the production and marketing of college sports does not make the colleges per se "competitors in any economic sense," even though they "compete on the playing field."[35] Without cooperation and regulation, college sports may not exist at all, or if existing, would not be as healthy an enterprise as they are. Joint action is a precondition to the existence and success of the product, if for no other reason than that athletic games require rules to define the boundaries within which competition will be allowed to prevail and to make the game interesting and mutually beneficial to the participants and fans.[36] Restrictions on players may only demonstrate that ancillary or incidental restraints are necessary for the success of the joint venture.[37] Antitrust law has long sanctioned restraints that are ancillary or incidental to otherwise lawful combinations. (The legal analysis is extended in the appendix to this chapter.)

By their nature, games require rules that amount to restrictions on competitive impulses. Rules against payments to athletes can be seen as materially the same as rules against changing the goal line or payoffs to referees calling the games. Restrictions on payments of many kinds may be useful devices for increasing the extent to which competitive energies are directed toward improving players' skills and the quality of competitive play.

Concluding Comments

Our analysis leads inextricably to the conclusion that the conventional economic wisdom regarding the intent and consequences of NCAA restrictions on the recruitment and retention of athletes is wrong and misleading. The conventional wisdom is wrong in suggesting that, as a general proposition, college athletes are materially underpaid and are exploited, that cheating on NCAA rules is prima facie evidence of a cartel intended to suppress athletes' wages, that NCAA rules violate conventional

antitrust doctrine, and that barriers to entry ensure the continuance of the NCAA's monopsony powers over athletes. No such barriers exist. In addition, our reading of the Supreme Court's decision in *NCAA* indicates that the NCAA would be unable to prevent through the courts the emergence of competing athletic associations (see the appendix). The actual existence of other athletic associations indicates that entry is not only possible but also practical if athletes' wages were materially suppressed.

Conventional economic analysis of NCAA rules also is misleading in suggesting that collegiate sports would be improved if the NCAA were denied the authority to regulate the payment of athletes. Given the absence of legal barriers to entry into the athletic association market, it appears that if athletes' wages were suppressed, alternative sports associations would form or expand, and the NCAA would be unable to maintain its presumed monopsony market position.

From our interpretation of NCAA rules, it does not follow necessarily that athletes should receive any more compensation than they do currently. Clearly, market conditions change, and NCAA rules often must be adjusted to accommodate those changes. Absent entry barriers, we can expect the NCAA to adjust, as it has adjusted, in a competitive manner, its rules of play, recruitment, and retention of athletes.[38] Our central point is that contrary to the proponents of the monopsony thesis, the collegiate athletic market is subject to the self-correcting mechanism of market pressures. There is reason to believe that proposed extension of the antitrust prosecution to the NCAA rules and/or proposed changes in sports law that proponents of the cartel thesis explicitly or implicitly recommend would not only be unnecessary, but also counterproductive.

Appendix

The Legal History

In this chapter, we maintain that antitrust law has for a long time sanctioned restraints on trade that are ancillary or incidental to otherwise lawful combinations. Our purpose in this appendix is to support that claim with a review of court findings. Contrary to the claims of the cartel proponents, the non-television restraints of the NCAA are not in violation of U.S. antitrust, at least as interpreted by the courts to the date of this writing.

The ancillary restraint doctrine was established as early as 1898 as an accepted American rule of interpretation of the Sherman Act.[39] In *United States* vs. *Addyston Pipe and Steel Co.*,[40] Judge Taft held that a contract or combination that produces an ancillary restraint is nevertheless reasonable and lawful as long as the main purpose of the contract, transaction, or combination was lawful and the restraint is limited in time, place, and manner of enforcement. The underlying rationale of the ancillary-restraint doctrine is based on the premise that the incidental restraint enhances the efficiency of the main agreement.[41] Throughout the history of the

Sherman Act, the doctrine has enjoyed wide application and acceptance, including in the sports market.

In *Smith* vs. *Pro Football, Inc*.,[42] the District of Columbia Circuit applied the doctrine to its initial analysis of the National Football League (NFL) regulation of the player draft. The court recognized that the NFL was a legal combination in the traditional antitrust sense. Joint cooperation was essential for the production of professional football. Normal market forces did not operate in the sports market because teams and leagues are not "interested in driving [other teams] out of business, whether in the counting-house or on the football field, for if the league fails, no one team can survive."[43] The joint venture produced a new product; it also produced restrictions on the actions of members of the league and players. A rule of reason was used to judge the legality of the regulations necessitated by joint venture.[44] Critical to the court's analysis was the characterization that sports leagues operate as joint ventures with the purpose of producing new products and increasing demand, not as a cartel that restricts output or supply. The joint-venture analysis of *Smith* was recently followed when the Supreme Court considered the restrictions of the NCAA on college sports.

In *NCAA* vs. *Board of Regents*,[45] the Supreme Court, in a broad and sweeping decision, recognized the important role the NCAA plays in regulating collegiate sports.[46] The court, specifically noting the NCAA's regulation of "standards of amateurism, standards of academic eligibility, regulations concerning recruitment of athletes, and rules governing the size of the athletic squads and coaching staffs,"[47] ruled that the NCAA was an association of colleges that compete against each other for athletes, fans, and television revenues.[48] But the court was candid in recognizing that college sports is an "industry in which horizontal restraints on competition are essential if the product is to be available at all."[49] Quoting Robert Bork, the Court said "[S]ome activities can only be carried out jointly."[50] The product marketed was "competition itself—contests between competing institutions."[51] Finding that incidental restraints were essential for the production and success of the product, the Court reasoned:

> Of course, this would be completely ineffective if there were no rules on which the competitors agreed to create and define the competition to be marketed. A myriad of rules affecting such matters as the size of the field, the number of players on a team, and the extent to which physical violence is to be encouraged or proscribed, all must be agreed upon, and all restrain the manner in which institutions compete.[52]

On college football, the court was specific in approving the non-television regulations of the sport: the regulations enhance consumer demand and choice, including the choices available to athletes.[53] Because college football is a part of the academic tradition, the court found that ancillary restraints produced by the NCAA joint venture were essential "in order to preserve the character and quality of the product."[54] Absent mutual agreement by colleges on the regulation, the "integrity" of the product would be compromised and "might otherwise be unavailable."[55]

The court concluded that the integration produced by the NCAA joint venture, while placing some limited restraints on colleges and athletes, actually promoted increased competition and output by producing a product distinguished from other sports entertainment, that is, from professional sports entertainment. The result enhanced consumers' and athletes' choices. On balance, the joint venture's non-television regulation increased competitiveness. The restraints, maintaining the "competitive balance among amateur athletic teams,"[56] are a "justifiable means of fostering competition among amateur athletic teams and are therefore procompetitive because they enhance public interest in intercollegiate athletics."[57]

At bottom, the Supreme Court sanctioned many non-television regulations issued by the NCAA. Because the Court found that the "preservation of the student-athlete in higher education adds richness and diversity to intercollegiate athletics,"[58] it is willing to give the NCAA "ample latitude to play that role," a role "entirely consistent with the goals of the Sherman Act."[59] This conclusion was premised on the court's implicit finding that amateurism and education are components of a market product, the promotion of which is procompetitive.[60] As long as the NCAA regulations are designed for, and have the effect of, enhancing the market product and preserving sports amateurism and education, they will receive favorable review from the Supreme Court.[61] Since *NCAA*, the antitrust outcome centers on the restraint's effect on output *and* consumer demand and preference.[62]

This legal review is not intended to suggest that the NCAA does not have some modicum of market power or that market power is a precondition to liability under Section One of the Sherman Act. The Court in *NCAA* answered each of these concerns. First, the Court found that the NCAA does have market power in the regulation of television contracts.[63] Second, the Court explicitly said market power is not a prerequisite for liability under a Section One charge,[64] as is required under a Section Two claim. Although the Court did not decide whether the NCAA has market power over non-television aspects of the sports regulation, for our purposes, the issue need not be debated. Even if the NCAA has monopoly power, which is debatable in markets for athletes, monopoly power alone is not illegal. The question is whether that power is exercised and, if so, whether the result is a predatory or exclusionary practice—one that deters entry of a potential competitor by raising the costs of entry or one that discourages existing rivals from increasing output.[65] The focus is on whether the monopoly conduct is designed to destroy or smother competition. The exercise of monopoly power does not refer to monopolistic pricing in the absence of entry barriers, but to the creation or preservation of market power by means that are anticompetitive.[66] On this point, the Supreme Court decision in *NCAA* is clear.

Again, the court in *NCAA* recognized that certain market products cannot be produced without cooperation between competitors.[67] Specifically, the NCAA's non-television regulations over college sports were held lawful because they enhance output by increasing consumer and athlete demand.[68] Contrary to a finding of monopolization (e.g., market power plus exclusionary practices), the Court concluded that the NCAA's non-television regulations are ancillary but essential

restraints that actually promote and more evenly distributed the market product of sports competition.

Implicit in this analysis is the finding that the NCAA did not act to reduce output or earn monopoly profits, as is the case with a traditional cartel or single-firm monopolist. Indeed, the creation and success of the rival CFA, which has the purpose of promoting the interest of major football colleges,[69] belie the notion that the NCAA's conduct increases the cost or defers the entry of a rival competitor. The non-television means used to achieve the integration of the NCAA's joint venture produced efficiencies, not anticompetitive consequences, through reduction of transaction costs. The result is an increased demand for amateur sports. Like other joint-venture agreements, member colleges in the NCAA or CFA are able to obtain certain economies through lower costs that benefit not only the participating colleges but also consumers and athletes.[70] The result is the creation of a new product market.[71]

This same economic approach used in *NCAA* is evident as well in more recent Supreme Court antitrust jurisprudence. The one theme recurring throughout the recent cases is that economic efficiency is a valid business justification for conduct engaged in by a monopolist or by joint venturers.[72] During the same court term as when *NCAA* was decided, the court recognized in *Cooperweld Corp* vs. *Independence Tube Corp*.[73] that integration and collective cooperation between related firms can produce efficiencies. Addressing whether a parent corporation and its wholly owned subsidiary would conspire within the meaning of the Sherman Act, Chief Justice Burger reasoned that:

> Coordination within a firm is as likely to result from an effort to compete as from an effort to stifle competition. In the marketplace, such coordination may be necessary if a business enterprise is to compete effectively. ... [To deny this reality] would serve no useful antitrust purpose but could well deprive consumers of the efficiencies.[74]

In *Northwest Wholesale Stationers*,[75] the Court unanimously ruled that per se illegality does not result from a horizontal concerted refusal to deal unless the defendant "possesses market power or exclusive access to an element essential to effective competition."[76] This relaxed standard of analysis was accepted in spite of a longstanding per se rule of illegality for horizontal concerted refusals to deal or groups boycott.[77] The justification for the changed legal standard again was an efficiency rationale that the challenged practice might "enhance overall efficiency and make markets more competitive."[78] Speaking for the Court, Justice Brennan observed that:

> [N]ot every cooperative activity involving a restraint or exclusion will share ... the likelihood of predominantly anticompetitive consequences. ... [C] ooperative arrangements [may] seem to be "designed to increase economic efficiency and render markets more, rather than less, competitive." The [purchasing cooperative] arrangement permits the participating retailers to achieve economies of scale in both the purchase and warehousing of wholesale supplies, and also ensures ready access to a stock of goods that might otherwise be unavailable on short notice. The cost savings and order-filling guarantees enable smaller retailers to reduce prices and maintain their retail stock so as to compete more effectively with larger retailers.[79]

Finally, in *Aspen Skiing*,[80] the first monopolization case decided by the court in nearly twenty years, the court said a monopolist has "no general duty" to deal with a competitor. The right is not unqualified, however. As long as the conduct is not predatory or exclusionary, the monopolist can compete vigorously on the merits.[81] But the monopolist cannot deliberately refuse to deal with a competitor that it has dealt with before, when that refusal would change the "character of the market" and hurt the competitor, in the absence of an efficiency justification.[82]

In *Aspen Skiing*, the court ruled against the monopolist because it failed to offer any business justification for the refusal to deal. From the lack of an efficiency defense, the court concluded that the defendant decided to forego short-run profit for the long-run effect of weakening competition.[83] In characterizing the conduct, the court decided, "if a firm has been 'attempting to exclude rivals on some basis other than efficiency,' it is fair to characterize its behavior as predatory."[84] Thus, it is clear from *Aspen Skiing* that had the monopolist engaged in the restraint for the purpose of promoting efficiency (reducing long-run costs thereby increasing demand for the product), the court may well have deemed the refusal to deal lawful.

Read together, *Cooperweld, Northwest Wholesale Stationers*, and *Aspen Skiing* are authority for recognizing cooperation and integration as means of achieving cost-reducing efficiency objectives. Unlike raw cartels or single-firm monopolists, partially integrated associations, such as the NCAA joint venture, can increase output and consumer demand. The Court in *NCAA* found no less. Economic efficiency is sanctioned under the current antitrust laws, even when advanced by a horizontal agreement or a monopolist. Consequently, the NCAA's non-television regulations are in apposite to the traditional cartel goal of reducing output and increasing price. Allocative efficiency is promoted and, as the Supreme Court has held, the predisposing characteristics of cartelization are not present in the NCAA non-television regulations.

In short, legal barriers do not prevent the continuation of the present NCAA regulations or the formation of alternative, competing leagues or associations from continuing or entering the market to compete against the NCAA for production and marketing of college sports. The emergence and presence of the CFA (or, for that matter, the NAIC or the NLCAA) are substantial evidence of a lack of barriers to entry.[85] The current state of antitrust law encourages robust competition on the merits through efficiency-enhancing conduct. The NCAA's and CFA's regulations are paradigms of this type of competition.

Chapter 21
Why Professors Have Tenure and Business People Don't

Academic tenure has become, understandably, the holy grail of newly employed assistant professors in the country's colleges and universities. Without tenure, faculty members must, as a general rule, be dismissed after 7 years of service, which means they must seek other academic employment or retreat from academic life. With tenure, professors have the equivalent of lifetime employment. Rarely are they fired by their academies, even if they become incompetent to teach and/or conduct research.[1]

Professors do not have, of course, complete protection from dismissal, and the potential for being fired may not be reflected fully in the number of actual firings. However, professor firings are for causes generally unrelated to their professional competence. The most likely reasons (or "good causes") for dismissal firings are "moral turpitude" (which may include criminal offenses on campus and in the community as well as sexual improprieties with students), and financial exigencies of universities and colleges (in which case, typically, whole departments are eliminated). For example, when confronted with serious and repeated budget cuts by the California State Legislature, San Diego State University announced in 1992 that it would abolish nine academic departments and dismiss the departments' 145 tenured and tenure-track professors.[2] Nonetheless, critics charge that professors are unduly protected by the remaining vestiges of the tenure system.

The fact that most students and close observers of academic life can easily recall horrendous cases of gross incompetence among faculty members has caused tenure to come under increasing attack from several prominent quarters. Tenure was abolished altogether in British public universities in 1988.[3] By the end of the 1980s, 30 percent of the nation's four-year colleges and universities had placed some limit on the percentage of their faculty holding tenure at any one time. This would seem to imply that the growth in the number of tenure-track faculty positions at many schools has been slowed, making tenure more difficult to obtain.[4] The University of California at Berkeley adopted new tenure rules in the 1980s that would permit the firing of tenured professors who were "grossly incompetent," mainly those who had not published substantive research in several years and whose teaching represented a "disservice" to the Berkeley students.[5]

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_21, © Springer-Verlag Berlin Heidelberg 2012

Journalists have often been hostile critics of the academic tenure system, especially now that (given the dictates of the Age Discrimination Act) retirement for professors can no longer be mandated (even at age seventy).[6] Even able faculty members (two of the most widely read are Thomas Sowell and Martin Anderson[7]) have been hostile critics of the tenure system. Sowell scoffs at the tenure system, reckoning that "it would be hard to conceive of an institutional arrangement with more potential for irresponsibility."[8]

We have observed how colleagues have tested the limits of tenure protection. In one case from the late 1990s, a faculty member in humanities asked for a leave of absence for the following academic year, which started in September. When she was denied the leave (on the grounds that replacing her in her fall classes would be difficult, if not impossible, on such short notice, the professor took leave, joining the faculty as a tenured full professor at a foreign university. She continued to collect her checks from the university where she had taken a leave that was officially denied, as well as the checks from her new university. You might think her original university could fire her outright for insubordination, as well as leaving her colleagues scrambling for a replacement. And you might think that her tenure protection was irrelevant since her actions had nothing to do with "academic freedom" and was a strictly administrative problem, or so it could be construed. Well, no, the university had to raise a complaint with the campus-wide tenure and promotion review committee that studied the case for nearly a year, only to recommend, not dismissal, but a demotion to associate professor with a concomitant reduction in pay. The professor left her original university possibly because she did not want to suffer the pain of the demotion, but also because she had another position, with tenure.

When questioned in the early 1990s about the abolition of mandatory retirement for university professors, one University of California, Berkeley, psychology professor quipped to a reporter, "Some of us may only leave if we drown in the soup at the faculty club."[9]

Why tenure? In contrast to conventional arguments and as widely believed, we argue that tenure survives in academic settings not merely because it provides faculty members with protection from political and religious forces outside of universities who would stifle independent and creative thought, and not because faculty members control the terms of their employment contracts; rather, tenure survives primarily because it represents a mutually beneficial trade between professors and their universities (the officials of which represent, albeit imperfectly, the interests of students and other college and university supporters). The arrangement gives professors a degree of (but not perfect) employment protection from the ebbs and flows—the ravages and vagaries—of institutional politics inside universities, while universities are able to pay lower wages and less fringe benefits than they might pay otherwise for the caliber of professors they hire.

In this chapter, universities are seen as labor-managed firms in which workers (professors) determine the services provided, who provides them, and how one another's work is evaluated. While economist Lorne Carmichael has recognized that universities have reasons to "supply" tenure as a part of the employment

contract, no one has recognized the institutional-based "demand" for tenure on the faculty's part.[10] Tenure is a means by which professors can protect themselves, at least in part, from the uncertainties that inevitably emerge when management decisions are made by a continually changing group of workers (professors) who may shift their political alignments. In short, tenure is a form of job protection professors have from their colleagues and the vagaries of academic democracy.

The line of argument developed here illuminates the consequences many universities would suffer from the wholesale abolition of tenure, as critics have recommended. At the same time, it helps to explain why tenure has come under attack. Recognizing that tenure is a contract provision that is a practical response to the academic institutional setting, we introduce the concept of "optimum tenure," which recognizes that the degree of job security can be adjusted, albeit with required lags, to changing institutional conditions.

Tenure as Limited Protection

Tenure amounts to an employment contract provision that specifies, in effect, that the holder cannot be fired easily (which is to say that the tenure holder can be fired but only at considerable cost to the institution). To that extent, tenure provides some employment security, but by no means perfect security. As noted, professors can be fired only for "good causes." Professors who are retained in spite of their shortcomings face prospects such as lowered salaries (in nominal or real terms), increased loads of teaching and other duties, and loss of their offices, research assistants, and fringe benefits. A university may not be able to fire a faculty member quickly, but it can deny salary increases repeatedly and gradually increase teaching loads until the faculty member "chooses" to leave. Accordingly, the degree of protection tenure affords is a function of such variables as the inflation rate. That is, the higher the inflation rate, the more quickly the real value of the professor's salary will erode each time a raise is denied.

The value of tenure to the professor is a function of the relationship between the professor's salary, the going market rate of pay for a comparable professor in the same discipline, and the cost of changing jobs. Tenure is of little or no value to the professor who is making his or her market wage, has a variety of acceptable job opportunities elsewhere, and would face slight, if any, costs in changing jobs.

The Conventional Wisdom of Tenure

If tenure has, on balance, grossly perverse consequences, as so many critics charge, why has it survived for hundreds of years? Tenured faculty members and tenure's critics are inclined to argue that tenure serves a useful educational purpose by promoting politically independent and original thinking. Originally, tenure was

conceived to protect faculty members' livelihoods from assaults by politically and religiously powerful people outside universities (and students inside universities) who might disagree with the professors' controversial research findings and teachings and pressure university administrations to fire or discipline professors. The editors of one major media outlet for higher education proffer that tenure is intended to encourage faculty members to pursue "truth" and to create a "professoriate that is free to seek, discover, teach, and publish without interference."[11] Epstein and MacLane have argued that tenure is designed to fortify the confidence that the public has in academic research, thereby representing a "response" to a wide range of external pressures on universities.[12]

Today, critics point out that outsiders no longer pose serious threats to faculty members' continued employment, mainly because of legislated or judicial protections. As opposed to promoting independent and creative or just controversial thinking and teaching, tenure promotes, critics charge, stagnant or uninspired thinking, and lazy and incompetent teaching.[13] Alternately, the academic employment system in universities has been established and maintained by faculty members who promote their economic and professional interests—if not "self-indulgence"[14]—at the expense of financial supporters (or customers), students, taxpayers, and contributors. Hence, control of universities must be wrestled from faculty members. Then, tenure can be abolished or severely circumscribed, and the interests of the nonfaculty constituencies of universities can be better served. At any rate, outside political threats to faculty probably do not constitute an important reason for expecting tenure to arise and survive in academic settings.

Clearly, any argument that suggests that tenure should be abolished because there are costs involved must be challenged immediately, if for no other reason than the fact that faculty no longer control the financial resources available to many universities. (For one thing, they no longer charge students directly for their courses, as they once did one or more centuries ago.) And faculty represent an exceedingly small fraction of the citizenry, which means even the indirect control they have over their employment conditions is meager. Furthermore, tenure exists in many public and private universities where governance is not democratic—that is, faculty make few, if any, meaningful employment and retention decisions[15]; rather, officials at the top of the organization, such as the president and board of directors, make most, if not all, faculty employment and retention decisions. Indeed, in most universities, faculty members only *advise* their boards of directors on tenure decisions. They do not make the final decisions. Among the universities that have democratic systems of governance, few are forced to maintain their decision-making systems. Most could opt for other forms of governance and could discontinue tenure when their democratic systems of governance are maintained.

Clearly, tenure has costs that the universities' various constituencies must be suffered. Professors do, at times (if not often), exploit tenure by shirking their duties in the classroom, in their research, and in their service to their universities. However, tenure is not the only contract provision that has costs, and some others are under the control of faculty members. Health insurance (as well as a host of

other fringe benefits) imposes costs on faculty members directly and students indirectly. Some professors continue to smoke and to overeat, in spite of the fact that these behaviors increase the costs of their universities' health insurance. Nonetheless, universities continue to cover health insurance costs because the benefits matter, too, not just the costs. Health insurance survives as a fringe benefit because it represents, on balance, a mutually beneficial trade for the various constituencies of universities. Universities (which can buy group insurance policies more cheaply than individual faculty members) are able to lower their wage bills by more than enough to cover the insurance costs because they provide health insurance. By the same token, professors obtain a fringe benefit that is worth more than the value of the foregone wages.[16]

Tenure, like health insurance, is a voluntarily negotiated contract provision that has survived all the problems that critics have identified (and few dispute). Moreover, universities widely advertise and promote tenure as a favorable employment feature. The fact that it remains a contract provision prized by faculty suggests that, on balance, tenure is very likely to benefit—on balance—both sides of the employment contract, the universities as well as the professors and students. In order to be mutually beneficial, both parties to the employment contract must realize enough gain in the trade, derived from faculty members' perception of tenure as a worthwhile contract provision, to be worth more than the costs to their universities (and their students).

As with health insurance, tenure's ultimate acceptability should not be judged by considering only the problems it creates. Some consideration must be given to the issue of why tenure is so prominent in the employment contracts between professors and universities, who can be viewed as acting, partially and imperfectly, on behalf of their students and supporters. To understand the reasons for tenure, we must recognize the nature of academic jobs and how they compare with jobs in other industries. To begin with, academic labor markets are tolerably, if not highly, competitive, with thousands of employers and hundreds of thousands of professors, and wages and fringe benefits respond tolerably well to the market conditions. If, in fact, tenure were not a mutually beneficial trade between employers and employees, universities—who are constantly in search of more highly qualified students, faculty at lower costs, and higher recognition of their programs—would be expected to alter the employment contract, modify the tenure provision, increase other forms of payment, and lower overall university costs.[17]

The Nature of Academic Employment

Jobs vary in difficulty, in time and skills required, and in satisfaction. They also vary in terms of who determines what is produced, how employment goals are reached, and how well and easily workers' performance can be evaluated either by external observers or by someone not directly involved in the jobs (including

supervisors). "Bosses" define many jobs, and they are quite capable of evaluating the performance of those they hire for these jobs.

In response to sales, supervisors in fast-food restaurants can determine not only how many hamburgers to cook but how many employees are needed to flip hamburgers (and assemble the different types of hamburgers). They can judge the performance of workers, partially because they, too, have experience doing the jobs, but also because the tasks are relatively simple and the employees' behavior is easy to observe. Where work is relatively more or less simple and routine, we would expect it to be defined by and evaluated within an authoritarian/hierarchical governance structure, as is generally true in the fast-food industry.[18]

Academic work is substantially different, partially because many forms of the work are highly sophisticated, because its pursuit cannot be observed directly and easily (given the reliance on thinking) and because it involves a search for new knowledge which, when found, is transmitted to professional and student audiences. (Academic work is not the only form of work that is heavily weighted with this attribute, a point we reconsidered later.) Supervisors (boards of directors, presidents, and deans) may be highly trained in a discipline and one or two subdisciplines, but they are often called upon to employ workers/professors who know far more than the supervisors about their areas of research and the courses they teach. Academic supervisors may know in broad terms what a "degree" should be and how "majors" should be constituted at any given time; however, they must rely ultimately and extensively (but not necessarily and completely) on their workers/professors to define their own specific research and classroom curriculums and to change the content of degrees and majors as knowledge in each field evolves. Academic administrators and officials employ people to conduct research and explore uncharted avenues of knowledge that the officials themselves cannot conduct or explore because they lack knowledge of a field, have no time, or are not so inclined to do so.

Professors, on the other hand, frequently undertake esoteric research projects, the benefits of which are uncertain, cannot be captured in saleable products, and have no value in the market where the professor works. In this regard, much academic research involves the production of the classic *public* (as distinguished from *private*) *good*. Moreover, the value of some research may not be known for a long time. Indeed, its value may change with the passage of time, perhaps even falling to zero or a negative value.

Fast-food restaurants can be governed extensively (but not exclusively) by commands from supervisors, and there are several reasons why this is possible. The goods and services produced are easily valued and sold, with little delay in markets, which means that customers can judge the workers' value indirectly and supervisors can judge it directly. Following the logic of Arman Alchian and Harold Demsetz, workers in such market environments would be inclined to see supervisors as people who increase the income of stockholders *and* workers mainly by reducing the extent to which workers shirk their agreed upon duties.[19] If such businesses were ever to start out as fully worker managed and controlled, they would quickly move toward hierarchical control as the workers themselves would

soon detect the merits of authoritarian control, which include delegating to managers the right to discipline or fire workers who shirk their duties. Workers in such workplaces would have an economic interest in having supervisors (or others up the hierarchical ladder) with a direct economic stake in the success of the firm. As residual claimants, they would press for efficiency improvements that could translate into enhanced worker compensation.

Academe, however, is a type of business that tends to be worker managed and controlled, at least in many significant ways. This aspect of the academic marketplace solves many decision-making problems but introduces other serious problems of unstable, if not volatile and uncertain, decisions over time and circumstances from which professors will seek contractual protection. Worker-professors are called upon extensively to determine what their firms (universities) produce (what research will be done, what courses are required, and what will be the content of the various courses, even which students will be taught), who is hired to teach identified courses and undertake related research, how workers are evaluated, and when they are fired. Because they are limited in just how much they can know about any field, supervisors in academic environments have seriously circumscribed control over those environments, which implies a high degree of worker involvement in management decisions, for example, hiring, evaluating, and firing workers.

Although not required, historically, worker involvement in academic management has been restricted by the rules of academic democracy, with many decisions being made by consensus or explicit votes. Delegation of decision-making authority, especially in large college and university settings, mutes the importance of residual claimacy. The professors themselves become, to a significant degree, the residual claimants on the value of their research. Because much of professors' research is a public good, the residual to be claimed is more likely to be reputation benefits within their disciplines rather than financial rewards as much research does not result in products that can be sold.

Of course, the size of the academic units will affect the diligence with which professors will actively and effectively participate in the democratic-managerial process.[20] In a small department (or university) setting, the professors may participate with due diligence and effectiveness. Their own work on managerial matters will, with a high probability, materially affect the professors' own welfare. However, in a large department (or university) setting, the decision-making authority might be spread so thinly over so many professors that no one professor can count on his or her managerial activities counting for very much in the decision-making process. Following the logic of collective action, as developed by Mancur Olson, an increase in the number of professors within relevant academic units can reduce the incentive of individual professors to participate with due diligence in the managerial-democratic-political process, a consequence that can compound the instability problems of democratic decision making with elements of risk and uncertainty.[21]

The argument can be stated without using the examples of fast food and academe, but those examples enable us to deduce a managerial principle of sorts: the simpler it is to accomplish a job, the more likely it is that managerial control will

be delegated to a supervisor. The more sophisticated, esoteric, and varied the job to be done, the more likely managerial control will be relegated to the workers themselves and the more democratic the decision-making will be.

Of course, not all academic environments share the same goals or face the same constraints. Some universities view pushing back the frontiers of knowledge as central to their mission, while others are intent on transmitting the received and accepted wisdom of the times, if not the ages. Some universities are concerned mainly with promoting the pursuit of usable (private goods) knowledge, that which has a reasonable probability of being turned into salable products, while other universities are interested in promoting research the benefits of which are truly public, if any value at all can be ascertained.[22]

In short, in some universities, the assumed and assigned tasks of professors are fairly stable over time, the value of what is done is broadly acknowledged, and the basis for evaluating their efforts remains similarly stable. Other universities exhibit opposite characteristics; that is, the assigned tasks of professors are ever changing, the value of their efforts is not well defined (if known at all), and the basis for evaluating the efforts of the professors is as changeable as the nature of what they do. We would expect the stable academic environments to be inclined to rely extensively on authoritarian control and the ever-changing academic environments to be inclined to rely more extensively on labor management and academic democracy. (The same, of course, could be said of many nonacademic firms.)

Why Tenure?

Labor-market theory is useful to the extent that it explains why workers must be paid and why they are paid what they are. Theory cannot, however, say exactly how workers should be paid or specify the exact terms of an employment contract. Exactly how workers are paid—whether and how much, for example, in money, fringe benefits, or other job attributes—will depend upon the particular trade-offs workers are willing to make and the costs the employers will have to incur in meeting the varied interests of workers.

Contract provisions, on the other hand, will tend to reflect how willing employers and employees are to adjust to particular conditions of employment. Workers in restaurants sometimes are paid in part with discounted or "free" food that employers can provide at modest cost (or at a cost lower than the cost that might have to be incurred to prevent theft). Workers in risky jobs may seek (cost-effective) assurance from their employers that hazards will be minimized and that accident insurance is available. Similarly, as we will show, the conditions of academic employment suggest several reasons why tenure will likely be one of many prominent (although not absolutely necessary) contract provisions.

Tenure as a contract provision is not unique to academic settings. In varied forms, tenure will tend to emerge in organizations that have attributes similar to

those found in academic settings and discussed above, mainly work environments that rely extensively on labor management.

Tenure as a Means of Promoting Academic Integrity in Hirings

Loren Carmichael reasons that tenure exists in academic environments primarily because worker-professors are called upon to select new members.[23] Carmichael compares the employment methods used in baseball and universities. In baseball, the owners through their agents determine who plays what position on the team. Baseball is, in this sense, "owner managed." In academe, the incumbent worker-professors select the team members and determine which positions they play. Academe is, in this sense, "labor managed." In baseball, the owners' positions are improved when they select "better players." On the other hand, in academe, without tenure, the position of the incumbent decision makers could be undermined by their selection of "better professors," those who could teach better and undertake more and higher quality research for publication in higher-ranking journals. "Loosely, tenure is necessary," Carmichael concludes, "because without it incumbents would never be willing to hire people who turn out to be better than themselves."[24] Weaker members of departments would fear that their future livelihoods (as well as prestige) would be undermined by revelation of their honest evaluations of candidates.

Thus, tenure can be construed as a means employed by university administrators and board members—who must delegate decision-making authority to the faculty but who still want to elevate the quality of what is done at their universities—to induce faculty members to honestly judge potential of the new recruits. The nature of the job of professoring—including undertaking esoteric research—the value of which is difficult for university administrators and board members to appraise and may remain uncertain even to professionals in the same field for some time—requires that professors be given considerable latitude in deciding not only what they will research and teach but with whom. In effect, university officials and board members strike a bargain (with varying degrees of credibility) with their worker-professor-decision-makers: if you select new recruits who are better than you are, you will not be fired.

Carmichael claims his model rules out as "infeasible" the "first-best practice of firing the weakest incumbents, either to replace them on an ongoing basis or to save money in times of financial crisis, even though they may readily be identifiable and clearly overpaid."[25] Pursuit of the "first-best" practice would actually encourage professors to select inferior recruits.

Accordingly, in times of financial crisis, rather than weeding out the weakest professors regardless of their departments (as the editors of the *Los Angeles Times* in 1992 seemed to think was the best course of action), a more appropriate policy course is to abolish whole departments.[26] Weak professors living with the threat of elimination in times of financial exigency probably would be inclined to choose

only recruits they consider inferior to themselves.[27] The abolition of entire departments (or decision-making units) would not impose the same incentive, given that incumbents in one department generally have no say in the selection of recruits in other departments. Indeed, the abolition of departments would encourage incumbents to "increase the average quality of their departments"[28] because they would not want to be members of the weakest departments facing the threat of abolition in difficult times. Although tenure is not the only important contractual provision in academic employment, it can help moderate the tendency of faculty to pursue the enhancement of their own private welfare at the expense of the goals of the larger university.[29]

Carmichael develops his argument within a model that treats tenure as an all-or-nothing employment provision. His principal conclusion regarding the honest dealing of incumbents can be extended to situations in which tenure is more or less secure. Any change in academic policy that makes tenure less secure—or increases the probability that tenure will be revoked and the incumbents fired, downgraded in status, or paid less—will cause incumbents to favor lower quality recruits. Hence, a university interested in improving its overall quality may have to pay undue respect to many incumbents and increase their pay even when their *relative* productivity does not warrant an increase (or, the amount of increase given). As a consequence, the employment systems that make tenure necessary are likely to have higher pay scales than are justified by the professors' relative productivity (as would be expected in any democratically controlled institution).

For the same reason they have tenure, academic environments are also likely to maintain outdated and outmoded disciplines, research methods, and courses. The reason is that management decisions must be conducted by the worker-professors. To the degree that professors whose ways are outmoded and shunted aside (and in many subtle and not-so-subtle ways demoted), those professors can be expected to make less than forthright decisions on new recruits or seek inferior recruits, whose performance would elevate the incumbents' relative worth to the department. As an incentive to improve the quality of their performance over time, inferior incumbents must be shown a degree of respect and offered a degree of security that are not wholly justified by their worth. Ironically, to improve their departments, the superior professors must exhibit a degree of dishonesty to encourage their inferior colleagues to deal more honestly.[30]

In short, tenure imposes costs on college and universities in the form of over-payment and indulgence of some undefined number of professors and their methods. At the same time, those costs can be seen as unfortunate consequences of doing the business of academe with less than perfect people who may seek to protect their own private interests at the expense of the goals of the broader academic community.

As noted earlier, not all academic settings are alike. Some colleges and universities do not need to rely heavily on the management knowledge and skills of worker-professors, because they are in the business of providing a well-defined and stable education with more concrete measures of faculty performance. They do not need to have tenure or worry about the consequences of making tenure less

secure, because in such academic settings new recruits can be evaluated by higher officials and the decisions of the faculty usually are tightly constrained by the decisions or veto power of higher administrators.

Faculty Demand for Tenure

Carmichael's explanation for tenure is both insightful and valid—as far as it goes. His model explains why administrators would want to provide tenure, but does not explain why faculty would demand it. After all, with decision-making authority and without tenure, faculty could, presumably, protect their jobs simply by failing to select recruits who are better than themselves. Indeed, some might even work to improve their own welfare by undermining the position of superior colleagues to have them fired or to make academic life so unpleasant that they choose to leave (which happens more often than many academics would like to admit).

Therein lies an important additional explanation for tenure that Carmichael has not considered: tenure is designed to protect worker-professors from their colleagues, acting alone or in a political coalition, in a labor-managed work environment operating under the rules of academic democracy. That is, faculty members demand tenure so that there will be little or no incentive for faculty members to run each other out of the decision-making unit.

Academic work is often full of strife, and the reasons are embedded in the nature of the work and the way work is evaluated and rewarded. Except in unusual cases, it is difficult, if not impossible, to assess the absolute value of much of the work of academics at least in the short run. Teaching and research quality is normally assessed in *relative* terms, and raises (which are largely influenced by exogenous factors, for example, state budget decisions) typically are allocated based on *relative* performance. As a consequence, a faculty member can improve his/her relative raise (or "slice" of the department's income pie) in two ways: first, by additional production (more articles published or higher student evaluation scores), and, second, by predation (thwarting the productive efforts of colleagues).[31] Some professors will have a comparative advantage in production, which necessarily implies that others will have a comparative advantage in predation. (Predation can take many forms, not the least of which may involve "predatory professors" diverting the time and energies of "productive professors" into political squabbles over, for example, new recruits and standards of evaluation.)

Once predation becomes a way of life within a decision-making unit, competing factions can be expected to seek to extend their influence and defenses by forming coalitions among incumbents and then attempting to increase the sizes of their coalitions by evaluating recruits not so much for their academic qualifications but for their likely political allegiances and effectiveness. The threat of penalties for predation can be muted in several ways, not the least of which is by insuring that predatory actions are, to one degree of another, covert and/or can be attributed with a low probability to any particular coalition member and that those involved in the

predation are protected by votes held by the coalition. Because professors make many decisions on their colleagues' incomes and ranks within academic democracy, administrators are impaired in capacity and inclination to identify and penalize faculty members involved in predation, individually or within the confines of coalitions.

Tenure is a means of putting some (minimum) limits on political infighting. It increases the costs predatory faculty members must incur to be successful in having more productive colleagues dismissed. More importantly, academic decisions on the worth of colleagues and their work often are made by the rules of consensus or democracy among existing incumbents. However, five problems exist.

First, and perhaps most important, academic democracy is a process that gives individuals the right to vote and to change their individual and collective votes at will, for whatever reason—good or bad, productive or counterproductive—the individuals deem valid. To that extent, rules of academic democracy undermine the concept of a tolerably firm contractual relationship between the worker-professor and the university. Professors who are hired to do one thing (teach, research, or engage in some implied fixed combination of those activities) may be judged for annual raises and retention by a totally different standard, because of the changing views (which might be little more than whims), the size of the decision-making group, and the incentive structure of their fellow faculty members.

Second, even with constant standards of judgment, public-choice economics has long recognized the prospect that collective decisions, especially in small groups of voters, can exhibit apparent inconsistencies. Nobel Laureate Kenneth Arrow has shown that every faculty member may exhibit normal transitive preferences, but collective decisions can be intransitive and unstable, ever changing as majorities shift, even within a constant group of voters.[32] In short, relying on labor-management decisions, even in a relatively stable group of decision makers, harbors the inherent prospect of instability in evaluative decisions (what public-choice economists have begun calling the "paradox of voting" or the problem of "cyclical majorities"). Faculty members would want some protection from the oscillating changes in their status that can occur each time there is a shift in the way decisions are structured.

Third, within the labor-managed academic environment, decision instability is made even more problematic because the cast of decision makers is forever changing with new hires, firings (to the extent there are any), and retirements—a fact that adds to the instability and unpredictability of political coalitions within academic decision-making units.

Fourth, within units, professors can change their assessments of the value of different disciplines, research methods, and courses, and these changes, when coupled with the changing cast of decision makers, can compound the instability and predictability of unit decisions over time.

Fifth, the many coalitions (especially the larger they become) themselves are inherently unstable primarily because each faculty member has a stake in taking a greater share of the coalition gains, in spite of the fact that the total coalition gains may be reduced by the efforts of individual faculty members.[33]

A much-offered argument in defense of tenure is that it protects academic workers from attacks by outside political and religious forces that might seek to squelch unpopular research findings and teachings. But closer scrutiny shows that few on the outside understand what professors do in their research or their classes because it is so esoteric and because few professors go public with their ideas. Note, then, that many professors who never expect to confront hostility from outside political forces still demand tenure protection. The analysis developed here suggests what such professors are really seeking is protection from the potential for changes—not necessarily the reality of change—in internal political forces.

The nature of some professors' work suggests another reason for demanding tenure—their esoteric characteristics of their work may diminish alternative job opportunities in the market place. Another reason is that there are political problems inherent within all democratic processes, and professors want, in effect, to be protected from the process and from their colleagues. If their work is intensely specialized, they want some assurance of job security in spite of changing assessments by ever-changing majorities. Universities can be seen as willing to provide tenure because they must delegate decision-making power to those who have the requisite knowledge and information of different disciplines if they want faculty members to specialize their efforts. Universities also realize, given the nature of academic democracy and the threats it poses, that faculty members have inherent reasons for demanding tenure, and these make it possible to recoup the cost of tenure by reducing professorial wages to less than what they would have to be if the professors did not share a need for job security.

Of course, this line of analysis leads to a number of deductions:

- If the work of professors were less specialized, professors would be less inclined to demand tenure.
- As a group of decision makers or a discipline becomes more stable, we would expect faculty to consider tenure less important and to be less willing to forego wages and other fringe benefits to obtain tenure.
- If there is a close to even split on democratic decisions related to employment, merit raises, and even tenure, faculty members will assign more value to tenure, because an evenly split vote may change with slight shifts in the composition of the decision makers.
- The farther below market are the wages of faculty during the probation period and the farther above market are wages after tenure, the more valuable tenure is to faculty members.
- As the diversity within a decision-making unit increases (the more disciplines included with more divergent views on how analyses should be organized and pursued), the demand for tenure will increase.
- Should universities become more constrained in their capacities to fund established faculty positions, tenure may be perceived as even more valuable. Financial exigencies can translate into the loss of faculty positions (with nontenured positions becoming prime targets), so it should not be surprising that faculty will seek with greater diligence to redistribute remaining positions and rents.

> It also means universities will probably have to spend considerable resources seeking to instill academic values—not the least of which will be the pursuit of honest dealings and academic excellence—and this emphasis may cause faculty members to shun the incentive inherent in the political process (especially in large group settings), that is, the tendency to pursue strictly private objectives at the expense of larger university goals.[34]

Why Not Tenure in Firms?

The quick answer to that question is that businesses, unlike universities, typically, are not labor managed. (Those that are like universities should be expected to use some form of tenure.) As noted, in businesses, goals are usually well defined. Perhaps more importantly, success can usually be identified with relative ease by using an agreed-upon measure of success, that is, profit (or the expected profit stream captured in the market prices of traded securities). The owners, who are residual claimants, have an interest in maintaining the firm's focus on profits. Moreover, people who work for businesses tend to have a stake in honest dealing because their decisions on "better" recruits can increase the firm's profits and incomes and job security of all parties.

Admittedly, real-world firms do not always adhere to the process as described. (They use, to a greater or less degree, participatory forms of management, and for some firms profit is not always the sole or highest priority goal.) The point is, however, that in firms there is not as great a need for tenure as exists within academe; employees in businesses do not have the incentive to demand tenure that professors have, primarily because these employees do not experience the problems inherent in democratic management that derive from imprecise and shifting goals and from esoteric and ill-defined research projects. Tenure is seldom found in firms, for the simple reason that in business employers and employees cannot make mutually beneficial trades (similar to those made in tenure arrangements).[35]

Tenure Tournaments

The oft-repeated theme of this analysis is that a faculty member's performance can be judged only in relative terms, and this, combined with the fact that professors' relative abilities are difficult to observe directly, especially in the short term, makes tenure a valuable feature in the employment contracts of faculty members. Self-evaluated ratings of abilities are of questionable value in assessing prospective faculty member because job seekers have a proclivity to define worth egocentrically and to represent their attributes with a bias toward whatever employment and income rewards are available. The graduate school records of new doctorates

provide useful information on which to base judgments of their potential for success as university teachers and researchers. However, such records are of limited worth in instances where a professor's research is at the frontier of knowledge in his/her discipline. Very few graduate students exhibit promise by doing wholly pathbreaking research (because they spend most of their time deciphering the accumulated store of their discipline's knowledge). The correlation between a person's performance as a student, as a prospective professor, as a teacher, and as a researcher is, at best, imperfect. This is exacerbated when comparisons are made among prospective faculty members from different graduate programs.

To induce promising faculty members to accurately assess their abilities and to confess their limits, universities have established what amount to *tournaments*, that is, research and teaching competitions among new faculty members.[36] The competitors know that only some among them will be promoted and retained. Since standards for tenure differ from one university to another, universities offer prospective faculty members an opportunity to, in effect, self-select and go to a university where they think they are likely to make the tenure grade. Weak faculty candidates are likely to avoid universities where they are less likely to achieve tenure because of the probability that they will have to accept wages below market value during the probation period—a loss that amounts to an investment that probably will not be repaid with interest (in terms of wages above market after the probation period and tenure is acquired). Thus, the tenure tournaments can reduce to some extent the costs universities incur in gathering information and making decisions, because they force recruits to be somewhat more honest in their dealings.

Competition for the limited number of "prized positions" often will drive new faculty members to exert a level of effort and produce a level of output that exceeds the value of their current compensation. To induce prospective faculty members to exert the necessary effort to reveal their abilities, universities must offer a "prize" that potential recruits consider worth the effort. That is, the recruits must expect the future reward (discounted) to compensate them for the extra effort they expend in the tournament and for the risk associated with not "winning." One approach universities can use to encourage recruits to exert reasonable effort in the competition is to offer winners the prospect of substantially greater compensation in the future (at least enough to repay the costs of assumed risk and of interest lost on delayed compensation).[37]

Another approach that offers future compensation as an incentive is to increase the security of continued employment and compensation once the tournament has ended and the winners have been determined. The prospects of greater compensation and enhanced job security should be adjusted at the margin to suit the costs and benefits of the employers and employees, as well as the trades they are willing to make. Jobs at the end of the tournament can be made more or less secure, but only if future compensation is adjusted. We would normally expect that the greater the job security, the lower the future compensation, and vice versa.

In the absence of tenure (or some similar device), universities would find it difficult to make a credible commitment that prospective recruits, who make the

necessary competitive investment during the probationary period, will receive an income stream that compensates them for all costs, including the required risks. We have stressed the instability inherent in academic democracies that, by its nature, reduces the credibility of virtually every commitment universities might want to make. Tenure is a practical means universities use to provide a reasonable level of job security—to make a credible commitment—that is, to overcome institutional instabilities and thereby enable them to pick the "best" professors for continued employment.[38] At the same time, tenure is part of a mutually beneficial trade between new professors and their universities, primarily because it is a feature of the employment contract that new self-selected faculty members will demand before they agree to participate actively and honestly (in the sense that they will reveal the limits of their true abilities) in what amounts to a risky and underpaid employment tournament, albeit short-run.

After tenure is awarded, faculty efforts should be expected to decline, while, at the same time, their pay rises. In the midst of the tournament, the new faculty members will exert unduly high amounts of effort, simply because of the prospect of being rewarded in the future by higher pay and greater job security. Also, the rise in compensation and fall in effort that accompany tenure may correlate with the fact that the added money makes it possible for faculty members to buy more of most things, including greater leisure (or leisure-time activities). If we did not expect new faculty members to anticipate relaxing somewhat after attaining tenure and enjoy, to a degree, being "overpaid," we could not expect the tenure tournament to be effective as a means to an end, which is disclosure of the limits of new faculty members' true abilities.[39]

The Abolition of Tenure

If tenure were solely a means of protecting professors from external political and religious forces, its abolition might have few negative consequences, but as here, there are good reasons to believe that the discontinuance of tenure policies would give rise to problems unrecognized by tenure's critics, not the least of which would be higher faculty pay. Given that tenure does provide job security, tenure policies may have generated a more abundant supply of prospective professors than would have come about otherwise. Hence, college and university wages are lower with tenure than they would probably be in its absence. If tenure were a mutually beneficial trade, we would normally expect that abolishing tenure would reduce faculty welfare and increase university costs. Still, admittedly, if tenure's sole purpose were to provide protection from consequential external forces, the abolition of tenure might be a net benefit to universities.

However, protection from external forces is probably the least worthwhile benefit associated with tenure. Hence, without changes in the condition of employment (to be considered below), the abolition of tenure would probably have more serious and perverse consequences than most of its critics imagine. The foregoing

analysis suggests that if tenure were abolished across universities (by, say, a government edict, as was done in the United Kingdom), it would tend to:

- Increase the pay of new, untenured faculty both during and after their normal probation period
- Reduce the willingness of incumbent faculty members to choose superior recruits
- Reduce the inclination of new faculty members to reveal the true limits of their abilities because less intense competition would provide less of an incentive to be seen as a superior recruit (indeed, there would be an incentive to be seen as inferior)
- Reduce the willingness of faculty members to undertake long-term, risky research and teaching projects and, at the same time, increase their willingness to undertake teaching and research projects that maintain and enhance their marketability (so their skills would tend to become less specialized and more general)
- Reduce departmental infighting because there would be less job protection for those who are engaged in predatory behavior, and less reason for faculty members to endure the consequences of others' predation because of the greater tendency to develop less specialized and more market-oriented professional skills
- Decrease the university administrations' reliance on faculty for management decisions because research and teaching would tend to become more routine or standardized and less esoteric and risky

Why Tenure Is Under Attack

The tenure system has probably always been the target of critics who have suggested that the system should be dropped or, at the very least, substantially reformed. Tenure is a flawed system with problems readily apparent to even casual observers of academic life. Recently, however, criticisms appear to be intensifying. Why? The answers are, no doubt, varied, but our analysis suggests several explanations.

First, university life has changed substantially and no longer fits many colleges and universities, but despite the poor fit, those universities and their faculties frequently resist change. Many colleges and universities that have been growing provide routine, somewhat cursory education of questionable value. Many faculty members undertake uninspired research that is of equally questionable value, designed solely to meet the publication requirement necessary for tenure. Many faculty members have moved toward general employment skills that have transferable value in other universities and industries, and they have shifted their research interests toward practical matters with prospective market-based payoffs in the

forms of grants and consultant work. In short, their work no longer warrants protection.

When university employers could mandate retirement, tenure may have been an appropriate contract provision. Mandatory retirement limited the period that universities were obliged to overpay and secure the jobs of professors. Universities can no longer mandate retirement at a fixed age (according to the Age Discrimination Act); thus many faculty members continue to collect overpayments long after the traditional retirement age of sixty-five. An important economic justification for tenure as a practical matter has always been the favorable balance of its apparent costs and benefits. In many (but not all) university settings, the abolition of mandatory retirement may have made tenure, on balance, too costly.[40]

Some universities and their internal decision-making units have grown so large that they can no longer maintain high standards of academic ethics and behavior. They lack the ability to cultivate responsible, cooperative, and nonpredatory behavior with sufficient strength to prevent the abuse of employment projections like tenure by opportunistic faculty members (who may have been attracted into academic life for its economic offerings rather than from purely academic and scholarly interests).[41] The growth in size of universities has impaired the usefulness of shared, university-wide academic standards that guide and unify the managerial decisions of different decision-making units, and it has encouraged the political manipulation of faculty's managerial discretion by individual faculty members and the coalitions they organize. In other words, growth in the size of universities may contribute to a tendency of faculty members to shirk duties and an obligation to behave responsibly that in the past were presumed to attend the granting of tenure.

During the 1960s and 1970s, growth in university enrollments led to an increase in the demand for faculty members, which necessitated increases in salaries and fringe benefits. If tenure had been abolished during those decades, universities would have seen a jump in wage bills that probably would have crippled many expansion plans. Possibly, some foresaw this consequence and used it to curb actions to abolish tenure.

The 1960s and 1970s were also decades of escalating inflation rates, which reduced the cost of tenure to universities, because faculty members could easily be encouraged to leave by denying them nominal pay increases. Since the early 1980s, inflation has greatly moderated, and tenure has, thus, become more costly to universities. Furthermore, faculty members in many disciplines have witnessed a decline in their market demand, which means that the abolition of tenure would not require (in all disciplines) an increase in nominal pay.

Put another way, we should expect the growth in university sizes, reductions in inflation rates, and a softening of the market position of faculty members to undermine faculty job security. We should not also be surprised that the role of tenure in academe into the 2000s and beyond will contract with state budgets, as universities seek to substitute part-time and lower-paid adjunct lecturers whose sole function is to cover classes (and generate student-credit hours for their departments), not to engage in frontier research.

Optimum Tenure

A central point is that tenure is a practical response to the academic institutional settings. Tenure normally is viewed by critics and supporters alike as monolithic, without variation across institutional setting. Such a description hardly matches reality, at least, not as measured by the *degree* of job security. Faculty members can be more or less secure, depending on a host of circumstances, not the least of which is the extent of administrative discretion and veto power over faculty decisions, the legal cost of pursuing faculty dismissal cases, the rate of inflation, the financial resources of different universities, and the fixity of the anticipated lifetime (or career-time) pay scale once tenure is awarded.

Variations in the degree of job security that tenure represents should be expected, given the practical interests of professors and administrators to pursue their interests in cost-effective manners and to make mutually beneficial trades under differing circumstances. For each institutional setting, there is some optimum tenure, and that optimum should be expected to vary over time with changing circumstances. We should expect the changes in tenure to occur with some delay, mainly because tenure is, inherently, a provision of a contract intended to be binding, a commitment designed to increase faculty members' ability to predict the future. If tenure were altered with every passing condition, its value would be diminished for both professors and their universities.

Recognizing that tenure is intended to promote honest dealing among faculty, Simon proposes that universities substitute renewable, fixed-term contracts for faculty.[42] That is, instead of tenure with or without an established cutoff point, faculty members would, after their probationary period, be awarded a contract of 10 years that would be renewed with a satisfactory review. The reform probably has merit, but not likely for all universities. The efficacy of the proposal depends, as argued above, on the exact nature of the university setting and what professors do. Universities that wish to encourage highly risky and uncertain research in esoteric and specialized areas may find a ten-year contract too short, primarily because the faculty members would be willing to concede more in wages to have a longer contract than their universities must incur in the way of costs.

Concluding Comments

Tenure is a contract provision that faculty members prize, universities provide, and just about everyone else criticizes. Nonetheless, tenure survives, mainly because faculty members aggressively demand it (even those who believe strongly in the value of markets) and because universities voluntarily negotiate it. Tenure's long-term survival and the competitiveness of university labor markets suggest that the trade is mutually beneficial.

The critics of tenure may be right—for some college and university settings, which we have identified. Tenure has good and bad features, costs and benefits, and the costs may often outweigh the benefits; however, the nature of academic work in many of the nation's universities requires considerable reliance on labor-management decisions, a condition that suggests tenure survives for a very good reason: the problems tenure creates are far less costly than the decision-making problems tenure solves. Therein lies the extent of the defense of tenure marshaled here.

Clearly, some universities might want to abolish tenure, especially when and where faculty members no longer narrowly specialize in esoteric, difficult-to-evaluate research and teaching in areas that are tolerably stable. Other colleges and universities will see a net loss in removing tenure. Clearly, an across-the-board move to abolish tenure would deny a striking characteristic of academic employment settings: substantial differences exist in what faculty members are called upon to research and teach. Similarly, maintaining tenure without regard to what faculty members do would probably be as inefficient as total abolition.

Part VI
The New World of Contrarian Economics

Economics has a core theory that is enshrined in all textbooks. But the discipline has gradually improved over the last two centuries as "contrarian economists" have dared to question the accepted wisdom of their time. In this section, we review key challenges to the conventional economic paradigm, which have become "received wisdom," or are in the process of being adopted as such. We start with a key interest of the authors—public choice economics—which a half century ago many in the profession dismissed, but has since yielded so many valuable insights that it is has won wide acceptance into the corpus of economic theory. We end with an introduction of the emerging "behavioral economics" that has challenged the validity and utility of a key premise of conventional microeconomic analysis, *rational behavior*. Behavioral economists argue that, contrary to conventional economic wisdom, people are so irrational that they are "predictably irrational." Although we see problems with the behavioral approach (outlined in a chapter in this section), we do have to concede that many practicing economists have already begun to treat behavioral economics as conventional economic wisdom. Along the way, we also take a contrarian look at conventional monopoly theory. We also take up the economics of a very controversial issue, why women on average earn less than men, and likely always will, and for reasons outside any personal preferences we might or might not have. Our critical concern in these matters is how economic analysis can shed light on the controversies that others might think are nothing more than matters of preference.

Chapter 22
Public Choice Economics

I have no fear, but that the result of our experiment will be, that men may be trusted to govern themselves without a master. Could the contrary be proved, I should conclude, either that there is no God, or that he is a malevolent being.

Thomas Jefferson

Previous chapters have been concerned with people's behaviors in private spheres. When government was considered, it was always in terms of the consequences of policies that had already been adopted (for example, price controls). We have said little about how government policies are determined or why government may prefer one policy to another.

In this chapter, we shift our focus to the functioning of government itself. Using economic principles, we examine the process through which government decisions are made and carried out in a two-party democratic system, and we consider that system's consequences. Today, when government production accounts for a substantial portion of the nation's goods and services, no student of economics and business can afford to ignore these issues.

Before the 1950s, economists spent little time applying their tools of analysis and modes of thinking to politics. It was not uncommon for scholars in the social sciences, economics included, to view people in the private sphere to be motivated by their "private interests." And those in the public spheres, politicians and government bureaucrats, for example, to be motivated by grader "public interests" or "common interests." People in the private sphere sought improvement in their private welfare; people in the public sphere sought improvement in "social welfare" (or the "collective welfare," however defined, maybe by "the greatest value of the greatest number"). Beginning in the 1950s, a small disparate band of contrarian economists—including Anthony Downs, James Buchanan, Gary Becker, and (one of your coauthors) Gordon Tullock—dared to postulate that people in both the private and public spheres are necessarily drawn from the same human race and are therefore likely to be largely motivated similarly, by their own interests (however they define them). These economists then developed a "calculus" or "logic" of collective actions. For one or two decades, these economic contrarians were

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_22, © Springer-Verlag Berlin Heidelberg 2012

dismissed, or just ignored, because their analysis was so at odds with conventional wisdom and, as some thought, demeaned "public service." But the contrarians persisted and overwhelmed their critics with insightful conclusions relating to how politics and bureaucracy actually worked, as distinct from how social scientists might want it to work. This chapter summarizes some of the key arguments that so-dubbed "public choice economists" have devised over the past half century, which has yielded a Noble Prize for James Buchanan.

We can all appreciate the value of democracy, but our admiration for democracy should not blind us to explanations for how the process is likely to work—and fail to work. In this limited space, we will concentrate on the problems of government processes, both democratic and bureaucratic. We hope you will understand that we believe that democracy—even with all of its problems—can still be superior to the next best governmental forms, for example, dictatorships and theocracies.

The Central Tendency of a Two-Party System

In a two-party democratic system, politicians tend to talk up their political differences, but elected officials typically take middle-of-the road positions. Winning candidates tend to represent the moderate views of many voters who are neither strongly liberal nor strongly conservative. For this reason, there is often not a lot of difference between Republican and Democratic candidates. Even when the major parties' candidates differ strongly, as Barack Obama and John McCain did at the start of their 2008 presidential campaign, they tend to move closer together as the campaign progresses. Why is this?

Candidates have a political incentive to move close to the position of their opposition, which is illustrated in Fig. 22.1. The bell-shaped curve shows the

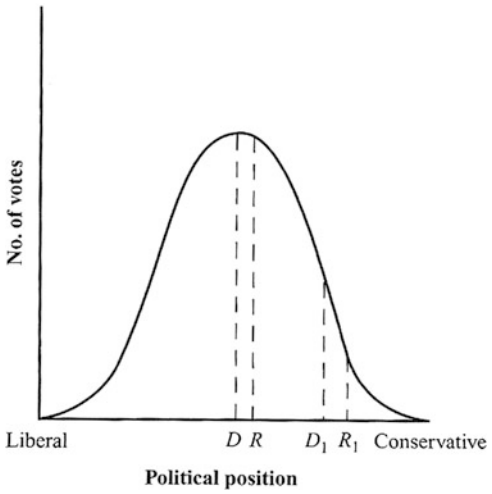

Fig. 22.1 The political spectrum

approximate distribution of voters along the political spectrum from very liberal to very conservative. A few voters have views that place them in the "wings" of the distribution, but most cluster near the center. Assuming that citizens will vote for the candidate who most closely approximates their own political position, a politician who wants to win the election will not choose a position in the "wings" of the distribution.

Suppose, for instance, that the Republican candidate chooses a position at R_1. The Democratic candidate can easily win the election by taking a position slightly to the left, at D_1. Although the Republican will take all the votes to the right of R_1 and roughly half the votes between R_1 and D_1, the Democrat will take all the votes to the left. Clearly, the Democrat will win an overwhelming majority.

The smart politician will, therefore, choose a position near the middle. Then the opposing candidate must also move to the middle, or accept certain defeat. Suppose, for instance, that the Republican candidate chooses position R, but the Democrat remains at D_1. The Republican will take all the votes to the left of R and roughly half the votes between R and D_1. She will have more than the simple majority needed to beat her Democratic opponent. In short, both candidates will improve their vote total by moving toward the middle of the distribution. Does this mean that both candidates will end up at the same point—exactly in the middle of the distribution? Probably not.

Politicians can misinterpret the political climate. Even with polls, no one can be certain of the distribution of votes before an election. Just as producers find the optimum production level through trial and error, so might politicians suffer several defeats before finding the true center of public opinion. Inevitably, however, political competition will drive them toward the middle of the distribution, where the *median voter* group resides, with the median voter being the person in the exact middle of the political distribution.

The history of presidential elections illustrates how politicians play to the views of the median voter. After an election in which the successful candidate won by a wide margin, the losing party moved toward the position of the winning party. After Barry Goldwater lost by a wide margin to Lyndon Johnson in 1964, the Republican Party made a deliberate effort to pick a more moderate candidate. As a result, the contest between Richard Nixon and Hubert Humphrey in 1968 was practically a dead heat. After the far-left George McGovern was defeated in a landslide by Richard Nixon in 1972, Democrats realized they, too, needed a less extreme candidate. Their choices in 1976 and 1984, Jimmy Carter and Walter Mondale, were more moderate. After Ronald Reagan soundly defeated Jimmy Carter and Walter Mondale and George H. W. Bush beat Michael Dukakis in 1988, the Democrats began what appeared to be a move back toward the center, picking Bill Clinton, a centrist candidate whose policies, in many ways, were more conservative than those of Bush or his son, President George W. Bush.

Ronald Reagan's two victories may seem at variance with the median voter result because most of his positions were considered to be well to the right. Reagan's success could represent another reason why both presidential candidates do not end up in the same position: politicians can influence public opinion as well

as simply respond to it. Reagan was known as "The Great Communicator," and he was no doubt able to pull the median voter in his direction. But it was also probably true that world and domestic events were causing public opinion to shift in a more conservative direction, and Reagan was better positioned politically to take advantage of that shift. Barack Obama started his first term with an aggressive political, economic, and social agenda, as he sought to prevent the economy from tanking with the collapse of the housing and financial markets and to make the federal government more socially active. When he took a political "shellacking" (Obama's desription of the outcome of the mid-term election of 2010), he cooled his political jets and took actions to move toward the center, including advocating modest federal expenditure cuts in early 2011.

The Economics of the Voting Rule

So far, we have been assuming that a winning candidate must receive more than 50 percent of the vote. Although most issues that confront civic bodies are determined by simple-majority rule, not all collective decisions are made on that basis, nor should they be. Some decisions are too trivial for group consideration. The cost of a bad decision is so small that it is uneconomical to put the question up for debate. Other decisions are too important to be decided by a simple majority. Richard Nixon was elected president with only 43 percent of the popular vote in 1968 (a third-party candidate, George Wallace, took almost 14 percent), but Nixon's impeachment would have required more than a majority of the Senate and the House of Representatives. In murder cases, juries are required to reach unanimous agreement. In such instances, the cost of a misguided decision is high enough to justify the extra time and trouble required to achieve more than a simple majority.

The voting rule that government follows helps to determine the size and scope of government activities. If only a few people need to agree on budgetary proposals, for example, the effect can be to foster "big government." Under such an arrangement, small groups can easily pass their proposals, expanding the scope of government activity each time they do so. However, government will implement very few proposals under a voting rule that requires unanimous agreement—a unanimity rule—because there are very few issues on which everyone can agree, particularly when many people are involved.

Small groups of voters also can exploit a unanimity rule. If everyone's vote is critically important, as it is with a unanimous voting rule, then everyone is in a strategic bargaining position. Anyone can threaten to veto the proposed legislation unless she is given special treatment. Such tactics increase the cost of decision making.

Government represents the people's collective interest, but the type of voting rule used determines the particular interests represented and the extent to which they are represented.

Problems of Democracy

As a form of government, democracy has some important advantages. It disperses the power of decision making among a large number of people, reducing the influence of individual whim and personal interest, and thus providing some protection for individual liberties. Democracy also gives political candidates an incentive to seek out and represent a broad sector of public opinion and interests. Competition for votes forces candidates to reveal what they are willing to do for various interest groups. As does any system, however, including the market system, the democratic system has some drawbacks as well. In particular, democracy is less than efficient as a producer of some goods and services.

The fact that the democratic form of government is inefficient in some respects does not mean that we should replace it with another decision-making process, any more than we should replace the market system, which is also less than perfectly efficient. Instead, we must measure the costs of one type of production against the other, and choose the more efficient means of production in each particular case. We must weigh the cost of externalities in the private market against the cost of inefficiencies in the public sector. Neither system is perfect, so we must choose carefully between them.

Median Voter Preferences

When you buy a good such as ice cream in the marketplace, you can decide how much you want. You can adjust the quantity you consume to your individual preferences and your ability to pay. If you join with your neighbors to purchase some public service, however, you must accept whatever quantity of service the collective decision-making process yields. How much of a public good government buys depends not only on citizens' preferences but also on the voting rule that is used.

Consider police protection, for instance. Perhaps you would prefer to pay higher taxes in return for a larger police force and lower crime rate. Your neighbors might prefer a lower tax rate, a smaller police force, and a higher crime rate, but public goods must be purchased collectively, no matter how the government is organized. If preferences differ, you cannot each have your own way. Under a democracy, the preferences of the median voter group will tend to determine the types and quantities of public goods produced. If you are not a member of that group, the compromise that is necessary to a democracy inflicts a cost on you. You probably will not receive the amount of police protection you want.

The Simple-Majority Voting Rule

Any decision that is made less than unanimously can benefit some people at the expense of others. Because government expenses are shared by all taxpayers, the

majority that votes for a project imposes an external cost on the minority that votes against it. Consider a democratic community composed of only five people, each of whom would benefit to some degree from a proposed public park. If the cost of the park, $500, is divided evenly among the five, each will pay a tax of $100. The costs and benefits to each taxpayer are shown in Table 22.1. Because the total benefits of the project ($550) exceed its total cost ($500), the measure will pass by a vote of three to two, but the majority of three imposes net costs of $50 and $75 on taxpayers *D* and *E*.

When total benefits exceed total costs, as in this example, decision by majority rule is fairly easy to live with. The vote on the next cost-effective project may favor *D* and *E*. But projects can easily pass even though their cost exceeds benefits. Table 22.2 illustrates such a situation. Again, the $500 cost of a proposed park is shared equally by five people. Total benefits are only $430, but again they are unevenly distributed. Taxpayers *A*, *B*, and *C* each receive benefits that outweigh a $100 tax cost. Thus, *A*, *B*, and *C* will pass the project, even though it cannot be justified on economic grounds.

Many different measures, each of whose costs exceed its benefits, could conceivably be passed by separate votes. If all the measures were considered together, however, the package will more likely be defeated. Consider the costs and benefits of three proposed projects—a park, a road, and a school—shown in Table 22.3. If the park is put to a vote by itself, it will receive the majority support from *A*, *B*, and *C*. Similarly, the road will pass with the support of *A*, *C*, and *E*, and the school will pass with the support of *C*, *D*, and *E*. If all three projects are considered together,

Table 22.1 Costs and benefits of a public park for five people, case I

Individuals (1)	Dollar value of benefits to each person (2) ($)	Tax levied on each person (3) ($)	Net benefit (+) or net cost (−) ((2)–(3)) (4) ($)	Vote for or against (5)
A	200	100	+100	For
B	150	100	+50	For
C	125	100	+25	For
D	50	100	−50	Against
E	25	100	−75	Against
Total	550	500		

Table 22.2 Costs and benefits of a public park, case II

Individuals (1)	Dollar value of benefits to each person (2) ($)	Tax levied on each person (3) ($)	Net benefit (+) or net cost (−) ((2)–(3)) (4) ($)	Vote for or against (5)
A	140	100	+40	For
B	130	100	+30	For
C	110	100	+10	For
D	50	100	−50	Against
E	0	100	−100	Against
Total	430	500		

Table 22.3 Costs and benefits of a public park for five people, case III

Individuals	Park (1)			Road (2)			School (3)			Total, 3 Projects (4)		
	Benefit ($)	Cost ($)	Vote	Benefit ($)	Cost ($)	Vote	Benefit ($)	Cost ($)	Vote	Benefit ($)	Cost ($)	Vote
A	120	100	For	250	200	For	50	400	Against	420	700	Against
B	120	100	For	50	200	Against	50	400	Against	220	700	Against
C	120	100	For	250	200	For	500	400	For	870	700	For
D	50	100	Against	50	200	Against	500	400	For	600	700	Against
E	50	100	Against	250	200	For	500	400	For	800	700	For
Total	460	500		850	1,000		1,600	2,000		2,910	3,500	

however, they will be defeated. Voters *A*, *B*, and *D* will reject the package (see column (4)).

Many, if not most, measures that come up for a vote in a democratic government benefit society more than they burden it. Moreover, voters in the minority camp can use "logrolling" (vote trading) to defeat some projects that might otherwise pass. For instance, referring to Table 22.3, voter A can agree to vote against the park if voter *D* will vote against the school. Our purpose here is simply to demonstrate that, in some (not all) instances, the democratic process can be less than cost-efficient.

Political Ignorance

In some ways, the lack of an informed citizenry is the most severe problem in a democratic system. The typical voter is not well informed about political issues and candidates because being well-informed politically is not worth much to the average person.

A simple experiment will illustrate this point. Ask everyone in your class to write down the name of his or her congressional representative. Then ask them for the name of the opposing candidate in the last election. You may be surprised by the results. In one survey, college juniors and seniors, most of whom had taken several courses in economics, political science, and sociology, were asked how their U.S. senators had voted on some major bills. The students scored no better than they would have done by guessing.[1] In the 1980s, 70 percent could not name any congressional candidate in their district in the middle of the election campaign.[2] In the United States, most voters do not even know which party controls Congress and public opinion polls indicate that most voters greatly underestimate the cost of programs such as Social Security.[3] In 2000, one week before the Republican convention, a survey group of voters found that 75 percent of Americans did not know when the convention would be held; 25 percent could not name their governor; 50 percent could not name their congressional representative Goldberg[4]. When it comes to knowing about (much less understanding the consequences of) current government policies, the political ignorance of Americans is stark, including the following illustrative observations from taken from polls conducted in the early 2000s:

- Seventy percent of Americans interviewed did not know that Congress and the President had provided a substantial prescription drug benefit to the Medicare program for the elderly.[5]
- Sixty percent of survey respondents did not know that the then recent rapid growth of the federal deficit was in a major way attributable to the large increase in federal spending (not just to George W. Bush's tax rate reductions).[6]
- In 2004, 62 percent of respondents did not know that Social Security was one of the two largest expenditure categories in the federal budget (Princeton Survey Research Associates 2004). Some 43 percent did not know that defense spending was the other largest federal budget category.[7]

If voters were better informed on legislative proposals and their implications, government might make better decisions. In that sense, political information is a public good that benefits everyone. Nevertheless, as we have seen before, in large groups people have little incentive to contribute anything toward the production of a public good. Their individual contributions simply have little effect on the outcome, and each can hope to free-ride off the contribution of others.

The result is that they often cast their votes on the basis of impressions received from newspaper headlines or television commercials—impressions carefully created by advertisers and press secretaries.

Special Interests

The problem of political ignorance is especially acute when the benefits of government programs are spread more or less evenly, so that the benefit to each person is relatively small. Benefits are not always spread evenly: subgroups of voters—farmers, labor unions, or government workers—often receive more than their proportional share. Members of such groups thus have a special incentive to acquire information on the legislative proposals that affect them. Farmers can be expected to know more about farm programs than will the average voter. Government workers will keep abreast of proposed pay increases and fringe benefits for themselves, and defense contractors will take a strong interest in the military budget.

Congressional representatives, knowing that special-interest groups are watching them, will tend to cater to these groups' wishes. As a result, government programs will be designed to serve the interest of groups with political clout, not the public as a whole. This is especially true when voters in general are "politically ignorant."

Rent Seeking

As long as there are monopoly rents to be garnered from market-entry restrictions or there is a payoff from government subsidies, political entrepreneurs can be expected to compete for the rents through *lobbying* (for example, providing political decision makers with lavish dinners and junkets to exotic locations for "working vacations"), campaign contributions, and outright bribes.[8] Rent seekers can be expected to assess their rent seeking expenditures as investments, ensuring as best they can that the rates of return on such investments are no less than their investments on other business ventures.

In the process of seeking rents through government protections and subsidies, the rent seekers can collectively devote more valuable resources to rent seeking than the expected rent is worth. In such case, the inefficiency of monopoly is greater than the inefficiency or dead-weight-loss triangle identified in monopoly

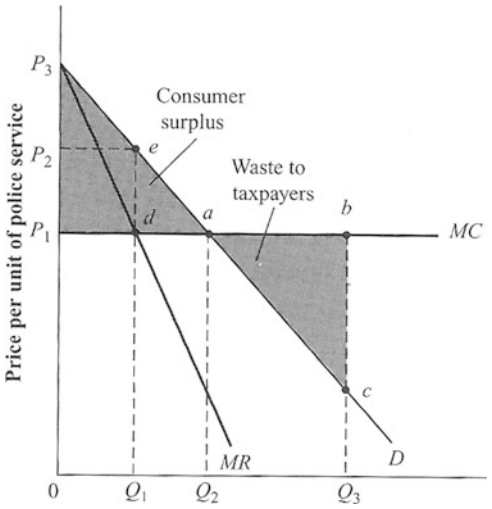

Fig. 22.2 Bureaucratic profit maximization

graphs conventionally drawn, as is done in Figure 22.2. The net welfare loss from monopoly (or a subsidy) can, at the limit, include that dead-weight-loss triangle (abc) plus the profit rectangle (PcPmac).[9]

Rent seeking is epitomized by the various individual companies and business trade associations in the capitals of the world, whose lobbyists are constantly knocking on the doors of key politicians, but rent seeking is not restricted to private businesses. Universities in the United States have since the 1980s learned that they also can engage in rent seeking, lobbying for so-called federal "legislative earmarks," or special appropriations for university projects (buildings and curriculum development) that are attached to (and buried in) budget bills. In fiscal year 2003, the *Chronicle of Higher Education* found that 716 U.S. colleges and universities benefited from 1,964 "legislative earmarks" worth $2 billion.[10] Economists from UCLA and the University of Toronto found that a $1 increase in lobbying expenditures can be expected to lead to $1.56 increase in "earmarks." However, for those universities who have a member of Congress on either the House or Senate Appropriation Committee, a $1 increase in lobbying leads to a $4.50 increase in "earmarks." As a result, universities' fortunes rise and fall with changes in the membership of these committees.[11]

Cyclical Majorities

In their personal lives, most people tend to act consistently on the basis of rational goals. If an individual prefers good *A* to good *B*, and good *B* to good *C*, the rational individual will repeatedly choose *A* over *C*. Collective decisions made by majority rule are not always so consistent. Consider a community of three people (I–III), whose preferences for goods *A*, *B*, and *C* are as in Table 22.4.

Table 22.4 Collective preference orderings for voters

Individual	Order of preference (ranked from high to low)
I	*A*, *B*, *C*
II	*B*, *C*, *A*
III	*C*, *A*, *B*

Suppose these three voters are presented with a choice between successive pairs of goods, *A*, *B*, and *C*. If the choice is between good *A* and good *B*, which will be preferred collectively? The answer is *A*, because individuals I and III both prefer *A* to *B*. If *B* is pitted against *C*, which will be preferred? The answer is *B*, because individuals I and II both prefer *B* to *C*. Because the group prefers *A* to *B* and *B* to *C*, one might think it would prefer *A* to *C*, but note that if *A* and *C* are put up to a vote, *C* will win since both II and III prefer *C* to *A*. A cyclical, or revolving, majority has developed in this group situation. This phenomenon can lead to continual changes in policy in a government based on collective decision making and has been called the "paradox of voting," or the "Arrow paradox" (after Kenneth Arrow, who first made the demonstration in 1951).[12]

Although there is no stable majority, the individuals involved are not acting irrationally. People with perfectly consistent personal preferences can make inconsistent collective choices when acting as a group. Fortunately, the larger the number of voters and issues at stake, the less likely a cyclical majority will develop. Still, citizens of a democratic state should recognize that the political process may generate a series of inconsistent, or even contradictory, policies.

The Economics and Politics of Business Regulation

Name an industry that has not, in some way, been under the authority of a government regulatory agency at some time. At the start of the twentieth century, such a task would have been relatively simple; but today, with government extending its activities in all directions, it is not. Almost every economic activity either is or has been subject to some type of regulation at one stage or another. The list of federal regulatory agencies virtually spans the alphabet—FAA, FDA, FEA, FPC, FRS, FTC, ICC, NTHSA, OSHA, SEC—to say nothing of the various state utilities commissions, licensing boards, health departments, and consumer protection agencies. As a result, it is much easier to list regulated industries than to name an unregulated one. Air transport, telephone service, trucking, natural gas, electricity, water and sewage systems, stock brokering, health care, taxi services, massage parlors, pharmacies, postal services, television and radio broadcasting, toy manufacturing, beauty shops, ocean transport, legal advice, slaughtering, medicine, embalming and funeral services, optometry, oyster fishing, banking, and insurance—all are regulated. In the 1960s and 1970s especially, regulation was one of the nation's largest growth industries (although there was something of a

"recession" in regulations in the 1980s). Why have people been willing to substitute the visible foot of government for the invisible hand of competition?

Explaining regulation—why and how it happens—is a major challenge to economists. Although several insightful theories have been proposed, statistical tests of those theories are incomplete and are at times based on crude data. Current theories cannot explain some instances of regulation or changes in regulatory policy. At best, we can review only the two major lines of explanation for the existence of so much regulation—the public interest theory and the economic theory of regulation.

The Public Interest Theory of Regulation

Much of our discussion of government involvement in the economy has been organized around discussions of how regulation can improve market efficiency. As conventional in economics, *externalities*—external costs and benefits—can cause market inefficiencies and how tax or regulatory regimes can increase the efficiency of markets (for more details on the argument, see a textbook written by one of the authors[13]). For example, shock-absorbing bumpers benefit not only the person who buys a car but also those who may be involved in a collision with the buyer. If John's car collides with Mary's, which is protected by shock-absorbing bumpers, John's car may sustain less damage than it would have otherwise, without Mary's having paid for the protection. He free-rides on Mary's purchase. Because of the externality, the quantity of shock-absorbing bumpers purchased in an unregulated market will fall short of the economic optimum. Hence, the need for regulation of safety equipment such as shock-absorbing bumpers, headlights, and mud flaps on trucks to prevent rocks from being propelled through windshields.

All economics textbooks stress the extent to which monopolies can generate inefficiency in the allocation of resources by the monopolist's restriction on production. Hence, regulation can, conceptually, improve market efficiency by forcing monopolies to expand output. However, the *net* improvement in welfare depends on the cost of the regulation. We noted earlier how production and price controls can enhance consumer welfare. If regulation is truly to serve the public interest, it must increase the efficiency of the entire social system: that is, regulations benefits (through greater output of monopolies) must exceed its costs (incurred because of the development and maintenance of the regulatory bureaucracies).

Too often, the net benefits of regulation are overestimated because of the failure to consider its costs, which were estimated to be $843 billion in the United States in 2000 Crain and Hopkins[14]. And, all too often, regulation seems to serve the interest of the regulated industry, not the broader "public interest," which is why economists began several decades ago to become skeptical of the public interest theory of regulation, in favor of an industry-centered view. Instead of seeing regulation as something thrust on firms, economists began to view it as a government-provided service frequently sought by those who are regulated.

The Supply and Demand for Regulation

Beginning in the 1960s, many economists began to see regulation as a product of the supply of and demand for politically provided benefits Stigler and Breyer[15]. Government is seen as a supplier of regulatory services to industry. Such services can include price fixing, restrictions on market entry, subsidies, and even suppression of substitute goods (or promotion of complementary goods). For example, regulation enabled commercial television stations to get the Federal Communication Commission (FCC) to delay the introduction of cable television.

These regulatory services are not free; they are offered to industries willing to pay for them. In the political world, the price of regulatory services may be campaign contributions or lucrative consulting jobs, or votes and volunteer work for political campaigns. Regulators and politicians allocate the benefits among all the various private interest groups so as to equate political support and opposition at the margin.

Firms demand regulation that serves their private interest. As we have seen, forming a cartel in a free market can be difficult, both because new firms may enter the market and because colluders tend to cheat on cartel agreements. The cost of reaching and enforcing a collusive agreement can be so high that government regulation is attractive by comparison.

The view that certain forms of regulation emerge from the interaction of government suppliers and industry demanders seems to square with much historical evidence. As Richard Posner has observed:

> The railroads supported the enactment of the first Interstate Commerce Act, which was designed to prevent railroads from price discrimination because discrimination was undermining the railroad's cartels. American Telephone and Telegraph pressed for state regulation of telephone service because it wanted to end competition among telephone companies. Truckers and airlines supported extension of common carrier regulation to their industries because they considered unregulated competition excessive.[16]

Barbers, beauticians, lawyers, and other specialists have all sought government licensing, which is a form of regulation. Farmers have backed moves to regulate the supply of the commodities they produce. Whenever deregulation is proposed, the industry in question almost always opposes the proposal. Gasoline retailers in North Carolina (and a dozen other states) got a state statute passed that restricts gas stations from selling gasoline below their "wholesale price" (except for ten days during the grand opening of a new station). Through the threat and actuality of lawsuits by mom-and-pop gas stations, the law obviously places a lower bound on price competition and restrains the creative efforts of convenience stores from using gasoline pricing as a means of bringing in customers who buy higher-margin nongasoline products on their refueling stops.[17]

To the extent that regulation benefits all regulated firms, whether or not they have contributed to the cost of procuring it, industries may consider regulation a public good. This creates a free-rider problem, which occurs when people can enjoy the benefits of a scarce good or service without paying directly for it by pretending not to want it. Some firms will try to free-ride on others' efforts to secure regulation. If all firms free-ride, however, the collective benefits of regulation will be lost.

The free-rider phenomenon is particularly noticeable in large groups, whose cost of organizing for collective action can be substantial. Someone must bear the initial cost of organization. Yet because the benefits of organization are spread more or less evenly over the group, the party that initiates the organization may incur costs greater than the benefits it receives. Thus, collective action may not be taken. Free-riding may explain why some large groups, such as secretaries, have not yet secured government protection. Everyone may be waiting for everyone else to act. Small groups may have much greater success because of their proportionally smaller organizational costs and larger individual benefits. Perhaps, it was because only a few railroad companies existed in the 1880s that they were able to lobby successfully for the formation of the ICC.

There are some exceptions to this rule. Several reasonably large groups, including truckers and farmers, have secured a high degree of government regulation, whereas many highly concentrated groups, such as the electrical appliance industry, have not. In highly concentrated industries, it may be less costly to develop private cartels than to organize to secure government regulation. In industries composed of many firms, on the other hand, any one firm's share of the cost of securing regulation may be smaller than its share of the costs of establishing and enforcing a private cartel. Large groups also control more sizable voting blocks than do small groups. Large groups may have the advantage of established trade associations, whose help can be enlisted in pushing for protective legislation.[18]

In broad terms, the economic theory of regulation explains much about government policy—but that is one of its weaknesses. The theory is so broad that its usefulness as a predictor is limited. It does not enable economists to forecast which industries are likely to seek or achieve government regulation. Nor does it explain the political movement to deregulate the trucking and banking industries, or to regulate the environment. Neither of these trends appears to meet directly the demand of any particular business interest group. In general, any self-interested group will be better represented the larger its interest in the outcome, the smaller its size, the more homogenous its position and objectives, and the more certain the outcome.

The Efficiency from Competition Among Governments

In the private sector, competition among producers keeps prices down and productivity up. A producer who is just one of many knows that any independent attempt to raise prices or lower quality will fail. Customers will switch to other products or buy from other producers, and sales will fall sharply. To avoid being undersold, therefore, the individual producer must strive continually to keep its production cost as low, or lower, than other producers striving to do the same. Only a producer who has no competition—that is, a monopolist—can hope to raise the price of a product without fear of losing profits.

These points apply to the public as well as the private sector. The framers of the Constitution, in fact, bore them in mind when they set up the federal government. Recognizing the benefits of competition, they established a system of competing state governments loosely joined in federation. As James Madison described in the Federalist Papers, "In a single republic, all the power surrendered by the people is submitted to the administration of a single government: and the usurpations are guarded against by a division of the government into distinct and separate departments" Hamilton, Jay, and Madison[19].

Under the federal system, the power of local governments is checked not just by citizens' ability to vote but also by their ability to move somewhere else. If a city government raises its taxes or lowers the quality of its services, residents can go elsewhere, taking with them part of the city's tax base. Of course, many people are reluctant to move, and so government has a measure of market power, but competition among governments affords at least some protection against the abuses of that power. It does not take many people and businesses to move out of a political jurisdiction to send a strong signal to the political authorities that they have to be more competitive.

Local competition in government has its drawbacks. Just as in private industry, large governments can realize economies of scale in the production of services. Garbage, road, and sewage service can, up to a point, be provided at a lower cost on a larger scale. For this reason, it is frequently argued that local governments, especially in metropolitan areas, should consolidate. Moreover, many of the benefits offered by local governments spill over into surrounding areas. For example, people who live just outside San Francisco may benefit from its services without helping pay for them. One large metropolitan government, including both city and suburbs, could spread the tax burden over all those who benefit from city services.

Consolidation can be a mixed blessing, however, if it reduces competition among governments. A large government restricts the number and variety of alternatives open to citizens and increases the cost of moving to another locale by increasing the geographical size of its jurisdiction. Consolidation, in other words, can increase the government's monopoly power. As long as politicians and government employees pursue only the public interest, no harm may be done. But the people who run government have interests of their own. So the potential for achieving greater efficiency through consolidation could easily be lost in bureaucratic expansion and red tape. Studies of consolidation in government are inconclusive, but it seems clear that consolidation proposals should be examined carefully.

The Economics of Government Bureaucracy

Bureaucracy is not limited to government. Large corporations such as General Motors and Walmart employ more people than do the governments of some nations. They are bigger than the major departments of the federal government, although no company, of course, is as large as the federal government as a whole. Yet corporate bureaucracy tends to work more efficiently than government

bureaucracy. The reason may lie in the fact that firms pursue one simple objective—profit—that can be easily measured in dollars and cents. Governments have a multiplicity of often ill-defined objectives.

Certainly the reason cannot be that stockholders are better informed than voters. Most stockholders are rationally ignorant of their companies' doings, for the same reason that voters are rationally ignorant of government policy—the personal cost of becoming informed outweighs the personal benefits. Even in very large corporations, however, some individuals hold enough stock to make the acquisition of information a rational act. Often, such stockholders sit on the company's board of directors, where their interest in increasing the value of their own shares makes them good representatives of the rest of the stockholders. The crucial point is that this informed stockholder has one relatively simple objective—profit—and can find out relatively easily whether the corporation is meeting it. The voter, on the other hand, has a complicated set of objectives and must do considerable digging to find out whether the objectives are being met.

Because most corporations face competition, the stockholder's drive toward profit is reinforced. General Motors knows that its customers may switch to Toyota if it offers them a better deal. In fact, stockholders can sell their General Motors stock and buy stock in Toyota. Corporate executives thus have a strong incentive to make decisions on the basis of the consumer's well-being, not because they wish to serve the public good, but because they want to make money.

Government bureaucracies, however, tend to produce public goods and services for which there is no competition. No built-in efficiencies guard the taxpayer's interests in a government bureaucracy. Both government bureaucrats and corporate executives base their decisions on their own interests, not those of society, but competition ensures that the interests of corporate decision makers coincide with those of consumers. No such safeguards govern the operations of government bureaucracies. Bureaucracies are constrained by political, as opposed to market, forces.

From the economist's point of view, one of the advantages of the profit maximizing goal of competitive business is that it enables predictions. Although some businesspeople pursue other goals—personal income, power, respect in the business—their behavior can generally be explained quite well in terms of a single objective—profit. No single goal such as profit drives the government bureaucracy. Different bureaucracies pursue different objectives. We do not have time or space to consider all the possible objectives of bureaucracy, but we touch on two: monopolistic profit maximization and size maximization.

Profit Maximization

Assume that police protection can be produced at a constant marginal cost, as shown by the horizontal marginal cost curve in Figure 22.3. The demand for police protection is shown by the downward sloping demand curve D. If individuals could

purchase police service competitively at a constant price of P_1, the optimum amount of police service would be Q_2, the amount at which the marginal cost of the last unit of police service equals its marginal benefit. The total cost would be $P_1 \times Q_2$ (or the area $0P_1aQ_2$), leaving a consumer surplus equal to the triangular area P_1P_3a. Notice that the police realize no economic profit in this case.

Regional monopolies, however, usually deliver police protection; that is, one organization supplies all police services in an area. These regional monopolies have their own goals and their own decision-making process, which do not necessarily match those of the individual taxpayers. If police service must be purchased from such a profit maximizing monopoly, service will be produced to the point at which the marginal cost of the last unit produced equals its marginal revenue: Q_1. The monopolist will set that quantity above cost at price P_2, making a profit equal to the rectangular area P_1P_2ed.

At the monopolized production level, there is still some surplus—the triangular area P_2P_3e—left for consumers, but they are worse off than under competitive market conditions. They get less police protection (Q_1 instead of Q_2) for a higher price (P_2 instead of P_1).

This analysis presumes that the police are capable of concealing their costs. If taxpayers know that P_2 is an unnecessarily high price, the outcome might be the same as that under competition. They might force the police to produce Q_2 protection for a price of P_1. But then governments may simply allow their costs to rise. Not having other sources of supply on which to compare costs, taxpayers may not know that costs are inflated and, hence, that the efficient output level is Q_2.

Size Maximization

In fact, a government bureaucracy is unlikely to take profit as its overriding objective, if only because bureaucrats do not get to pocket the profit. Instead, government monopolies may try to maximize the size of their operations, because if a bureaucracy expands those who work for it will have more chance of promotion, their power, influence, and public standing will improve, and they will likely get nicer offices and better equipment.

What level of protection will a police department produce under such conditions? Instead of providing Q_1 service and misrepresenting its cost at P_2, it will probably provide Q_3 service—more than taxpayers desire—at the true price of P_1. The bill will be $P_1 \times Q_3$, or the area $0P_1bQ_3$ in Figure 22.3. Note that the net waste to taxpayers, shown by the shaded area abc, exactly equals the consumer surplus, P_1P_3a. By extending service to Q_3, the police have squeezed out the entire consumer surplus and spent it on themselves.

Fortunately, government bureaucracies do not usually achieve perfect maximization of size and the waste that would result. For one thing, most legislatures have at least some information about the production costs of various services, and bureaucrats may not be willing to do the hard work necessary to exploit their

position fully. If bureaucracy does not manage to capture the entire consumer surplus, citizens will realize some net benefit from their investment.

Making Bureaucracy More Competitive

What can be done to make government bureaucracy more efficient? Perhaps the development of managerial expertise at the congressional level would encourage more accurate measurement of the costs and benefits of government programs. Cost–benefit analysis alone, however, will not necessarily help. As long as special-interest groups, including those of government employees, exist, the potential for waste can be substantial.

A better solution to bureaucratic inefficiency may be to increase competition in the public sector. In the private marketplace, buyers do not attempt to discover the production costs of the companies they buy from. They simply compare the various products offered, in terms of price and quality, and choose the best value for their money. A monopoly of any kind, of course, makes that task difficult, if not impossible, but the existence of even one competitor for a government bureaucracy's services would allow some comparison of costs. The more sources there are of a service, the flatter the demand curve that each source faces, and the more efficient each must be to stay in business.

How exactly can competition be introduced into bureaucracy? First, proposals to consolidate departments should be carefully scrutinized. What appears to be wasteful duplication may actually be a source of competition in the provision of service. In the private sector, we would not expect the consolidation of General Motors, Ford, and Daimler-Chrysler to improve the efficiency of the auto industry. If anything, we would favor the break-up of the large firms into separate, competing companies. Why, then, should we merge the sanitation departments of three separate cities?

A second way to increase the competitiveness of government services is to contract for them with private producers. Many government activities that must be publicly financed need not necessarily be publicly produced. In the United States, highways are usually built by private companies but repaired and maintained by government. Competitive provision of maintenance as well as construction might reduce costs. Other services that might be "privatized" are fire protection, garbage collection, and education.

Because of tight state budgets that were expected to extend into the future, universities in Michigan had to start getting serious about controlling costs, which led them to "privatizing," or contracting out or outsourcing, a variety of services. Of the ten out of fifteen Michigan universities that responded to a survey in 2005, 90 percent had contracted out garbage and sanitation services, 80 percent had contracted out their bookstore operations, and 70 percent had contracted out their vending machine needs, as well as other services (legal, utilities, food, busing, laundry, and maintenance services). Why? Mainly to save money and tap into the expertise of outside vendors. In the early 2000 Western Michigan State University reduced its annual maintenance

costs by $1.5 million by contracting out its custodial services. Ferris State University reported contracting out its vending services, with the result that the university went from losing $85,000 a year on its vending machines to making an annual profit of the same amount from the outside vending machine company Davis[20].

Finally, competition can be increased simply by dividing a bureaucracy into several smaller departments with separate budgets, thus increasing competition. Such a change would eliminate a dissatisfied consumer of a government service from having to move to a different political jurisdiction to get better or cheaper government services. The consumer/taxpayer could simply switch to a different government provider of a service in the same jurisdiction. The loss (or threat of loss) of customers can put pressure on a government agency to improve its performance.

The Mathematics of Voting and Political Ignorance[21]

Public problems are normally more important than private problems, but the decision by any individual on a private problem is likely to be more important than her decision on a public problem, simply because most peoples' decisions on public matters make almost no difference. It is rational, therefore, for the average family to put a great deal more thought and investigation into a decision such as what car to buy than into a decision on voting for president. As far as we can tell, families, in fact, act quite rationally in this matter, and the average family devotes almost no time to becoming informed on political matters but will carefully consider the alternatives when buying a car. Why is that the case?

In order to address the question we need first to ask a more basic question: what is the payoff to the individual from voting? Assume that you are in possession of some information and have decided that you favor the Democratic Party or, if it is a primary, some particular candidate. The payoff could be computed from the following expression:

$$BDA - C_v = P,$$

B = benefit expected to be derived from success of your party or candidate
D = likelihood that your vote will make a difference
A = your estimate of the accuracy of your judgment + $(-1 < A < +1)$
C_v = cost of voting
P = payoff

Certain aspects of this expression deserve a little further discussion. The B refers, of course, not to the absolute advantage of having one party or candidate in office, but the difference between the favored candidate and the opponent. The factor labeled A, the estimate of the accuracy of the voter's judgment, is included here because we are preparing to consider the amount of information the individual holds, and the principal effect of being better informed, which is that the

individual's judgment is more likely to be correct. The factor labeled A can take any value from -1, which represents a certainty that the judgments will be wrong, to +1, which indicates a certainty that the voter is right. The choice of this rather unusual way of presenting what is really a probability figure is due solely to its use in the particular equation, not to any desire to change the probability notational scheme. For the equation to give the right answer, it is necessary that A have a value of zero when the individual has a fifty–fifty chance of being right.

The factor labeled D is the likelihood that an individual's vote will make a difference in the election; that is, the probability that the election result would be different if the person were to vote than if the person were not to vote. For an American presidential election, this is less than one in ten million even in an election that is expected to be close. C_v is the cost, in money and convenience, of voting. For some people, of course, it may be negative. They may get pleasure, or at least the negative benefit of relief of social pressure, from voting. If we view voting as an instrumental act, however—something we do not because it gives us pleasure directly but because we expect it to lead to some desirable goal—then our decision to vote or not will depend on weighing the costs and benefits.

Let us put a few figures into our expression. Suppose I feel that the election of the "right" candidate as president is worth $10,000 to me. I think I am apt to be right three times out of four, so the value of A will be 0.5, and D will be figured as 0.0000001. Assuming that my cost of voting is $1.00, the expression gives ($10,000 $\times$ 0.5 $\times$ 0.0000001) – $1.00 = $0.9995. The payoff to voting is negative, and so it follows from this that I have no reason to vote.

A few variations on the expression, however, are worth consideration. In the first place, it is not true that this line of reasoning would lead to no one voting, a frequent argument. If people began making these computations and then refrained from voting, the value of D would rise because the fewer the voters, the more likely that any given vote will affect the outcome. As more and more people stopped voting, D would continue to rise until the left-hand side of the expression equaled the right. At this equilibrium there would be no reason for nonvoters to begin to vote or for voters to stop. Presumably the people voting would be those among the population who were most interested in politics, since D would have the same value for everyone but ($B \times A$) would approximate a positive function of political interest.

The equation, if it is thought to be in any way descriptive of the real world, would imply that people would be more likely to vote in close elections, an hypothesis that has been tested and found to be correct.

Let us now complicate our model. An additional factor, C_I, the cost of obtaining information, has been included in the first equation noted above:

$$BDA - C_v - C_I = P.$$

This is, of course, the cost of obtaining additional information, since the voter will have at least some information on the issues as a result of her contact with the mass media. Of course, A is a function of information ($A = (I)$), and hence each increase in information held will increase A and thus raise both the benefits and the

costs. The problem for the rational individual contemplating the choice to vote would be whether there are any values of C_I that would lead to a positive value payoff.

Suppose, for example, that the investment of $100 (mostly in the form of leisure forgone) in obtaining more information would raise the value of A from 0.5 to 0.8. Using the same amounts for the other values as we used previously, $P = -\$100.9992$. Clearly, this is even worse than the original outcome. Furthermore, these figures are realistic. The cost of obtaining enough information to significantly improve your vote is apt to very much outweigh the effect of the improvement. This is particularly true for the average voter, who does not have much experience or skill in research and who would put a particularly high negative evaluation on the time spent in this way.

A further implication of our reasoning must be pointed out. There may be social pressures that make it wise for the individual to make the rather small investment necessary for voting. In terms of our equation, C_v may be negative. In these cases, voting would always be rational. Becoming adequately informed, however, is much more expensive. Further, it is not as easy for your neighbors (or your conscience) to see whether you have put enough thought into your choice. Thus, it would almost never be rational to engage in much study in order to cast a "well-informed" vote. For certain people (and presumably most readers of this book will fall within this category) A may already be quite high. For intellectuals interested in politics, the amount of information acquired about the different issues for reasons having nothing to do with voting may be quite great. Further, for this group of people, the value put on the well-being of others may be higher than in the rest of the population. It may be, then, that these people would get a positive payoff from voting even though the average citizen would get negative returns from taking the same action. Thus, for many of the readers of this book, voting may be rational. We have our doubts, however. The value put on the well-being of others must be extremely great. Further, my own observation of intellectuals interested in politics would not confirm that A is high for them. They may have a great deal of information, but this seems to have been collected to confirm their basic position, not to change it.

Concluding Comments

In this chapter, we have applied the cost–benefit, private welfare-maximizing analytics used in our discussions of private markets to politics, focusing on the problems of democracy. Public choice economists not only think their approach is reasonably descriptive of how political markets—activated by politicians—operate, but also suggest that the approach yields insights and understanding. The approach also balances the debate over what activities should be undertaken with and without government involvement. If people start with the presumptions that people in markets are greedy grubby "capitalist pigs," while people in political arenas are

"angels," then the argument is largely rigged toward moving much economic activity to governments.

This chapter may have impressed you as a criticism of democracy. This is the way it impresses us, also, especially when compared with the deductions so often drawn from analyses that start with the presumption that people in the public sphere have far more elevated motives than those in the private sphere. Fortunately, in markets the excesses of private entrepreneurs (businesspeople) are checked by their search for sales and profits (and their demand and cost curves). In politics, the excesses of political entrepreneurs (politicians) are checked by voters, and by entrepreneurs' search for votes. The political maneuvering of political entrepreneurs will be guided by their own, and voters', accurate or distorted distribution of information. To say that this is a weakness of democracy is not to say that some other form of government is better. Indeed, the common nondemocratic forms of government—dictatorships and theocracies—have immense defects of their own. But our admonition is this: in evaluating proposed shifts of decision making from the private sector to the public sector, improvements in outcomes can be curbed by the fact that private interest motivations will not necessarily be more forcibly contained by the shift. Indeed, the shift may liberate the forces of private interest to do less good (or more harm). The fundamental problem that can make the difference, for good and bad outcomes in the shift, is that government has the power of coercion.

Chapter 23
In Defense of Monopoly

With renewed dedication, antitrust enforcers on both sides of the Atlantic appear intent on saving the world from the evils of monopoly. Microsoft has been the poster firm for targeted antitrust enforcement in the United States since the early 1990s. The Justice Department in the Clinton Administration took the software giant to court in 1998 for using its market dominance, protected by the so-called "applications barrier to entry," to "bolt" its Web browser, Internet Explorer, to the Microsoft Windows operating system and thus to destroy the alternative browser, Netscape, and undercut competition and consumer welfare—supposedly.[1] After a rough ride through the federal district court (in which the presiding judge discredited himself by revealing a private animus toward Microsoft in a secret media interview while the trial was underway), an appeals court agreed that Microsoft was a "monopoly," but found no anticompetitive fault with Microsoft's enhancing Windows with its browser Internet Explorer (besides, by the time of Microsoft's trial all other available operating system developers had done the same thing, understandably, given the Internet's then rapid growth in importance to computing).

The European Commission (EC) has not been so charitable to Microsoft on several fronts. In 2004, the EC found that Microsoft was in violation of Europe's competition law by making it difficult for software developers to make their programs interoperable with Windows. The EC required the company to make available its "protocol technology," which it did by releasing thirty thousand pages of software code, but after legal delays and compliance misfires that, by early 2008, had led to the European Commission to impose fines totaling $2.5 billion.[2]

The EC then held that Microsoft had violated the continent's competition law by tying Media Player to Windows. Microsoft caved to the European Commission, offering in 2005 to provide two versions of Windows XP, one with and one without Media Player at the same price.[3]

In 2008, the EC followed the U.S. Justice Department's lead, deciding in 2008 that "Microsoft's tying of Internet Explorer to the Windows operating system harms competition between Web browsers, undermines product innovation and ultimately reduces consumer choice." Bruised by its past futile legal maneuvering with the EC,

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_23, © Springer-Verlag Berlin Heidelberg 2012

Microsoft offered in mid-2009 to settle the EC's tying complaint by introducing an opening "ballot screen" in its forthcoming Windows 7 that would allow European buyers to easily download any of several competing browsers and to deactivate Internet Explorer. Stay tune to see if the European Commission will, in the long run, be satisfied with Microsoft's proposed remedy and not come back with more controls and added remedies to ensure European markets remain *competitive*.[4]

In early 2011, the European Commission sought to broaden its antitrust powers by investigating Google for allegedly using its market dominance to lower hits in search rankings for sites that have not paid Google for advertisements. You might think that actions on Google's part, if true, would be a matter of fraud rather than an antitrust violation, because Google has continually maintained its search results are unbiased by the company's commercial interests.[5]

Back on this side of the Atlantic, the Antitrust Division in the Obama Justice Department gave notice in early 2009 that it intended to investigate AT&T's contract with Apple that made AT&T the sole network on which Apple's extraordinarily popular iPhone could be used (a complaint that should now be moot, given that Apple started selling its iPhone through Verizon in early 2011).[6] Moreover, the Federal Communication Commission in mid-2009 indicated that it intended to investigate Apple's refusal to include Google Voice, an application that permits users to make Internet phone calls, on its iTunes site for downloads to iPhones. Apparently, the FCC fears that Apple's rejection of Google Voice bolsters AT&T's presumably monopoly delivery of phone calls through the tens of millions of iPhones in subscribers' hands.[7]

Regardless of the current status of these efforts, antitrust enforcers on both sides of the Atlantic have demonstrated a dedication to taking on monopoly wherever it raises its wicked head in markets. Never mind that antitrust enforcement everywhere has a dubious record on actually promoting competition. No, antitrust enforcement has over the last century consistently suppressed competition by all too often restraining the market moves of large firms at the behest of their smaller competitors, a point that has been repeatedly made in the voluminous scholarly literature on antitrust enforcement over more than a half century.[8] Three decades ago, antitrust scholar and former Judge Robert Bork spoke bluntly for many other antitrust economic and legal scholars: "[M]odern antitrust has so decayed that the policy is no longer intellectually respectable. Some of it is not respectable as law; more of it is not respectable as economics; ... a great deal of antitrust is not even respectable as politics."[9]

Over the past three decades, the record of antitrust enforcers has improved little to none. Enforcers continue to be moved to action by the targeted firm's competitors. For much of the 1990s, Microsoft competitors—Netscape, IBM, Sun Microsystems, Word Perfect, Oracle, and others—pressed the Justice Department on the issue of Microsoft's tying Internet Explorer to Windows when only one of them, Netscape, had a browser. Real Radio pushed the European Commission to force Microsoft to untie Media Player from Windows. The makers of Opera and Firefox browsers pressed the EC's demands on Microsoft to integrate competitors' browsers in Windows. When in 2008, Google and Yahoo sought to team up to

display Yahoos ads on Google search results, you got it, Microsoft supported the Justice Department's threat to investigate the joint venture for antitrust violations, which caused Google and Yahoo to part ways.[10]

Little did antitrust enforcers on both sides of the "Pond" appreciate in the early 2010s and before how readily a "monopoly" market position could be undermined by new technological developments. Indeed, Microsoft's supposed indomitable "market power," presumably fortified by the impenetrable "applications barrier to entry," was under serious threat of erosion by the late 2010s from the rapid development of alternative computer platforms in the form of smart phones and tablet computers, almost all of which used operating systems other than Windows. The *Wall Street Journal* reported that in the second quarter of 2011, 43 percent of smartphones ran on Google's Android software and 61 percent of tablet computers were Apple iPads, and then use of Apple's Mac operating system spread with the revival of Apple's desktops and laptops. In 2011, Microsoft had to be worrying that the market was "tipping" away from Windows, which means that computer buyers could be moving away from Windows and toward Mac because so many others were doing the same, and expected to follow suit, fueled by a growing array of applications developers were dedicating to use on Apple's operating systems for it iPhones, iPads, and Macs. By mid-2011, Microsoft's market share, touted to be fixed in the mid-90 percent in its 1998 antitrust, was down to 82 percent, the lowest in two decades—and falling![11]

The Textbook "Monopoly"

Many economists and antitrust lawyers have concluded that the problem with antitrust enforcement has largely been a matter of the wrongful application of monopoly theory. A better diagnosis is that enforcement is being misguided by the deeply flawed conventional monopoly theory. That theory is taught to all budding antitrust lawyers and economists almost always with reference to a graph of the "monopoly model" similar to the one displayed in Fig. 23.1. From that graph and underlying theory, four theoretical conclusions that paint monopoly as a source of "market failure" are always drawn:

- First, monopolies everywhere lead to curbs on production to achieved higher-than-competitive prices, which gives rise to monopolies collecting unearned "profits" or "rents" and imposing on markets an "inefficiency" or "deadweight loss" (reflecting an underlying misallocation of valuable resources due to the monopoly's production curbs). In the nearby graph, the monopoly restricts production from the competitive output level to the monopoly output level, enabling it to hike the price charged to the monopoly price, above the competitive price (and above the marginal cost of production). Efficiency in the allocation of resources is always fully maximized when price equals marginal cost, or so students are required to repeat in rote fashion.

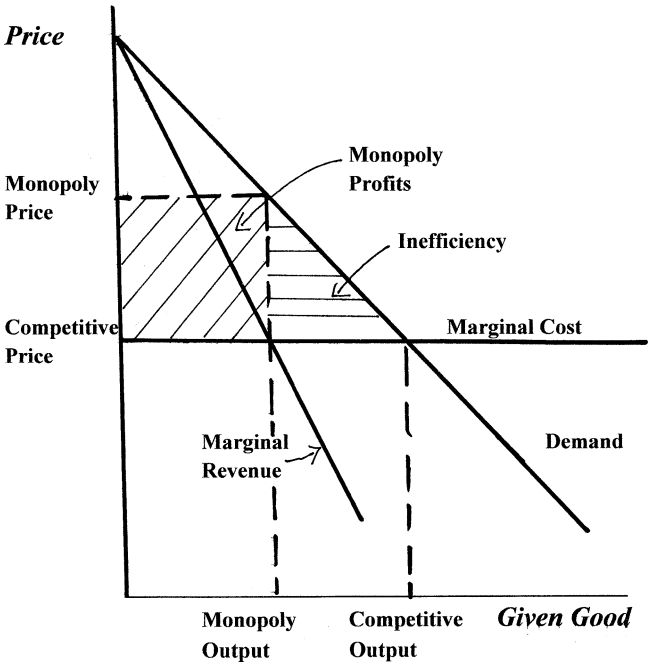

Fig. 23.1 Monopoly Market Model

- Second, market (pricing) power (caused by market dominance, if not just bigness), supported by barriers to market entry is antithetical to competition and welfare gain. The monopoly production and pricing decision gives rise to an "inefficiency," or lost consumer welfare (equal to the striped triangular area in Fig. 23.1).
- Third, the monopoly achieves monopoly profits or rents (equal to the striped rectangular area in the graph) that are unearned and forcibly taken from consumers' "surplus value" (the whole of the area under the demand curve and above the marginal cost curve in Fig. 23.1).
- Fourth, "perfect competition," a market in which all resources are perfectly fluid and in which monopoly rents are nowhere achievable, should be viewed as the goal to which antitrust enforcement presses real-world markets. Then, consumers would get all consumer surplus (including the striped rectangle and triangle in the nearby graph), which is to say that consumer welfare is maximized.

It follows that antitrust enforcers enhance consumer welfare when they prevent or destroy barriers to market entry and increase the number of competitors, thereby undermining the market power of monopolies.

The Real-World Role of Monopoly

Nice theory, but it is grossly misleading for several reasons.

From the theory on which antitrust law is founded, one has to wonder why competitors to a dominant monopoly firm would press for antitrust complaints against a monopolist when the monopolist acts like one—that is, when it curbs production to hike its price. Would that not mean the monopoly would be giving its competitors a chance to gain market share even with higher prices? Would competitors really want their market to be made even more competitive through antitrust enforcement, as Microsoft's competitors indicated they wanted when they proposed the breakup of Microsoft into two "Baby Bills"? Clearly, William Baumol and Janusz Ordover damned much antitrust enforcement when they observed, "Paradoxically, then and only then, when the joint venture [or other market action] is beneficial [to consumers], can those rivals be relied upon to denounce the undertaking as 'anticompetitive.'"[12]

Notice how the theoretical model rigs the debate. As in the graph here and in abstract discussions of monopoly, the monopolized product is *given* to the analysis (and identified on the horizontal axis), which is to say it does not have to be created. In such a market, any output level below the idealized competitive output level caused by monopoly is a clear detriment to consumers. Consumers have less to buy and must pay an inflated price for what they are able to buy because of the monopolist's constricted market supply. Consumers lose the potential welfare gain that goes up in the smoke of the monopoly profits and in the market inefficiency. Few presentations of conventional monopoly theory in economics or law ever mention the "Dupuit triangle," the consumers' welfare gain indicated in the figure by the area above the monopoly price and below the demand curve that could be greater than the more widely touted inefficiency triangle. The Dupuit triangle is what is realized *because* the product is brought into existence. The inefficiency triangle is imagined welfare that can never be realized, even potentially, if the product is never produced.

However, contrary to how conventional monopoly is treated in textbooks, products bought and sold in real-world markets do not appear by assumption, or fall like manna from heaven. Products and their markets have to be created and developed with significant initial investments. Once that point is recognized, a monopoly that is responsible for the creation of its product and the development of the market for it does not restrict total output at all. On the contrary, it expands total output along with the array of available products. The monopolist does not charge higher prices; it lowers them. Consumer welfare is not lowered; it is elevated (at the very least equal to the triangular area in the figure above the monopoly price and below the demand curve). The monopolist does not give rise to an inefficiency; the identified inefficiency area in the graph would not likely exist in so many monopolized markets were it not for the prospect of the monopoly profits. Without the monopoly product, many products of monopoly would not exist in the first place. The monopoly-profit box in Fig. 23.1 can be viewed not as an unjustified grab but as the reason for the existence of the product in the first place.

Of course, a monopoly would not restrict its output and elevate its price if it faced perfectly competitive market conditions. But if a potential monopolist anticipated anything close to perfectly competitive market conditions, it would not create the good in the first place because there would be absolutely no incentive to do so. In a market with complete resource fluidity, a firm would be stupid (and negligent to its stakeholders) to incur the product and market development costs because such costs are not recoverable in totally fluid markets. All prospects for development cost recovery would be wiped out as numerous producers replicated the newly created product at zero development costs, forcing price to the marginal cost of production. It follows that where there are *no* barriers to entry, product and market development costs cannot be recovered, which, it must be reiterated, means "monopolized" products and their markets would not be developed. Why move resources into a market where the best that can be hoped for is a "normal" rate of return, which can be achieved by simply having the resources stay put?

Hence, it follows that resource fluidity is not the unmitigated good that market circumstance economists claim it to be. We might reason that as resource mobility increases (or costs of entry decline toward zero), beyond some point at least, firms might reasonably figure that the risk costs associated with upfront investments in product and market development will go up. This means that firms' cost structures, including the marginal cost curve in the Fig. 23.1, can rise, which can have the effect of restricting production progressively as resource movements become ever more fluid. The end result can be that output in a market with resource fluidity can, beyond some point, be lower than could be expected from a market with costly entry barriers.

This line of arguments is well understood when it comes to goods subject to patent and copyrights. It underlies those artificial forms of restrictions on market entry. However, most economists fail to see that "natural" or "created" entry barriers (trade secrets and brands, for example) can have the same welfare enhancing effects as patents and copyrights.

Freedom of Entry as a Barrier to Entry

Economists make a great deal of how complete freedom of entry (or zero cost of entry) yields maximum efficiency benefits. In reality, however, complete freedom of entry is a perfect barrier to entry—for all. In such market circumstances, market output of the product would not simply be restricted to the modeled "monopoly level," somewhat below the output of perfect competition (or half of the perfectly competitive output level in the case of Fig. 23.1, in which marginal cost is constant). Rather, output would be restricted to zero, clearly an inferior outcome compared with the monopoly output level.

The idealized competitive price, which equals marginal cost, becomes all the more absurd as a viable price as marginal cost of production approaches zero, which is the case for many digital goods. A competitive price of zero is hardly a price that

is sustainable, given product and market development costs in addition to production costs—unless, of course, give-aways of the product can enable producers to charge monopoly prices on some other product tied to the give-aways.

Indeed, when goods have to be created by real-world entrepreneurs, the idealized competitive price (which equals marginal cost) is hardly a better signal of what products should be produced *because it captures so little of the value of the product to consumers*. This is to say that a monopoly price can direct entrepreneurial energies more efficiently because such a price captures more of the value of the product than the competitive, a point made by Paul Romer.[13]

Paradoxically, the potential for market power over price can lead to greater competitiveness in markets through the generation of new ideas that form the value core of new products than when there is a complete absence of market power, which is the case under so-called perfect competition (which is a far less "perfect" in terms of generating consumer value over the long run than markets with more constricted resource fluidity).

Think about it: how much entrepreneurial and intrapreneurial effort is being applied right now in garages or even in established firms to the development of products and markets where there is no chance of making (directly or indirectly) at least enough monopoly rents to cover development costs? No, the exact opposite occurs. Firms are constantly searching for potential products that come with natural entry barriers or harbor the prospect of being protected by artificially created and continually fortified entry barriers with, if nothing else, continuous product improvement. As opposed to being destructive of consumer welfare, entry barriers in some form and at some level are essential for product and market creation—and for the advancement of consumer welfare beyond what can be achieved when products are *given*.

Antitrust enforcers decry "monopoly prices" because they cause monopoly rents. But think again. How many consumers and firms would want to deal with firms that make zero monopoly profits and stand always on the brink of being supplanted by competitors at the slightest of errant moves? Firms in such markets cannot make credible commitments to do what they say they will do.

The standard models of monopoly and perfect competition that all antitrust enforcers learn set aside a reality of markets: the vast majority of new products (and even new firms) fail. Under such market conditions, the potential for monopoly prices and profits on the relatively few successful products are absolutely essential, just so that the development costs of all products—the successful and failed ones—can be covered with some margin left over. Otherwise, firms would not systematically take the risk associated with the development of an array of products.

The Good from a Bad Monopoly

Finally, for sake of argument, let us assume that a firm—call it Microsoft, Apple, or Google—were the worst of monopolies as conventionally conceived, constricting output to the limit to hike its price and profit to the limit resulting in the maximum

inefficiency in its market. Is such a firm a drag on the economy, *on balance*? Conventional monopoly theory offers a resounding "yes." But not so fast. There can be an untold number of firms out there busting their organizational butts to create an array of heretofore unknown products at their own expense *because* they want to be like the "big bad" monopoly making "big bad" monopoly profits.

Paradoxically, monopolized markets can be more creative, competitive, and welfare enhancing than the most perfect of perfectly competitive markets. Indeed, perfectly competitive markets would be totally stagnant markets, if they could exist in the first place, which is unlikely, because no one would have an incentive to create and develop the products and their markets in the first place. Moreover, in seeking to force their version of "competitiveness" on markets following the wrongheaded lessons learned from standard monopoly theory, antitrust enforcers can very likely impose more damage—inefficiency—on the world's economy than their targeted so-called "monopolies" could ever do.

Concluding Comments

The late Joseph Schumpeter is renowned for having coined "creative destruction," which most people either misinterpret or do not understand. Schumpeter had in mind a subtle point that needs to be emblazoned in the corner of the computer screens of all antitrust enforcers everywhere:

> A system—any system, economic or other—that at *every* given point in time fully utilizes its possibilities to the best advantage may yet in the long run be inferior to a system that does so at *no* given point in time, because the latter's failure to do so may be a condition for the level or speed of long-run performance.[14]

The prospects (and the necessary reality) of monopoly power and profits at some level is the necessary and crucial market force driving creativity and competitiveness and, thus, long-term maximization of resource efficiency and consumer welfare. Particular products might be protected by barriers to entry from replicators of the product, but new good ideas incorporated in new and improved products cannot be denied. Or as Schumpeter observed, "The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, and the new markets, the new forms of industrial organization that capitalist enterprises create."[15] Unlike price competition idealized in conventional monopoly discussions, competition from new ideas incorporated into new and improved products strikes "not at the margins of the profits and the output of the existing firms but at their [the firms'] foundations and their very lives."[16] Without including an analysis of this type of non-price competition, any discussion of markets, even though technically correct, is as empty as a performance of "Hamlet without the Danish prince," points that Schumpeter would surely repeat with force to modern-day antitrust enforcers everywhere.[17]

Chapter 24
Behavioral Economics

Behavioral economics has emerged as a subdiscipline in economics over the last half of the twentieth century because of the work of scholars whose main contributions were outside the strict boundaries of economics, most prominently Herbert Simon and Daniel Kahneman. Simon won the 1978 Nobel Prize in economics for his work on "bounded rationality" applied to firm organization collected in his three-volume set published in 1982, and Kahneman received the 2002 Nobel Prize in economics for his work on "prospect theory" developed largely in collaboration with the late Amos Tversky (Kahneman and Tversky 1979, 2000a, among a host of citations). Behavioral economics now covers a massive scholarly literature and, more recently, a growing list of widely read trade books on the subject. In this chapter, we seek to cover only a portion of the literature, but enough to establish credibility of the formidable challenge that behavioral economics and behavioral psychology present to conventional, mainstream modern (or neoclassical) economics. In the main, reservations regarding and criticisms of this literature are covered in the following chapter.

The Overall Dimensions of the Behavioral Challenge

Dan Ariely, a Duke University behavioral psychologist who focuses on economic behaviors, wrote *Predictably Irrational* (2008), a book that made *The New York Times* best seller list and damned the economics profession for its almost religious adherence to *rationality* as its core premise, which is far from being descriptive of so much of human behavior. Ariely's catalog of studies describing human irrationalities was published on the heels of a string of widely selling books on behavioral economics that are accessible to general audiences, including University of Chicago Richard Thaler's *The Winner's Curse* (1992) and Yale University economist Robert Shiller's *Irrational Exuberance* (2005, but first published in 2000). Thaler returned to the trade market with his book, *Nudge* (2008), coauthored with his former Chicago colleague who is now a Harvard University law professor

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_24, © Springer-Verlag Berlin Heidelberg 2012

Cass Sunstein, which describes how insights from behavioral economics can be used to shape decisions and improved behavioral outcomes.

All of these works carry two levels of argument: On one level, behavioral research reveals that people do not exhibit the perfect rationality economists commonly assume. The more damning, second level of argument is that people are in so much of life "predictably irrational," because of a host of decision-making biases. Ariely concludes, "We are—goslings, after all."[1] Thaler and Sunstein muse, "If you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi," which they suggest stands in stark contrast with real homo sapiens who readily forget birthdays, have trouble with math, and regret hangovers.[2]

While recognizing the shortcomings of behavioral findings, Thaler concluded his *The Winner's Curse* with the confession that devising accurately descriptive models of human behavior is difficult because many theorists have a "strong allergic reaction to data." Moreover, economic models based on the rationality premise are "elegant with precise predictions," while behavioral work tends to be "messy, with much vaguer predictions." He then asks, "But, . . . would you rather be elegant and precisely wrong, or messy and vaguely right?"[3]

Behavioral economists and mainstream microeconomic theorists share the concern that any discipline worthy of being a science must be positive, not normative, in approach. That is, science must be concerned with what is, not with what ought to be. However, contrary to Milton Friedman, Thaler stresses that economics is not so much a positive science, as it is a prescriptive one: "Setting price so that marginal cost equals marginal revenue is the right answer to the problem of how to maximize profits. Whether firms *do* that is another matter. We try to teach our students that they should avoid the winner's curse and equate opportunity costs to out-of-pocket costs, but we also teach them that most people don't" (emphasis in the original).[4]

Behavioral economists set out an array of behavioral deductions or predictions that fully rational people can be expected to follow, if people are as rational as mainstream economists claim. Of course, behavioral economists draw up their lists of exactly how people make their choices and how they behave in the real world, outside of economists' sterilized models. Behavioral economists' lists can include these points:

- Rational people can be expected to carefully, precisely, and accurately weigh the costs and benefits of everything they do, always appropriately discounting costs and benefits for risks and time. The only thing determining the present value of a dollar earned in a riskless venture a year from now or ten years from now is the discount rate. If the discount rate is 6 percent, the value of a dollar received a year from now is $0.94. The present value of a dollar received ten years from now is $0.58. The rational person should be willing to pay $0.94 for the dollar a year from now, and $0.56 for the same dollar ten years out.
- Rational people can be expected always to take the most advantageous option, as defined by their present values adjusted for risk.

- If given the reward and loss and the appropriate discount rates for time and risk, external observers can predict what rational individuals will do.
- The discount rates can be expected to be the same no matter how far in the future the costs are incurred and the benefits received.
- The discount rate is not expected to change with the size of the prospective loss or gain. Economists assume constant discount rates through time with no additional effort to weight discounted values.
- Losses and opportunity costs should be valued the same. That is, losses and gains share the same continuum, which implies that a person should be willing to pay the same to avoid a given dollar loss as to acquire a given dollar gain.
- The decisions rational people make should be affected only by the expected costs and benefits, not by exactly how choices are posed or decisions are framed since the calculated difference in the discounted costs and benefits is what controls decisions.
- The rational person can be expected to take or not take an option, depending on its value, regardless of whether he or she incurred an opportunity cost of a dollar or had to give up an out-of-pocket dollar.
- Historical costs are sunk costs, and hence are not real costs for today's decisions. They should not affect today's decisions or, for that matter, any decisions going forward.
- All demand curves slope downward based on consumer choice theory.

Behavioral economists seek to improve the realism and predictive power of economics. As Colin Camerer and George Loewenstein attest, "At the core of behavioral economics is the conviction that increasing the realism of the psychological underpinnings of economic analysis will improve the field of economics *on its own terms*—generating theoretical insights, making better predictions of field phenomena, and suggesting better policy" (emphasis in original).[5]

Moreover, behavioral economists take issue with each one of the above conventional economic propositions, including the sacred law of demand. Thaler is a proponent of what he calls "quasi-rational economics," defined as including behavior that is "purposeful, regular, and yet systematically different from the axioms of economic theory."[6] He observes, "As [Gary] Becker [1962] has shown, the aggregate demand curves will slope down even if people choose at random, so long as they have binding budget constraints. What then is the economic theory of consumer?"[7] The question posed suggests that empirical tests revealing inverse relationships between price and quantity do not necessarily add validity to the underlying rationality premises. And since there is no way to know preferences, there is no way to test whether consumers "equate price ratios to marginal rates of substitution."[8]

Ariely goes a step further, virtually denying the validity of the downward sloping demand curve. In a chapter on "The Fallacy of Supply and Demand," Ariely quotes Mark Twain who observed that "Tom had discovered a great law of human action, namely that in order to make a man covet a thing, it is only necessary to make it dear."[9] He then redevelops his gosling view of human decision making and

behavior: what people are willing to pay for a thing is a function of the imprinting of the first price observed for a thing, or, for that matter, any number that consumers are asked to imagine. For example, he asked fifty-five management students to write down the last two digits of their Social Security numbers and then asked them to indicate the maximum amount they would pay for the bottle of wine that had been given a 92-point rating by *Wine Advocate*. Those 20 percent of students with the highest last two digits of their social security numbers (80–99) gave maximum prices that were 216 to 346 percent higher than those 20 percent of students with the lowest last two digits (01–20). He found much the same pattern with an assortment of other products (cordless trackball and keyboard, for example), suggesting that prices people are willing to pay may be incidentally tied to preferences.[10] He argues that we are innately bound to seek "arbitrary coherence," a form of consistency between what we have observed in prices (or just numbers) and prices we are willing to pay. Put another way, initial numbers observed, and maybe imprinted, become *anchors* that guide our assessments of acceptable prices.[11]

Ariely argues that the law of demand is really unsettled when the price of a good becomes "free." A price of free presses an "emotional hot button" and gives rise to a form of "irrational excitement" among consumers, which, in turn, dramatically unsettles consumption choices at prices above zero. He made this point by first offering students who passed his research station on campus a thirty-cent Lindt truffle for fifteen cents and a two-cent Hershey Kiss for one cent. Seventy-three percent of the students bought the truffle. When the price of each chocolate was lowered a penny, to fourteen cents for the truffle and zero cents for the Kiss, the consumption distribution almost reversed. Sixty-nine percent of the students chose the free Kisses, up from 27 percent when its price was a penny.[12]

According to Ariely, the students were freely grabbing the Kisses "not because they had made reasoned cost–benefit analysis before elbowing their way in, but simply because the Kisses were FREE!"[13] And the word and concept of free has an "emotional charge" to people "because we humans are afraid of loss." One does not have to fear a loss when something is free,[14] a line of argument that could suggest that people can engage in a constrained form of rationality in the sense that they must be, in making decisions, at least weighing the subjective damage from a loss.[15]

Other behavioral economists argue that the rational behavior premise is patently wrong, citing a mountain of experimental and behavioral research. Marketing researchers Thanos Skouras, George Avlonitis, and Kostis Indounas write in their survey of the differences in approaches to research by people in marketing and economics:

> The weakest part [of "economists' theoretical edifice"] is surely the notion of utility-maximization by rational consumers. This is not only implausible as a general description of buyers' behavior but there are many instances in everyday experience of most people that seem to contradict it. Moreover, the work of psychologists and several psychological experiments have shown beyond any doubt that rationality and utility-maximization can hardly be considered as universal and ever-present traits of consumer behavior.[16]

Summarizing his own personal observations about how people make decisions, as well as research findings, Thaler observes, "[People with some consistency] over

withhold on their income taxes in order to get a refund. They have positive balances in their savings accounts earning 5 percent *and* outstanding balances on their credit card for which they pay 18 percent."[17] Thaler cites financial researchers who have found that assuming "that irrational investors will automatically go broke is incorrect. In some situations, the irrational investors actually end up with more wealth."[18]

What are economists to make of such findings, and the implied challenge to the way so many economists continue to do science, especially when the findings lead some behavioralists to declare sometimes with little to no qualification, "There's only one problem with this assumption of human rationality: it's wrong."[19] People may in some sense and in some limited way be rational, but the way in which they are rational often stands at odds with the kind of rationality economists conventionally assume, or so behavioralists forcefully argue. Moreover, making policy deductions based on models of conventional rationality may turn out to be inadequate, misdirected, or plain wrong.

Indeed, the irrational failings of people in their decisions—which very well could expose the high degree of boundedness of their rationality capacities (as behavioral economists and psychologists stress)—might make it imperative that economists assume their subjects are more rational even than economists-qua-analysts know themselves to be, if economists seek to do deductive science within the constrained limits of their own thinking, rational, decision-making capacities. Criticisms of the behavioralists' critiques of the rationality premise at the foundation of mainstream economics will be developed in Chap. 24.

Prospect Theory

Daniel Kahneman and the late Amos Tversky argue that conventional "utility theory, as it is commonly interpreted and applied, is not an adequate descriptive model."[20] One of their strongest arguments is that decisions, economic or otherwise, are seldom made among known goods. Rather, when options are known at all, choices frequently involve gambles because the consequences are often not understood with the precision assumed in conventional rational models. At best, choices involve prospects, which are options with probabilities attached to various outcomes. At worst, decisions have to be made with immense uncertainties regarding the available array of options and their features. Decisions can be "orderly" without necessarily conforming to the dictates of traditional rationality.[21]

Behavioral economists argue that gambles are the "fruit flies" of experimental economics: they can be rapidly or cheaply replicated to test the various propositions of rational behavior outlined above.[22] For example, behavioral economists point to the pioneering work of Daniel Bernoulli who, as far back as 1738, tried to explain that people tend to be risk averse when contemplating choices involving gains, favoring sure-thing gains over gambles with expected gains. They will tend to be risk prone when contemplating choices involving losses, favoring gambles with expected losses to sure-thing losses. By implication, avoiding losses looms larger in

decisions than garnering potential gains, a position that even Adam Smith also adopted in 1759 in his *Theory of Moral Sentiments*. In Smith's words:

> We suffer more, it has already been observed, when we fall from a better to a worse situation, than we ever enjoy when we rise from a worse to a better. Security, therefore, is the first and the principal object of prudence. It is averse to expose our health, our fortune, our rank, or reputation, to any sort of hazard. It is rather cautious than enterprising, and more anxious to preserve the advantages which we already possess, than forward to prompt us to the acquisition of still greater advantages. The methods of improving our fortune, which it principally recommends to us, are those which expose to no loss or hazard; real knowledge and skill in our trade or profession, assiduity and industry in the exercise of it, frugality, and even some degree of parsimony, in all our expenses.[23]

Kahneman and Tversky illustrate Bernoulli's point with a set of choices in a laboratory experiment from which a working rule of decision making can be drawn. Suppose you give subjects "a choice between a prospect that offers an 85 percent chance to win $1,000 (with a 15 percent chance of winning nothing) and the alternative of receiving $800 for sure."[24] According to conventional rational tenets, as behavioral economists present them (often implicitly equating the conventional view of rational behavior with monetary maximization), the gamble should be chosen by a "large majority," if not all, choosers, since its expected value [equal to ($1,000 $\times$ 0.85) + ($0 $\times$ 0.15)] is $850. But the exact opposite is the case, a choice outcome that supports a presumption of risk aversion that represents a decision-making bias that at least constrains human rationality, if it is not evidence of a form of irrationality, according to Kahneman and Tversky.[25]

In an experiment involving 150 subjects, the choice was between a sure-thing option valued at $240 and a gamble with an expected value of $250 (25 percent chance to gain $1,000 and a 75 percent chance to get nothing), 84 percent of the subjects took the sure thing.[26] In an actual experiment, when ninety-five subjects were presented with a choice between a guaranteed $3,000 and an 80 percent chance of a $4,000 payoff (with an expected value of $3,200), 80 percent of the subjects took the sure thing.[27] Kahneman and Tversky report another experiment in which the dollar values of the two options were the same as above ($4,000 and $3,000), but the probability of each was reduced by three quarters, to 0.20 and 0.25, respectively. The equal percentage reduction in the probabilities gave rise to 65 percent of the subjects taking the first option ($4,000), up from 20 percent.[28] Kahneman and Tversky suggest that "over half the subjects violated expected utility theory" in that their choices were inconsistent, or were not transitive. The same general pattern of inconsistent choices was found when subjects were given nonmoney payoffs (weeks of tours in England) as options.[29]

Kahneman and Tversky argue that economists have decision theory wrong. People do not evaluate alternatives, including prospects, just by discounting the monetary outcomes. Rather, people apply an additional subjective weight to the discounted value of the alternative outcomes.[30] In standard microeconomic treatment of rational decisions, $100 should be evaluated the same no matter whether it is added to a gain in wealth of $100 or $1,000 or added to a loss in wealth of $100 or $1,000. But prospect theory and laboratory experiments suggest that is not the case.

People's subjective valuations of $100 can be different, depending on the probability that the stated payoff will be received, on the weight that is applied to the discounted value, and whether the $100 is a loss or gain.[31]

Why does it matter whether a value is a loss or gain? People innately tend to be risk averse, not risk seeking, on matters involving gains (or so can be the case for a sizable majority of people).[32] To behavioral economists, this means that losses loom larger in decisions than gains of equal monetary value. (As one of the authors explains elsewhere, evolutionary biologists and evolutionary psychologists have their own explanations for people's innate risk aversion.[33]) Kahneman and Tversky posit, "Loss aversion explains people's reluctance to bet on a fair coin for equal stakes. The attractiveness of the possible gain is not nearly sufficient to compensate for the aversiveness of the possible loss. For example, most respondents in a sample of undergraduates refused to stake $10 on the toss of a coin if they stood to win less than $30."[34]

Prospect theory postulates that people's "hypothetical value function" spanning losses and gains has a flattened S shape to it, as described in Fig. 24.1 (which graphically illustrates the risk aversion on gains and the risk proneness on losses). The positive subjective value of a $100 gain is less than the negative subjective value of a $100 loss. Put in behavioral economic terms, people (or some ill-defined majority of people) are subject to loss aversion, which means they will favor gambles involving losses over sure-thing losses and they will incur more costs to avoid a loss of a given amount than they will incur to obtain a gain of the same amount. The observed discontinuity in people's evaluations of losses and gains is at odds with conventional rational behavior, which assumes that gains and losses are mirror images of one another. In effect, behavioral economists admonish other economists to adjust, at the very least, their conception of rationality to accommodate risk aversion on decisions involving gains and loss aversion (which implies a form of risk proneness on decisions involving losses). This, they suggest, will lead to improved predictive power of their modeling.

People's inclination to be loss averse also means that people are more inclined to gamble to avoid a loss than to garner a gain. When given a choice between a sure loss of $800 and a gamble with an 85 percent chance of losing $1,000 (and a 15 percent chance

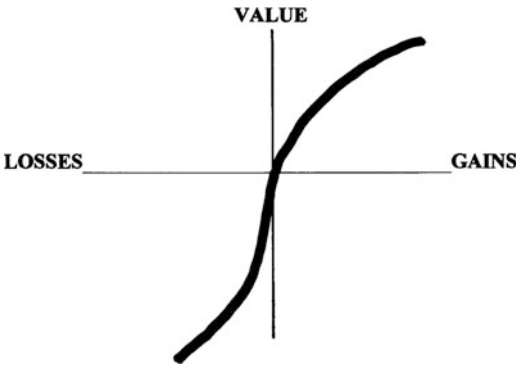

Fig. 24.1 Behavioralist's "Hypothetical Value Function"

of no loss), a large majority of the subjects in the Kahneman and Tversky experiment took the gamble, in spite of the fact that the gamble had a higher expected loss, $850. This split of the subject's choices is the opposite of the outcome when the choice was between a sure gain of $800 and a gamble with an 85 percent chance of a $1,000 gain.[35]

Most telling, according to Kahneman and Tversky (2000a, p. 3), is the loss aversion that shows up in samples of undergraduate students who are not willing to bet $10 on the toss of a fair coin unless the potential gain is greater than $30, whereas by conventional economic theory they should be willing to bet $10 so long as the potential gain were just slightly above $20. Why? They simply do not consider the subjective value of a 50 percent chance of a gain of, say, $25 (which has an expected value of $12.50) is as great as the subjective negative value of the sure-thing loss of $10 in the bet.

Loss aversion also shows up in people's reluctance to sell losing stocks and real estate. One study found that the trading volume of stocks that have fallen in price on large exchanges is lower than the trading volume of stocks that have risen in price (Weber and Camerer 1998). Another study found that investors held stocks that rose in price for a median of 104 days; they held stocks that fell in price for a median of 124 days. Many investors might explain their unwillingness to sell losers quickly on the grounds that they expect their losers to rebound, but in one study unsold losers yielded a return of 5 percent in the following year, whereas the gainers that were sold had a return the following year of nearly 12 percent.[36] Similarly, homeowners who incur a capital loss on houses apparently try to avoid the loss by setting the selling price at or higher than their purchase price, only to end up delaying their sales.[37]

Again, one of the strong points of prospect theory is that, behavioralists posit that people will tend to be risk averse when the choices are between potential gains and risk seeking when the choices are between losses, as illustrated by the S-shape of the value function in Fig. 24.1, not exactly the kind of consistent behavior expected of fully rational people.

Dominance and Invariance

Behavioral economists point to two basic propositions underlying conventional constructions of rational behavior: *dominance* and *invariance*. The principle of *dominance* in decision making means that option A, which is better than option B in at least one respect and at least equal in all other respects, should always be preferred to option B. The principle of *invariance* means that the choice between A and B should not be affected by how the options are *framed*, or by how they are described or presented. What is important in choices, according to mainstream microeconomic theory, is the respective discounted value of the options, not so much the exact context or reference points, i.e., the choice frame.

But Shiller maintains that even single words such as "insurance" can frame a choice, making people more receptive to the choice, because of its "association, in our culture, of safety, good sense, integrity, and authority."[38] And Kahneman and

Tversky;[39] Tversky and Kahneman[40] point to violations of dominance and invariance in laboratory experiments. For example, 152 subjects were told that the outbreak of an unusual influenza virus was expected to kill 600 people and that there were two potential reaction programs: Program A could save 200 people and program B would yield a one-third probability that 600 people would be saved and a two-thirds probability that no one would be saved. The number of expected lives saved under the two programs is exactly the same, 200, but 72 percent of the respondents chose program A.

Now, when the problem was reframed and a different set of 155 subjects were told that program C would result in 400 people dying and program D would yield a one-third chance that no one would die and a two-thirds chance that 600 people will die, 78 percent of the subjects favored program D. This is a total reversal of the vote between A/B and C/D, when in fact all four options are "indistinguishable in real terms," that is, the number of people expected to die is always 200.[41]

Why the difference? In two words, risk aversion. The first experiment framed the problem with 600 expected deaths as a starting point and programs A and B *reducing* the deaths. Exercising risk aversion, people chose the sure thing—saving 200 lives under program A. In the second experiment, the problem has a starting frame in which no one dies, with programs C and D causing deaths. People avoid the sure-thing option, 400 people dying, in favor of a gamble that 400 people could die.

According to Kahneman and Tversky, repeated experiments among sophisticated and unsophisticated subjects yield much the same results. Kahneman and Tversky report that when eighty-six subjects were given a choice between A, a sure gain of $240, and B, a 25 percent chance of gaining $1,000 and a 75 percent chance of gaining nothing, 84 percent of the subjects chose the sure gain of $240, despite the gamble having a higher expected value. When the subjects were given a choice of C, a sure loss of $750, and D, a 75 percent chance of losing $750 and a 25 percent chance of losing nothing, 87 percent of the subjects chose D, the gamble, despite the fact that the discounted monetary values of C and D are the same.

Hence, Kahneman and Tversky believe that such findings, corroborated by others, support two behavioral principles: First, when gains are involved, people tend to be risk averse. Second, when losses are involved, people tend to be risk seeking. Again, the source of the difference emerges in how people subjectively evaluate expected monetary outcomes, not the monetary values of outcomes without additional weighting adjustments, with evaluations systematically affected by the reference point.[42]

Conventionally, rational behavior often subsumes implicitly, if not explicitly, linearity in the value assessment of the chances of reaping gains and incurring losses. That is, the expected value of a prospect of reaping a $100 reward with a 5 percent probability and a 95 percent probability of reaping nothing is $5. When the probability of reaping the reward is raised fivefold to 25 percent, the expected value rises fivefold to $25. If the reward is raised to $1 million while the probability of reaping the reward is held to 5 percent, then the assessed expected value rises in line with the reward, or 10,000 times, to $50,000.

Such reassessments need not be the case, behavioral economists argue. People can apply different decision weights to different probabilities and the sizes of gains and losses, a fact that helps explain why people buy both lottery tickets and insurance. The amount they give up in a lottery is small, but the decision weight given to the lottery's combination of a very high reward but very low probability of winning can be high, making the tickets a deal worth taking, in terms of subjective assessment or decision weights applied to the discounted values.[43] Kahneman and Tversky use gambles to bolster their argument that people tend to overweight choices with low probabilities and high rewards. The first experiment involved sixty-six subjects who were given a choice between a 0.1 percent chance of receiving $6,000 and a 0.2 percent chance of receiving $3,000. While the expected values of both options were the same ($6), 73 percent of the subjects chose the first option, smaller probability but a much larger potential reward.[44]

The second experiment involved a choice between a 0.1 percent chance of receiving $5,000 and a sure thing of $5. Again, both options had the exact same expected value, but 72 percent of the seventy-two subjects chose the first option.[45] Kahneman and Tversky also point to the work of Kachelmeier and Shehata who found that if subjects were given an option with a small chance—5 percent—of the payoff being received, the sure-thing cash option would have to be three times the expected value of the bet.[46]

People's purchases of lottery tickets cannot be explained simply by comparing the price of the tickets with the expected monetary value of the reward. Lottery ticket purchases make no sense in present discounted terms alone, since a $1 ticket typically has a discounted value of less than one thousandth of a cent. Similarly, people who buy lottery tickets also buy insurance, even when they fully understand that the insurance costs more than it is worth in strictly expected value monetary terms, independent of some consideration, such as risk or loss aversion. People buy insurance, however, because of the imputed subjected value of a loss, especially a major loss, such as that of one's home.

Real people, not those whom economists model, seem to recognize their own limited control over their ability to forego close-at-hand temptations to consume now as opposed to consuming later. A hundred adult students at Chicago Museum of Science and Industry were asked to choose between three lifetime income paths that had the same total income over time with no discounting. The first income path had income starting high and declining. The second had income constant. The third path had increasing income. Obviously, in terms of their discounted value, the first path was superior to the second and third, and the second superior to the third. However, 12 percent of the subjects chose the first path and 12 percent chose the second, meaning that 76 percent of the subjects chose the path with the lowest discounted value, not exactly what mainstream economists would surmise (at least not in real-world social and market settings). Even after the discounting of income streams was explained to the students, they stuck with the third path with the lowest discounted income by a substantial majority, 69 percent.[47] The explanation? Perhaps, again, loss aversion. The students might have imagined that they would end their careers in an inferior position with the first and second paths because they might have saved too little, given their limited ability to control their consumption out of current income. The third income path incorporated a form of forced saving.

Mental Accounting

Thaler maintains that people's decisions are also affected by what he calls "mental accounting"—the "entire process of coding, categorizing and evaluating events"—that causes people to categorize expenditures and to elevate the importance of relative prices versus absolute prices.[48] According to standard cost–benefit analysis and the principle of invariance, a person's decision to drive from one store to another to save $5 should be founded simply and only on the balance when the $5 savings is compared with the cost and inconvenience of the drive. If the cost of the drive is greater than $5, then the drive will not be made, according to conventional cost/benefit theory. If lower, then the drive will be made.

However, behavioral researchers have found that when eighty-eight subjects were told that they could buy a hand calculator in one store for $15, but could buy it elsewhere for $10, 68 percent said they would make the drive to the store with the $10 price. When another group of ninety-three subjects was told that a calculator in one store cost $125, but that could be bought for $120 in another store, only 29 percent of the subjects said that they would make the drive to save $5.[49] Given these findings, behavioralists are not surprised that experiments demonstrated that shoppers did not expend more effort to save $15 on a $150 item than they expended to save $5 on a $50 item, although conventional theorists might expect greater effort to be expended to save a greater amount.[50]

The problem is reversed by other researchers who asked subjects how much they would pay for an item to avoid standing in line for forty-five minutes to purchase it. When purchasing an item that cost $45, the subjects were willing to pay on average twice what they were willing to pay to avoid the wait for a $15 item, suggesting to the researchers that the value subjects put on their time depends on the price of the item to be bought.[51]

Such findings are consistent, or so behavioral economists argue, with the so-called Weber–Fechner principle of psychophysics, which states that "the just noticeable difference in a stimulus is proportional to the stimulus."[52] Hence, percentage changes in prices tend to be disproportionably influential in buying decisions relative to absolute changes in prices, a point that appears to show up in the findings that price variations tend to rise almost linearly with the mean price of goods.[53]

In another study of the importance of framing choices and mental accounting, 200 subjects were told that they had paid $10 for a ticket to attend a play, but discovered that they had lost the ticket when they arrived at the theater. When asked if they would buy a replacement ticket, less than half, 46 percent, said yes. When another group of 188 subjects were told that they had not bought a ticket before arriving at the theater, but had lost $10 on the way to the theater, 88 percent of the theatergoers said they would buy a ticket Kahneman and Tversky[54].

These findings appear anomalous from the standard construction of rational behavior because in both cases the theatergoers have incurred identical $10 losses, which are sunk costs to be ignored. But if people engage in forms of mental

accounting and/or are affected by the framing of the choice situation, the loss is not identical. For more than half of the theatergoers who lost their tickets, purchasing a second ticket could be viewed as increasing the price of seeing the play to $20, beyond the maximum they would have been willing to pay in their mental account. The lost $10-dollar bill, on the other hand, could be construed as a loss in one mental account, separate from the mental account for the play.

Interestingly, when both the lost-ticket and lost-bill scenarios were presented to the same subjects with the lost-ticket problem preceding the lost-bill problem, the subjects' answers did not change materially. However, when the lost-ticket problem followed the lost-bill problem, the percentage of the subjects willing to replace the ticket went up "significantly."[55] In the second ordering, the subjects apparently deduced that consistency required them to see the two problems as the same, leading more people to buy the ticket, given that they had said they would buy it when they lost the bill. Hence, Kahneman and Tversky "conclude that frame invariance cannot be expected to hold and that a sense of confidence in a particular choice does not ensure that the same choice would be made in another frame,"[56] a position that raises a serious question about the value of experiments in drawing out general rules as the frames for posing choices are essentially unlimited (see Chap. 24). Kahneman and Tversky do recognize the problem: "It is therefore good practice to test the robustness of preferences by deliberate attempts to frame a decision problem in more than one way."[57] But the framing hook on which behavioralists adopt the Kahneman/Tversky position remains problematic: the research regime can be unending, if the framing position is taken with the seriousness behavioralists believe that it deserves. Mainstream economists might rightfully worry that behavioralists' findings could be biased by the particulars of the ways their prospects have been framed.

For the time being, we can set matters aside and address the behavioralists' question: why does framing affect subjects' decisions? Ariely suggests a direct and simple answer: the brain is set up to process sensory information as it is received, with bits of information like prices, put in context, with the context adding to the meaning of the information. Hence, all data are evaluated by the brain relatively, consciously and unconsciously. A price has meaning, but only in the context of other prices and arbitrary numbers—"anchors"—recently viewed or heard.[58] Still, Ariely's answer can be problematic to theorists who seek general principles and who rightfully can imagine a multitude of contexts for economic variables like prices.

Endowment Effect

Mainstream microeconomic theory posits that rational people unwilling to pay $200 for a football ticket should be willing to sell such a ticket she is given, or has bought at a much lower price, if the ticket can be sold for at least $200. The reasoning is straightforward: people unwilling to pay $200 for the ticket are saying

that they have something better to do with $200, or else they would buy the ticket. The utility of the something else is greater than the utility of seeing the game. If people have been given the ticket, then they still have something better to do with the $200, unless something has changed. They should sell the ticket and do the something else that is more valuable to them.

But abundant anecdotal evidence from everyday life suggests that people's buying and selling prices often differ, sometimes markedly. We have taught at big-time sports universities with strong and popular sports rivals, especially in football. Key games between rivals are almost always sellouts, with the result being that tickets are often scalped days before the game for hundreds of dollars. Before the big games, we have asked our students if they would be willing to pay the known price for scalped tickets, which, to illustrate the point, is, say, $200. Typically, no students have raised their hands. We have then asked how many of them would be going to the game. Many hands go up. We cannot resist asking, "Why? You just said you would not pay $200 for a ticket, and you can get $200 for the 'free' student ticket you have. Why not sell your ticket and use the $200 to do what you would have done with $200 had you not received the 'free' student ticket and had not bought a ticket? Something is amiss." No doubt the students would sell their tickets at some price (as, you might remember, Phillip Wicksteed postulated a century ago), but for most, the price would clearly have to be much higher than $200.

Ariely put our anecdotal evidence to a more rigorous test. He contacted a hundred Duke University students, half of whom had won the lottery on receiving basketball tickets to a home game and half of whom had not. All hundred students had camped out for days to be in the lottery for tickets. The students who did not have tickets were willing to pay an average of only $170 for a ticket, whereas the students who had tickets were willing to sell their tickets for an average price of $2,400. No student who had a ticket was willing to sell a ticket for a price that anyone who did not have a ticket was willing to pay.[59]

To a conventional economist, the students' buy/sell decisions on sports tickets are puzzling. Thaler (2000b) argues that we have here is a general principle: people are commonly willing to pay less to obtain a good than they are willing to accept as payment on selling the good. He notes that income effects and transaction costs can explain the differences between people's buying and selling prices. Students who are given a ticket are, in effect, given a real income grant, which results in a higher wealth. Students' greater wealth might result in a suppression of their need to sell the ticket, which shows up in a greater price to sell their tickets than the price they would be willing to pay, absent the wealth represented by the ticket. However, Kahneman, Knetsch, and Thaler ran an experiment in which they gave coffee mugs to some subjects in the group. Those who were given the mugs set their selling prices two to three times the buying prices of those who were not given mugs. These researchers conclude that people's difference between "willing to buy" and "willingness to pay" are "too large to be explained by income effects" alone.[60] The income and wealth effects involved in things like tickets must be minor, if not trivial, when compared to people's expected total lifetime wealth.

Students might not be willing to sell their tickets for the $200 specified in our anecdote because of the transaction cost of finding a willing buyer and finalizing the exchange (especially when anti-scalping laws are enforced, which introduces a risk cost as well). When the transaction costs are deducted from the $200-ticket price, the net price is lower than what the students would be willing to pay at maximum for the ticket. But such an explanation can surely be dismissed, since the enforcement of anti-scalping laws is minimal at most major college sporting events and the probability of getting caught could easily be less than a small fraction of 1 percent.

Thaler suggests a more "parsimonious" explanation for the differences between people's buying and selling prices, the "endowment effect," which is different from the wealth effect noted above.[61] According to Thaler, the endowment effect is the inertia built into consumer choice processes due to the fact that consumers simply value goods that they hold more than the ones that they do not hold (which has an evolutionary explanation[62]).

Thaler traces the endowment effect to a difference (not recognized in conventional microeconomics) between opportunity costs and out-of-pocket expenditures, with the former viewed by many consumers as foregone gains and the latter as losses. Given people's observed inclination toward loss aversion (see Fig. 24.1), the pain of loss will suppress consumers' buying prices below their selling prices. Similarly, their required selling prices can be inflated because decision weights for gains (implied in the selling price of a good received free of charge or bought at a lower price) are subjectively suppressed.

To support his endowment effect arguments, Thaler points to an experiment with MBA students by other researchers Becker, Ronen, and Sorter[63]. The students were given a choice between two projects that differed in only one regard: one project required the students or their firms to incur an opportunity cost, and the other required that the students or their firms make out-of-pocket (or out-of-firm coffers) expenditures. "The students systematically preferred the project with the opportunity cost."[64] This finding suggests that the students should be willing to accept a lower rate of return on opportunity-cost investment projects than out-of-pocket-expenditure projects of equal amounts. Similarly, researchers studying the choice of schooling in the Seattle-Denver Income Maintenance Experiment found that changes in parents' out-of-pocket expenditures for school had a stronger effect on schooling choice than did an equivalent change in opportunity costs.[65]

If, as behavioral economists attest, buyers subjectively weigh opportunity costs as less than an equal dollar amount in out-of-pocket expenditures, then we have another explanation for the long queues in retail stores, at movies, and elsewhere.[66] When sellers cut the number of ticket booths or checkout counters, they can curb their costs and, in turn, lower their prices, thus lowering buyers' out-of-pocket expenditures. But the lower prices can lead to lines that impose a time cost, or opportunity cost, on buyers. According to standard analysis, sellers should continue to maintain their ticket booths and checkout counters so long as sellers can lower their prices by more than buyers incur in opportunity costs. Sellers have optimized on the length of their queues when the increase in buyers' opportunity cost (say, $1)

from the last increase in the length of the queues equals the reduction in the price (say, $1).

However, if behavioralists are right on the differential weights buyers apply to opportunity costs and out-of-pocket expenditures, then the dollar equality suggested above would mean that the line is suboptimal—or too short. Firms can increase their profits and consumer welfare by increasing the length of their lines. This is because buyers would subjectively weigh the last increase in length of the queue (opportunity cost) as less than the last reduction in price (out-of-pocket expenditures). Hence, sellers should continue to curb their ticket booths and checkout counters, extending the length of their queues until the additional subjectively weighted opportunity costs equal the subjectively weighted reduction in out-of-pocket expenditures.

Acquisition and Transaction Utility

Conventional microeconomics assumes people maximize their welfare by comparing the intrinsic value of a good with its price. Once again, Thaler takes issue with conventional mainstream economics by positing a more expansive view of the source of utility. He argues that people choose goods because of two sources of utility, "acquisition utility" and "transaction utility."[67] Acquisition utility is, in effect, the consumer surplus (total benefits minus the price paid) buyers receive from their purchases, while transaction utility is any perceived advantage from buyers making deals. A good in which the subjective value is greater than the price paid has acquisition utility. A purchase that buyers view as a good deal—defined as the "difference between the amount paid and the 'reference price' of the good"—has added transaction utility.[68] Presumably, this means that people may buy goods when the acquisition utility is negative, but more than offset by the positive transaction utility.

Thaler posed a scenario to support his contention that people evaluate goods relative to some reference price and other qualities of the deal. He asked all subjects to imagine they were on a beach on a hot day and would like nothing better than a cold beer. He told one subset of the subjects that they could get the beer only from an expensive resort hotel. He told the remainder of the subjects that the beer could be obtained only from a "small, run-down grocery store." He then asked each group to indicate the maximum price they would pay for the beer. The subjects who were told that the beer could be bought only at the expensive resort hotel gave an average maximum price of $2.65, in 1984 dollars. The other group gave an average price of $1.50, also in 1984 dollars.[69] The presumption must be, according to Thaler, that the subjects gave a higher maximum price for the resort hotel because they assumed that the "reference price" is higher than at the run-down grocery store.

Thaler concludes that "some goods are purchased primarily because they are especially good deals," as indicated by the fact that "most of us have some rarely worn items in our closets." He also concludes, "Sellers make use of this penchant by

emphasizing the savings relative to the regular retail price (which serves as the suggested reference price)."[70] That is, posting sale prices alongside regular prices can increase buyers' total utility and can cause additional sales, even some for which the acquisition utility might be negative. The utility value of deals can also explain the prevalence of sales, as well as pervasive use of coupons and rebates that insert wedges between the reference prices and the prices consumers actually pay.

The Matter of Sunk Costs

In conventional microeconomics, there is a common refrain: sunk costs do not matter (or rather, should not matter) in real choice decisions. The logic of the claim is compelling to many, if not all, strictly neoclassical economists. Costs that have already been incurred cannot be recovered. They are gone forever. In a real sense, they were true costs at the time they were incurred, but not afterward. In effect, once incurred and not subject to recovery, sunk costs are misnomers: they are no longer costs, that is, potential value that can be forgone by decisions yet to be made.

But behavioral economists point out that people certainly behave as if sunk costs do matter, at least for a while. Thaler proposes what he dubs the "sunk-cost hypothesis": "[P]aying for the right to use a good or service will increase the rate at which the good will be utilized, *ceteris paribus*."[71] He points to a study by Aronson and Mills[72] involving different levels of initiation for three groups of students wanting to join a discussion group:

- Group 1 was put through a "severe" initiation: students were required to read aloud sexually explicit material.
- Group 2 was given a "mild" initiation: students were required to read aloud tamer material.
- Group 3 was the control group: students were not subjected to the initiation reading.

As predicted, the students who endured the severe initiation reported enjoying the discussion group more than the other two groups Aronson and Mills[73], an experiment repeated with the same findings by other researchers Gerard and Mathewson[74]. Thaler is convinced that the best evidence of the sunk-cost effect can be easily observed among students who are resistant to learning and then believing that sunk costs do not matter.

In another experiment on the relevance of sunk costs, Lewis Broad ran an experiment at a pizza parlor, which charged $2.50 for all you can eat.[75] The customers who paid the up-front payment, which the researcher presumed to be a sunk cost, were considered the control group. Other customers, who were randomly selected on entering, were offered a free lunch. If people were unaffected by sunk costs, then the control group would eat no more than the experiment group. But the control group consistently consumed more pizza than the experiment group,

supposedly showing that sunk costs can indeed affect, positively in this case, consumption.

Apparently, the sunk-cost effect wears off, eventually, and the costs incurred no longer matter. Arkes and Blumer developed an experiment in which three groups of people were buying season tickets for an on-campus theater group.[76] The first group paid the full season ticket price. The second group was given a 13 percent discount, and the third was given a 47 percent discount. Those in the group who paid the full price attended productions significantly more than the two groups that were given discounts, but only during the first half of the season. During the second half, the three groups attended production with more or less the same frequency, suggesting that the sunk-cost effect diminishes. This point is supported by the work of Gourville and Soman who found that attendance at health clubs charging semiannual dues increases in the month following the date for payment, only to decline during the subsequent five months.[77] Although the sunk-cost effect wears off, the important point for behavioral economists is that sunk costs do matter, even though how much they matter tends to depreciate.

The endowment and sunk-cost effects should alter the way economists and others think about public policy, or so behavioral economists argue. Consider, for example, the policy question of whether prescription drugs are given free of charge to the elderly or are sold to them at a subsidized price. Conventional microeconomic theory suggests that the charge will cause the elderly to economize on their drug usage, taking medications at less than the recommended frequency. But the endowment and sunk-cost effects suggest that prescription charges can be expected to cause the elderly to follow more carefully their doctors' advice to take the drugs with a prescribed frequency. If following a prescribed usage plan leads to more *effective* drug use, the result can be, perhaps, less need for medical treatments.[78]

Behavioral Finance

Behavioralists in finance largely oppose the widespread adoption among finance scholars in the last third of the twentieth century of the "efficient-market hypothesis," which University of Chicago financial economist Eugene Fama discovered and discussed in his doctoral dissertation in the early 1960s. Fama's work was rewritten in two forms, for an academic audience in a journal article (1965a) and for a less technical audience in a trade publication (1965b).

In these early publications, Fama argued that stock prices were difficult to predict. With earlier scholarly work showing that professional investors could not consistently beat the market Cowles and Jones[79], Fama further developed his argument by positing that asset prices that were broadly traded were "information efficient." That is, asset prices captured all relevant information on firms' prospective financial health, which helped to explain why professional investors were so hard pressed to beat the market. To beat the market, investors either had to know something others did not know or they had to be lucky in buying stock just before

new information became widely known. Otherwise, in the strong form of Fama's theoretical model of market behavior, fully rational investors, utilizing full rational expectations (or the ability to interpret and discount with perfection the value of any and all information on firms' earning streams), would on average act on the existing public and private information, driving stock prices to their efficiency-enhancing levels more or less instantaneously, given prospective earnings and risks, with no one being able to earn excess returns, absent the advent of new information.

While markets may never have been as information efficient as Fama's model suggests, the efficient-market hypothesis proved a shocking insight and a means of modeling market behavior and generating hypotheses (in line with Friedman's methodology) and as a means of empirically assessing the market impact of new information, or events, in the financial lives of firms. If stock prices capture all existing information and some new event, incorporating some new information, affecting firms' earning streams into the future, then stock prices can be expected to respond immediately. Fama and his coauthors published the first so-called event study in 1969. Literally hundreds (if not thousands) of such event studies have been produced across the world over the last four decades, which explains why Fama deserves a Nobel Prize in economics.

While the efficient-market hypothesis was certainly productive in generating empirical research, many economists and financial professors inside and outside the academy greeted it with considerable skepticism. Their skepticism was grounded in casual observations of how slowly financial information flowed among investors and how difficult *information* was to pin down in data, much less interpret with tolerable accuracy. Then, there were concerns that market prices frequently seem to rise and fall for no apparent reason, with no apparent new event or no apparent change in relevant information flows. One has to wonder how some individuals could become quite wealthy from stock trading if stock markets were at all times, and everywhere, as efficient as Fama's model posited. (But then most investors cannot beat the market.)

Behavioral finance scholars have attacked the efficient-market hypothesis for the same reason that behavioral economists and psychologists have criticized the perfect rationality premise: the foundation of the efficient-market hypothesis seems otherworldly, given people's observed "irrationalities" in the marketplace and the economy.

Then, there are the matters of the historical reality of stock-market bubbles and crashes that seem completely at odds with the efficient-market hypothesis. Much behavioral finance literature suggests that investors are often no more rational in their decision making than consumers and both are affected by biases and conditions seemingly unrelated to financial markets, such as weather.[80] We can use Robert Shiller's explanation of the stock-market bubble of the 1990s and the housing-market bubble of the 2000s to illustrate the problems behavioralists have with models founded on fully rational investors. Shiller explains these bubbles in his two widely read, praised, and well-timed books, *Irrational Exuberance*[81] (first published in March 2000 as the stock market peaked, and rereleased with an added chapters on the housing-market bubble as housing prices peaked in 2005) and *The*

Subprime Solution (published in May 2008 only a few months before the credit markets began to freeze up, the mortgage-backed security market evaporated, banks began to fail worldwide, and governments passed bailouts of their financial sectors).[82]

Shiller sees such recent bubbles as repeats of similar stock- and housing-market bubbles throughout history. Bubbles founded on investor incompetence, greed, and the tendency of people to herd. Herding describes people's proclivity to accept some "new era" common story for the continued rise in the prices of stocks and houses and to make buying decisions based on what others are doing.[83] Shiller is fully convinced that people's—even expert investors'—financial decisions are infused with what can only be called "irrational exuberance" (a phrase Alan Greenspan, then chairman of the Federal Reserve, coined in 1996). In effect, Shiller reiterates a point mainstream economists make with reference to prisoner-dilemma and public-good settings, that rational decision making at the individual level can give rise to outcomes that have all the markings of being irrational, i.e., outcomes that are inferior to what all—investors—would prefer.

Shiller offers a dozen factors that made up the "skin" of the stock-market bubble of the 1990s, but that had "*an effect on the market that is not warranted by rational analysis of economic fundamentals*" (emphasis in the original).[84] The first such factor was the opening of the Internet to the broad public by the advent of the first browser in early 1994, which led many people to believe that the economic landscape would be radically changed. One story widely accepted, to extend Shiller's theme, in the dot-com bubble and burst of the late 1990s was that the Internet fundamentally changed the way business could be done and would continue to be done in the future. With a small investment in software and a few servers, any reasonably competent computer geek could become a seller to the world from an easily established virtual storefront.

Moreover, with the emergence of China and India as economic powerhouses founded on an abundance of skilled but cheap labor, markets had become global in scope with the potential for vast economies of scale and vast increases in sales (Shiller 2008, Chap. 3). With costs low and potential revenues high and with most work being done by Internet-site visitors from all over the globe, the potential for future economic profits was unlimited, which justified the dramatic escalation of stocks' price/earnings ratios to levels far removed from previous records—as the story was told and retold.

All the while, according to Shiller, irrational exuberance took hold in stock markets.[85] Few purveyors of the new era story in the midst of the 1990s bubble may have realized that the argument for exorbitant profits was self-contradictory and defeating, given that the touted low entry costs made Internet-based markets open to new and highly competitive entrants, which would eventually lead to low profitability and the high likelihood of failure for many dot-com companies.

The stock-market bubble was further expanded by other considerations, several of which were as follows:

- The downfall of the Soviet Union and the conversion of the Russian and Chinese economies to free markets, which heightened profit expectations.
- Business moves toward downsizing and outsourcing.
- The Republican takeover of both houses of Congress in 1994, which meant that more pro-business legislation could be expected (and did result in a cut in the top capital gains tax rate in 1997).
- The movement of the Baby Boomers into mid-life during which they could be expected to increase their savings and stock purchases.
- The expansion of business news reporting, which could increase the demand for stocks, because so many of the reports were optimistic.
- The expansion of defined contribution pension plans and the development of mutual funds.
- The expansion of stock trading with the development of discount brokers and Internet trading, which permitted more people to "gamble" more cheaply in day trading.[86]

Along the way, there can emerge an "information cascade," with all investors in herd-like mode starting to look to the same information on the performance of stocks and looking to each other for guidance on what they should do in their financial dealings. As a result, a disconnect can develop between the actual performance records of firms and the information investors use in making their buy, hold, and sell decisions because investors are future looking.[87] These and other considerations have a "self-fulfilling aspect" to them, which contributes to stock markets taking on attributes of one big Ponzi scheme.[88] Even though investors may have recognized in the late 1990s that the stock market may have been expanding through an unwarranted bubble, they need not have been deterred from submitting buy orders because of the general expectation that the market would continue its expansion—for a time—which meant that there were still gains to be had. The market took on something of a casino character with investors gambling on how far out the bubble would expand before it burst and generated a reversal information (and expectations) cascade.[89] Of course, the stock market bubble in the 1990s and the housing-market bubble in the 2000s could have been fueled partially by what Fed Chairman Ben Bernanke called a "global savings glut," which could have caused investors to take greater risks just to bolster their returns on investments that were sagging because of the global savings glut, or so George Mason University economist Tyler Cowen has argued.[90]

A key element of the new era story behind the housing bubble of the 1990s and early to mid-2000s was, according to Shiller, that housing and the land on which houses had to sit was in short supply and would only get tighter in supply as the country's population and economy continued to expand, especially in key charmed markets like Los Angeles, San Francisco, Las Vegas, New York City, and various cities in Florida.[91] Beginning in the 1990s, the housing bubble was fueled with various government subsidies and falling interest rates. The rising housing prices in the late 1990s validated the new era housing story, which, in turn, encouraged herding and speculation into the first five years of the 2000s. Along the way, the

housing bubble was expanded with the advent in the 1970s of the securitization of home mortgages, creating a moral hazard for many bankers, who had become mortgage retailers and resellers, to induce home buyers to take on larger debt than they would likely be able to handle over the long term.

Under pressure from Congress and a string of administrations, especially the Clinton and following Bush administration, to increase home ownership, especially among low-income earners and minorities, with emphasis on minorities, the U.S. Department of Housing and Urban Development loosened mortgage restrictions on first-time homebuyers in the mid-1990s.[92] Over the three decades preceding 1995, the U.S. ownership rate remained within a fairly narrow band, 63–65 percent, but then started an upward trek during the Clinton second term and the following Bush first term, peaking at 69.2 percent in second quarter 2004 (and then dropping only to just under 68 percent by the third quarter 2008).[93]

One of the major changes was that borrowers no longer had to prove five years of stable income. HUD guaranteed billions of dollars in mortgages for low-income borrowers in identified ethic groups.[94] Fannie Mae and Freddie Mac followed suit in 1999 by looking on the mortgage-backed securities loaded with high-risk subprime (under which interest rates were initially suppressed and then set to jump after several years) and Alt-A mortgages (mortgages granted without supporting documentation on the borrowers' income and assets). At the time, *The New York Times* reported that "African Americans borrowers constituted 18 percent of homeowners holding subprime mortgages and 5 percent of conventional mortgages."[95] Franklin Taines, then chairman and CEO of Fannie Mae, defended the company's action on the grounds that "Fannie Mae has expanded home ownership for millions of families in the 1990s by reducing down payment requirements. Yet there remain too many borrowers whose credit is just a notch below what our understanding has required who have been relegated to paying significantly mortgage rates in the so-called subprime market."[96] Accordingly, Freddie and Fannie began aggressively buying mortgage-backed securities.

Between 2004 and 2007, Freddie and Fannie bought to the tune of $1 trillion, to "curry congressional" favor, all with private funds invested in the two organizations attracted by federal government guarantees.[97] HUD's policies and Freddie and Fannie's investments had the desired effects: U.S. home ownership rose from 64 percent in 1994 to 69 percent in 2005,[98] but also increased the riskiness of the securitized mortgages. Subprime and Alt-A mortgages rose from 8 percent of all mortgage originations in 2003 to 20 percent in 2006 as their investments primed the subprime mortgage pump and the housing bubble, but also of containing the risk exposure of Freddie and Fannie investors, or so they might have thought, given that they bought and bonds issued by the two quasi-governmental corporations—or until the housing bubble burst.[99]

The development of the risky subprime mortgage and the Alt-A mortgages boosted short-run housing demand, further pushing housing prices that, in turn, validated (for a time) the story about housing being a solid investment and the borrowers' decisions to choose subprime mortgages with delayed balloon payments. Given the continuing sharp escalation of housing prices (which rose in

some areas of the country for several years at more than 20 percent), many real estate speculators could expect to refinance their mortgages on speculative properties on more favorable terms, as their expected equity built up and before the balloon payments kicked in. Moreover, banks increased the riskiness of their mortgage portfolios in search of higher spreads between the interests rates they paid for their loanable funds and the interest rates they charged borrowers (with lowered credit standards). Their growing profitability and the continuing escalation of housing prices (which hid the growing riskiness of bank's portfolios) improved banks' credit ratings and their ability to sell off mortgage-backed securities, which, in turn, fueled the spread of subprime loans and the housing bubble.

People in power virtually denied the prospects of a truly national housing bubble. Shiller quotes Alan Greenspan, who wrote in his *Age of Turbulence,* "I would tell audiences that we were facing not a bubble but a froth—lots of little local bubbles that never grew to a scale that could threaten the health of the overall economy."[100]

Shiller argues that once a bubble gets started, it can take on a life of its own, with acceptance of the story spreading like a disease through what Shiller calls "social contagion of boom thinking," under which people set aside local and personal information that denies the validity of the widely adopted story of success and believe that everyone else has better information.[101]

The housing bubble can expand as people begin to buy based on past price increases and the prospects of greater wealth with a continued rise in prices. At some point, many people may come to understand that prices are excessively inflated but continue to fuel the bubble with added buy decisions that can be founded on little more than the belief that the story is widely believed and, thus, will be self-fulfilling—at least for a time. A bubble is then expanded by nonrational or irrational decision making—or irrational exuberance, a term that Shiller exploits to good effect.[102]

All can be well until "bubble thinking" comes to a halt as people begin to recognize the disconnection between housing prices and potential resale values (or rental rates), given the realities of buyers' ability to pay. The housing price bubble peaked in 2006 after leveling off in 2005 as housing price increases began to taper off with the price downturn jeopardizing many subprime and Alt-A mortgages (and variations of such mortgages) that had been earlier negotiated with practically everyone—borrowers, mortgage originators, mortgage-backed security buyers, and even government regulators and policy makers—believing that escalating housing prices could and would continue. As price increases tapered off, the speculative demand for houses dampened, and housing prices began to reverse course in 2006 and 2007, leaving many borrowers under water (or with mortgages larger than the resale prices of their houses). Many subprime and Alt-A (and, of course, negative amortization) borrowers were unable to refinance their way out of ballooning mortgage payments. The result was a collapse of the housing markets and escalating foreclosures on houses and personal bankruptcies.[103]

Real estate finance professors Major Coleman, Michael LaCour-Little, and Kerry Vandell found that between 1998 and 2003 housing prices were by and

large tied to economic fundamentals (population and income, for example), with later price increases having all the markings of pure speculation, supporting Shiller's central point. Indeed, they found that instead of subprime mortgages *causing* the housing price bubble, the housing price bubble gave rise to a surge in subprime mortgages, which were attractive because of speculation fever and which peaked at 24 percent of all mortgages originated in 2006.[104] Of course, the emerging subprime mortgages could still have had feedback effects on the housing price bubble and, no doubt, contributed to the downward spiral of housing prices and upward spiral in foreclosures after 2006 and to the downward spiral in market evaluations of mortgage-backed securities and the freezing up of interbank credit in 2008.

In his *Subprime Solution* (2008), Shiller presciently argued that the burst in the housing bubble, not to mention the pervasive financial fraud afoot in the mortgage industry, put the country virtually on the precipice of a financial calamity, possibly on par with the 1929 collapse in the stock market. This could give rise to a second coming of the Great Depression:

> The *subprime crisis* is the name for what is a historic turning point in our economy and our culture. It is, at its core, the result of a speculative bubble in the housing market that began to burst in the United States in 2006 and has now caused ruptures across many other countries in the form of financial failures and a global credit crunch. The forces unleashed by the subprime crisis will probably run rampant for years, threatening more and more collateral damage. The disruption in our credit markets is already of historic proportions and will have important economic impacts. More importantly, this crisis has set in motion fundamental societal changes—changes that affect our consumer habits, our values, our relatedness to each other.[105]

And as an early draft of this chapter was being finalized (late 2008), the burst in the housing price bubble was patently obvious in the widespread escalation of foreclosures and bankruptcies over the months since Shiller released his book, the collapse of the investment banking firms of Bear Stearns and Lehman Brothers, the takeover of Merrill Lynch by Bank of America (which paid a share price less than half of Merrill's market price a year before), the financial precariousness and rescue of American Insurance Group (which was considering the selloff of some of its assets to stay afloat), the takeover of Wachovia by Wells Fargo Bank, the rising closures of a number banks, the federal takeover of Freddie and Fannie, as well as a rise in the unemployment and inflation rates to levels not seen in years. All of this was keeping Bush Administration officials at work late at night and on weekends seeking ways to avert a wider financial system meltdown.[106]

Shiller was one of the first financial economist to go on record, advocating a massive bailout of banks and other financial institutions, as well as other large companies that have been described as "too big to fail" because of the potential irreparable damage to the larger economy.[107] If irrational exuberance and bubbles can take hold in financial and housing markets, then perhaps they can emerge with the same ease, and same effects, in policy circles. In early 2009, a "policy bubble" did seem under way with various politicians and policy advocates adopting "new era" stories about how the economy was on the brink of an economic collapse that

could unfold as a Second Great Depression and that so many sectors of the economy were in retreat that the federal government was the only entity left to fuel demand. Federal Reserve Chairman Ben Bernanke supported then Secretary of the Treasury Henry Paulsen by pressing what he saw as the reasons for the urgency of approving the Treasury's initial $700-billion bailout plan, "My interest is solely for the strength and the recovery of the U.S. economy. We believe if the credit markets are not functioning that jobs will be lost, the unemployment rate will rise, more houses will be foreclosed upon, GDP will contract, that economy will just not be able to recover in a normal, healthy way, no matter what other policies are taken."[108] In making his case for his company's bailout, CEO General Motors Ric Wagoner exhorted his workers and suppliers to write their congressmen, arguing, "The current financial crisis goes far beyond any one industry. With each passing day without a solution, the credit market continues to freeze up, denying consumers and businesses the needed cash for home loans, car loans, small business loans and the critical investments that grow the economy and create jobs."[109]

Of course, talk of both bailout and stimulus packages activated lobbyists from all sectors of the economy—including homebuilding, air conditioning, railways and air transportation, environment, travel and tourism, wireless telephony, fish farming, and library—to begin seeking their own bailout or stimulus programs, with everyone claiming damage from the economic downturn and great potential benefits from federal expenditures on their industries, according to news reports.[110]

Keynesian economics came to the economic policy forefront once again with a series of ever-higher bailout and stimulus proposals that would have "multiplier effects."[111] At this writing in early 2011 the projected federal budget deficit was projected to remain above $1 trillion for years to come with commentators still proposing "stimulus" expenditures to keep the recovery from faltering in face of a string of Middle East uprisings and the Japanese earthquake and tsunami disasters, which caused oil prices to surge on world markets.[112] There seemed to be no end to the willingness of the federal government to route federal tax and borrowed dollars funds being routed to firms that were deemed "too big to fail." The fact that the bailed out companies, including General Motors and Citi Group, were paying back their federal dollars fortified advocates' confidence in the legitimacy of the bailout policy course.[113]

One has to wonder, given arguments and findings from behavioral research, if the prospects of a policy bubble continuing could do as much damage as the financial and housing bubbles. After all, the problem of moral hazard was at least partially responsible for the country getting into its financial and economic mess, and the proposed bailout and stimulus packages could create a major moral hazard problem for the future, as many firms and individuals begin making decisions with an eye toward their losses being "socialized" through future bailout and stimulus packages. The bailout and stimulus packages could also be translated into higher future tax rates and inflation rates, given the mounting federal debt, and in his first proposed budget President Obama did include major tax increases on the "rich"

(those making more than $200,000 a year).[114] At the very least, from the perspective of the new behavioralism, such a prospects cannot be summarily dismissed.[115]

Concluding Comments

Behavioral economists have developed a number of key insights about people's behavior:

- People facing real-world choices among prospects sometimes, if not often, violate the principles of dominance and invariance underlying rational behavior models (at least in laboratory and survey settings without the buildup of market consequences that can press for changes in decision making).
- People tend to be risk and loss averse, which implies that they will require payment premiums to confront prospects that involve risk, the potential for losses.
- People's buying price of an item often can be expected to be lower than their selling price because of the endowment effect.
- Opportunity costs tend to be given a lower negative subjective weight than an out-of-pocket expenditure of the same (present discounted) dollar amount. In other words, the way in which costs are incurred can matter, and choosers will favor projects involving foregone opportunities to those involving out-of-pocket expenditures.
- Sunk costs can matter, meaning they can affect current and future behavior, at least for a while (and so long as market pressures do not come to bear on decision making).
- People can engage in mental accounting, which can affect their perception of the costs and benefits of different prospects.
- Stock market and housing market (as well as other asset markets, like oil) are subject to speculative fever, fueled by information cascades, that leads to price bubbles. Bubble thinking can have irrational and/or nonrational foundations, which can be the case when people do not engage in due diligence on investigating their investments. Speculative fever can be rational, given that people might rationally decide to invest when they detect others are engaging in (irrational) bubble thinking.

In general, behavioralists insist that people simply do not have the mental wherewithal to be as rational as mainstream economists theorize, a position that a burgeoning behavioral literature has documented. Herbert Simon argued that the concept of bounded rationality should supplant full rationality in economics simply because "the capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world—or even for a reasonable approximation to such objective rationality."[116]

Chapter 25
Problems with Behavioral Economics

Behavioral economists and psychologists feel confident, if not cocky, that they have substantively undermined the methodological approach to mainstream (conventional or neoclassical) economics identified in modern times with the two branches of the Chicago school associated with Milton Friedman and, more pointedly, Gary Becker. Certainly, the behavioralists have contributed to our understanding of people's decision-making abilities, especially their limits, and have caused mainstream economists (including both authors) to rethink their (our) methodologies. This in turn has led us to a new understanding of the role of the rationality premise in economics and of a budding economic theory of the human brain. There are, however, several good reasons for caution in siding with the behavioralists on all critical fronts, even if their research findings on people's decision biases and irrationalities are confirmed time and again. Let us count the ways.

The Perfect Rationality Caricature

In a growing number of books, behavioral economists and psychologists follow what has become a fairly well-worn format for argument, starting with a caricature of perfect rationality's function in economic theory. Richard Thaler and Cass Sunstein assert that economists assume that "*homo economicus* can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the will power of Mahatma Gandhi,"[1] with the none-too-subtle suggestion that mainstream economists who base their theory on *homo economicus*—or, more broadly, perfect rationality—must believe their premise is descriptively accurate in its full details because, they presume, one could not expect reliable insights from a theory founded on a patently false premise. Thaler and Sunstein add that modern mainstream economics is founded on the "false assumption" that people either almost always make the best decisions, or make better decisions than could be made by someone else: "We claim that this assumption is false—indeed, obviously false. In fact, we do not think that anyone believes it on reflection."[2] They are certainly right on one

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_25,

point: probably no economist truly believes—and certainly Friedman did not (and never used the phrase "perfect rationality")—the Thaler/Sunstein characterization of perfection in human decision making as a descriptive proposition.

One of the problems in using Einstein as the paragon of human intelligence is that while Einstein was brilliant in thinking through tough physics questions, he was remarkably inept when it came to much more complex economic and social issues, at least as judged by the standards of modern microeconomics. He had a feeble understanding of how markets worked, which largely explains why he consistently, unabashedly, and vigorously advocated socialist solutions for the major economic ills of his era, all points one of the authors has developed at length elsewhere.[3] At any rate, as we have noted, Gerd Gigerenzer and his colleagues have shown how people can make themselves smarter than they are innately simply by devising heuristics that sidestep the need to make the kind of complicated calculations implicit in rational decision making (in pool or baseball, for example).[4] The rationality premise itself can be construed as a heuristic that makes economists at least appear smarter than economists know themselves to be, simply because the premise allows them to work within their own mental limitations. Again, the important constraints on economists' doing deductive (or inductive) science are not the constraints facing their subjects as they try to allocate resources efficiently in a world with pervasive scarcity. Rather, economists' more pressing constraints are likely to be those of their own limited mental abilities as they try to understand vastly complex human interactions in markets and other social settings.

Otherwise, Thaler and Sunstein do not seem to appreciate in such pronouncements the important distinction between perfect rationality (or some close approximation) as a *description* of human decision making and behavior, and perfect rationality as a *premise* devised for strictly deductive, theoretical purposes—or in other words as an imperfect tool of analysis, which has still proven productive (reason enough for many mainstream economists to be loath to jettison it readily). As noted, Friedman advocated use of the rationality assumption, but only so long as it lowered the complexity and cost of doing theory without undermining the intent of theory, which is to generate insights and testable predictions. Friedman and other mainstream economists have insisted all along that people do have some rational capacity, which means the premise of rationality is not completely arbitrary and makes for a connection between how people are believed to make decisions and can press people to be more rational than they might naturally be inclined to be. And a rational capacity at some level could be justified on evolutionary grounds. Neuroeconomists have found that the human brain does include a utility function, which supports a presumption of some rational capacity.[5]

Friedrich Hayek, another Nobel economist whom we have cited before, did indeed argue directly that he and other Austrian economists (who share at least some methodological, pedagogical, and ideological affinities with mainstream economists of the Chicago Price Theory schools) advocated delegating choices to individuals not because individuals always make the best decisions, but because it is hard to say who else could make better decisions among the numerous daily choices individuals face than the individuals themselves. Hayek and many other

economists (mainstream and Austrian) recognized that the voluntary advice of others could and does guide many people in their decisions toward higher welfare levels. Frank Knight believed that communications among people were an underrated source of information for ends that should be pursued individually and collectively and for goods and services that could be bought to achieve those ends. Indeed, people's sociality is very likely an evolutionary successful human trait because congregate living provided early humans with greater predator detection. When people live in groups, there are simply more eyes and ears to survey safety perimeters, a line of argument developed at length elsewhere.[6] For humans with highly developed communication skills, congregate living conserved and focused the brains' limited neurons as some group members specialized in the sensory information flows could absorb, consider the data with care, and communicate the value of the information to others in the group, points also elaborated elsewhere.[7]

But Hayek and Knight—and Friedman and Becker—have disputed the wisdom of giving power and authority to some self-appointed or collectively appointed experts to impose their decisions on others in such detailed matters of daily life as what personal ends to pursue and which consumer goods to purchase to achieve those ends—as if the experts have the research techniques and the intuitive powers to divine the subjective ends of all others as well as know when other people's decisions are truly wrong. Experts might know something of what their relatively small number of laboratory subjects want, but they can hardly know the minute details of people's wants, especially over stretches of time for multitudes of diversely situated people. Moreover, experts' decision powers can be as defective—formed with decision biases and filled with irrationalities—as anyone else's. Hayek, Knight, and others would likely worry that the decisions of behavioralist experts would be as "predictably irrational" as the people they study, mainly because the behavioralist experts doing the so-called nudging of other's behaviors must be drawn from the human population, all of whom suffer the same evolutionary history and have many, if not all, of the same rational limitations. They would also worry that the delegation of nudge powers to self-acclaimed experts could magnify the influence of decision frailties and irrationalities because they could affect large numbers of people. Granting such powers could also suppress experimentation, which is crucial to the advancement of human welfare improvement precisely because people have limited rational capacities.

Behavioralists as experts might be better able than their subjects to discern right decisions from wrong ones in the behavioral areas they have studied, but should we not worry that the experts' own rational limitations will appear in areas they have not studied, not the least of which is the exact and varying implications of their proposed nudges on different people over time? Remember circumstances differ substantially in particulars, especially with the passage of time. Will their nudges, which must apply for defined time periods for groups, eliminate people's experimentation that could lead to better nudges, and more rational decision making, over time for different people? Such questions must remain a concern because even minor and gentle nudges can give rise to sequences of decisions, behaviors, and interactions of decisions and behaviors, all with feedback loops that experts could

not possibly know when they initiate any agenda of decision reforms. The derivative decisions that people may make several sequences removed from the original nudges may never have been studied in their full complexity over extended real-world populations and over extended time periods during which irrationalities can be corrected to one degree or another through feedback mechanisms, most notably experiential learning and the communication of lessons among a very large number of people. Our point here is to point out an obvious problem with so much behavioralist research: the great majority of laboratory subjects in past studies have been undergraduate or graduate students who, by virtue of their being in universities and volunteers, are biased samples, perhaps unrepresentative in their values and sensitivities of the great wash of humanity across a nation or the globe.

The behavioralist experts' decisions could be further flawed if they are based on defective research techniques that overlook essential features of decision environments. Real-life decision environments are, to repeat, far more varied across large numbers of people and are ever changing through time. Behavioralists themselves insist that human decisions are critically dependent upon the way in which choices are framed, yet choices can be framed in innumerable ways. If framing is as strong a force as behavioralists claim, then is it even possible for generalizations to be reliable over time for a large portion of the population? At what point can research be stopped and reform agendas be confidently developed? There is reason for skepticism about the application of knowledge of human behavior from the behaviorist research program, a point that will be fortified as we go through the arguments in this chapter.

Then there is the nontrivial concern that behavioralists can become unjustifiably enthralled with their newfound sense of judging other people's decisions, so much so that they recommend nudges that generalize their principles, applying them to situations and people where they need not and should not be applied. Employing resources to nudge those people who make right or rational decisions in the behavioralists' research would surely be a waste.

In short, Austrian and mainstream economists would have a healthy skepticism for any proposal that delegates the power of making personal choices for others to Richard Thaler, Cass Sunstein, or Dan Ariely, no matter how expert they and their admiring followers see themselves. First and foremost, to reiterate, behavioralists have found that not all of their subjects have made wrong or irrational decisions (even by the behavioralists' chosen criteria of rationality). In laboratory experiments, some subjects (often a nontrivial minority of all subjects) did choose the higher expected value gamble over a lower valued sure thing, an important fact that often is set aside as later reports of the experiments include loose talk about how subjects are collectively irrational with little to no attention to how the minority can be an important force in changing behaviors among those who make irrational decisions over time.

Then, there is no reason to believe that the sure-thing option was in any sense wrong or irrational, given the role variance can play in people's evaluations. In a widely cited experiment, some subjects treated projects involving out-of-pocket expenditure as less preferred than similar projects of equal dollar value involving only opportunity costs. As noted in the previous chapter, Richard Thaler concluded,

"the students systematically preferred the project with the opportunity cost."[8] Those who chose the opportunity-cost projects may have imagined some hidden benefit to the projects that the researchers, for a good reason, did not observe—these types of evaluations are necessarily subjective. Even if there is a true decision bias among business people for opportunity-cost projects, not all subjects suffered from the identified bias. Some subjects treated the projects as equals, or may have exhibited a bias in favor of out-of-pocket-expenditure projects. If there is a right decision, those who made it can cause, with appropriate learning and feedback loops, a shift in the distribution of right and wrong decisions over time (which is more likely in the real world than in laboratory settings).

There is also the consequential problem McKenzie has encountered: He repeated (as best he could) Thaler's experiment with MBA students, offering two ways of pursuing a business venture that required a $1 million investment (A) through using firm resources devoted to other projects (an opportunity cost) or (B) through raising outside equity funds or borrowing (out-of-pocket expenditures). The overwhelming majority (upwards of 75 percent) in two separate classes chose option B (out-of-pocket expenditure). When McKenzie made option B the use of the firm's cash reserves in one class, 87 percent chose option B. (Of course, the use of cash reserves involves an opportunity cost, but the use of cash might be expected to be seen as more of an out-of-pocket expenditure than option A, given Thaler's use of out-of-pocket expenditure. The cash might have been seen as a more explicit or salient cost.) But perhaps McKenzie's class experiment was framed differently than Thaler's. If so, our point remains: generalizing about decision biases from the experiments framed in particular ways is fraught with inherent risks that are rarely acknowledged because there is essentially no limit to the details of the "frames" for experiments.

Sure, give Thaler, Sunstein, Ariely, and everyone else in the behavioralist camp all the opportunities they desire to present their arguments in books, articles, and classes, and to solicit (paid and/or unpaid) consulting jobs, but such a concession is a far cry from giving them or other experts the power to impose supposedly correct decisions on all (or even a few) others, no matter if they made the right choices. Power can be misused, and while those in the behavioral camp might be able to make more rational decisions for themselves than the average of all others, there is no guarantee that their decisions, based on their own assessments, in fact will be more rational for others, even if they could divine the ends of others. They just might be inclined to infuse their decisions for others with their own value systems, perhaps affected by principles of decision making they have deduced from, say, mean scores in their research findings (a form of valuation through group think), which likely will have little chance of improving the decisions of a large number of people scattered about the mean.

One could go through the "irrationalities" listed by behavioral economists to explain reoccurring phenomena such as asset (stock market and housing) bubbles. For example, part of the problem with bubbles, behavioralists tell us, is that market participants engage in "herding," which is claimed to be irrational because people do not look to the fundamental data to make their decisions, but rather look to what others are doing.[9] Richard Posner makes a strong argument that herding is not

necessarily irrational, and can be quite rational: "It is risky but not irrational to follow the heard. (It is also risky to abandon the safety of the herd—ask any wildebeest.)"[10] When uncertainties abound, following the herd can be a good working heuristic because other members of the herd can have information individuals do not have and cannot obtain. And herding works well in so many areas of life, especially those relating to the use of language, culture, social norms, and morality.

Besides, when a bubble is expanding, knowing when to get out of the asset market is hard to determine because the peak can only be known in retrospect. And Posner reminds us that the expected value of staying in assets in the midst of a bubble can be greater, given the unlimited upside gain, than the expected losses that will be incurred when or if the bubble bursts because the size of individuals' investments truncates participants' downside losses. Nevertheless, the result of individual rationality can be a "collective irrationality." Put another way, individual irrationality cannot be deduced from collective irrationality.[11] When economists talk about public goods, they recognize that individuals behaving rationally and individually will underproduce the good. Competitive prices are a form of collective irrationality for sellers. Economists do not ascribe irrationality to market participants, but rather use individual rationality as a way of explaining (or predicting) the underproduction in the case of public goods and equilibrium prices in the case of competitive markets. Posner effectively argues that bubbles can be treated in essentially the same way that public goods and competitive markets are treated.[12]

Reliance on Constrained Laboratory Studies

The behavioralists argue that research demonstrates how human beings are less rational and exhibit more irrationalities than people—especially economists—assume: "Hundreds of studies confirm that human forecasts are flawed and biased. Human decision making is not so great either."[13] In the process, the behavioralists point to a varying collection of decision deficiencies or biases (availability bias, optimism bias, status quo bias or inertia bias, representativeness bias, relativity bias, loss-aversion bias, anchoring bias, planning bias, and the list goes on) and recite findings of a series of studies demonstrating that people's decisions and behaviors do not match the presumption of perfect rationality, as indicated by the high proportion of subjects who gave what the behavioralists deemed wrong—equated with irrational—responses to constructed choices. Along the way, the behavioralists might acknowledge, as Ariely does, that "life is complex, with multiple forces simultaneously exerting their influences on us, and this complexity makes it difficult to figure out exactly how each of these forces shapes our behavior,"[14] with complexity being the reason d'être for carefully crafted laboratory experiments,[15] which are the "microscopes and strobes lights" used by economists and others in their roles as social scientists.[16] "They [the experiments]

help us slow down human behavior to a frame-by-frame narration of events, isolate individual forces, and examine those forces carefully and in more detail. They let us test directly and unambiguously what makes us tick."[17]

Never mind that any admission that "life is complex, with multiple forces simultaneously exerting their influences on us" necessarily draws into question the usefulness of applying the results of laboratory experiments, which can entail gross simplifications, to the broader and ever-changing complexities of real life (the kind of charge behavioralists make against mainstream economists for their simplifying premise of perfect rationality). Moreover, some sterilizing premise of decision-making behavior must be behind the set up of laboratory experiments, which are designed to select and isolate a few variables (often among innumerable social and physical forces) so that the simplified experiments can be devised in the first place. How else might researchers select and isolate essential features of complex real-world environments for study in laboratory settings? The behavioralists' guiding theory seems to be a negative one: behavior cannot be perfectly rational—with which Friedman and other mainstream economists might agree without going to the trouble of proving the point with expensive laboratory research. After all, as we have seen, perfect rationality has always been touted as a simplifying assumption, an imperfect methodological means of easing the cost of thinking.

We also should not ignore the fact that behavioralists' careful research often amounts to nothing more than the tabulation of subjects' responses to surveys completed in classes or laboratory settings where the subjects have few, if any, meaningful incentives to make and report accurately how they arrived at their choices and where there are no feedback loops on decisions, either within the brain, among the subjects, or between the subjects and the external environment. Hence, there are few opportunities to correct errant decisions and behaviors, as the focus in classroom and laboratory settings is generally on the decisions and behaviors themselves isolated from their consequences and from any interaction among the subjects or between the subjects and institutional settings. Sure, lots of wrong decisions can be expected if the potential for corrections is ruled out, especially when there are no or few incentives (much less growing incentives as decision-making errors mount) for subjects to detect errors and to take the time and resources to make corrections.

And, we must note, a substantial experimental literature indicates that people's decisions in real-world settings (or some approximation of such settings) are significantly different from those in laboratory settings where subjects may be inclined to give the researchers what they want and where their decisions may be under scrutiny, as reviewed by economists Steven and John List.[18] For example, subjects were asked to allocate sports trading cards among subjects who gave different prices for cards. The subjects tended to give higher "quality" cards to those offering the higher prices. However, in real-world settings in which "confederates" approached real-world card traders' different prices, the tie between the buy price and quality was weak at best.[19] In another study, subjects who had never given to charities gave 60 percent of their allocated endowment in their

laboratory setting to what they were told was charity.[20] When subjects in a dictator game in a laboratory experiment knew they were being monitored, 46 percent of the subjects donated at least $3 of their $10 laboratory endowment. When the subjects were given complete anonymity, less that 16 percent donated at least $3.[21] Subjects who show a high tendency to contribute to public goods in laboratory settings have a low tendency of contributing to a real public good (urban tree-planting for a nonprofit) in the outside world.[22]

The Human Brain's Internal Inclination to Correct Errant Decisions

Presumably, within the behavioralists' methodology, the brain is nothing more than a black box that makes decisions and has little, if any, internal interest in adjusting to feedback sensory data that emerge from decisions. That is, wrong decisions, and the sensory data that are bound to emerge from them, are not cause enough for the brain to adjust decisions to the scope of the external data considered, the ways in which external data are recombined with already stored data, or the extent to which decisions are shifted from the primitive and limbic system to the frontal cortex. No matter how serious the flaws in past decisions, behavioralists often overlook ways in which people—through their brains—can adjust past decisions. The reported errant decisions are the end of the surveys or experiments. The unstated presumption is that the brain has no interest in correcting its own mistakes and is perfectly content to continue to systematically make all identified errors, even when the brain learns that it and the body it inhabits would be better off if corrections were made.

The presumption seems to be that the only economizing behavior is in the external world. There is no recognition that, consciously and unconsciously, the brain is constantly filtering sensory data inflows, and changing the assessments of various components of the inflows, based on what is decided. This reality of how the brain works means there must be at least some feedback loops embedded in the process by which the brain interacts with the external world, especially if the consequences for its errant decisions and behaviors mount with time.

There is also no recognition that the brain itself must economize, or has any independent interest in economizing, on its own energy and neuronal resources and can suffer in the achievement of its own goals (which can be in full synchronization with the goals of decision makers themselves for whom it is a dutiful agent) when it makes errant decisions. Surely, errant decisions—especially when consequential, systemic, and predictable enough for behavioralists to pay attention to them—will affect the brain's internal workings as new and more solid neuro-networks are laid down through those decisions and their consequential experiences.

If the human brain has an interest in securing energy resources for its own functions and those of the body, which the brain manages, but yet it has evolved to fear a scarcity of such resources, then certainly the brain would have an interest

in correcting errant decisions to some degree even absent external pressures to do so, at least, again, beyond some point as the consequences of its errors mount. If behavioralists' brains can deem other people's decisions and behaviors errant, then should not the brains of the decision makers themselves, who necessarily have more details of the decisions' circumstances and must suffer their consequences, be able to detect at least some of the errant, irrational consequential errors, at least at some level?

Okay, the brains of the decision makers might not be able to detect, or have an interest in detecting, the full error of their ways (especially in artificially constructed laboratory settings), but so long as they can detect some degree of error of consequence, then feedback loops within the brain are created with the potential for correcting decisions over time. These corrections then combine with the brain's sensory data inflow, and potentially may be absorbed and used by other decision makers because of external pressures the corrections impose. These external pressures, the exact nature of which depends on the institutional environment, may affect only the speed and degree to which corrections are made, but there should nonetheless be pressures for corrections if the errors are truly consequential for the prosperity of people and their brains and if they mount, or are made more consequential as others make right decisions and, in turn, others correct the errors of their ways.

The point worth stressing here is that established irrationalities set up their own feedback loops within the brain, at least to some degree, especially when the irrationalities are deemed consequential. Such feedback loops, both conscious and automatic, are part and parcel of the human brain's evolved construction. One cannot deny the prospects of such loops and potential correction without assuming away what the brain is designed to do, which is constantly to assess and reassess internal and external sensory data, including the sensory data that errant decisions elicit.

But then, behavioralists' research may involve only administering surveys on some choice circumstances, the full results of which for all subjects in the experiments are known only to the administrators. That is, the subjects themselves are not made privy to the data on the choices of all other subjects until later, after the experiment has been terminated and the reports on the experiments are filed or published. The errant decisions, and their subsequent consequences, cannot then be sensory data that the subjects' brains can employ in feedback loops for reassessment and correction of errant decisions. No wonder in such research paradigms people's observed rationality falls far short of perfection. Human decision making as a *process* is often denied (or is severely constricted).

The critical point missed in survey findings is that the subjects are not given opportunities to adjust to their own and others' decision experiences. In real life, interactive processes, some real or supposed irrationality can be presumed to abate, or else we must worry that the irrationalities are not really consequential or that the brain does not do what we think it does, which is to think and, in some way, economize on its own limited resources. We have to wonder how the brain could have evolved to do anything other than economize on itself, given the body's

evolved physiological constraints and the brain's own neurobiological constraints, as well as energy constraints faced by both body and mind.

We also might wonder how only the behavioralists are capable of understanding errant decisions and recommending corrections. If corrections at some level are not naturally forthcoming, then surely behavioralists' notifications of people's irrationalities should provide new and useful data to people to correct their own decisions, at least to the degree that their evolved mental constraints will allow. Perhaps behavioralists might retort that people are too captured by decision-making biases to correct their ways in the normal courses of their lives; but if that were the case, then would the errant decisions be as truly consequential or as powerfully important, widespread, and predictable, as behavioralists suggest? If so, then how have the behavioralists escaped the bounds of their own irrationalities, if others cannot do the same? But then, the behavioralists could be the ones who are incorrectly assessing the irrationalities of all others. Any number of behavioralists have certainly fallen into the trap of obtaining evidence of a majority of subjects making wrong decisions and then talking with ease about how people in general are irrational or harbor decision-making biases, when their own evidence does not warrant the generalization that individuals are thoroughly and predictably irrational Ariely[23]. Researchers from the behavioralist school do seem to suffer an unrecognized decision bias of their own, a *generalization bias*, as well as myopic focus on irrational decision making since they so rarely report subjects' rationalities. Indeed, in their books Ariely, Thaler, and Sunstein focus so completely (if not exclusively) on subjects' irrationalities, one must wonder how they can expect to carry on rational discussions with readers about people's pervasive irrationalities.[24]

Ecologically Adaptive Environments

In any number of the behavioralists' decision surveys, there is little external competitive market pressure on subjects to induce them to ratchet up their rational inclinations in decisions, to expand the intake of sensory data beyond that which is noted in the experimental survey, or to shift consideration of sensory data to more deliberate and calculating levels of the brain. The surveys capture decisions in snapshot form, without allowing time for processes of adjustment to kick in. Moreover, the given survey instruments and laboratory settings are specifically designed to restrict relevant sensory data for the choices that are made. Laboratory settings are environments that the investigators define, rather than those that subjects define themselves in some ecologically adaptive manner. In such artificial environments subjects might be expected to make more mistaken, irrational decisions than they would in more natural, evolved, real-world environments that accommodate the subjects' rational limitations and the errant decisions people are inclined to make. Research settings typically have few to no opportunities for subjects to correct their own errant decisions or to respond to the correct and errant

decisions of other subjects, and subjects typically have no control over the research environment or the experimental programs of the researchers.

Subjects' Overall Rationality

In their reviews of laboratory and survey findings, the behavioralists also do not seek to assess the relative merits or consequences of irrational *and* rational decisions. Perhaps such can be expected when behavioralists use perfect rationality as their standard for judgment, which makes fully rational decisions rare, if not impossible, and when the intent may be only to expose anomalies in decision making, undermine mainstream economists' premise of perfect rationality, and encourage support for behavioral economists' recommendations for other people's decisions and behaviors. Yet, subjects' tolerably rational decisions made in real-world settings or under circumstances not considered in the laboratories could be of greater frequency and of greater consequence than their irrational decisions made in laboratory experiments and surveys. We are left to wonder about what the limited research findings show when the universe of decisions is so vast, a basic concern with all inductive reasoning that is no less problematic than the premise of perfect rationality is for deductive reasoning. To repeat, this issue is particularly troublesome because behavioralists themselves insist that decisions depend crucially on the particulars of how choices are framed, which suggests possible inexhaustible ways in which choices can be posed to subjects, and, in turn, suggests an endless research agenda with increasing difficulties in drawing out generalities, other than that decisions depend on the exact conditions under which they are made—not a particularly impressive insight with added value.

Might the behavioralists' framing of their reviews give a distorted impression of the extent of people's irrationalities, or errant decisions? Subjects in laboratory settings could make many errant decisions, but still be deemed reasonably rational overall (especially outside of laboratory settings), because they make far more correct decisions than errant ones or because their rational decisions are more consequential than their irrational ones. We can never know for certain people's overall rationality, and surely not with the confidence that the behavioralists suggest from identifying only irrational decisions and weighing down their research reviews with only those findings. We must presume, contrary to any impression left from the behavioralists' reviews of their findings that behavioralists still hold that people are capable of being rational (a point that seems apparent in their favored use of "bounded rationality"[25] and "quasi rationality.")[26] After all, they do seem intent on having a rational discussion with their readers and broader audiences about people's irrationalities and proposals for corrections.

The question again is how much stock can be placed on evidence that comes in snapshot form and from artificial environments devoid of internal and external feedback loops, and representing a limited segment of potential experiences—especially when the surveys and experiments are not guided by a general deductive theory of

behavior, other than that everything affects decisions, or perfect rationality is wrong on its face. Without a general deductive theory, there seems to be little or no basis for selecting the essential features to incorporate into the research surveys and the laboratory settings. Laboratory settings can be fruitful, but the construction of the settings must have some guiding theory, openly described, that includes subjects' motivations, or we have to wonder how irrationalities can be identified.

To clarify, let us reconsider the type of experiment widely touted as providing evidence of irrationality (as noted in the previous chapter). Daniel Kahneman and Amos Tversky posed a choice to their subjects between a sure-thing payoff of $800 and an 85 percent chance of receiving $1,000 or nothing (an expected payoff of $850).[27] A reported substantial majority of the subjects took the sure-thing payoff, which Kahneman and Tversky and other behavioralists contend (wrongly, we suggest) is contrary to the dictates of rationality. Rational subjects would have taken the option with the higher expected payoff, the gamble, according to the behavioralists' determination of rational decisions. Note that there was nothing in the choice environment for repeats of the choice. In one sense, Kahneman and Tversky have validated what economists have long known: variance of outcomes matters in people's subjective assessments of options.[28] And economic theory, founded on rationality, is at its best when used to assess the directional changes in decisions when essential features of the environment, like variance, are altered.

If the same subjects were allowed to play the game repeatedly and the game were truly fair as stated (85 percent of the draws yielded $1,000), we might reasonably expect the percentage of (rational) subjects taking the higher valued gamble would tend to rise. This can be expected to happen because as the game is repeated, the variance of outcomes would fall, which would cause the subjects' assessed value of the gamble to gravitate toward—if not reach—its expected value of $850. To prove the methodological value of the perfect rationality premise, not all subjects need choose the gamble when the choice is repeated, say, numerous times. Again, all that economists can predict (and maybe seek to predict) is the *directional* change on the margin: as the count of repeated plays is increased, the percentage of subjects taking the gamble can be expected to rise, at least up to some count of repeated plays.

Similarly, if a large number of subjects could agree to share their drawings equally, then the subjective value that individual choosers place on the prospect option would also begin to approach the expected value, $850. Again, the variance in outcomes for individual subjects would begin to narrow. We would thus expect that the percentage of people choosing the lower valued sure thing would likely fall. Also, the larger the number of choosers who share their drawings, the lower the expected variance in outcomes, or the closer the average drawing would approximate to the expected value, $850, which suggests that the larger the number of choosers who pool their drawings, the greater the percentage of subjects who would be expected to choose the gamble.

And it follows that, given a fixed variance in outcomes for the gamble, any growth in the dollar gap between the sure thing (originally set at $800) and the gamble (set with an expected value of $850) would be expected to cause the

percentage of the subjects taking the gamble to rise. For example, if the expected value of the gamble is held at $850 and the value of the sure thing were gradually dropped toward, say, $500, then, at the very least, beyond some point, the percentage of subjects taking the gamble would be expected to rise, if the payoffs were real payoffs and not just hypothetical laboratory choices. If the percentage of subjects taking the gamble did not rise under repeated plays of the game, then the Kahneman/Tversky claim of subject irrationality would be all the stronger. On the other hand, if the percentage of the subjects taking the gamble did not rise or even decreased, Kahneman/Tversky's claim of irrationality (or flaw in economic theory) would be weakened, if not discredited.

The implied hypotheses in the foregoing discussion are the kind of testable predictions mainstream economists surely have in mind in their deductive methodology based on some variant of the rationality premise. Again, Friedman was perfectly willing to concede that some people might make what observers view as irrational choices in a given one-shot choice situation. Accordingly, the use of perfect rationality as the standard for assessing the presence of irrationality is something of a methodological straw man, which is bound to be proven flawed. Again, the testable predictions Friedman had in mind were of the sort that some essential feature in the environment changed, which could give rise to an expected directional change in choices and in behavior on the margin, not to a prediction of any given level of behaviors, including irrational behaviors (for example, in consuming apples or taking gambles). After all, rational tenets by themselves allow economists to deduce that demand curves slope downward, not where they will actually be positioned on a graph.

Kahneman and Tversky report an experiment that supports, albeit indirectly and without intent, the prediction that if choosers are given more than one chance of choosing a gamble with an expected value greater than the sure thing and then receive the mean payouts from all drawings, the percentage of people taking that higher expected-valued gamble would increase, again because of the decline in the variance.[29] In one of their experiments, subjects were given a choice between a 25 percent chance of receiving $6,000, with an expected value of $1,500, and a 25 percent chance of receiving $4,000 plus a second 25 percent chance of receiving $2,000, the combined expected value of which is also $1,500. Although the expected values were the same, 82 percent of the subjects chose the second option.[30] Kahneman and Tversky's findings support our point: in choices involving prospects (gambles), choosers will tend to attribute some subjective negative value to the variance of outcomes.[31] The lower the variance, the greater the likelihood that the strict expected value would dominate people's choices. The fact that the second gamble had a lower variance made it relatively more attractive to more subjects.

To test the point about the impact of narrowing variance on choices, McKenzie undertook a set of experiments in which he gave 174 executive and fully employed MBA students in his microeconomics classes two options, all before the students were told anything about behavioral economics. He posed this problem:

Experiment I. Suppose you are given a choice of drawing from two barrels, A and B. You cannot choose to draw from both barrels. Barrel A has only one coupon in it that is worth $800. You have only one draw from Barrel A. Barrel B has 100 coupons in it, 85 percent of which are worth on redemption $1,000. The rest are worth zero. You have only one draw from Barrel B. Which option do you choose?

As expected from the review of the behavioral economic literature discussed in Chap. 23, a substantial majority, 72 percent, of the MBA students chose Barrel A. McKenzie then gave the same students the following set of options, involving a change in option B only:

Experiment II. Suppose you are given a choice of drawing from two barrels, A and B. You cannot choose to draw from both barrels. Barrel A has only one coupon in it and that one coupon is worth $800. You have only one draw from Barrel A. Barrel B has 1,000 coupons in it, 85 percent of which are worth $10 each. The remaining 15 percent have a zero value. You can draw 100 (and only 100) coupons. All coupons in the barrel are thoroughly mixed, and you cannot see the coupons before you pull them out. A computer will do the random drawing for you and will total the coupons drawn at no cost to you. Which option do you take?

As expected, the percentage of the students taking option A (55 percent) in Experiment II was a quarter below the percentage taking option A in Experiment I. To our way of thinking, behavioral economists are right: the option taken depends on how you frame the choices. In McKenzie's classroom experiments, increasing the number of draws—and reducing the potential variance of outcomes around the expected value—substantially decreased the percentage of subjects who chose the sure-thing option.

In a follow-up run of the experiment, the subjects were given a prospect of having a thousand draws from a barrel in which 85 percent of the coupons were worth $1 and the rest zero (the expected value remained at $850); the percentage of students choosing the sure-thing option declined again, but only to 51 percent (revealing, perhaps, declining marginal utility to declining variance).

Of course, in such classroom experiments the fact that subjects do not have to calculate the value of the sure thing distorts the percentage of subjects making that choice. Subjects do have to calculate the value of the gamble. Some subjects might choose the sure thing because they are unsettled by the time constraint, which can impose calculating mistakes that they would not make in more real-world environments where they can take their time and look to other's experiences with the choices. The subjects in class may also have had little incentive (and they had no real monetary incentive) to make the required calculations to make what outside observers might consider the right choice. There is a cost of thinking after all.

In McKenzie's initial test of the above experiment, he made a mistake in devising the sure-thing and gamble options for the first trial, which was, serendipitously, revealing. Instead of the coupons in Barrel B being worth $1,000, he mistakenly set them worth $850. The paragraph read as follows:

> Suppose you are given a choice of drawing from two barrels, A and B. You cannot choose to draw from both barrels. Barrel A has only one coupon in it that is worth $800. You have

> only one draw from Barrel A. Barrel B has 100 coupons in it, 85 percent of which are worth on redemption $850. The rest are worth zero. You have only one draw from Barrel B. Which option do you choose?

Twelve percent of the students actually chose the gamble, option B, in spite of its expected value being $722.50, 10 percent below the value of the sure thing. Either those students were risk-loving, in which case their choices were not irrational, or they simple did not make the required calculations because they had no real incentive to do so, which suggests again that their wrong choices cannot be construed as irrational, except by the imposed standard of outside observers. But such serendipitous findings do make one wonder how many subjects made the wrong choice by mistake or simple mental laziness in all such experiments.

Errant Decisions, Entrepreneurs, and Market Pressures

In the Kahneman/Tversky study, no attention was given to the possibility that entrepreneurs could emerge who would be alert to the unexploited profitable opportunities available in the errant decisions and behaviors and orchestrate corrections, if the subjects themselves were not willing to correct the errors of their ways.

Laboratory experiments often provide no prospect for the accumulation of errant decisions and behaviors to affect the value of unexploited opportunities and for the growing value induced by errant decisions to affect the subjects' tendency to be more rational (or less irrational) in their selections. The behavioralists-experimenters could see the subjects' errant decisions and behaviors and could devise corrective decisions.[32] Mysteriously, the subjects could not do the same, not even those who were intimately integrated into the social processes in which the errant decisions and behaviors emerged and pervaded the group. They simply were not given the chance. This is understandable: in laboratory experiments, only the experimenters are privy to the full sweep of errant decisions. They are the ones who collect and hold the data. Again, the behavioralists do not, in reporting their findings, recognize a role for decision entrepreneurs, other than themselves. Perhaps, subjects in the laboratory-experimental process are deemed too irrational, or too captured by the process, to be capable of being entrepreneurs intent on profiting from errant decisions, or just intent on setting the decisions of others straight. Maybe giving subjects some leeway for entrepreneurial work has not occurred to behavioralists.

One has to wonder why behavioralists see their methodological approach as the more credible, if not the only, means of detecting broad irrationalities and devising corrective solutions. They have criticized mainstream economists for sterilizing their economic analyses, but are not behavioralists doing the same? Behavioralists seldom consider how the prevalence of profitable opportunities embedded in the distribution of the irrational choices, as determined by subjects' responses on

surveys, can affect with time the relative value of, say, the sure-thing option and the prospect option. The division of the subjects' choices between the two options is treated as a given with no implication for future choices, even if the subjects in the experiment knew that the vast majority of the subjects made wrong choices. Presumably, the minority of subjects who made the right choices are not deemed sufficiently rational, intelligent, or creative to take advantage of all the subjects who made the wrong choices.

In short, laboratory experiments do not allow people to be tolerably rational, that is, to take in new revealed sensory data on wrong choices in their environments, to make cost–benefit assessments, and to reconstruct their decisions with the intent of advancing their welfares through the exploitation of profitable and welfare-maximizing opportunities that are bound to emerge from the wrong choices of so many others.

To assess the validity of the line of argument being developed here, McKenzie reframed the options in the Kahneman/Tversky experiment noted above. On the first day of class, without any discussion of microeconomics, he gave his 156 first-year executive and fully employed MBA students a choice between two options, A and B:

Option A. Business venture A is a sure thing, giving the owner/owners a guaranteed profit of $800 a year on the one product that is produced.
Option B. Business venture B is something of a gamble: the owner/owners have an 85 percent chance of receiving a profit of $1,000 a year and a 15 percent chance of receiving a profit of zero.
Which do you take? (You cannot take both.)

Again, behavioralists are right in that how people choose between the two options depends on the framing of the options. In this case, options A and B were identified as "business ventures," a slight change of words that, no doubt, redirected the students' frame of reference toward expected payoffs from the options, which might help explain why the students' choices were far more evenly split between the two options. Fifty-four percent of the MBA students chose business venture A and the remainder chose business venture B.

McKenzie then told them about earlier experiments in which 70 percent or more of the students took option A, and he also assigned them a short paper in which they were asked to take the earlier data as valid, and to consider the way the choice split would affect the relative prices of the two business ventures and thus their relative rates of return. He then asked the students, working in teams of five to seven, to come up with ways of making money off the choices that had been revealed. The students had no trouble recognizing that the expected value of business venture B was greater than business venture A and that the division of the choices would affect the relative prices of the ventures, and the relative rates of return on their investments. Several teams noted in their papers that as the number of people who chose A grew, its rate of return would likely fall for any number of good economic reasons (not the least of which is that the price of buying into venture A could increase with its market demand), which means it would not necessarily

have the sure-thing payoff that was advertised (or that might be thought from the given payoff fixed set in the option at $800). Seventy-plus percent of the teams came up with ways by which money could be made off the (supposedly) risk-averse students who chose venture A.

- Several teams came up with a strictly cooperative strategy—getting all students to choose venture B and dividing the total take, which, they reasoned (correctly), would likely increase the average payoff. Their cooperative solution also reduced the variance problem in the process.
- More ingeniously, several teams noted that they, individually or as teams, could go into the business of offering those who chose A a sure-thing payoff of, say, $801 to choose B and hand over the payoff. Several students even recognized that competing entrepreneurs would bid up the price offered to choosers of A, with the competition increasing the number of subjects choosing B.
- Several teams suggested that they would offer those inclined to choose A insurance that would mitigate the risk associated with choosing venture B, at a price, of course.
- Several teams indicated that they would, if allowed, select venture B multiple times (just as many companies do when they introduce multiple products, for example, books and toys).

More to the point, when told about the division of choices between the given options and when allowed time to think about how money might have been left on the table in the classroom experiment and about how money could be made from a redistribution of choices, the seasoned business people/students demonstrated far more rationality (and less outright stupidity) than behavioralists have found from framing the options in narrow and one-shot terms with no potential for entrepreneurial corrections. We surmise that the students, when told of the methods their classmates proposed to use to pick up the dollars left on the table by those who chose venture A, could be induced to replicate those methods with little hesitation.[33]

The influence of the emergence of feedback loops on initial decisions and on entrepreneurs engaged in corrective activity to profit from mistaken decisions of others can be relevant to other behavioral findings. Behavioral economists and psychologists have found that a majority of their subjects (mistakenly) treat sunk costs as relevant costs (see the previous chapter). They have also found, it must be stressed, that some minority of subjects treat sunk costs the way rational people can be expected to treat them, as costs that have already been incurred and cannot be reincurred and are, therefore, irrelevant for current decisions. And this minority can be far more important to ongoing market outcomes (as opposed to one-shot laboratory outcomes) than their numbers might suggest, because their decisions can induce others to correct their behavior or suffer the economic consequences of their misjudgments. The minority of rational decision makers on sunk costs in laboratory settings can approach a majority in market processes, perhaps reversing the behavioralists' general assessments of people's predictable irrationality. Those market participants who are sufficiently rational to ignore sunk costs will have a

pricing advantage over those who treat them as relevant costs. Those who ignore sunk costs will also put competitive pressure on those who do not, forcing those who are imbued with what we might call the "sunk-cost decision bias" to change altogether their cost calculations and to set sunk costs aside (when in fact sunk costs are truly sunk with no associated commitment).

Similarly, many producers may indeed have a decision bias (grounded in, say, evolutionary forces that have shaped human physiology and neurobiology) for projects with opportunity costs rather than those with out-of-pocket expenditures of equal dollar investment, suggesting that they can be inclined during any initial time period to accept too many projects with opportunity costs higher than projects with out-of-pocket expenditures. If such is the case, those producers will have a higher than necessary cost structure, and producers without a preference for projects with opportunity costs will have a competitive pricing advantage and therefore greater access to financial capital for expansion. In turn, producers with a bias for opportunity-cost projects will see their market share contract, if they do not correct the error of their ways. Some (maybe not all) errant decision makers can be expected to correct their ways and, in the process, increase the pressures on others to do the same.

These kinds of competitive market pressures will tend to correct consequential errant decisions. The pressures might not press market outcomes to achieve some sort of competitive ideal in terms of welfare, but then achievement of some competitive ideal in the real world through the playing out of market forces is beside the point of mainstream analytics, as is the achievement of elusive equilibriums. Equilibriums will never likely exist in the real world because market, social, and physical environmental forces are always in motion and because market processes themselves, which are necessarily affecting people's rational tendencies and their opportunity sets, make equilibrium and any competitive ideal outcome moving targets. But, still, equilibrium-based analysis can remain useful for thinking purposes.

But we should not be too harsh on the behavioralists. Abstractions from complex reality are required in any scientific endeavor. Reality is simply too complex; the mind is too limited—familiar themes from past chapters. The problem that the behavioralists' arguments highlight is obscured beneath their claims regarding the distribution of errant decisions: behavioralists impugn deductive neoclassical theory for abstracting from reality through the sterilization of the rationality premise, but they do not seem to recognize that they are doing the same thing in their sterilized laboratory settings, although in an inductive methodological way. Behavioralists employ grossly simplistic environments—devised out of experimental necessity—to take issue with what they see as a grossly simplistic behavioral premise at the foundation of neoclassical theory, a classic case of an old adage at work, the kettle calling the pot black. However, the late Kenneth Boulding, who was as much a philosopher as an economist and who is credited with founding the subdiscipline of evolutionary economics, once quipped incisively: "It is a fundamental principle indeed that knowledge is always gained by the orderly loss of information; that is, by condensing and abstracting and indexing the great buzzing

confusion of information that comes from the world around us into a form we can appreciate and comprehend."[34] That is, some form of sterilization of the real world is absolutely essential to advance science, or just thinking, a point that should be a friendly reminder to mainstream and behavioral economists alike. And for theory to have scientific value, it must represent a partial view of reality, simply because any theory that can explain everything can be devoid of predictive value (which can be the case for utility theory absent any constraints on what motivates people or what they want).

The Rational Emergence of Choice Option

Of course, choice options should not be expected to magically appear in real-life, market settings in the way they do in the classroom and laboratory settings, at the will and direction of behavioralists-experimentalists (or even mainstream economists). In the real world there has to be at least some rudimentary economic foundation for available options, which have economic value (at least if the options are to be viable for some stretch of time). Options in the real world generally have histories, which means providers and choosers in real life are likely to have more experience with the available options than the enlisted research subjects who have choice options presented to them in experimental settings more or less out of the blue, so to speak. Experience with options is important because experience can affect choices, if for no other reason than experience can affect the existence and efficiency of the brain's neuro-networks.[35] If options emerge from an entrepreneurial process that influences their values and if people at any point in time overwhelmingly make the wrong or irrational choices, then surely their choice sets will change, giving rise to at least some alterations in options taken and the relative values of those options with time and repeated interactions.

Experimental evidence from a large number of laboratory studies involving subject interactions through time and repeated plays of games, which allow at least some feedback loops, reveal three major conclusions:

- First, the existence of the so-called endowment effect is mixed, especially in market settings.[36]
- Second, if the endowment effect exists, consumer experience in buying goods can affect the actual endowment-effect gap, possibly eliminating it altogether when subjects realize the gains to be had from the gap. As mainstream economists, but not behavioral economists, might have expected, John List found market field data that suggests that inexperienced consumers exhibited an endowment effect consistent with behavioral theory. Experienced consumers, on the other hand, found ways of overcoming any endowment effect they might have initially exhibited.[37]
- Third, subjects in hundreds of experiments, even when they have highly incomplete information on what others will do and even when they are few in number,

can make adjustments, find mutually beneficial trades, and achieve more or less all gains from potential trades.[38]

Vernon Smith, who received a Nobel prize for his work as a founding force behind experimental economics, observes that "an important component of the emergent observed order in these isolated single-product market experiments derives from the institution, not merely from the presumed rationality of the individuals. Efficiency is necessarily a joint product of the rules of the institution and the behavior of the agents."[39] Remarkably, experiments have shown that even robots with no intelligence, much less rationality, can achieve most of the known gains from trading, suggesting again that the rationality and efficiency of outcomes are necessarily related in a consequential way to the interactions of subjects with all others and the institutional constraints under which they make and revise their decisions.[40]

The Irony of Nudges

The behavioralists note that neurobiological considerations founded in evolutionary forces can predictably "sway" human decisions and behaviors. Accordingly, changes in the environment that behavioralists have found to be effective can nudge decisions and behaviors toward what they and others consider improvement. Thaler and Sunstein define a nudge as "any factor that significantly alters the behavior of humans even though they would be ignored by Econs" (with "Econs" being Thaler and Sunstein's derogatory name for the subjects of mainstream economics).[41] Ariely stresses, "Whether we are acting as consumers, business people, or policy makers, understanding how we are predictably irrational provides a starting point for improving our decision making and changing the way we live for the better."[42]

Thaler and Sunstein reason that economists have traditionally focused on the role of incentives in guiding people's decisions and behaviors to the virtual exclusion of nudges (all nonincentive influences on decisions and behaviors) that "improve our ability to improve people's lives, and help solve many of society's major problems. And we can do so while still insisting on everyone's freedom to choose."[43] The nudges Thaler and Sunstein recommend include the following sample of a rather extensive and varied list:

- If schools want to alter the combination of healthy and unhealthy foods chosen by students in cafeterias, cafeteria workers can place the healthy foods at eye level and toward the start of the lines.[44] They ask, "Would anyone object to putting the fruit and salad before the deserts at an elementary school cafeteria if the result were to induce kids to eat more apples and fewer Twinkies? Is the question fundamentally different if the customers are teenagers, or even adults?"[45]

- If businesses want to reduce the splatter from men relieving themselves in public restroom urinals, then maintenance departments should place something for men to aim at (a small plastic spider, for example).[46]
- Because people's decisions are subject to inertia, firms can encourage payroll-based savings by not returning monthly payroll deductions for saving to zero at the start of a new fiscal year, unless workers specify otherwise. Rather, the default option should be that workers are automatically enrolled in company-based saving plans (especially when companies match their workers' savings) and from then on workers' savings are held to their past levels.[47] Better yet, firms should encourage workers to commit to boost their savings with future raises on the grounds that the loss in future consumption will seem less onerous in the present than it may in the future when raises are awarded. Moreover, when the future arrives, workers will again be reluctant to change their future saving level because of the status quo or inertia bias.[48] Firms can also encourage saving by paying workers biweekly instead of monthly.[49]
- If charitable organizations want to raise more contributions, then they should recognize that suggested starting points—or anchors—for people's contributions can affect how much they give. Charities that have suggested contribution levels of "$50, $75, $100, and $150 can increase their total contributions by increasing the suggested amounts to $100, $250, $1,000, and $5,000."[50]
- Because people are subjected to the availability bias, which is to say that their decisions are distorted by recent information, they may inaccurately judge the probabilities of future bad events occurring. Reminding people of bad outcomes may nudge their assessed probabilities back in the direction of true probabilities and improve their decisions. To increase their optimism, remind them of good outcomes.[51]
- To increase the availability of transplantable human organs, the default option would no longer be that citizens must select the donation option on, say, their driver's licenses, which people infrequently do because (supposedly) of their inertia bias. Instead, "all citizens would be presumed to be consenting donors," but would retain the option of easily opting out of the donor category,[52] all with the expectation that no more people would opt out of being presumed organ donors than would opt in to being organ donors.
- To make people's mortgage decisions less grounded in irrationalities, forged by a host of decision-making biases, lenders would be given a list of new information disclosure mandates on lending fees and interest rates that would be totaled into a "single salient number"[53] and would be required to simplify the confusing variety of mortgages.[54] Similarly, to make students better borrowers in the student-loan market, which is distorted by "sleazy" lender practices,[55] loan applications should be simplified with fewer questions and made uniform for all federal and private loan sources.[56]
- To curb misuse of credit cards, "credit card companies should be required to send an annual statement, both hard copy and electronic, that lists and totals all fees that have been incurred over the course of the year," which can be expected

to cause cardholders to shop for better deals and to be more conservative on, say, their expenditures on trips abroad.[57]

- To improve the environment, the government should build on the success it has had with mandates that require tobacco companies to disclose the health effects of cigarettes and that require drug companies to list the drug risks on labels. Thaler and Sunstein's proposed "low-cost nudge" would be to have the government "create a Greenhouse Gas Inventory (GGI), requiring disclosure by the most significant emitters," which would enable people to track the behaviors of the worst offenders and to pressure them to improve their ways.[58]

Ariely does not use the word nudge as a way of describing his embedded suggestions on how people's irrational behaviors can be made less irrational, given their decision-making biases. Nonetheless, he offers, albeit indirectly, a catalog of means by which people's behaviors can be improved, only a few of which need be noted:

- People have great difficulty appraising the value of different products isolated from one another (just as the assessed size of a darkened circle can change with the sizes of other surrounding circles).[59] Because of people's relativity bias, sellers of products should place their products for sale in the context of similar options in a product line. Also, when given a choice among three options—say, different television sets with their prices rising with their screen size—buyers tend to buy the option in the middle, both in features and price. Retailers such as Sam's Wholesale Clubs can increase the sales of its favored, supposedly most profitable, product by offering three alternatives and pricing the favored product in the middle. Restaurants owners can increase the orders of their favored upscale meal by inserting on the menu a higher priced meal that they do not expect to be ordered with any frequency precisely because patrons will scan the menu for lower priced meals. However, the mere placement of the higher priced meal on the menu will move customers from low-price menu options to the restaurants' favored upscale, but now middle-priced menu option.[60]
- Because of their relativity bias, people who want to buy houses or cars should restrict their searches to a range of options they can easily afford. By including options that are out of their price range, they can lead themselves to buy more house and car than they should, given their incomes and wealth.[61]
- People often behave like goslings (because of the brain's imposed requirement for arbitrary coherence), with first impressions counting unduly and acting as anchors against which all other options are judged. Hence, people's decisions can be controlled by their initial experiences. The prices people say they are willing to pay for something can be heavily influenced by the price of the first product and price (or anchor) they see. For that matter, the prices buyers say they will pay for a product can be affected by buyers doing nothing more than writing down the last two digits of their Social Security numbers (or the outside temperature). Hence, sellers can influence sales and can increase the actual selling price by listing a manufacturer's suggested retail price (MSRP) for no other purpose than to take advantage of buyers' arbitrary coherence, which

means that buyers will be inclined to see any other discounted price being a better bargain than if no higher MSRP were indicated. Such pricing strategies can work because "that's the way we are—goslings, after all," Ariely adds.[62] Needless to say, a variety of product promotions work only because we are irrational and predictably so (2008, p. 45).

- How much people pay for anything depends on their anchors, which includes how the deal is framed. After reading a selection of poetry in class, Ariely reports asking one group of students to indicate how much they would pay him to undertake poetry readings of various lengths later.[63] He asked another group of students how much they would have to be paid to listen to readings of various lengths. With the anchors set, the first students group volunteered actual payments they would make for the readings. The second volunteered prices they would have to be paid, again suggesting that anchoring and framing are important for decisions and should be exploited.
- People will respond unduly to the word "free." When a thirty-cent truffle was offered to students at fifteen cents and a two-cent Hershey Kiss was offered to students for a penny, 73 percent bought the truffle and 27 percent bought the Kiss. But when the prices of both chocolates were lowered by a penny—making the Kiss free—69 percent chose the Kiss. Ariely suggests his research explains why free is frequently used in product promotions and why he advocates its greater use, as in products being sold with a free second copy added or with free shipping.[64] To induce large numbers of people to buy electric cars, do not just lower their prices; give them away. To get more people to adopt preventative medicine, eliminate any co-pay for doctor visits.[65] The word free in itself provides an "emotional surge," perhaps "because humans are intrinsically afraid of loss."[66]
- "Market norms," which allow for explicit money payments, work well in business, but not so well in family and social settings where "social norms" involving the rule of tit for tat govern. When social norms are controlling, explicit money payments should not be used. Even in business settings, employers can often get more work out of their employees when they are asked to work for causes other than money. Payments can have the exact opposite effect of the one intended. When an Israeli daycare center started charging parents who picked up their children late, late pickups increased, according to Ariely, because the parents felt justified in arriving late since they were paying for the extended care service.[67] Ariely adds, "Indeed, just thinking about money [in social settings] makes us behave as most economists believe we behave—and less like the social animals we are in our daily lives."[68]
- Similarly, paying students and teachers for more learning (or just higher test scores) can shift education from social to market norms, reducing the inclination of students or teachers to perform for the sake of goals other than money. Ariely advises: "Money, as it turns out, is often the most expensive way to motivate people. Social norms are not only cheaper, but often are more effective as well."[69]

- A male's state of sexual arousal can influence the quality of his decisions (hardly a surprising research finding!), which suggests that males should make decisions about birth control or AIDS prevention prior to their being sexually aroused.[70]
- Because people are inclined to procrastinate, strict deadlines for completion of course assignments can improve student performance,[71] and those people, students included, who admit their procrastination "are in a better position to utilize available tools for precommitment . . ."[72] Similarly, doctors can overcome their patients' procrastination in getting medical tests by demanding up-front payments of $100, which will be refunded only when patients show up on time for the tests.[73]
- Americans' "overdependence" on credit cards can be curbed through a "smart credit card" that the consumer is able to program with governors that control spending over time and under "particular conditions."[74]
- Because of the endowment effect, consumers should be leery of trial offers of products and money-back guarantees. Ariely recommends viewing transactions as "nonowners, putting some distance between [one's self] and the item of interest."[75]

Of course, Ariely, Thaler, and Sunstein do not appear to have serious qualms about setting themselves up as the arbiters of improved decisions and outcomes that "are for the better." They see no apparent conflict between deploying behavioral-directing nudges and maintaining true freedom of choice and insist that they favor "nudges over commands, requirements, and prohibitions" because of the risk that such powers of telling people what to do can be misused.[76] And after all is said and done, Thaler and Sunstein are convinced that their recommendations amount to nothing more than "gentle nudges,"[77] although such a category seems to include government mandates and fairly harsh social pressures that could be brought to bear on people and firms for not giving way to the "nudge." Yet their nudge recommendations seem to be at odds with the explicit and strong statement earlier in their book opposing "commands, mandates, and prohibitions"[78] and their advocacy of "libertarian paternalism," which means their proposals, they insist, would be "liberty-preserving."[79] Why make the case for nudges that they do? Thaler and Sunstein assert, "The paternalistic aspect [of libertarian paternalism] lies in the claim that it is legitimate for choice architects [those who design nudges] to try to influence people's behavior in order to make their lives longer, healthier, and better,"[80] a comment made on the belief that all beyond the walls of classrooms and laboratories want what researchers say they want and that all can agree on what constitutes "longer, healthier, and better."

Behavioral economists do not seem to be able to acknowledge that mainstream economists see the premise of perfect rationality as a means of doing in their theoretical arguments what behavioralists seek to do, which, paraphrasing Ariely, amounts to the "slowing down of human behavior to a frame-by-frame narration of events, isolating individual forces, and examining those forces carefully and in more detail."[81] By focusing on equilibria, mainstream economists are able to set frame against frame to see how key variables move in response to changes in

essential features in the environment, assuming some process is set afoot through given changes in the essential features.

There is no such process of adjustment in behavioral economics. People just make poor, or rather irrational, decisions in response to set choices. There is no endogenous mechanism embedded in behavioral analysis for the subjects themselves to correct their decisions, aside from discovering their poor decisions through the behavioralists' findings. If any adjustment is permitted, it is the behavioralists themselves who assume the role of choice architects for all others, proposing changes in the environment for their research subjects (and, by extension, everyone else) so that decisions can be nudged more correctly in one way or another, as the behavioralists themselves deem desirable (or the behavioralists themselves believe that the subjects deem desirable). Never mind that defined and pressed nudges can impose a uniformity in decisions and behavioral outcomes that is at odds with the great variety of human needs, desires and aspirations, as well as is at odds with almost all forms of libertarianism that we can imagine (and we must confess to seeing libertarian paternalism as a total oxymoron) and ignore the value of varied experimentation, with the experimentation more or less ensuring bad, maybe irrational, decisions on reflection (or when compared with better decisions).

For example, as noted, Thaler and Sunstein argue that employers can increase workers' participation in company-sponsored savings plans by making the plans the default option on employment.[82] Even if they were correct on the facts of worker participation, the Thaler/Sunstein nudge of mandatory savings plans is not without problems. Some unknown number of firms and worker groups might simply prefer the full libertarian position of making "opt-in" the default option because they have found a better incentive for increasing participation or because greater participation may increase the firms' costs of the plans and cause them to reduce their contributions for every worker who contributes, or lower worker wages (and Thaler and Sunstein say nothing about potential interactions of nudges and worker wages and benefits unrelated to the nudges, and mainstream economics does should that there should be interactions if the nudges have the advertised consequential effects).

Again, in behavioral research settings, irrationalities do not have built-in feedback loops that can give rise to corrections. People would, presumably, have to have some rationality for that to happen, which suggests they must be able to see, or be pressured to see, the errors of their ways. And if we concede everyone's rationality, then the behavioralists' self-assumed guiding, corrective role would surely be diminished, if not called into question altogether. The built-in feedback loops, founded on some residual rationality, could very easily lead with time to corrections of misjudgments and irrationalities that could be superior—at least in theory—to the nudges (and their interactive consequences) the behavioralists recommend, because the subjects might know of detailed, essential, and varying environmental conditions that were unknown to the behavioralists-experimentalists as they designed their laboratory experiments and drew out their findings. The subjects might know better what constitutes improvement in outcomes, knowledge that the behavioralists-experimentalists cannot know to the degree that they, the

behavioralists, suggest—a point that many Austrian and mainstream economists have stressed when considering the consequences of fettered markets.

Moreover, the behavioralists would have to concede that they, also having flawed decision-making capacities and beset with irrationalities, could recommend errant nudges, simply because their recommendations will be based on laboratory experiments that do not replicate the real world in all its complexity, that are at odds with the findings of others. If people harbor no rationality, they cannot see the errors of their ways, which means there would be no internal feedback loops, other than perhaps in the form of other nudges from other behavioralists. Nothing in the behavioralists' methodology would suggest that a sequence of nudges devised and imposed would lead with time to an equilibrium in the nudge process that represents true improvement, not for everyone at least.

Hayek might rightfully worry that the behavioralists' methodology can lead to its own form of road to serfdom. Of course, behavioralists exude confidence that they *know* where people go wrong in their decisions and they *know* what constitutes corrections in decisions and behaviors. Hayek would surely worry that such a position is itself grossly errant, given that nudges are necessarily based on limited survey and laboratory information on what people want and how people will respond to nudges and respond to people's responses to nudges.

We can only suppose that behavioralists are willing to adopt their methodology and to elevate the importance of nudges because they imagine that their research has already shown where decisions makers go wrong and what corrections are needed or that they themselves will be chosen to do the research required to see where the decisions of others are errant and to devise corrective nudges. No one should be so confident. The decision to orchestrate nudges can be separated from the decision of who will be anointed with the powers of investigation and of the development of nudges. The behavioralists might not be among those chosen as choice architects even when such decisions are made with the interest of the public at heart; however, a system of nudges that has any depth and breadth will likely be grounded in disagreements over exactly what nudges, and combinations of nudges that can have interacting effects, should be imposed and orchestrated, and any given set of nudges will likely affect people differentially.

Accordingly, if the nudges are of any consequence, political interest groups will likely be forces in the selection process, which means that behavioralists themselves might fear the development of such a process because they very well might not be selected as choice architects and might not want to endure others' possibly errant nudges devised to correct the errant decisions and behaviors of people in general. After all, bookstore shelves are lined with advocates—scholars, ministers, self-appointed self-help gurus, and charlatans alike—for whole agendas of nudges that will correct people's errant decisions and behaviors. If people are as beset with decision-making flaws as behavioralists suggest, it is hard to know how behavioralists would provide assurance that the vast majority of heavily irrational people would not select choice architects who are themselves heavily irrational or, in other ways, would not be inclined to select nudges through irrational, counterproductive means.

Why would the selected choice architects be expected to provide the definitive improvements in people choices that the behavioralists believe should be provided? That question at the heart of the behavioralists' reform agenda is never addressed, and for good reasons: it has no good answer, or not one as clear as behavioralists imagine, assuming they are not among the nudgers. The advocates of nudges are not just advocating reforms in the broad institutional framework of society within which people can do as they please. Rather, the advocates of nudges want to manipulate the details of people's decisions and behaviors based on the kinds of (limited) research the behavioralists conduct. Indeed, if so many economists (and their public policy followers) can be led astray with (supposedly) the kind of misguided theory mainstream economists have employed for so long, as behavioralists insist has been the case, one has to wonder how the behavioralists can be so cocksure now, after only a few decades of behavioral research, that their own theoretical and empirical research is any less defective and misleading.

Of course, behavioralists might retort that they do not harbor any interests in having a system of forced nudges through, say, governments. Although Thaler and Sunstein concede that their phrase "libertarian paternalism" might appear self-contradictory, they write: "The libertarian aspect of our strategies lies in the straightforward insistence that, in general, people should be free to do as they like—and to opt out of undesirable arrangements if they want to do so."[83] They see their agenda as liberty-preserving and choice expanding: "Libertarian paternalists want to make it easy for people to go their own way; they do not want to burden those who want to exercise their freedom."[84] But then they have no compunction against setting themselves up as choice architects who "influence people's behaviors to make them live longer, healthier, and better" and "steer people's choices in directions that will improve their lives," all of which is set in motion by the belief that concepts like improvement and better off are what people want but do not achieve because "individuals make pretty bad decisions —decisions that they would not have made if they had paid full attention and possessed complete information, unlimited cognitive abilities, and complete self-control."[85]

The embedded ironies in the behavioralists' argument should be self-evident. Behavioralists insist that all of the decision-making biases are not simple surface defects in every-now-and-then decisions; rather they are deeply engrained, perhaps by evolutionary forces. But how can people recognize their wayward decisions if they are as irrational, or so thoroughly deficient in rational skills, as Thaler and Sunstein and other behavioralists believe them to be? If they cannot make good decisions, how can they judge any more effectively the quality of their decisions after being nudged by behavioralists? Might we not expect people's bad judgments to extend to assessing the quality of their decisions after the decisions have been made? How would they know they are better off when their decisions have been altered by the judgment calls of behavioralists acting as choice architects?

Concluding Comments

Thaler, Sunstein, Ariely, and almost all other behavioral economists and psychologists argue that people make some "pretty bad decisions"; however, they use perfect rationality as the standard of comparison, concluding that people make "decisions that they would not have made if they had paid full attention and possess complete information, unlimited cognitive abilities, and complete self-control."[86] But why should behavioralists use such a standard for judging decisions if they are convinced that the standard is descriptively untenable? If the standard for judgment is relaxed to reflect real-world conditions of scarcity in both the external physical world and the internal mental world, then many decisions people make might not be judged to be so bad after all—and might not need nearly so many nudges toward improvement as the behavioralists propose.

In this chapter, we have described three levels of weakness in the methodological approach embedded in behavioral economics:

- First, the behavioralists are inconsistent in their argument when they challenge mainstream economics for assuming as-if perfect rationality in making testable predictions, but then use a form of perfect rationality as the benchmark to determine the breadth and depth of irrational decisions. They then, in turn, use this information to construct nudges and mandates, many of which could be as off the mark as they believe the behavioral implications drawn from strict mainstream economics to be. Many proposed nudges might be unnecessary or unproductive if people are inclined to adjust their rationality through time as their errors become apparent. As noted in the chapter, it was not at all difficult for MBA students to find profitable ways of correcting for many wrong choices made in reaction to an initial set of options from which they could choose.
- Second, behavioralists seem to harbor no appreciation for the idea that many supposed irrationalities can have a rational foundation (but then such a position might be implied in their attention to decision biases). This is especially problematic because the abundance of rational irrationalities depends upon the exact nature of the real-world institutional settings in which people make decisions and adjustments according to the consequences of their own and other people's errant choices. That is, the persistence of irrationalities depends on the absence of corrective feedback loops infused throughout people's own internal mental hardwiring and the external institutional settings.
- Third, behavioralists exhibit little concern for how their proposed corrective nudges and mandates can change the institutional settings, or can have derivative effects (not inconsequentially on the political front) that cannot be anticipated. The behavioralists cannot anticipate such changes because they cannot foretell how people's actions and the inevitable sequence of reactions over time will interact after the nudge is installed.

No one should expect people's real-world behaviors—even when markets are in equilibrium—always to be devoid of irrationalities of one sort or another. There is

no reason to believe that Friedman or Stigler or Becker would have had such an expectation. All markets (or any other institutional setting) can do is mitigate the frequency and distorting influence of irrationalities, for two basic reasons: First, perfect efficiency—including, perhaps, perfect eradication of irrationalities—in competitive markets is a useful theoretical construct for discussions in economics but perfection in reality is simply not optimal, and not even an option. Second, the human brain is simply not constructed to make all decisions, and all behavioral responses, rational in the sense that all costs and benefits of all options are carefully and accurately weighed. The infinite regress lurking behind cost/benefit calculations rules out perfectly rational decisions.

The higher brain simply does not contain enough neurons to accomplish perfection in decision making, nor does not it always have the time and energy to engage precisely in more rational, deliberate decision making. Many decisions and behavioral responses are reflexive and emotional, made with split-second speed, with limited sensory data and without conscious, exacting contemplation of alternatives, and thus are frequently mistake-ridden. But still, such mistake-ridden decision processes can be, on balance, efficiency and welfare enhancing. This is to say, if automated and emotional, irrationality-laden responses were ruled out, or could be (for sake of argument) totally suppressed by nudges and mandates, there is good reason to expect that people would be less well off than they are, with their decisions and behaviors likely even more infiltrated with misjudgments, irrationalities, or nonrational and emotional responses. In the development of their nudges, behavioralists do not appreciate the extent to which their proposed nudges and mandates can undermine the efficiency of defective decision making.

In a perfect decision-making world, nudges and mandates can be deemed good, or Pareto optimal; however, in a world of external and internal scarcity, such is not likely always the case. The nudges and mandates themselves can carry development and imposition costs, but they can also eliminate bad decisions that were good for the welfare of the decision makers in the same sense that mistakes in a world of risk and uncertainty can reflect mental economizing behavior.

As noted throughout this book, markets *improve* decision making simply by summarizing a lot of data on products into prices that enable people to economize on their rational capacities, by weeding out decision makers who persistently make bad (or irrational, net-gain destroying) market decisions, and by pressuring market participants to correct their decisions. The culling of bad decision makers can, of course, cause others to correct their mistakes by inducing them to be more rational than they would be absent the culling pressure. People can become more rational through a conscious decision to transfer many decisions from their reflexive and emotional systems in their brains to the more deliberate reflective systems.

The core issue that behavioralists leave largely unaddressed is whether the market processes that Friedman held dear and that are indispensable to mainstream economics are able to correct people's tendencies to make irrational decisions to any significant degree, even when an assumption of perfect rationality makes those processes invisible in the analytics. Behavioral economists have compiled findings of human irrationalities when snapshots of their controlled behaviors are taken;

however, any number of experimental economists have found from laboratory experiments that market processes often do quite well in guiding market outcomes toward equilibrium states that the experimentalists know to be the welfare maximizing outcomes, despite the fact that the subjects' mistaken decisions might infect the processes along the way.[87] Moreover, experimentalists have found that welfare-maximizing outcomes of the laboratory market processes can be approximated even when the subjects have far less than complete information, or when they know only information particular to themselves, say, the price at which they can buy or sell a given quantity. Competitive equilibrium also has been approximated (if not exactly achieved) when the count of buyers and/or sellers is far from numerous, the thought-to-be required condition for achievement of perfectly competitive output levels and net welfare gains for market participants.[88]

Finally, the methodological criticisms of rational behavior contain an inherent contradiction. The critics seem to believe that people's behavior is everywhere irrational, so much so that natural selection and corrective dynamics cannot be counted on to generate anything approaching rational, efficient outcomes. At the same time, they seemed convinced that they can engage their readers or listeners in a meaningful, rational discussion of people's pervasive irrationalities, all with the intent of nudging people into corrective changes toward improved behaviors for the great swath of people outside their own academic camp and relatively small groups of subjects. One can only wonder how pervasively irrational people can engage in rational discourse with the goal of lasting improvements in behavior. Do the critics of mainstream economics believe that they and their readers and listeners stand apart from all irrational people? If critics believe that they and their readers can, with the aid of laboratory and survey research findings, improve their decision making, why cannot decision making of others be improved by themselves once they (errant decision makers) see the data on errant decisions and/or through feedback loops in market settings? Markets might do a better job of nudging people toward enhanced welfare than a system of potentially ill-conceived and difficult-to-adjust nudges and mandates based on snapshot surveys of decisions inside laboratory settings devoid of feedback loops.

Then again, in pointing out people's decision-making limitations, biases, and failures, behavioralists could improve the feedback loops within markets and increase the pressure on people to correct their decision-making ways. Because of what they learn from behavioral economics and psychology, more market participants than otherwise might be made aware of the decision errors and biases of others, and the unexploited opportunities in their decisions, sooner than otherwise, which means that the behavioralists findings could increase (marginally, if not structurally) competitive market pressures to correct errors, which can give rise to more rational decisions and less waste of resources. That is, the research findings themselves could be the most important nudge the behavioralists have devised, especially since such a nudge is fully consistent with libertarian paternalism as people are allowed to decide for themselves what to do with the information.

Chapter 26
Why Men Earn More on Average than Women—And Always Will[1]

The subject of this chapter—the relative pay of men and women in the workplace—fits well in this section of the book. Many readers might think that the wage gap between men and women in the workplaces of the world can be attributable totally to political, social, and economic forces that, when corrected, will cause the wage gap to evaporate. We dare to be contrarian, not on the facts of the wage gap, but on its eventual elimination. This is not to say that the wages of women and men will not converge somewhat over coming decades, but only that some gap will remain—mainly for evolutionary reasons that have not be widely considered but that the gender divide in today's labor markets.

No doubt about it, a gender-based *average* wage gap has been documented in the United States, and this gap has been a persistent labor-market reality. At the behest of the White House Council on Women and Girls, the U.S. Department of Commerce released a report in early 2001 that came to a stark conclusion: In spite of women closing the gap with men in their labor participation and exceeding men in terms of the number college degrees earned each year, in 2009 women still earned 75 percent of their men counterparts in the labor force.[2] The U.S. Bureau of Labor Statistics drew a slightly more favorable conclusion: in 2010 the median weekly earnings of full-time wage and salary women in the United States was just under 83 percent of the earnings of men, up from 76 percent in 2000 and 62 percent in 1979.[3]

However, all researchers agree that while progress has been made, the gender pay gap still persists and, moreover, it cuts across all nations,[4] and industrial, occupational, and ethnic groups.[5] It has also been measured for at least two centuries.[6] Finally, female/male pay gaps have shown up in the laboratory experiments of economists.[7] Even after adjusting for any number and combination of wage-influencing variables, almost all researchers have found a significant gender-based wage gap.[8] Most commentators lament the persistent wage gap, no matter how the data are mined, and assume that a closing of the gap is doable, if only governments would adopt appropriate labor-market policies.

In this chapter, we note the varied theoretical foundations of a substantial body of empirical (meaning statistical or econometric) research (following the work of Wayne State University Law Professor Kingsley Browne), and then offer a

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3_26, © Springer-Verlag Berlin Heidelberg 2012

substantially different conceptual framework for reconsidering the female/male pay gap and reinterpreting the available empirical findings on the determinants of gender pay difference.[9] We relate these differences to evolutionary psychological surveys on gender-based mating attractors and on male-against-male competition. This conceptual framework draws out the inevitable links between gender-based mating strategies and competitive labor-market behavior and outcomes. That is say, *if* females and males seek mates based on different attractors—in particular, with females and males giving relatively different weights to the actual and expected labor-market pay and on-the-job-hierarchical, corporate position of prospective mates—then competition in the mating market can be expected to lead to gender differences in the *average* pay in labor markets, everything else held constant.

More specifically, if females as a group tend to place a relatively greater weight on their prospective male mates having "good financial prospects" (as extensive research in evolutionary psychology, reviewed in this chapter, shows they do), then males should be expected to compete with other males on pay and career-path choices to signal females of their relatively greater attractiveness among males. The competition among males for female mates can be expected to drive up males' relative *average* pay.

Additionally, given the mating preferences of many females, many males can be expected to be more risk seeking than many females, and this increase in risk taking among males will in modern labor markets lead to higher average pay for males—because risky jobs carry "wage premiums" to compensate workers for the risk taken (because risk necessarily translates into costs workers can expect to incur).[10]

In an array of empirical studies, others have attributed the (residual) gender pay gap (left after adjusting for various factors, such as age and education, that can be expected to affect pay) to gender-based discriminatory forces and restrictions in labor markets (as well as other variables). We certainly do not deny that such discriminatory forces and restrictions exist. Rather, we simply stress that the presumption that the entire pay residual reflects raw labor-market discrimination, conventionally conceived, is likely wrong and that some portion of the pay gap residual has its foundation in discriminatory forces apart from labor markets, but in mating markets that drive a wedge between the *average* market pay of males and females and can give rise to a pay gap residual (which may be explained by market forces that, by their nature, cannot be measured very well for econometric studies).

To the extent that mating market discriminatory forces are "hard wired" into females' and males' brains (the consequence of evolutionary processes that possibly date to at least the Pleistocene epoch, as many scholars have argued), a gender pay gap of some magnitude should be expected to persist.[11] That is to say, do not hold your breath on the average wages of males and females to ever fully align, no matter how many equal-pay-for-comparable-work laws are legislated. Such laws might narrow the wage gap somewhat (because they address discriminatory forces at work in labor markets), but should not be expected to eliminate the gap altogether (because they do not address discriminatory forces at work in mating markets). To eliminate the gap altogether would require a rewiring of male and female brains on sexual/reproductive attractors.

In this chapter, no attempt will be made to deny the merit of conventional explanations—including blatant discrimination—for the widespread persistence of some part of the female/male wage gaps. At the same time, we argue that such explanations very likely do not explain the full extent of the wage gap.

This chapter straddles and integrates theoretical contributions from five established but disparate academic subdisciplines: behavioral biology, evolutionary psychology, labor economics, experimental economics, and empirical studies. The contribution in this chapter comes mainly from showing how widely accepted conceptual points in mate selection theory can be linked to market theory to predict the observed persistence of a female/male wage gap on a global scale. In short, we develop in this chapter a radically different conceptual prism through which a mountain of scholarly empirical literature from several disciplines (encompassing survey studies on gender mate preferences and empirical studies on the determinants of female and male earnings) can be reinterpreted. To appreciate the importance and relevance of the evolutionary perspective for gender-based wage differences, we need to review the various conventional explanations.[12]

Conventional Explanations for Gender Pay Differences

Gender oppression and workplace discrimination mainly at the behest of politically and economically well-positioned males provide the most widely cited explanations for the average gender pay gap across all disciplines and among political partisans.[13] However, among economists steeped in competitive market theory, such explanations, by themselves, are problematic. This is because profit-seeking entrepreneurs (women included) should be expected to favor the "underpaid" female workers in their drive to develop a cost and price advantage over their competitors, thus driving up the demand for and wages of female workers and driving down the demand for and wages of male workers. In the absence of market impediments or some force apart from considerations of the relative productivity of female and male workers, the gender pay gap (that oversteps any difference in productivity of the two sexes) should largely dissipate, at least over time. Granted, some minor pay gap might linger in some markets, due to inevitable imperfections in information flows on wage differences. However, the persistence of a pronounced wage gap for as long as has been recorded cannot be explained by the application of standard competitive labor-market theory. The gap should not exist, or persist. Then why does it?

Economists have developed several prominent lines of argument for the persistence of the female/male wage gap. For example, gender (or any other form of) discrimination can be attributable to a group of people (employees, employers, or consumers) having a "taste for discrimination" that, as economist Gary Becker has argued, causes a person to "act as *if he* were willing to forfeit income in order to avoid certain transactions" (emphasis in the original).[14] People's tastes for

discrimination can drive a wedge between group wages as surely as a tariff on imported goods can drive a wedge between prices of imported and domestic goods.[15]

Alternately, economists have argued, gender discrimination can come from the development of "dual labor markets" that are separated by class, gender, or presumed skill-level distinctions. Socioeconomic and prejudice barriers dividing the markets can prevent the movement of the sexes (or races) between the two markets, giving rise to differential wage rates that are not undermined by the kind of worker mobility that is presumed in standard competitive labor-market theory.[16]

Gender discrimination has also been attributed to market imperfections that come from the high cost of acquiring information.[17] When workers' true productivity is unknown, employers look for objective but imperfect indicators of productivity of individual workers (education or work experience, for example) based on group association. Males may receive higher pay because gender is seen as a low-cost marker of actual relative productivity of males and females.[18] In short, females may be subjected to so-called statistical discrimination, a view of the gender pay gap forged by McKenzie's University of California-Irvine colleague Dennis Aigner.[19]

Of course, such statistical discrimination can arise because of earlier gender discrimination against females, based on their particular institutional settings, relating to restrictions encountered in acquiring education and work experience.[20] Statistical discrimination can also arise because females, given their expectation of discriminatory pay, have historically underinvested in enhancements to their productivity (education, for example) or just in labor-market "signals" (college degrees in technical and high-paying fields like engineering, for example) that have some prospects of indicating their true labor productivity.[21] In short, gender discrimination can be based on "adaptive behavior," which suggests that because females have been guided (until recently) into low-paying jobs, they have adopted attitudes toward work that may have perpetuated their low economic status and, hence, their relatively lower pay as a group.[22] Even though women may have recently adjusted their career orientations, long-term, historical experience can still be influencing the perceptions and expectations of employers, men and women alike.

Persistent discrimination can be attributed to limited entrepreneurial skills that restrict the entry of new employers into labor markets in which females are paid less than their equally productive male counterparts.[23] Hence, when discrimination in pay emerges, the entry of nondiscriminating employers, who can increase the demand for and pay of females, is rapidly curbed by the higher production costs.

The female/male pay gap can be attributed to the relatively greater unresponsiveness of female workers to wage-rate changes, which suggests that employers who are large enough to have some control over labor demand can depress the demand for and pay of female workers more than they suppress the demand for and pay of males.[24] The pay gap can also be due to labor unions that can obtain higher-than-competitive wages. Unions must restrict membership, and their restrictions on female membership (even though illegal) can be more severe than on males, because males dominate union policy-making decisions.[25]

If there are cultural or religious norms that hold female wages down, then there would have to be some enforcement mechanism that imposes more costs on employers for breaking with the norms than the profit to be made from hiring females over males. Government-imposed impediments to female labor-market opportunities would, of course, contribute to the persistence of a female/male wage gap primarily because government impediments carry legal enforcement, but such labor-market restrictions would be guided by the tastes for discrimination of dominate voter groups. And governments around the world have either imposed or sanctioned employment impediments on women.[26]

Any measured female/male wage gap is inevitably tainted by workers' voluntary decisions. That is to say, females earn less than males at least in part because of their choices relating to college majors (women tend to major in education, arts, and the humanities, although change is afoot), job categories (women tend to dominate secretarial, teaching, and nursing professions), time devoted to homework, and part-versus-full-time work (women tend to dominate part-time job categories, partially because of heavy attendance to household work).[27] Moreover, many occupations with above-average pay require simple brute strength, and women, as a group, have less strength than men, although this source of differences is probably declining in modern societies with technological advances and reliance on mechanical power sources.

A Different Conceptual Framework

Mating theory within the fields of evolutionary biology and psychology provides a radically different explanation for the average gender pay gap (pay residual) than the theories reviewed above. This theoretical framework posits that females, because they can bear only a very limited number of offspring, have reason to seek and choose males for mating who not only have good genes that will increase the survivability of females' own genes, but who also demonstrate a capability and willingness to provide their mates with support pre- and postpartum, if not at other times.[28] Such support, of course, can increase the survivability of the females' genes.[29] After all, thousands of years ago when babies' brains had grown to its current size, child delivery was difficult and life threatening. It was, in other words, no two- or three-day stay in a maternity ward. Because babies' brains had grown so large, babies had to be born, in a real sense, prematurely, needing far more nurturing than the offspring of other mammals whose newborns could make it through the birth canal at such a late stage in development that they could be on their feet and running within hours, if not minutes, after birth. As a consequence of the selection bias of females for males willing and able to provide support, males have long had, in order to be selected as sexual partners and mates, reason to compete among themselves to demonstrate their mating fitness to females, which can include a demonstrated ability and willingness to provide females with the support they need and seek. In many generations in the past—say, in the Pleistocene epoch, 10,000 and more years

ago, when humans were hunter-gatherers and when engrained behaviors were formed and passed on to future generations—males could demonstrate their relative superiority as mates with their hunting skills and successes.

In more modern times, male demonstrations can come in the form of pay and accumulated human capital and financial wealth as well as in the form of signals (degrees and corporate position and movements up business and social hierarchies) that indicate the prospects of providing the required support. We stress that not *all* females need to look for males who show good prospects of being able to provide support for the theory to help explain the gap in the *average* wages of males and females (and the pay residual). If only *some* (even only a sizable minority of) women seek males capable and willing to provide support, then males have an incentive to compete on income and corporate position vectors to increase their odds of being selected by females as sexual partners and long-term mates.[30]

Risky Behavior

The second major factor leading to a wage gap is male behavior with respect to risk. Mammalian males universally have a higher variance in number of offspring than do females. In the evolutionary environment of long bygone eras, polygamy was virtually universal. The relative size of human males and females is consistent with a situation in which males averaged two to three mates.[31] This has several implications for human behavior. Here we will concentrate on those that are relevant for wage differences.[32]

Consider some risky activity. It can be a real (physical) risk, as in hunting a lion or driving a car too fast, or it might be a financial or economic risk, as in gambling or in accepting employment in occupations where annual and lifetime earnings can vary considerably across individual workers. If the result of the male's risky activity is a loss, then perhaps the individual will be unable to find a mate and will leave no genes in the gene pool. On the other hand, at least in the evolutionary environment, if the result is success, then the individual might reap considerable rewards that can be attractive to females, which can mean that the male can leave a large number of descendants. Assume for example that the gamble has a forty–sixty chance of success, and that a male who accepts the gamble and succeeds has three mates. Then even though the economic payoff for the gamble is negative, the genetic payoff is positive. On average, those of our male ancestors who accepted such gambles would have had more offspring than those of our ancestors who did not accept the gamble. Those of us living today would be disproportionately descended from those males who accepted the risk, and if there were a genetic basis for risky behavior, then those of us living today would have those genes. If the number of offspring for a female is limited by her ability to carry and nurture children, then there would have been no such payoff for females, and so females today would be *relatively* less inclined to accept risks.

The major point is that this increased variance in outcomes can induce many males to take more risks than do many females. The investment difference discussed above might indicate that the mean of the male wage distribution would be greater than the mean of the female distribution. The increased risk accepted by males would mean that the variance would be higher. Even with the same mean, a higher variance would indicate that there would be more high-earning males (and of course more low-earning males) than females. But in modern times (and perhaps in all times) the lower tail of the distribution of wages can be truncated by public policies intent on helping the unfortunate. If nothing else, minimum-wage laws mean that anyone earning less than the minimum becomes unemployed and therefore is eliminated from the wage distribution. There are also many who are unable to work, and there are many more homeless males than females. In other times and places, the lower part of the distribution might simply starve; this may not occur now to the same extent (at least not in wealthy countries), but in any event, males have a shorter life expectancy than females. Part of this shorter life expectancy is due to males' taking physical risks. Male accident rates are always higher than female rates. This is another aspect of the male risk preference identified above.

Thus, if we begin with male and female earning distributions with the same mean but with males having a larger variance, the workings of the labor market are likely to eliminate the bottom part of the distribution. Then the male *mean* in this truncated distribution will be greater than the female *mean*. Moreover, if, as argued, the male mean is in any way larger, then this difference will be further magnified by risk taking, especially because jobs carrying risks, as noted, tend to carry a wage premium (which compensates workers for the risk costs they incur). Measured in terms of money wages, then, the male–female earnings gap exaggerates to some extent the actual welfare gap between males and females, because no allowance is made for the *risk cost* incurred by males and females as *groups*.

The Linkages Between Mating and Labor Markets

Our argument for the persistence of the female/male pay gap is founded on a mate selection bias among females that impacts males' competition for females, which drives a wedge between the average wages of females and males. Supporting evidence (but not definitive proof) for this linkage can be found in the survey and experimental work of behavioral biologists and evolutionary psychologists, in the laboratory findings of experimental economists, and in the regression equations of econometricians.

Evidence from Behavioral Biology and Evolutionary Psychology

To test the tenets of mate selection theory, researchers in behavioral/evolutionary biology and evolutionary psychology have turned to a variety of surveys and

experiments mainly aimed at determining how females and males separately assess various attributes of "attractiveness" of the opposite sex for friendship, sexual relations, and marriage. The findings from this substantial literature have been reviewed in detail elsewhere and need only be briefly summarized here.[33]

Respondents in thirty-three countries on six continents were asked to rate eighteen mate selection characteristics (including attractiveness, financial prospects, ambitiousness, chastity, and industriousness).[34] Across all of the thirty-seven samples taken in the study, males rated their potential female mates' physical attractiveness and youth more highly than did females rate males on such dimensions. Females, on the other hand, rated their mates' potential earning capacity relatively more highly (generally twice as highly) than males in all seven surveys done in the United States and all but one of the surveys done in other parts of the world. One of the eighteen attributes was "good financial prospects." In a comparison of thirty-seven surveys, the difference between the ranks of male and female preferences for financial prospects varied, but in all societies, females gave a higher ranking to a potential mate's financial prospects than did males.[35]

Other studies have found that the more attractive females are, the better able they are to marry males with "high status, occupational or social."[36] Indeed, female attractiveness tends to be a better predictor of their mates' socioeconomic status than other female characteristics, including their intelligence, education, and premarital economic and social status.[37]

Across all thirty-three countries surveyed, males prefer to marry, and do marry, females who are, on average, close to three years younger, which supports the view that mate preferences do impact mate selection and suggests that women select spouses based on males' ability and willingness to provide support, since male income and work status are directly related to age, or so it has been argued.[38] Such a mating-age gap also lends support to the proposition that males are selecting on the basis of female fertility.

In trying to establish and retain a relationship with the opposite sex, both males and females consider humor and niceness as being important attractors with equal frequency. However, males tended to deploy tactics involving "resource displays" (flashing money and driving expensive cars) more frequently, while females tended to use "appearance enhancements" (putting on makeup and going on diets) and threats of infidelity (flirting and showing interest in other males) more frequently.[39]

Males who marry in any given year earn about 50 percent more than the males of the same age who do not marry, suggesting, according to the researcher, that females select mates based on their command over resources.[40]

In a survey of 200 small nonurban societies, researchers found considerable variation over what females and males consider sexually attractive in the opposite sex. However, the researchers also found that, generally speaking, males tended to place far more weight on the physical attractiveness of females than females placed on the physical attractiveness of males, and that "the attractiveness of a man usually depends predominantly upon his skills and prowess rather than on his physical appearance."[41] When the study was redone and expanded to include 300 nonurban, non-Western societies, much the same conclusion was drawn.[42]

In a study of female and male attractions, as revealed in personal advertisements in tabloids, researchers have found that females judge males based on three factors in descending order (1) sincerity, (2) age, and (3) financial security.[43] Again, males were far more likely to place emphasis on the "good looks" of prospective mates.

In a survey of over 1,100 personal ads in newspapers and magazines, females sought financial resources in a prospective mate eleven times as frequently as males.[44] In a study of female/male dating behavior in a Washington, D.C. dating service, the best predictor of males who were asked out for dates was higher social and economic status, whereas physical attractiveness was the only predictor of females who were asked out on dates by males.[45] Other researchers have found that although females do place some emphasis on good looks, males' high status could compensate for their lack of attractiveness.[46]

At the same time, it needs to be noted that, according to one study of the importance of "beauty in the workplace," good-looking men received an average wage premium over their not-so-good-looking male workers with comparable jobs of about 10 percent, according to University of Texas economist Daniel Hammermesh and his collaborators on a number of studies on the impact of "beauty" on workplace pay and success.[47] Beauty among female workers apparently provides no wage premium (perhaps because good looks in women can be interpreted as undercutting, wrongly or rightly, their workplace smarts and productivity).

Females may be attracted to good-looking males partially because of the importance of their physical attributes and because of the wage premium good-looking males receive. Females may see good looks as a reasonably good signal of males' career success and support capability, which may be a more important source of attraction.

One research team had pictures taken of male models dressed in three status-revealing costumes (1) high status (a physician dressed in a designer blazer and a Rolex watch), (2) medium status (a high school teacher dressed in a white shirt), and (3) low status (a waiter-in-training dressed in a Burger King uniform).[48] The researchers found that females were far more willing to engage in various levels of a relationship with the high status males (even when the males were rated as unattractive) than with the low and medium status males. In another similar study, other researchers found that high status dress always increased females' attraction to males.[49]

Yet another set of researchers videotaped actors and actresses playing "high dominance" and "low dominance" roles in separate tapes.[50] Females gave the actors higher ratings on dating interest and sexual attractiveness in their high dominance roles than in their low dominance roles, suggesting that females are attracted to male dominance displayed. The males' ratings of the females were not affected by the roles the females played.

Females' preferences for male mates taller than they are[51] and their rating of taller males as being more attractive may be explained by the fact that male height can equate with male dominance, and with higher income, given that taller males tend to earn more and are more likely to be promoted than shorter males, with taller males receiving a wage premium averaging 10 to 15 percent more than their shorter

counterparts.[52] Taller males are also more frequently sought after in personal advertisements,[53] receive more responses to their personal advertisements for dates,[54] and tend to have more attractive women friends.[55]

Another research team asked male and female college students to indicate, among other factors, the "minimum percentiles" in income any prospective spouse must have to be acceptable for marriage.[56] Females indicated an average minimum acceptable percentile of seventy. Males indicated an average minimum acceptable percentile of forty.

Male medical students report that their education has the effect of increasing the number of their prospective sexual and marital partners, causing the male medical students to "seek and enjoy more transitory relationships."[57] These findings and many others, especially his own international comparisons of mate attractors, caused evolutionary psychologist David Buss to conclude:

> Woman across all continents, all political systems (including socialism and communism), all racial groups, all religious groups, and all systems of mating (from intense polygamy to presumptive monogamy) place more value than men on good financial prospects. Overall, women value financial resources about 100 percent more than men do, or roughly twice as much.[58]

Evidence from Experimental Economics

Experimental economists have only since the 1990s turned their attention to developing laboratory experiments that provide suggestive evidence on the extent and causes of the female/male pay gap observed in the workplace across many societies, ethnic groups, and occupations. The experimental evidence on gender pay differences is, accordingly, far more limited than the mountain of econometric evidence (to be covered below). Nonetheless, the evidence generally supports this chapter's central thesis, which is that the gender pay gap could be tied to basic biological forces driving mate selection that, in turn, affect the relative competitiveness of females and males in labor markets.

In a laboratory version of the "battle of the sexes game," one researcher asked 300 paired subjects from the United States and Sweden, all of whom knew the gender of their coplayers (but nothing else about them), to divide $100 (between themselves and their coplayers, all without the pairs being able to communicate with each other).[59] In the trials that were the focus of the investigation, the subjects were limited to two possible divisions of the $100:

(1) The "hawkish strategy": $60 for the subject making the division and $40 for the coplayer and
(2) The "dovish strategy": $40 for the subject and $60 for the coplayer.[60]

The subjects would be rewarded only if their coplayers' division made the sum for each player equal to $100.

The study's author also found that the females had an average "experimental earnings" that was 78 percent of the males' average[61] and that in the United States and Sweden, both females and males tended to take the division favoring themselves ($60/40) with far greater frequency when they knew they were playing against females.[62]

Other researchers asked sixty subjects (recruited university students), evenly divided between females and males, to work their way through computer-based mazes with different levels of difficulty within a restricted (fifteen-minute) time period.[63] In noncompetitive trials—that is, when the subjects were paid an appearance fee plus two shekels for each maze they solved without regard to how many mazes other subjects solved—there was no statistically significant difference in the count of mazes solved by males and females (although in the noncompetitive piece-rate trials females solved 87 percent as many mazes as did the males).[64] However, when the subjects were put in mixed-gender "tournaments" (in which all subjects were paid an appearance fee, but in which only the subject with the most mazes solved would be paid twelve shekels per maze solved), a *significant* pay gap emerged, with females solving on average 72 percent as many mazes as did males. However, as the researchers note, "[T]he increase in the gender gap in performance between the noncompetitive and the competitive treatment is driven by an increase of the performance of men and basically no change in the performance of women."[65] Additionally, the authors found that the average performance of males in mixed-gender tournaments was, statistically speaking, much the same as it was in male-only tournaments, whereas females' average performance was elevated significantly in the shift from mixed-gender tournaments to female-only tournaments.[66] This means that the gender pay gap narrowed in the shift from mixed-gender trials to single-sex trials, a finding that caused the authors to speculate that there may be some truth to the often heard view that females perform relatively better in female-only educational environments.[67]

Econometrics Evidence

Economists generally agree that comparisons of the *mean* earnings of female and male workers are not very instructive, although such mean comparisons are frequently cited by policy partisans and are widely reported in the press.[68] This is because a host of factors can explain mean earnings differentials of females and males, including differences between female and male workers in terms of their ages, the number of hours worked and at what times of the day, education, job preferences and category, work-related risks assumed, work experience, and the continuity of work experiences.[69] When economists have used regression analysis (sophisticated statistical analysis that allows for a separation of the effects of various variables on male and female earnings), they have found that some of the female/male wage gap is indeed attributable to such factors in varying degrees—with the variance related to the exact nature of the dependent variable (the exact measure of earnings, for example) used, the group of workers studied, the exact

combination of independent work-related variables (age, education, and hours worked, for example) used in the regression analysis, and the years covered by the study.[70] However, almost all econometric studies on the wage gap have found that after adjusting for different combinations of independent variables, males still earn significantly more than females, with the male wage premium (after adjusting for other variables) ranging from 7 percent to 61 percent of the female wage.[71] Consider the following sample of findings from two econometric studies (one old and one relatively recent) that mirror findings of many other studies (several of which are briefly reviewed in a long endnote to this chapter[72]):

Using mean census data for females and males twenty-five years and older with incomes for 1959, economists James Gwartney and Richard Stroup found the ratio of female mean earnings to be 33 percent of males.[73] When adjusted for several variables, females' earnings were 39 percent that of males. Practically the same results were obtained for 1969 data. When the researchers restricted their data to full-time, full-year workers in 1959, females earned on average 56 percent of males before adjustments and 58 percent after adjustments.

The General Accounting Office (GAO) evaluated the female/male pay gap by using the Panel Study of Income Dynamics, a nationally represented longitudinal dataset, which included a variety of work-related, family, and demographic variables.[74] This means the GAO was able to track the work histories of males and females aged twenty-five to sixty-five during the 1983–2000 period. The GAO found that on average when compared with males, females in the study sample had 75 percent as many years of work experience, worked 78 percent as many hours per year, were 76 percent as likely to work full time, and had three times the number of weeks out of the labor force per year. After controlling for a variety of variables (including industry, occupation, race, marital status, and job tenure), the GAO found that on average females earned annually 80 percent of what males earned.

The male wage premium, which is that portion of the female/male wage gap that is not explained by the independent variables in the econometric equations, has often been attributed to rank discrimination against females, or the mistaken prejudice on the part of employers that females are not as productive as males. Such prejudices, the argument goes, have tempered the relative demand for female workers and have led to social, cultural, and legal restrictions on the ability of females to earn as much as their male counterparts.[75] The persistence of a male wage premium has also been explained by the relatively greater "psychic benefits" that employers (male and female) receive from hiring predominantly (or only) males or that customers (male and female) receive from buying predominantly from males.[76]

Others have countered that the male wage premium might not be as great as the econometrics studies suggest. Then again, it might be greater. This is the case because econometric studies do not include (because they cannot measure adequately) important determinants of absolute and relative worker wages, for example, the "quality" of work done, work intensity, the entertainment value of some work, job-related "risks" assumed, and "dedication" to jobs of different worker groups.[77]

Explaining the Narrowing Pay Gap

However measured, the female/male pay gap has narrowed significantly over the past four decades. As noted earlier, female workers on average earned 59 percent of what males earned in 1962, but in 2002, female workers earned 77 percent of what male workers did. Also as we noted earlier, the Bureau of Labor Statistics reported in 2010 the pay gap between the median weekly earnings of full-time male and female workers narrowed to under 83 percent, or by 23 percent points between 1962 and 2006.[78] A part of the explanation can be attributed to the stagnation in the real average wages of males during the last three decades of the twentieth century. During that period, females' average real wages continued to rise.[79] However, economists have found that the wage gap has narrowed for several other reasons, including the following:

- Although there is survey evidence that occupational crowding resulting from occupational segregation is linked to differences in female/male work preferences,[80] the occupational segregation of the sexes began to decline in the 1970s.[81]
- Self-employment among females began rising substantially in the mid-1970s, hiking females' measured relative incomes (which are not adjusted for the additional risk taking).[82]
- The absolute and relative rise during the last quarter of the twentieth century in the economic rewards to workers with higher skills and greater education disproportionately benefited females because females acquired relatively more skills and education. Female work experience also improved.[83]
- Females have shifted toward higher paying occupational categories,[84] perhaps reflecting a decrease in the gender differences in college majors[85] and the relative rise in females' math SAT scores.[86]
- The GAO found in regression analysis that the number of children variable was associated with a 2.1 percent *increase* in average annual earnings of males and a 2.5 *decrease* in the average annual earnings of females.[87] This suggests that the drop in the birth rate from 15.6 to 14.4 per 1,000 in the population during the 1983–2000 study period could have narrowed, albeit slightly, the female/male pay gap by increasing the labor force participation in full-time jobs of females and the annual earnings of females and lowering the average earnings of males.
- A labor economist found that a one-year delay in the first childbirth from age twenty-four to twenty-five can increase a woman's career earnings by 10 percent, partly because the childbirth delay can result in an increase in the number of hours worked over a career by 5 percent.[88] Hence, an as-yet-undetermined portion of the narrowing of the male/female pay gap can be attributed to the rise in the average age at which women have their first child; the average age of women at the birth of their first child was 21.4 years in 1970 and almost twenty-five years in 2000, according to researchers at the National Center for Health Statistics.[89] The delay in births may be related to the increased use of contraceptives and abortions as methods of managing births and to the escalating costs of child rearing (attributable in part to the relative rise in women's wages), but it may also be related to the fact that

young married couples now place relatively less importance on children for a satisfying marriage.[90] This is to say, some portion of the narrowing male/female pay gap may be explained by the emergence and spread of birth-control technologies and to the rise in the relative costs of children vis-à-vis other things couples can do with their money (buy boats or take vacations).

- The evidence of the impact of equal-opportunity/equal-pay laws on the female/male pay gap is mixed. One labor-market researcher found that during the 1967–1974 period, the Equal Employment Opportunity Legislation (or the Civil Rights Act of 1964) increased the real earnings of female workers by nearly 5 percent (1976) and lowered the female/male pay gap by nearly 10 percent and 14 percent in the 1967–1974 and the 1968–1975 periods, respectively.[91] However, other researchers found that in the 1960s and 1970s the impact of equal opportunity laws was quantitatively small and statistically insignificant.[92]

All in all, the economic rationale for "statistical discrimination" against females may have diminished as females improved their job skills, increased their work experiences, delayed their first childbirths, and increased their commitment to their jobs. Of course, with a reduction in statistical (or any other form of) discrimination against female workers, they could have had greater incentives to acquire more education, shift their college majors, change their occupational goals, and dedicate themselves to their careers.[93]

In citing the econometric literature on the female/male wage gap, we do not mean to settle the debate over exactly what is the mean male wage premium linked to pure discrimination or other considerations. Frankly, that debate will not likely ever be settled because, as acknowledged by the GAO, there is no consensus among researchers on the magnitude of the premium, and because economists are unable to impose laboratory-type controls on their investigations of real-world labor markets.[94] Rather, our purpose here is to point out that the preponderance of the econometric evidence leads to a substantive conclusion for both economic and biological sciences: *females tend to earn significantly less than their male counterparts in the workplace*. This tendency has been observed on a worldwide scale and has been persistent in spite of major political and legal efforts to eliminate discrimination.

The Female/Male Wage Gap: Hard Wired or Cultural?

An overriding thesis of this chapter is straightforward: a pay gap should be expected between female and male workers because females look to males for support of themselves and their children and because males have a higher variance of earnings than do females (which can reflect greater risk taking among males and a wage premium for the risks they take). A gap in the socioeconomic status of females and males should also be expected, given that males' socioeconomic status can be a strong signal of their ability to provide support. The pay and status gaps should be

expected because males' pay and status can make them more attractive to females, thus engendering a level and intensity of competition among males for pay and status that females do not need to seek (at least not with the same intensity). The studies reviewed suggest that males' ability to offer support and socioeconomic status to females influences females' assessments of males' relative attractiveness.

However, the evidence does not support the inference that none of the residual female/male pay difference, as found in econometric studies, can be attributable to sexual discrimination founded on social and cultural norms, ignorance, and chauvinism. The evidence and conceptual arguments made in this chapter suggest that the female/male pay gap has two constituent components. One component of the gap can be attributed to males' competition among themselves for the attention of females, an innate (conscious or subconscious) drive built into their psychological makeup. The other component can be attributed to discriminatory labor-market restrictions or prejudices against females. Exactly what portion of the actual residual pay gap is attributable to each component is not known and, perhaps, cannot be known.

A Summary Assessment

The evidence reviewed is, admittedly, suggestive but ambiguous. Understandably, some researchers have argued that females look to males' pay and socioeconomic status because of extant restrictions on females' incomes and socioeconomic status, a line of argument that suggests that females' should be expected to be less concerned with their mates' socioeconomic status as they gain income and status.[95] Interestingly, the evidence, albeit limited, from separate studies of female college students, feminist leaders, and female medical students suggests that many females become more concerned with the pay and socioeconomic status of their prospective mates as they, the females, gain status and income due to the abatement of labor-market discriminatory practices.[96] However, such evidence does not deny the basic point being made that restrictions on females' income and socioeconomic status can be a reason many females seek males who can enhance the females' living standard and socioeconomic status over and above what it would otherwise be.

The abatement, if not elimination, of labor-market restrictions on the pay and status of females, regardless of how they are imposed, could still dampen females' demand for males who can be supportive. The pay gap could thus be narrowed in two ways with the abatement of labor-market restrictions:

First, females' relative wages could rise, making females inclined to seek males with higher pay and socioeconomic status but still with less of a pay and status premium.

Second, with females' interest in male pay and socioeconomic status dampened, although still prevalent, males may no longer be driven *to the same extent* to compete among themselves in terms of relative pay and status, thus causing their

relative (not absolute) pay to fall. That is to say, females who earn more may seek men who earn even more. However, it does not follow that the female/male pay and status gap will not narrow.

What does seem suggestive by both theory and available evidence on mate selection regarding what females seek in male mates is that the female/male pay and status gaps can be narrowed by policy changes but will not ever be completely eliminated. If a complete closure of the gaps could be imagined, for purposes of argument, many males would still be driven to earn more than other males in order to improve their chances of attracting females. Given males' heavy emphasis on the physical attractiveness of females and not on females' income earning capability, females' competitiveness should be diverted toward enhancing their relative physical appearance. Hence, female/male pay and status gaps can open up in three key ways:

First, male competition for demonstrated evidence of their relative ability to support females can drive up male pay and socioeconomic status above the pay and socioeconomic status of females.

Second, given male attention to female appearance, females can relax to the extent to which they compete for pay and socioeconomic status because females can enhance their living standard by tapping the support (inflated by male competitiveness) males are willing to provide to females and their children. In short, male competitiveness for female attention can be treated by females as a "wealth effect" that suggests that females do not have to earn the same income or achieve the same socioeconomic status to achieve any given wealth level to which females and males may equally aspire.

Third, it is possible (although hardly certain) that females may not be inclined to allocate the same time and resources to the development of their skills to raise their pay and socioeconomic status. To the extent that females divert their competitiveness to catch the attention of males by doing what is necessary to be more attractive physically, then females must divert (marginally, if not significantly) time away from elevating their pay and acquiring socioeconomic status. Females, however, may see the diversion of their resources into appearance competition as productive, because, as the evidence suggests, more physically attractive females can attract males with higher pay and socioeconomic status. That is, all other considerations equal, females and males may be driven at some fundamental level to seek more or less the same life-cycle living standard. Females and males, as distinct groups, simply tend to use different means to accomplish the same ends.[97]

A complete closure of the gaps would suggest that females would no longer be driven to prefer mates who are relatively more supportive of themselves and their children, which suggests that a basic tenet of mate selection theory—that attraction is "hard wired" into females' psychological makeup from their days as hunter-gatherers during the Pleistocene epoch—is misleading, or altogether wrong. If female/male attraction is truly "hard wired," then females' drive for male support

should be left largely (if not totally) unaffected by transient or short-term shifts in social and cultural norms or even in the abandonment of restrictions on female pay and the array of employment opportunities. In other words, there should be some minimum pay gap toward which the prevailing wage gap can be driven, but the gap cannot be completely closed—at least not in the short or intermediate term (say, a few generations).

All of this research suggests that if mechanisms (jobs, education, or insurance) for support of females, other than male mates, emerge and endure for a long stretch of time, then, presumably, females would not have to look to males for their support and the support of their children. Males would then not be so inclined to compete based on their pay and socioeconomic status (because such behavior might not be as attractive to females), which suggests that the female/male pay gap should be expected to narrow (or perhaps close, depending on how long the support mechanism lasts).

If divorce is facilitated, females might become, eventually, less inclined to judge males based on their pay or socioeconomic status and more inclined to judge males based on their ability to make binding marriage commitments (thus increasing the expected value of more limited support levels). With divorce made easier, males can be expected to divert resources from increasing their pay and higher socioeconomic status to developing a reputation for credible commitments, the net result of which can be a reduction in the female/male wage gap.

The basic thesis of this chapter is that male competitiveness for attracting females is a biological force with heretofore-unrecognized market consequences. It would seem to follow that with a relative rise in the ratio of males to females in the population (a consequence, for example, of a cultural bias that results in, say, female fetuses being aborted more frequently than male fetuses, as has occurred in China over the past several decades[98]) males would have to compete more aggressively for the attention of females.[99] The result could be a rise in the pay gap for two reasons already noted in another context: first, the competition among males could drive their absolute wages up, and second, females could relax in seeking higher wages, given the wealth effect of the heightened competition among males to earn higher pay and provide support.

Concluding Comments

In concluding sections of chapters, it is very tempting, and common, for authors to assert considerable confidence in the theoretical and empirical components of their studies. We cannot do that here; however, we can say that the broad range of research studies reviewed is strongly suggestive of two conclusions, one weak and one stronger.

The weaker of the two conclusions is that the literature reviewed suggests that there could very well be a biological foundation to the gender pay gap that is not widely appreciated. Enthusiasm for that conclusion must necessarily be tempered

by the fact that the gender pay gap can be driving differential mating preferences between the sexes.

The stronger conclusion that can be drawn from this literature review is that commonly made claims that *all* of the average gender pay gap (or pay gap residual) has its foundations in narrowly defined labor-market discrimination is clearly suspect, given the variety of findings from econometric, experimental, and mating-market studies.

Accordingly, we repeat a point made at the start of this chapter, those wanting full equality in pay for comparable work should not hold their breaths, a point we make in spite of our fondest wish that a more politically correct assessment of future trends in the relative wages of males and females could be pressed.

Endnotes

Preface

[1]Levitt and Dubner (2005). See also Cowen (2008a).

[2]See McKenzie (2008, 2010).

Chapter 1

[1]Marshall (1890, ¶ I.II.1).

[2]Actually, Adam Smith was concerned with several of these problem areas in *The Wealth of Nations,* published in 1776. He would not be surprised that economists are now giving such topics more attention.

[3]In fact, it is the thought process or the mental skill developed below that defines an economist. Indeed, in the context of the discussion that follows, there are no doubt many people who call themselves economists but who do not meet the description offered here, and there are many persons in other disciplines who can, according to our definition, accurately be classified as economists. However, given the differences in policy conclusions of economists and noneconomists, it is apparent that not everyone possesses the mental skills developed in this book. By the same token, economists are well advised to develop some of the skills possessed by other social scientists.

[4]Boulding (1970, p. 2).

[5]Mises (1949, p. 13).

[6]For a more detailed discussion on the concept of supply, see any standard textbook on principles of economics. For example, see McKenzie and Lee (2010).

[7]The relationship called *demand* is held with such complete confidence that one prominent economist has reportedly argued that if an empirical study ever reveals that people buy more when the price is increased, there must be something wrong

R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3,

with the empirical investigation. Other economists, like us, taking a more moderate view, recognize possible exceptions to the rule, but argue that they are extremely few.

[8]Strictly speaking, the market supply curve is not equal to the horizontal summation of the individuals' supply curves. Nothing is lost for our purposes, however, by leaving this refinement for more advanced treatments of the theory of supply.

[9]Knight (1935, p. 105).

[10]For more on the limits of economic analysis, see McKenzie (1983).

[11]Because of space restrictions a book of this nature forces upon the authors, we have attempted to extend and refine the model until we thought the marginal benefits of an additional point was equal to the marginal cost of making the point.

[12]See the quote by James Buchanan, which is the epigraph to the book.

[13]Becker (1976, p. 8).

Chapter 2

[1]Economist James Buchanan suggests in *Economics and Its Scientific Neighbors* (1966, p. 168) that an economist can be distinguished from a noneconomist by his reaction to this statement.

[2]Marginal cost can be viewed as the utility forgone in some alternative activity. Therefore, when MU > MC, by consuming more quality, the individual can acquire more utility than he gives up in some other activity.

[3]Two to three decades ago psychology professors often taught that people's mental capability peaked in the mid-1920s; that is to say, people's IQs rose until about twenty-five years of age and then declined. However, psychologists based their conclusion on a cross-sectional study of all age groups, and it happened that people in the study group who were in their mid-1920s were the most intelligent. Later studies of the same people as they aged indicate that people's IQs continue to rise until at least until the sixties or seventies at which point they tend to level off.

[4]Before readers become unduly disturbed by this statement, they should check the economic meaning of rational action in Chap. 1.

[5]One qualification: as the volume goes up, several may decide to leave the room, keeping the volume from going as high as it otherwise would. Additionally, the higher general volume can make the party more tiring and can cause it to end more quickly for some. The host could conceivably get up and ask that everyone quiet down; the immediate effect can be a sharp reduction in volume. This is, however, likely to be a short interlude before the sound increases again.

[6]For a more detailed discussion of the sale of pollution rights, see McKenzie and Lee (2010, Chap. 6).

[7]The authors have repeated the experiment with the students in their classes with essentially the same result.

[8]See Shin (2009).

[9]We recognize that there are times when a person will get up and turn the light off; our purpose here, however, is to explain why at times he may not.

[10]If the government is interested in setting up a coupon system to minimize people's disutility under a bad situation, then they should permit people to sell their coupons. By the fact that people freely choose to buy or sell coupons, we must conclude that they are better off by doing so. Otherwise, we must wonder why they make the trade. If coupons are sold, it means that the price of gasoline will, in effect, rise.

[11]For a review of a variety of forces at work in the California electricity market leading up to the crisis of 2001, see Weare (2003). The importance of Enron's trading practices on California's electricity crisis remains in serious dispute. See Weare (2003) and Taylor and Peter VanDoran (2002).

[12]We recognize that although in an absolute sense the cost of an accident may be quite high, the cost that the driver will operate on is the cost of the accident discounted by the probability of having the accident. Besides, we are merely suggesting in different words that if the costs were even higher, the quantity of reckless driving would be lower.

[13]In the 1960s, the late economist Mancur Olson (1965) developed, or should we say clarified, the "logic of collective action," which has been at the heart of the extension of economic analysis to politics, clubs, markets, and profit and nonprofit organizations.

Chapter 3

[1]Maslow (1954, primarily Chap. 5).

[2]Ibid., pp. 90–92.

[3]Ibid., pp. 98.

[4]Ibid., p. 92

[5]Ibid., p. 92.

[6]"If both the physiological and safety needs are fairly well gratified, there will emerge the love and affection and belongingness needs" (Maslow, 1954, p. 89). Maslow never explains what will keep the individual from fully satisfying any given need level before moving on to a higher tier.

[7]Admittedly, this is an interpretation of Maslow and may be an unfair statement of what his true position is; however, he does tend to write in black and white terms—either the barriers are there or they are not.

[8]Maslow, in his 1954 book, is less certain about the relative positions of the need to know and the need for aesthetic quality because of the limited research that had been done on the subject at the time he wrote the book.

[9]Maslow (1954, pp. 100–101).

[10]At the quantity, the marginal utility is zero, implying that the person's utility level from the consumption of that need is at its maximum.

[11]It may also be that the demand for physiological satisfaction is more inelastic than the other demands. This could be considered normal as far as need gratification is concerned.

Chapter 4

[1]Guglielmo (2007).

[2]Friedman and White (2007). Bloomsburg News reported that a third of the 164 Apple stores ran out by Sunday night after the iPhone was released on the previous Friday, and most of AT&T's 1,800 cell phone stores were out of stock within twenty-four hours (Guglielmo 2007).

[3]Guglielmo (2007). The *Orange County (Calif.) Register's* technology columnist found that on July 2, 2007 the average price of the eight-gig iPhone model on Craig's List (http://www.craigslist.com) was $781.57 in Orange County alone (Stewart 2007).

[4]Wingfield (2007).

[5]The day after Apple announced its $200-price reduction on the iPhone, Steve Jobs posted an "open letter" on its Web site, announcing that early iPhone buyers would receive a $100-store credit, seeking to assuage the complaints of early iPhone buyers (Hafner and Brad Stone 2007). Jobs suggested that the price reduction "benefits both Apple and every iPhone user to get as many new customers as possible in the iPhone 'tent.' We strongly believe the $399 price will help us do just that this holiday season." (http://www.apple.com/hotnews/openiphoneletter/, accessed September 6, 2007).

[6]The tax credit for various models and rules for receiving the tax credit can be found on an IRS web page, http://www.irs.gov/newsroom/article/0,,id=157557,00.html.

[7]Radcliffe (2007).

[8]To determine how many miles the Civic hybrid would have to be driven in order for the gas savings to cover the added hybrid costs, including the price differential of $7,500 (plus interest and taxes) and the $3,000 cost of a new hybrid battery, I used *Consumer Reports'* estimate of the gas mileage for the Civic hybrid and non-hybrid, 37 MPG and 28 MPG, respectively. I also used the *average* price of regular gas in Southern California in for 2004 through early 2007, or $2.60 a gallon. The actual miles that would have to be driven for the savings in gas cost to more than cover the hybrid costs is 523,000 miles.

[9]Radcliffe (2007).

[10]Woodyard (2007).

[11]Murph (2007).

[12]U.S. Department of Transportation, Federal Aviation Administration (1990).

[13]Kolstad (1989).

[14]See U.S. Congress House (1990).

[15]Lightfoot (1990). Representative Lightfoot maintained that his proposal does not mandate the purchase of additional seats, only the use of safety seats by infants. He suggested that parents can use their auto safety seats and utilize free empty airline seats, as they now do. However, it seems unlikely that parents would buy their own tickets—especially cheaper nonrefundable tickets—and take the risk of not being able to board at the last minute because adjoining seats are unavailable for their infants.

[16]For the period 1995 through 2003, for every per hundred million miles traveled there were 0.03 fatalities by air throughout the world (International Civil Aviation Organization 2003) and 0.93 fatalities traveled by car on U.S. highways (Bureau of Transportation Statistics 2003), as reported by Sanders, Weisman, and Li (2008).

[17]U.S. Department of Transportation, Federal Aviation Administration (1990). In a Harvard Medical School study, Richard Snyder (1988) estimated that the infant seat requirement would save an average of only 0.6 infant life a year, or three lives in 5 years (as reported in Coleman 1990). The FAA found that an additional six infants and toddlers were injured in airline flights between the late 1970s and 1990, as reported in *USA Today* (editorial, 1990).

[18]National Safety Council (1989). In addition, it should be noted that the annual infant death rate for the era covered, which can be inferred from FAA findings, averaged slightly above one per 100,000 daily boardings of infants each year between 1978 and 1990 (the mean of the estimated range of daily boardings, 5,000 to 10,000, or 7,500, times 12). The death rate per 100,000 infants under one in 1986 was higher in other activities than in air travel: 5 due to mechanical suffocation, 4.2 due to ingestion of food and objects, 3.2 due to fires and burns, and 2.5 due to drownings (National Safety Council 1989, p. 8).

[19]Kolstad (1989).

[20]Total airline fatalities on scheduled airlines (U.S. air carriers operating under 14 CFR 121) between 1980 and 1988 came to 975, including the 259 passengers killed in the explosion of the Pan American flight over Lockerbie, Scotland (U.S. Department of Transportation, Federal Aviation Administration 1989, p. 154).

[21]See U.S. Congress, House (1990).

[22]Windle and Dresner (1991) estimated that the cost of air travel per "family travel unit" would be $296 without the child-safety-seat requirement and $358 with the requirement (assuming half-price fares for infants), a 21 percent increase.

[23]For the period 1995 through 2003, for every hundred million miles traveled there were 0.03 fatalities by air throughout the world (International Civil Aviation Organization, 2003) and 0.93 fatalities traveled by car on U.S. highways (Bureau of Transportation Statistics 2003), as reported by Sanders et al. (2008).

[24]Because some families would not fly, the net increase in revenues to the airlines was estimated to have been $119 million (U.S. Department of Transportation 1990, p. v.).

[25]See McKenzie and Shughart (1988); McKenzie and Warner (1987), and Rose (1987). Indeed, McKenzie and Warner (1987) found that airline deregulation, which led to lower airfares and an expansion of flights, increased air travel by an annual average of 11 percent and reduced passenger car travel by an annual average of just under 4 percent between 1978 and 1985. Accordingly, airline deregulation significantly reduced highway accidents, injuries, and deaths. McKenzie and Warner estimated that in 1979–1985, after adjusting for a number of factors that affect highway travel safety, airline deregulation reduced automobile accidents by an annual average of more than six-hundred thousand, lowered automobile injuries by an average of approximately 66,000, and reduced automobile fatalities by an annual average of almost 1,700.

[26]If the number of automobile trips by families goes up by a third of the estimated reductions in infant boardings and if the average length of the trips is 400 miles one way (800 miles round trip), automobile travel will increase by more than 185 million miles each year, a very small percentage increase. Nevertheless, at the time of the congressional debate, according to our econometric model, the increase could translate into more than 1,600 additional automobile accidents each year, which could result in more than 175 additional disabling injuries and just under five additional deaths each year. If the fare increase had been much greater than the FAA conservatively assumes, the increase in highway injuries and deaths would have, of course, been greater.

[27]In a report prepared for the FAA, Apogee Research (2003) estimated that had the infant-seat requirement been imposed, there would have been a net increase in travel deaths of 8.2 (additional car deaths minus reduction in air deaths). There also would have been an additional fifty-two serious injuries and 2,300 minor injuries from travel.

[28]Federal Aviation Administration (2005). Federal Aviation Announces decisions on child safety seats, August 25.

[29]Blalock, Kadiyali, and Simon (2005a, 2005b, February 10).

[30]Blalock, Kadiyali, and Simon, forthcoming (2005a, 2005b, February 10).

[31]Blalock, Kadiyali, and Simon, forthcoming (2005a, 2005b, February 23).

[32]A desert is generally defined as any area that receives less than ten inches of rainfall a year.

[33]According to researchers at the Wessex Institute (Hamer 2007).

[34]County officials used lighted overhead freeway signs to alert people to the crisis, with the admonition: "Orange County Water Emergency. Conserve Water," as reported by the *Orange County Register* (Townsend, Carpenter and Vik Jolly 2007).

[35]See Douglass (2007).

[36]This section relies heavily on an insightful essay by applied economists Runge and Senauer (2007).

[37]As reported by Runge and Senauer (2007, p. 5).

[38]As reported by Associated Press (2007).

[39]As reported by Runge and Senauer (2007, p. 5).

[40]As reported by Runge and Senauer (2007, p. 2).

[41]As reported by Runge and Senauer (2007, p. 5).

[42]Runge and Senauer (2007, p. 5).

[43]Runge and Senauer (2007, p. 5).

[44]Reuters (2007).

[45]Runge and Senauer (2007, p. 6).

[46]Pontoniere (2006), p. 1)

[47]Rivera (2007, p. A14).

[48]Janet Larsen, research director for the Earth Policy Institute, an environment-friendly organization, told the *New York Times,* "Turning food crops into fuel crops does not make sense, economically or for the environment" (Rivera 2007, p. A10).

[49]Admittedly, there are a couple of problems with the proposed taxation/distribution scheme that we have skipped in the text above to avoid choking the discussion with details. One obvious problem is that the price increase on the taxed product will not likely equal any give-size tax. The solution there is simple: continue to raise the tax until the price raised is enough to achieve the desired environmental effect. The second problem is that the return of the taxes paid to consumers will mean that consumers will be able to buy more of the taxed products than they would been able to buy had the taxes been kept by the government. No problem, all this refinement in argument means is that the tax needs to be raised further until the combination of the higher price and return taxes achieves the desired environmental effect. We understand also that there will be costs in collecting the taxes and then distributing the revenues back to buyers. No one ever said that greater environmental cleanliness would ever be costless on all fronts, and of course, our proposed solution is no solution at all if the tax collection/distribution costs are greater than the gains from greater environmental cleanliness.

Chapter 5

[1]Akerlof (1970).

[2]Hecker (2003), p. 2).

[3]For more discussion on policymakers can become constrained in their policy options by the so-called "Transitionary-gains trap," see an insightful article by one of the authors Tullock (1975).

[4]Aguiar and Hurst (2004).

[5]Friedman (1957).

[6]Becker (1965).

[7]Aguiar and Hurst (2004).

[8]Aguiar and Hurst (2004).

[9]This data comes from reports made to the Graduate Council when McKenzie was a member.

Chapter 6

[1]As quoted in Brams (1975).

[2]Baily (2001).

[3]As reported by e! Science News, retrieved February 14, 2011 from http://esciencenews.com/articles/2010/05/20/kidney.transplants.expanding.pool.available.organs. See also Otten (1988, p. 29).

[4]Brams (1975).

[5]To get a sense of the extent of trade in bodily organs, just Google "kidney sales," and consider the long list of "hits."

[6]Transplant centers have also sought to relieve the shortage of organs by extending the number of hours an untransplanted organ may be kept before it is discarded and by increasing the maximum age of possible donors. However, the crackdown on drunk drivers has reduced highway deaths and therefore has reduced the availability of transplant organs (Otten, p. 29).

[7]See Manne (1966). It needs to be noted that misuse of inside information by managers and officers is not necessarily costless in a world in which insider trading is legal. Managers and officers that misuse their authority can be penalized with reduced job opportunities and a lower future income stream.

[8]Kelley (1986, p. 32). See also Kelley, Nardinelli, and Wallace (1987).

[9]Kelley (1986, p. 32).

[10]These points are developed in McKenzie and Hipp (1988).

Chapter 7

[1]*Webster's* defines marriage as "the institution whereby men and women are joined in a special kind of social and legal dependence for the purpose of founding and maintaining a family" (*Merriam-Webster's Collegiate Dictionary* [2008]).

[2]The *Wall Street Journal* reported that by 2010, 50,000 same-sex marriages had been performed in five states. An additional 30,000 gay couples got married outside of the United States, mainly Canada. The approval of gay marriages in 2010 was just under 30 percent for surveyed Americans born between 1928 and 1945 and over 50 percent for Americans born after 1980 (Perez [2011]).

[3]As reported by the Associated Press (2006).

[4]As reported in Stanley (2001, Chap. 6).

[5]See Associated Press (2006) and Stanley (2001).

[6]If the wife takes as much as 180 minutes to mow the lawn and everything else about the example above is the same, it would still be more efficient for the wife to mow the lawn and the husband to clean the house.

[7]The same allocation of time would result if the wife were substantially more efficient in the production of household goods. Consider the case of the wife being able to earn $10 per hour and the husband earning $6 per hour. Suppose that it takes the wife an hour to do some household task and it takes the husband two hours. If the husband stayed at home to do it, it would cost the family $12 (two hours at $6 per hour). However, it would only cost them $10 (1 hour at $10 per hour) for the wife to do it. In such case, the family would choose to have the wife stay home if it were interested in minimizing production costs. Inculcated values would perhaps come into play as an explanatory factor if the couple did not obey these rules for time allocation.

[8]In searching for a mate, he will extend his search until the marginal cost of extending the search is equal to the marginal benefits.

[9]See, for example, Winch (1958). This conclusion, of course, does not apply to the situation in which one party prefers a mate who will dominate him or her.

[10]Becker (1974, p. s22).

[11]Freiden (1974).

[12]A person can shirk by failing to carry out any part of the contract or by making it more difficult (costly) for the other person to see that the contract is obeyed.

[13]As reported by Frank (2011).

[14]As reported by Frank (2011).

Chapter 8

[1]The reader should recognize that there are male prostitutes, although they may presently account for a relatively minor portion of the total membership in the profession.

[2]Dawkins (1976).

[3]Get citation.

[4]Get citation.

[5]Personal beautification, once produced, becomes a public good because persons other than the one who is more beautiful receive benefits from the sense that their surroundings are more pleasant. This may mean that there may be an underinvestment in such beautification because people may consider only the private benefits from the personal beautification and not the total social benefits.

[6]In the event that you think our talking about the male's demand for sex and the female's supply of sex is "sexist," everything said with reference to Fig. 8.4 could be restated (if space permitted) with the labels on the supply and demand curves reversed. Indeed, the model can be reversed by holding Fig. 8.4 up to a mirror. Then, the male's demand curve becomes the supply curve, and the female's supply curve becomes the demand curve. Try it.

[7]It is possible that the price will become negative. This would mean a reversal of roles: the women would be paying the men.

[8]From some points of view, such women may be viewed as deviates. However, such a designation may be inappropriate. These women can be behaving, in a sense, like everyone else; the only difference is the location of their equilibrium in the social market.

[9]Levitt, S. D., and Dubner, S. J. (2009). *Superfreakonomics: Global Cooling, Patriotic Prostitutes, and Why Suicide Bombers Should Buy Life Insurance*. New York: Harper and Collins.

[10]Levitt and Dubner (2009, p. 215), citing Lakshminarayanan, Chen, and Santos (2008).

[11]Gumert (2007).

[12]On the other hand, by adding in the cost of VD or AIDS, we can understand why some men do not engage prostitutes. For some (if not most) men, $100 plus the cost of contracting various diseases can be a greater cost than the possible benefits (and lower than the benefits to others).

[13]Fels (1975, p. 32).

[14]Fels (1975, p. 33).

Chapter 9

[1]As we intend to discuss in considerable detail throughout the book, such relationships can also be founded on individual private interests that have nothing to do with affection. However, in this chapter, we want to focus on the affection aspect of the relationship.

[2]This chapter is based the short article: Schmidt, W. E. (1969). Charitable exploitation, *Public Choice*. *10* (Spring), 103–4.

[3]In more detailed terms, the total value that the donor receives from making Q_1 gifts is equal to $OXYQ_1$. The total cost is equal to OP_1YQ_1. The difference between the total costs and total benefits is equal to P_1XY, or the striped area, which we have called consumer surplus.

[4]The donor's demand for making gifts to anyone of the possible recipients under highly competitive conditions (that is, a large number of alternative recipients) will be essentially horizontal.

Chapter 10

[1]The planned surplus capacity in bodily organs would be affected by religious values, belief in reincarnation, and desire to bequeath one's bodily organs to help others. In attempting to maximize his well-being, a person, of course, does not have perfect information as to how his organs interact with each other; his ignorance, however, only affects the degree to which he is able to achieve his goals. Further, he will very likely, but not necessarily, build the strength of those organs that will have a positive effect in extending the life of other organs.

[2]In making this statement, the economist is implicitly suggesting that T. S. Eliot was probably misguided when he wrote: "This is the way the world ends/Not with a bang but a whimper."

Chapter 11

[1]Tittle and Rowe (1974).

[2]Tittle and Rowe (1974, p. 47).

[3]Tittle and Rowe (1974, p. 48).

[4]Hartshorne and May (1930).

[5]Hartshorne and May (1930, p. 412).

[6]The sources of these and other reported findings on cheating at all levels of education have been summarized, with sources, by Bramucci (2003).

[7]As reported for ABC News/Money by De Nies and Russo (2010, November 10).

[8]Lee (2010).

[9]See Madoff's biography on Wikipedia, retrieved on February 27, 2011 from http://en.wikipedia.org/wiki/Bernard_Madoff.

Chapter 12

[1]As reported by Bernstein (2010a)

[2]As reported by Bernstein (2010b).

[3]See Brownell and Frieden (2009). For a full discussion of the growing weight problems, and the resulting economic and political controversies, in the country, see McKenzie (2010).

[4]Lower food prices can, when demand is "elastic," result in lower total expenditures on food, which means more income consumers can use to buy other goods and services.

[5]Lakdawalla and Philipson (2002).

[6]Philipson and Posner (2003) also found that improvements in food-production technologies lowered the price of food and increased food consumption to boost the country's average weight and obesity rate.

[7]Goldman, Lakdawalla, and Zheng (2009).

[8]The HEALTHY Study Group (2010).

[9]The obesity rate for the group given instruction declined 18 percent (to 24.6 percent), and the control group's obesity rate declined 11to 12 percent (to 26.6 percent), but, again, the researchers did not find the difference to be statistically significant, meaning that the difference in the drops could have occurred by chance (The HEALTHY Study Group 2010).

[10]As reported by Rabin (2010a, 2010b).

[11]Fields (2004).

[12]Alston, Sumner, and Vosti (2007).

[13]As reported by the editors of the *Wall Street Journal* (January 22, 2011).

[14]As reported by Smith and Elliott (2008).

[15]Alston, Sumner, and Vosti (2007).

[16]As reported by MacFarquhar (February 4, 2011).

[17]Lakdawalla and Philipson (2002).

[18]Gelbach, Klick, and Stratmann (2007).

[19]Gelbach, Klick, and Stratmann (2007).

[20]Powell et al. (2007).

[21]Americans average daily calorie intake was 2,157 in 2006, up from 1,826 in 1978 (as reported by Adamy [2010]).

[22]Helmchen and Henderson (2004).

[23]Costa and Steckel (1997), as cited by Cutler et al. (2003, Fig. 1).

[24]Fogel (1994).

[25]As obtained from U.S. Census Bureau, as reported in the Arias, *National Vital Reports* (2007) accessed May 18, 2010 from http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_09.pdf and from http://www.census.gov/compendia/statab/cats/births_deaths_marriages_divorces/life_expectancy.html.

[26]Lakdawalla and Philipson have found that aging can add three to four points to people's average BMI and the percentage of cohorts who are obese can increase four or more times, but some of the weight gain with age can be attributed to people moving into less strenuous jobs (2002).

[27]As obtained from U.S. Census Bureau, as reported in the online U.S. Statistical Abstract: 2010, accessed May 18, 2010 from http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_09.pdf and from http://www.census.gov/compendia/statab/cats/births_deaths_marriages_divorces/life_expectancy.html.

[28]Cutler et al. (2003), citing National Health and Nutrition Examinations Surveys I and III (1978 and 1996).

[29]As reported for the *New York Times* by Bakalar (2010).

[30]Ruhm (2009).

[31]As reported in "The recession's negative impact on health" by DietsinReview.com, accessed June 3, 2010 from http://www.dietsinreview.com/diet_column/05/the-recessions-negative-impact-on-our-health/.

[32]As reported for *The New York Times* by Schultz (2010). According to the Zagat Survey, the Great Recession and sluggish recovery lead Americans to reduce the average number of meals eaten out of the home per week from 3.3 in 2007 to 3.1 in 2010. Also, in 2007, survey respondents reported that 47 percent of meals were eaten in restaurants in 2010, down from 53 percent in 2007. Nearly two-fifth surveyed Americans also reported becoming more sensitive to the prices of restaurant meals. A third reported eating at cheaper places, and up to a fifth reported cutting back on appetizers and desserts. Zagat found that the increase in price of restaurant meals between 2007 and 2010 was three-quarters of the increase in the CPI (as reported by Zagat and Zagat 2011).

[33]Dave and Kelly (2010).

[34]As reported for the *New York Times* by Foley (2010).

[35]See the chart for the real price of gasoline for the 1918–2009 period at http://www.inflationdata.com/inflation/inflation_rate/Gasoline_Inflation.asp.

[36]Courtemanche (2010).

[37]Lakdawalla and Philipson (2002) found from analyzing self-reported individual data for the period 1981–1998 that women who work fourteen years at the least physically demanding jobs can expect to have BMIs 3.5 points higher BMIs than women in the most physically demanding jobs. And the added weight on women in sedentary jobs does not appear to be a consequence of heavy women choosing sedentary jobs. They seem to gain weight in their jobs because of the limited physical demands. See also Philipson (2001).

[38]Cutler, Glaeser, and Shipiro (2003).

[39]As reported by Adamy (2010).

[40]Putnam (1999) and Young and Nestle (2002).

[41]Courtemanche (2010).

[42]Flegal et al. (2010) and reported by Belluck (2010).

[43]With the added weight gain and upward pressure on gas prices, the pump price of gas could be rising or falling over time. The weight gain could keep the gas price from falling as much as it would have otherwise, or it could cause the gas price to rise by more than it otherwise would have.

[44]Jacobson and McLay (2006).

[45]In spite of Courtemanche's argument having intuitive appeal, we must remain somewhat cautious in accepting his analysis and conclusions as the last word on the tie between gas prices and weight gain, mainly because gas prices are only a small portion of *total travel costs* by car, and weight gain could be more affected by total travel costs than gas prices per se. This is the case because when Congress mandated for the first time in 1975 that automobile manufacturers meet corporate fuel economy standards, it *could* have affected the country's weight—but either up or down. In 1978, automobile companies' fleet of cars (with light pick-up trucks exempted) had to get a minimum average of 18 miles per gallon. By 2010, the minimum average had to be 27.5 miles per gallon. In 2007, the minimum corporate average fuel economy was set to rise to 30.2 miles per gallon in 2011 (with light trucks to be counted in the average for the first time), with the prospects of the standard rising to the mid-30s by 2020. While the implied reduction in the gas cost of traveling was lowered by the precipitous fall in the price of gas in the 1980s and 1990s (from a temporary peak in the early 1970s) and by the continuing hike in the fuel economy standard, the overall per-mile cost of traveling by car could have risen, because of the higher production cost of the cars themselves inspired by the progressively higher fuel economy standard. The gas cost of travel is only about 10% of the total cost of traveling a mile. This overall cost could have fallen, but then again it could have increased, tempering people's inclination to drive places and to gain weight (if Courtemanche's econometrics are to be believed). Similarly, the increases in federal and state real gas taxes and tighter emission controls could also have, again, tempered somewhat people's weight gain. We cannot be sure at this point. There is a good reason to fear that the cost per travel mile went up because of the fuel economy standards. If automobile manufacturers could have achieved the higher mileage standards at a lower car cost, which would have further lowered the cost of car travel per mile, then it seems that the fuel economy standards would not have been needed (other than for environmental reasons); the manufacturers would have achieved higher fuel economies without government direction.

[46]Bradford, Grieco, and Hufbauer (2005).

[47]See Bergsten (2005).

[48]As determined by data from the Bureau of Economic Analysis, U.S. Department of Commerce, at http://bea.gov/, as accessed December 3, 2010.

[49]For a quick review of the spread of economic freedoms country by country over the last half of the twentieth century, see Sumner (2010). Sumner, among a growing number of "freedom researchers," also found a decisively positive relationship between the "index of economic freedom," devised by the Heritage Foundation, and real per capital income.

[50]As reported by Alesci (2008).

[51]Cutler et al. (2003).

[52]Powell et al. (2007).

[53]Rashad, Grossman, and Chou (2005) and Raynor and Epstein (2001). On the increase in fat consumption in the United States, see Ippolito and Mathios (1995); and Frazao (1999).

[54]Nielsen and Popkin (2003).

[55]Raynor and Epstein have found that the growth in the variety of readily available foods over the last several decades has contributed to the growth in weight (2001). Ewing et al. have found that the greater the conduciveness of urban areas to exercise, the lower the obesity rate (2003). Other researchers have found that greater density of fast-food restaurants has led people to increase the consumption of more and fattier foods (French et al. 2000; Public Health Service 2001).

[56]These researchers estimate that with a 100 percent increase in the density of restaurants, the average BMI for adult Americans would rise by nearly 10 percent (assuming a starting average BMI of 25) (Rashad, Grossman, and Chou 2005).

[57]Chou, Grossman, and Saffer (2004).

[58]Three economists found that calories consumed at dinnertime actual decreased slightly between the mid-1970s and the mid-1990s, using U.S. Department of Agriculture surveys of people who kept diaries and who self-reported the various foods they consumed (a data collection method that probably introduces the possibility of underreporting of food intake) (Cutler et al. 2003).

[59]Cutler et al. (2003).

[60]The number of daily meals consumed averaged 3.86 during 1977–1978, as reported by the survey respondents. Daily meals averaged a reported 4.44 in 1994–1996 (Cutler et al. 2003).

[61]Cutler et al. (2003). Young and Nestle (2002) have argued that weight gain has been significantly affected by the growth in portion sizes.

[62]Block, Scribner, and DeSalvo (2004), citing Schlosser (2001).

[63]Block, Scribner, and DeSalvo (2004), citing Lin and Frazao (1999).

[64]Powell et al. (2007).

[65]In a study of the density of fast-food restaurants in New Orleans, predominantly white neighborhoods had 1.5 fast-food restaurants per square mile, whereas predominantly black neighborhoods had 2.4 fast-food restaurants per square mile (Block, Scribner, and DeSalvo (2004)).

[66]Maddock (2004) and Fuzhong et al. (2009).

[67]Cash, Goddard, and Lacanilao (2007).

[68]Cutler et al. (2003, Table 4).

[69]Guthrie, Lin, and Frazao (2002). Similar results in the increase calories consumed by age groups were found by Nielsen, Siega-Riz, and Popkin (2002).

[70]Cutler et al. (2003, Table 4).

[71]For reviews of the vast minimum-wage literature, see Brown (1988) and Brown, Gilroy, and Kohen (1982).

[72]Editors, *New York Times* (1987).

[73]Liu et al. (2007).

[74]Meltzer and Chen (2009).

[75]Meltzer and Chen (2009).

[76]The study deduced that the drop in the real minimum wage in the 1984–2006 period increased the BMI of those 10 percent of Americans with the highest BMIs by 0.13 (Meltzer and Chen 2009).

[77]The history of the increases in the nominal federal minimum wage was available (in May 2010) on the Labor Law Center's Web page: http://www.laborlawcenter.com/t-federal-minimum-wage.aspx.

[78]Researchers have found that a 10 percent increase in the price of fast foods leads to a 0.4 percent decrease in the average BMI, nearly 6 percent decrease in the probability of people being overweight, partially because the 10 percent increase in the prices of fast-food meals leads to a 3 percent increase in the frequency of consumption of fruits and vegetables (Powell et al. 2007).

[79]As obtained May 12, 2010 from http://www.bls.gov/opub/ted/2000/feb/wk3/art03.htm.

[80]As reported by Gorski (2010) and Williams (2010).

[81]However, women working at least forty hours a week had a median annual earnings that were 87 percent of men's median annual earnings. Cornell University economists have found that after adjusting for such labor-market factors as education, experience, occupation, the "gender pay [median earnings] gap" had narrowed to 9 percentage points in 1998. The gender wage gap varies across fields from nearly 93 percent for computer programmers to under 61 percent for physicians (as reported in the *Wall Street Journal* by Bialik [2009]). See also Institute for Women's Policy Research (2010) for a different, more women-friendly view of the wage gap. For one of our own take on why women around the world, across all cultures and ethnic groups, tend to earn

less than men (the pay gap today is partially explained by evolutionary forces long ago), see the last chapter in this book.

[82]Dunifon and Kalil (2011).

[83]Dunifon and Kalil (2011) and Cutler et al. (2003).

[84]Cutler et al. (2003).

[85]Among African-American mothers, only 58 percent start out breast feeding, with only 28 percent breast feeding after 6 months and then with only 8 percent of babies exclusively breast-feeding after six months (as reported by the Office of the Surgeon General, January 20, 2011, as retrieved on January 28 from . http://www.surgeongeneral.gov/topics/breastfeeding/factsheet.html.

[86]Gillman et al. (2006); Grummer-Strawn and Mei (2004); Owen et al. (2005); and Toschke et al. (2007).

[87]Dewy (2006) and Nommsen-Rivers and Dewey (2009).

[88]Nommsen-Rivers and Dewey (2009).

[89]Kim and Peterson (2008); Benjamin et al. (2009); and Nommsen-Rivers and Dewey (2009). One caution to keep in mind is that day care children could be a biased sample, given that they could be from homes dominated by unhealthy and fattening diets.

[90]Rowswell, Rich, and Syben (2006).

[91]Nommsen-Rivers and Dewey (2009) report that the median weight loss just after birth of breast-fed babies is 6.6 percent compared with 3.5 percent of bottle-fed babies. On average, breast-fed babies regain their birth weight in 8.3 days compared with 6.5 days among bottle-fed babies, with some of the difference attributable to the lower weight loss among the bottle-fed infants.

[92]Nommsen-Rivers and Dewey (2009).

[93]Dewy (2006).

[94]Kim and Peterson (2008); Benjamin et al. (2009).

[95]Weimer (2001).

[96]Weimer (2001).

[97]Arizona Department of Health Services (2005) and as reported by the Office of the Surgeon General, January 20, 2011, as retrieved on January 28 from http://www.surgeongeneral.gov/topics/breastfeeding/factsheet.html.

[98]Halfon and Lu (2010).

[99]Ludwig and Currie (2010).

[100]Ludwig and Currie (2010, online abstract).

[101]Ludwig and Currie (2010).

[102]Halfon and Lu (2010).

[103]Rosenow (2010).

[104]Cawley (1999); Naik and Moore (1996); and Schlosser (2001).

[105]Campaign for Tobacco-Free Kids (2010a, b).

[106]Rashad, Grossman, and Chou (2005).

[107]Viscusi (1994).

[108]*Santa Monica Daily Press* (2010). The latest smoking ban takes effect, September 10, as accessed September 11, 2010 from http://www.smdp.com/Articles-c-2010-09-08-70276.113116_Latest_smoking_ban_takes_effect_today.html.

[109]Becker and Murphy (1988) and Becker, Grossman, and Murphy (1994).

[110]Chou, Grossman, and Saffer (2004).

[111]Klick and Stratmann (2007).

[112]Peltzman (1975).

[113]Carpenter and Stehr (2009).

[114]Cutler, Glaeser, and Shapiro 2003.

[115]Cutler, Glaeser, and Shapiro 2003, p. 13 in NBER version).

[116]Cutler, Glaeser, and Shapiro 2003, p. 14 in NBER).

[117]Subar et al. (1998).

[118]As reported by Critser (2002) in reviewing a book by Pollan (2003).

[119]Cutler, Glaeser, and Shapiro found the correlation between the amount of commercial preparation of foods and their increased consumption to be 0.68 (Cutler, Glaeser, and Shapiro 2003, Fig. 7).

[120]Stewart (2007).

[121]Cutler, Glaeser, and Shapiro found that the correlation between the degree of branding of food products and calories consumed to 0.51 (Cutler, Glaeser, and Shapiro 2003, Fig. 8).

[122]The researchers found that a half hour saving in food preparation time is associated with a 0.5 point increase in people's BMI (Cutler, Glaeser, and Shapiro 2003, Figs. 9 and 10]).

[123]Cutler, Glaeser, and Shapiro (2003, Table 7 and Fig. 13).

[124]Researchers have found that a one standard deviation in price controls is associated with close to a 4 percentage point decrease in the obesity rate (Cutler, Glaeser, and Shapiro 2003).

[125]As reported by FrumForum (2011).

[126]Smith, Lin, and Lee (2010).

[127]Brownell and Frieden (2009, p. 1806).

[128]Fletcher, Frisvold, and Tefft (2010a, b).

[129]As reported by Dahler (February 9, 2011).

[130]As reported by Huget (2011).

[131]By "rational," economists generally mean three things (1) people know, more or less, what they want, (2) they are able to order their wants from most preferred to least preferred, and (3) they are able to choose consistently among the goods in their ordering to maximize their well-being, and they individually determine their well-being.

[132]University of Chicago economist Richard Thaler and Harvard University law professor Cass Sunstein, who have been major players in the emergence of "behavioral economics," note in their widely read book *Nudge*, "If you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi," which are hardly characteristics of real living human beings who cannot do simple math problems (even with hand calculators), who have memory lapses (as well as false and distorted memories), get drunk, and become obese to their own regret (2008, pp. 6–7).

[133]Ariely (2008, p. xxi).

[134]See books by Wansink (2006), Thaler and Sunstein (2008), Ariely (2008), Marcus (2008), and Chabris and Simons (2010).

[135]McKenzie has countered the criticisms of economists' use of "rationality" in their economic models in a recent book. See McKenzie (2010a).

[136]For a more complete treatment of proposed fat taxes and other policies designed to control people's weight, see McKenzie (2010b, Chap. 8).

[137]See also McKenzie's *Predictably Rational?* (2010).

Chapter 13

[1]For early discussions of price discrimination, see Pigou (1962) and Robinson (1965). For modern textbook discussions of various forms of price discrimination taught university and college students, see Becker (1971), Pindyck and Rubinfeld (2004), and McKenzie and Lee (2010).

[2]For a more detailed discussion of the law of demand, and its graphical representation, see a textbook written for MBA students, McKenzie and Lee (2010), or consult their video module 2.1 on the law of demand at http://media.merage.uci.edu/McKenzie/Modules.html.

[3]*Education Life* 2007.

[4]Consider Richard Vedder's discussion of the use of scholarships for purposes of price discrimination (2006).

[5]Lifson (2004). See also Vedder (2004).

[6]As reported by then-*New York Times* business columnist Peter Passell (1997).

[7]Passell (1997).

[8]As reported on the web site NexTag Comparison Shopping on August 14, 2007, http://www.nextag.com/imation-1gb-usb-flash-drive-clip/search-html, and February 15, 2011, http://www.nextag.com/imation-clip-flash-drive/shop-html. The Amazon price on the 1-gig drive was found February 15, 2011 from http://www.amazon.com/s/ref=nb_sb_noss?url=search-alias%3Daps&field-keywords=Imation+flash+1+gig.

[9]The marginal cost of an ounce of drink must be lower than .6 cent. Otherwise, there would be no reason for a profit maximizing firm to systematically charge so little for the marginal ounces in the large drink. Restaurants are not in the business of doing their customers a favor any more than the customers go to restaurants for do their owners a favor.

[10]Granted, price discrimination by market segments might give rise to higher sales costs. However, the central point of the discussion is that price discrimination can raise profits. The increase in profits is only reduce by the added sales costs. It goes without saying that if the increase in sales costs from price discrimination exceeds the increase in revenues from price discrimination, then price discrimination is not a viable firm strategy.

[11]If you need a more intense discussion of price discrimination, see Chap. 10 in McKenzie and Lee (2010) and the video module 11.5 on price discrimination by market segments at http://media.merage.uci.edu/McKenzie/Modules.html.

[12]It might be thought that McDonalds' prices have been pushed up by airport rental rates, and such may be the case, but only to a degree. It might be more appropriate to say that airport rental rates can be relatively high because price insensitivity of travelers, given their time constraints and inability to look for eating options outside of the airport.

[13]Apple did increase the size of the black laptop's hard drive from 80 to 120 GB, or by 40 GB, and left the white laptop's hard drive at 80 GB. However, those additional gigabytes could, in early 2007, be bought in larger external drives for as little as $xx extra.

[14]Indeed, "quantity discounts" given by a great variety of stores, middlemen, and manufacturers are often viewed as representing economies stores achieve from selling in bulk and reducing the transaction costs of associated with multiple purchases, which can explain the price differences—in part. Another explanation can be that the retailers, middlemen, and manufacturers are simply tailoring their prices to the price sensitivity of different groups of buyers, with the discounts going up with the quantity bought.

[15]One study involving a comparison of 268 textbook prices on Amazon.com (U.S.) and Amazon.co.uk in May 2002 revealed that after adjusting for the length of the textbook and format of the textbooks (hardcover versus paperback) in a regression analysis, textbook prices on Amazon.com were 31 percent higher than on Amazon.co.uk (Cabolis et al. 2005).

[16]The sale price of *Microeconomics* in British pounds was L39.91, with the price of a pound equal to $1.9532.

[17]Cabolis et al. (2005).

[18]Lewin (September 2003) and (October 2003).

[19]Higher incomes in the United States can push students' demand curve for textbook further out to the right, meaning that any given textbook price can be lower down their demand curve for textbook, which can (but not necessarily will) put U.S. students in a range of their demands with a lower elasticity. To see this point more clearly, see the discussion of the elasticity of demand along a given demand curve and at different demand levels in McKenzie and Lee (2006, pp. 270–276). The presumption of a generally higher elasticity of demand in the United Kingdom could be expected to show up in prices for trade book higher in the United States than in the United Kingdom, and the study relied on for differences in textbook prices has also shown that trade book carry a 13 percent premium in the United Kingdom *vis a vis* the United States (Cabolis et al. 2005).

[20]We should, of course, realize that the used book price will be determined, in part, by how widely the text is adopted: the greater the adoptions, the more fluid the used book market can be, the greater the demand of used book buyers, leading to a relatively higher used book price.

[21]We present this argument with some hesitation on accepting it without reservation. This is because many (if not most) students can figure that money spent on textbook will, to a nontrivial extent, be money that parents cannot spend in other ways (for instance, as an increase in student allowances).

[22]You can sample the availability of downloadable chapters at iChapters, http://www.ichapters.com/comsite5/bin/comsite5.pl.

[23]Clerides (2002).

[24]According to one report, Christmas gift card sales were expected to jump nationwide 32 percent in 2006 over what they were in 2005. In Indiana, 69 percent of Christmas shoppers were expected send buy gift cards with an average value of $117 (up from $88 in 2005) (Knight 2006).

[25]Stigler (1961).

[26]Varian (1980).

[27]Salon and Stiglitz (1977).

[28]Varian (1980).

Chapter 14

[1]One of the authors (McKenzie) actually bought four tubs of popcorn from a Regal Theater in Irvine, California. The average weight of the popcorn in the tubs was 6.75 ounces, not counting the weight of the paper tub (1.75 ounces).

[2]These are McKenzie's cost calculations from having made at home enough popcorn to fill a tub from a Regal Theater three times over. However, the tub of popcorn was significantly (47 percent) heavier than the popcorn made at the theater (for reasons we don't understand). The reported cost of a tub of home-produced popcorn, $0.55, is the cost, assuming equal weight. Assuming equal volume, the cost of the home-produced tub of popcorn was $0.81. To make the calculations, McKenzie weighed the bag of popcorn and bottle of oil before and after the popping was complete to make the necessary cost calculations. The reported cost of a home-produced tub of popcorn is the average of the three tubs made at home.

[3]As economists have conventionally argued, if movie theaters were not protected monopolies, to one degree or another, new entrants to the theater markets would provide adult seats at the price of children's seats. Because the adult/children's pricing structure has persisted for a long period of time, existing theaters must be protected from new competition by market entry barriers, or so the conventional argument is developed.

[4]The clearance zones are determined by the potential box-office receipts of movies, as well as the population of the area. The clearance zones can have radii of from three miles in major cities to fifteen miles in small towns (Orbach and Einav 2001, pp. 10–11).

[5]For example, if one low-income group of moviegoers is willing to buy 100 tickets at a price of $6.50 a ticket and 60 tickets at $9.50, the theaters revenues decline from $650 ($6.50 $\times$ 100) to $570 ($9.50 $\times$ 60). If the group's income goes up and the count of tickets demanded goes to 150 at $6.50 and then drops to 110 at $9.50, then the theaters' revenues increase from $975 ($6.50 $\times$ 150) to $1,045 ($9.50 $\times$ 110). Notice that both examples have the exact same price increase of $3 and the exact same decline in the number of tickets sold of 40.

[6]Kahneman and Tversky (2000a, b).

[7]Landsburg (1993, Chap. 16).

[8]FunFoodZ of Evansville, Indiana, maker of commercial popcorn poppers and carts, estimates that the raw materials for popcorn popped on its machines to be a nickel (two cents for the raw popcorn, two cents for oil, and one cent each for the oil and salt), as found at http://www.hi-profit.com/funfoodz/nfppcproft.asp, accessed March 2, 2004.

[9]See Smith's discussion of the "popcorn boom" (2001, Chap. 6).

[10]Harris (1996).

[11]However, we hasten to add a word of caution in accepting the conclusion that popcorn sold in theaters is lower than popcorn sold in malls: the *average* price of theater popcorn could misrepresent the relative price of theater popcorn and popcorn sold elsewhere because the theater popcorn is sold in larger portions (Harris 1996). The added popcorn could be sold at low marginal prices, thus pulling down the average price of theater popcorn.

[12]Harris (1996, p. 44).

[13]Perfect competition is a market in which there are numerous producers of an identical product with completely free (costless) entry by producers. Consumers are also fully aware of all prices charged by all of the numerous producers. In such a market setting, producers have no control over price, and the prices charged will only enable producers to recover their production costs (including risk and opportunity cost). However, clearly real-world markets do not match well with economists' perfectively competitive model. Moreover, as we have argued elsewhere (2007), perfect competition is not a market setting that is likely to maximize growth and economic wellbeing over time, simply because producers have little to no incentives to develop new and better goods and services.

[14]More formally, economists reason that the profit-maximizing monopolist will certainly increase its price so long as its revenues go up. However, the monopolist will not stop raising its price when revenues begin to fall. This is the case because the decrease in costs from lower sales can be greater than the decrease in revenues. Hence, profits can still rise under such conditions. For example, if the monopolist raises it price from \$6 to \$7 and sales decline from 100 to 80 tubs of popcorn, revenues fall from \$600 (\$6 $\times$ 100) to \$560 (\$7 $\times$ 80), or by \$40. The monopolist would still raise the price so long as the drop in costs were greater, say, \$50. The monopolist's profits would rise by \$10. The rule economists proffer for monopolist's (or any other firm's) pricing strategy is that price should be raised so long as the reduction in revenues is less than the reduction in costs. It should stop raising it price when the reduction in revenues equals the reduction in costs.

[15]See Friedman (1990, pp. 28–29, 90–93, 249–250) for a more formal discussion of how theaters price movies and popcorn taken as bundles.

[16]Landsburg (1993, Chap. 16).

[17]Locay and Rodriguez (1992).

[18]De Vany (2004) and De Vany and Eckert (1991).

[19]De Vany (2004).

[20]For more details on how movies are priced and distributed, see Tyson (2000).

[21]See Conant (1960) and Crandall (1975).

[22]Crandall and Winston (2003).

[23]For an extended discussion of the perverse economic consequences *Paramount* decision, see De Vany (2004, Chaps. 7–9).

[24]These weight estimates are necessarily "rough" because there was a nontrivial amount of variability in weights of the popcorn in the several containers McKenzie bought. You can also imagine that the variability in the weights is dependent on who is filling the containers, whether the clerk fills them to overflowing and packs the popcorn in the containers, as one did to the point of crumbling the popcorn.

Chapter 15

[1]As reported by and *Editor and Publisher* (2010), citing a report by Lukovitz (2009).

[2]The value of coupons distributed during the first half of 2005 was $1.23, an increase of 3.3 percent, below the inflation rate of 4.3 percent for the twelve-month period ending June 2006 (an unusually high inflation experience for the USA in recent years). This means that the average real value of coupons fell slightly more than 1 percent.

[3]CMS (2006). The real, inflation-adjusted average value of redeemed coupons fell by 2 percent from June 2005 to June 2006. See also Daniel (2007).

[4]CMS (2006).

[5]The 2006 redemption rate for all coupons was 14 percent lower than the redemption rate for 2004, which was 1.2 percent. Two possible explanations for the decline in the redemption rate are that both the real value of coupons and the average length of time consumers had to redeem their coupons fell.

[6]Coupons worth $0.01–$0.24 constituted less than 0.1 percent of all coupons distributed and only 0.2 percent redeemed. Coupons worth $0.50–$0.75 constituted 19 percent of coupons distributed and 19 percent of coupons redeemed. Coupons worth $0.75 to $1.00 accounted for 52 percent of all distributed coupons and 41 percent of coupons redeemed. Surprisingly, however, coupons worth more than $1.00 constituted 17 percent of all distributed coupons, but only 8 percent of all redeemed coupons (CMS 2006).

[7]CMS (2006).

[8]The count of frequent shopper discounts was not counted before 2006, perhaps because of their minimal importance. During the twelve months ending in mid-2006, frequent-shopper discounts constituted 0.1 percent of all coupons but 1.23 percent of all redeemed "coupons" (CMS 2006).

[9]As estimated by Santella & Associates for 2001, accessed on February 16, 2007 at http://205.212.176.204/coupon.htm.

[10]Nielson (1965).

[11]Banerjee and Summers (1987).

[12]See Levedahl (1986), White (1983), Narasimhan (1984), and Sweeney (1984).

[13]Narasimhan (1984).

[14]Landsburg (1993, p. 164).

[15] Narasimhan (1984).

[16]Bawa and Shoemaker (1987a).

[17]Blattberg et al. (1978).

[18]Blattberg et al. (1978) found that buyers who owned their own houses were more deal prone, and more price sensitive, than buyers who lived in apartments, since house owners have more storage space and lower inventory costs than apartment owners.

[19]See Ward and Davis (1978); Reistein and Traver (1982); Shoemaker and Tibrewala (1985); Bawa and Shoemaker (1987b); Bawa, Srinvasan, Srivastava (1997); and Vilcassim and Wittink (1987).

[20]See Shoemaker and Tibrewala (1985), Bawa and Shoemaker (1987b), Neslin and Clarke (1987), and Krishna and Shoemaker (1992).

[21]Gerstner and Hess (1991).

[22]Vilcassim and Wittink (1987) and Dhar and Hoch (1996).

[23]See Krishnan and Rao (1995).

[24]As reported by Nevo and Wolfram (2002, p. 337).

[25]As reported in Nevo and Wolfram (2002, p. 337).

[26]Stigler (1961).

[27]Stigler (1961).

[28]See Corts (1998) and Nevo and Wolfram (2002).

[29]Sobel (1984) and Aguirregabiria (1999). Alternatively, coupons may cause retailers to use couponed products as "loss leaders," enhancing the amount of foot traffic they experience in their stores by giving buyers a break on the shelf prices in addition to the break they get from the coupons (Lal and Matutes 1994).

[30]Oyer (1998).

[31]Nevo and Wolfram (2002).

[32]See also Corts (1998).

Chapter 16

[1]For details on the structure of firm costs both with a constant scale and increasing scale of operations, see McKenzie and Lee (2010, Chaps. 7 and 8) and review video modules 8.1 and 9.1–9.3 at http://media.merage.uci.edu/McKenzie/Modules.html.

[2]See McKenzie and Lee (2010) and go to http://media.merage.uci.edu/McKenzie/Modules.html.

[3]Starbucks initially had a menu of plans, which, at the beginning of 2004 included a $6.00 login fee good for 1 h and $0.10 a minute for every minute over an hour, a day pass for $9.99, a yearly pass for $29.99 per month with a penalty if terminated within the year, and a month-to-month plan for $39.00 per month.

[4]Sometimes there is a price for each unit, and sometimes the charge is the same up to a certain number of units, and then increases if additional units are taken.

[5]Alcoholic beverages are seldom covered in the price of a cruise because they are more costly than food and there is a greater variance in alcohol consumption than food consumption.

[6]Nelson (1970). Nelson's work is an extension of the seminal work on the economics of information by economist George Stigler (1961) discussed in Chap. 4. In the development of his theory of "experience goods," which he saw as a fairly broad category, Nelson included jewelry, typewriters, radios, televisions, tires, batteries, aircraft, boats, motorcycles, heating and plumbing systems, bicycles, automobiles, music instruments, and appliances (Nelson 1970, p. 319).

[7]Nelson (1970) found that an overwhelming majority of product reviews in *Consumer Reports* were for experience goods, especially durable goods.

[8]Indeed, we have to expect that by the time this book is released, the publisher will have to allow prospective buyers to sample it in both print and audio forms.

[9]Fitzgerald (1996).

[10]Lindstedt (1999).

[11]Parmar (2003). See also Lammers (1991) who found that chocolate samples given out in specialty stores increased the sales on the day of the sampling, but the purchases were relatively inexpensive, generally under $5. As reported in Heilman et al. (2005), other researchers found that samples had a relatively greater impact on sales than a temporary price reduction. Steinberg and Yalch (1978) found that food sampling increased the sales to obese people more than to nonobese people.

[12]Heilman et al. (2005). The array of marketing studies on the impact of free, in-store samples is very limited to date. However, if an array of new studies appears, it should not be surprising that the exact short run and long run impact of samples on sales will vary greatly. This is because the exact conditions under which free samples are distributed can affect sales, and these conditions are likely to vary greatly from study to study.

[13]The interviews were done at Costcos in Orange County, California on June 9, 2007.

[14]See Arthur (1989, 1990, 1996).

[15]For a more detailed discussion of network good, graphically illustrated, see McKenzie and Lee (2010, Chap. 6) and video module 7.3 at http://media.merage.uci.edu/McKenzie/Modules.html.

[16]Wright (1995).

[17]From a memorandum from Bill Gates and Jeff Raikes to John Sculley and Jean Louis Gassee on "Apple Licensing of Mac Technology," June 25, 1985 (from the author's personal files).

[18]And it needs to be recognized that in the late 1980s, many industry experts were betting on IBM to dominate the operating system market. In *PC Magazine*, William Zachmann wrote in 1992, "I expect that OS/2 will not only succeed but will take a lot of wind from Windows' sails in the process. I think OS/2 is the odds-on favorite to replace DOS as the dominant desktop operating system . . . I see a big change toward OS/2 and away from Windows over the next year" (Zachmann 1992).

[19]Klein et al. (1998), p. 19.

[20]The Justice Department used expert witness Frederick Warren-Boulton to explain how computer "users become 'locked in' to a particular operating systems [sic]," adding, "The software 'lock-in' phenomenon creates barriers to entry for new PC operating systems to the extent that consumers' estimate of the switching costs are large relative to the perceived incremental value of the new operating system. Often, switching operating systems also means replacing or modifying hardware. Businesses can face even greater switching costs, as they must integrate PCs using the new operating systems and application software within their PC networks and train their employees to use the new software. Accordingly, both personal and corporate consumers are extremely reluctant to change PC operating systems" (Warren-Boulton 1998, pp. 21–22).

[21]Judge Thomas Penfield Jackson found in the Microsoft antitrust case that "it is a commercial necessity to preinstall Windows on nearly all of their PCs. Both OEMs [original equipment manufacturers] and Microsoft recognize that they have no commercially viable substitutes for Windows, and they cannot preinstall Windows on their PCs without a license from Microsoft" (Jackson 1999, p. 21).

[22]Jackson (1999, p. 12).

[23]Fisher (1998, pp. 15–16).

[24]Fisher (1998, p. 27).

[25]Klein et al. (1998, p. 6).

[26]The Justice Department used Franklin Fisher to explain to the court how Microsoft's pricing strategy was "predatory": "A predatory anti-competitive act is one that is deliberately not profit maximizing, save for supra-normal profits to be earned because of the effects on competition" (Fisher 1998, p. 19), a definition Fisher used to charge that, "Microsoft's [predatory] actions as to price are not profit-maximizing in themselves but are profitable only because of their adverse effects on competition," which caused Fisher to assert that any price below the short-run profit maximizing price is necessarily "predatory" (Fisher 1998, p. 7).

[27]U.S. Department of Justice (1999, p. 8).

[28]McKenzie (2000).

[29]Business Software Alliance (2006, p. 1).

[30]Business Software Alliance (2006, p. 2).

[31]Business Software Alliance (2006, p. 4).

[32]Leeds (2001).

[33]Givon, Mahajan, and Muller (1995).

[34]Maltz and Chiappetta (2002).

[35]See Besen (1986), Besen and Kirby (1989), and Johnson (1984).

[36]Becker and Murphy (1988) have developed this "Theory of Rational Addiction" on which this section is based.

[37]Becker and Murphy (1988).

[38]Becker, Grossman and Murphy (1994) found that in the short run, a 10% increase in the price of cigarettes will lead to a 4% reduction in cigarettes sold. However, if the time period is extended, a 10% increase in the price of cigarettes will lead to a 7–8% reduction in sales.

[39]Anderson (2009).

Chapter 17

[1]For a compendium of Becker's major journal contributions through the mid-1990s, see Febrero and Schwartz (1995).

[2]Becker and Becker (1997).

[3]Appropriately, Becker's Nobel Lecture, given on December 9, 1992, was on "The Economic Way of Looking at Life" (1993).

[4]Becker's analytical approach is best summarized in an article he published with his then colleague at the University of Chicago, George Stigler (1977).

[5]Becker (1991).

[6]For a more detailed discussion of how equilibrium is achieved in a competitive market setting, with supply and demand curves, see McKenzie and Lee (2010, Chap. 6) and video modules 2.1, 2.2, 2.5, and 3.1 at http://media.merage.uci.edu/McKenzie/Modules.html.

[7]See Kahneman, Knetsch, and Thaler (1986).

[8]See McNicol (1975).

[9]Becker (1991).

[10]See De Vany and Frey (1982).

[11]See De Vany and Frey (1982).

[12]See Barro and Romer (1987).

[13]See Landsburg (1993, p. 13).

[14]See Becker, Ronen, and Sorter (1974); Weiss, Hall, and Dong (1980).

[15]Hall (1991).

[16]For longer discussions of how queues can reduce the cost that firms incur to provide other consumer benefits, see Hall (1991), Saaty (1961), and Schwartz (1975).

[17]Passy (2007).

[18]Granted, we noted earlier in the book that shoppers tend to resent having to pay a premium but look favorably on discounts, with the end result of the discount or premium being the same price paid (Thaler 1980). If this is the case, then stores can hike their prices across the board, and give a discount to all shoppers who go through checkout counters other than the designated "premium" counter.

[19]Ralph's and Food4Less are often within short distances of one another, which means that residents in different neighborhoods can go to either. However, casual observation of the stores' shoppers reveals that shoppers have self-selected by incomes and opportunity costs.

[20]Haddock and McChesney (1994).

[21]Haddock and McChesney write,

> A demand increase may be temporary. A price rise would diminish the firm's stock of goodwill among loyal customers. Regaining the loyalty of the old clientele will be costly. A priori, the cost of regaining clientele is not necessarily less than the opportunity cost of foregone sales to transitory buyers. The firm must estimate which course is apt to be more profitable. So a firm believing that a demand increase is transitory might quite rationally restrain prices and serve only loyal buyers, thus creating excess demand and potential queues for transitory buyers (p. 567).

[22]Haddock and McChesney (1994, p. 565).

[23]As quoted by Haddock and McChesney (1994, p. 574) from Lohr (1992, pp. C1–2).

[24]Haddock and McChesney (1994, p. 568).

[25]Haddock and McChesney (1994, p. 569).

[26]Haddock and McChesney (1994, p. 568).

[27]Becker (1991, p. 1110).

[28]Leibenstein (1950).

[29]Becker (1991, p. 1114).

[30]See Lee and McKenzie (1998).

[31]Becker (1991, p. 1113).

[32]Becker (1991, p. 1113). Becker may actually see his upward sloping demand curve as the locus of price/combinations that are realized as the normal downward

sloping demand curve shifts out in response to advertising and market buzz about the product.

[33]See Friedman and White (2007) and Guglielmo (2007).

[34]As reported by the *Wall Street Journal* (Kane and Clark 2011, March 14).

[35]As reported by Elmer-DeWitt (2011, January 3) for *Forbes* magazine.

[36]See Rothkopt and Rech (1987) and Rafaeli, Barron, and Haber (2002). However, not everyone agrees that the wait time for multiple queues will tend to be shorter. See Wolff (1988, Chap. 5).

[37]See Rothkopf and Rech (1987), Averill (1973), and Perlmutter and Monty (1979).

[38]See Hall (1991) and Rafaeli, Barron, and Haber (2002).

[39]In one experimental study where the conditions of single and multiple queue structures were tightly controlled via computers, Rafaeli, Barron, and Haber found that while the single queues had longer wait times, the subjects tended to favor the single queues, because the multiple-queue system "produced violations in fairness and variations in time wasted" (2002, p. 134).

[40]Landsburg (2007, p. 125).

[41]Hassin (1985), Naor (1969), and Nalebuff (1988).

[42]Hassin (1985, p. 201).

[43]Nalebuff (1988).

[44]Landsburg (2007, p. 127).

[45]Nalebuff (1988) suggests one way the last-come/first-served rule is used in business. Cashiers often answer the phone and address questions from callers even when they face a line-up of customers. The callers, Nalebuff suggests, effectively break line. But there are obvious differences between a shopper breaking in front of other shoppers in line and callers. Callers can be put on hold or dealt with briefly. That is hardly the case when many grocery shoppers break line with a shopping cart full of groceries. Also, stores can incur the costs of shoppers whose wait times are increased because of the calls that are taken by clerks. If they allow clerks to take calls as a matter of practice (and allow callers to break line), the stores can expect additional shoppers will use their cell phones to effectively break line. The stores will have to offset shoppers' dissatisfaction from the line-breaking by, say, providing better products at lower prices.

Chapter 18

[1]An aloof attitude on the part of professors and administrators is one means of reducing the utility of education to students, and, to that extent, it is one means of extracting a nonmonetary price from students.

[2]We realize that tuition charges have gone up dramatically during the period with which we are concerned; however, such changes do not harm our conclusions. In fact, such changes, if introduced, would serve to reinforce our conclusions. Can you show why?

[3]As a side note, one of the authors has been associated with two schools that, when he was there, had very strict dress codes and sign-out requirements for women. For example, at one school women had to be in their dorms by 10:30 p.m. during the week and could not be gone from campus for more than four hours without signing out again. They also could not wear Bermuda shorts on "front" campus. At another campus, women could not date men of another race without written permission from their parents. When students demonstrated against such rules in the early 1960s, the administration would respond by arguing that they were doing what they thought was right and in the best interest of the women students. At both schools, when enrollment problems began to appear, the rules were scrapped almost in toto. The justification given was that women in the middle and late 1960s were more mature and responsible than were their counterparts in earlier years. Such statements made good press releases, but few in the college communities took them very seriously.

[4]"Grade Inflation," *Newsweek,* July 1, 1974, p. 49.

[5]Fethke and Policano (forthcoming).

Chapter 19

[1]Dubin and Taveggia (1968).

[2]Kiesling (1971); Lewis and Orvis (1971).

[3]For a more detailed and rigorous treatment of the economist's approach, the reader may want to see McKenzie (1979a, b).

[4]A fruitful departure (but one that cannot be taken) would be to consider a question economists have pondered for years: when does a person stop acquiring information and make a decision? Remember that the acquisition of information itself can be a rational act. Aside from this issue, one economist, Gary Becker (1962), showed that even if people are irrational in at least one sense of the term, many of the deductions made from an assumption of rationality still hold.

[5]Admittedly, as we have discussed, the amount of time available for educational purposes is not likely to be fixed; however, the assumption does simplify the discussion and does not detract from the limited argument we have in mind. Also see Staaf (1972).

[6]We recognize that some students come to a class with such a backlog of knowledge in a given subject area that they do not have to do anything to pass the course. Here again, we are attempting to concentrate on the typical student in the typical class.

[7]We force students to go to public schools. The element of compulsion suggests that the perceived benefits of education for those who actually have to be forced is not sufficient to cover the students" private cost of the education.

[8]Kelley (1972, p. 13).

[9]Capozza (1973, p. 127). For other studies on the same subject, see Voeks and French (1960); Rodin and Rodin (1972); Nichols and Soper (1972); and Soper (1973).

[10]The student can possibly dislike all of his instructors; but if asked to rate the instructors, he or she will give the one whom he dislikes least the highest rating.

[11]These statements seem reasonable to us because if the student is asked to give comparative ratings to different professors in different fields or different courses, he must be able to reduce the comparative problem to one common basis. We use the economist's concept of utility as that common denominator.

[12]A point worth mentioning at this juncture is that if a researcher observes several students making higher grades than others in the class, he cannot on *a priori* grounds expect their ratings of the instructor to be higher for the simple reason that they may have worked harder to obtain their grades and are therefore no better off.

[13]Attiyeh and Lumsden (1972).

[14]Rodin and Rodin (1972).

[15]Vedder (2010).

[16]As reported by Finkelmeyer (2010, January 27).

[17]Combs and McKenzie (1975).

[18]Upon more sophisticated regression analysis (for those who understand statistics), we standardized for a number of characteristics of the students, such as sex, age, race, marital status, quality point average, and so forth. We found in the McKenzie test, the dummy variable introduced to distinguish between the students in his hard and easy classes was statistically significant at 0.001 in the equation in which the professor ratings were used as the dependent variable and in which the differences in the student's performance on the pre and posttest were used as the independent variable. This dummy variable was not significant in the analysis of Combs' results, but the sign of the variable was in the predicted direction. This suggests, but does not prove, that if Combs had increased the difference in his grading structures, the differences in ratings and performance would have been significant. The study also suggests that if student ratings had been used in ranking the faculty within the department for purposes of raises, Combs and McKenzie could have, assuming other faculty members held to their grading policy, raised their rankings and raises by inflating their grades.

[19]Babcock and Marks (2010).

[20]Babcock and Marks (2010, p. 1).

[21]For an example of the extensive literature on the tie between grades and student evaluations, see Krautmann and Sander (1999).

[22]For those who may be concerned with this study from a moralistic point of view, the authors of the study maintained a difference in their grading policy until the last lecture session at which the student ratings were taken. In the final analysis, the classes were graded on the same basis. In fact, because we realized that we had "framed" the students, the student grades were higher than they normally are in our classes.

Chapter 20

[1]This chapter is a revised version of an article published jointly by Thomas Sullivan and one of the authors, McKenzie (1987). The authors of this book are indebted to Thomas Sullivan for his contribution and for his permission to republish the article here in revised form.

[2]As reported by Thamel (2011).

[3]As reported (among numerous sources that can be found through a Google search) by Robinson (2010, June 10).

[4]Three of 110 proposed rule changes created an unusual amount of controversy within the ranks of NCAA colleges in 1985 and 1986. The three most controversial rule changes are (1) freshmen entering Division I colleges would be required to have a grade-point average of 2.0 in their high school core curriculum and a minimum combined score on their Scholastic Aptitude Test of 700 or 15 on the American College Testing program; (2) a drug-screening program (with tests and penalties) would be instituted for national championships and football bowl games; (3) boosters would be barred from all contact with prospective athletes. As reported by Farrell (1985).

[5]As reported by Klein (1985).

[6]See Alchian and Allen (1977). The authors of this book made the mistake of adapting the cartel argument in an early version of their own textbook McKenzie and Tullock (1978). Clemson University economist Robert McCormick has written:

> [T]he real reason for the NCAA's existence is to cartelize college athletics. Like all good cartels, the NCAA has rules limiting competition between institutions that prevent the monetary value generated by fine athletes from going to the athletes. . . . The NCAA cartel makers are determined to make sure that competition does not break out that would allow very talented young athletes to be compensated for the valuable services they provide (1985).

[7]Becker (1985).

[8]Howell (1985).

[9]Editors, *Wall Street Journal* (1985).

[10]McCormick (1985).

[11]Yoder (1985).

[12]Yoder (1985).

[13]Public goods are goods the benefits of which are shared by all within the relevant community.

[14]Quasi rent is the amount by which the wage rate exceeds the resources' opportunity cost, or next best alternative employment.

[15]The efficient employment level occurs when the marginal value of the last worker employed equals his or her marginal opportunity cost. The efficient employment level is achieved when no further trades between employers and employees can be made, which graphically occurs at the intersection of the supply and demand for labor curves. In competitive markets, the wage rate, which is subject to competitive pressures, drives the market to the intersection of their supply and demand curves. At that intersection, the marginal value and cost of the last worker are equal.

[16]*Pecuniary externalities* are financial costs competitors suffer from bidding for scarce resources and goods and services. They result in improved market efficiency.

[17]One set of authors write in technical economic terms,

> The essence of these rules is that players cannot be paid according to their marginal revenue product [MRP]. Rather, they are paid a uniform wage in-kind, consisting of a scholarship, room and board, and expense allowance, and so on. The problem is that, in an era of modern college athletics, many (if not most) players have MRP's in excess of the value of their stipulated payments. Seen in this light, the NCAA is a mechanism by which schools capture rents from student-athletes (Fleisher, Goff, Shughart, and Tollison [1985]).

[18]When viewed from the perspective of all colleges in the athletic labor market, the marginal cost of the last student-athlete hired exceeds the wage (and his or her marginal value) by the amount of the reciprocal pecuniary externalities. By suppressing the labor demand and hiring fewer athletes through the development of NCAA rules, colleges can reduce their collective marginal cost of labor until it no longer exceeds the athletes' marginal value. When the colleges' cost is reduced by more than their revenue, their collective profits must rise.

[19]Nonathletic members of the colleges' administrations and faculties are thought to support the NCAA wages rules because of the presumed transfer of rents from the athletic programs to the nonathletic programs.

[20]Graphically, the demand for labor and wages fall below competitive levels because of the NCAA's rules. The suppressed wages will cause athletes to move down their labor supply curves.

[21]The extent of the market inefficiency equals the difference between the collective value of all athletes that are not hired under the cartel but would have been hired under a competitive labor market minus their combined opportunity costs.

[22]Becker (1985).

[23]McCormick (1985).

[24]Indeed, the value of college experience to athletes is clearly indicated by the number of high school athletes that could follow the lead of basketball player Moses Malone and tryout for the professional ranks directly out of high school. Admittedly, there are few high school athletes that could successfully make the transition as did Malone, but that is, again, only a way of asserting the value of college athletics.

[25]Admittedly, there are restrictions on the ability of players to enter the National Football League (NFL) draft. (College football players cannot be drafted until they have used their college eligibility or until they are declared "hardship cases.") However, such draft restrictions also could be construed as devices to ensure the long-run viability of college athletics. In addition, the NFL draft restrictions do not prevent colleges from seceding from the NCAA and paying players what are thought to be competitive wages. If anything, the NFL restrictions represent barriers of entry to the NFL for players, not barriers to entry for collegiate sports associations or barriers to exit from the NCAA.

[26]Admittedly, McDonald's does not restrict wage payments made by franchises to their employees; however, it does restrict the prices they can charge.

[27]Exactly why the member-colleges believe the NCAA will further the interests of the colleges through a joint venture is of no consequence to the argument. There may actually be various types of benefits received by different schools, just as there may be various types of benefits received by the different McDonald's franchises. The critical requirement is that benefits from a joint venture are perceived.

[28]As would be true of all ventures in which joint action results in benefits to all that have some durability (through, for example, the creation of a "reputation" for amateur sports), individual participants—for example, players—have an additional short-term incentive to free ride by cheating. Each athlete can reason that if he or she accepts side payments, his or her payments may never be uncovered and, even if they are uncovered, may have no detectable effect on his or her own expected income over the expected relatively short time involved in a college education. The reputation benefits for amateur sports in college may evaporate with rampant cheating; each athlete can reason, however, that he or she will have long completed his or her college career when the joint-venture benefits do evaporate. That is to say, there are inevitable tensions between the short-term interests of athletes (and coaches and, for that matter, all others whose stay at colleges is perceived to be short-term) and the long-term interests of colleges as institutions.

[29]In addition, more athletic talent at lower wages will be available for the professional ranks, which may explain professional teams' support of the NCAA system of rules and regulations. Proponents of the cartel theory of college sports have a difficult time explaining professional teams' support of the NCAA rules. If the NCAA were a cartel that suppressed wages and employment opportunities for

athletes, the supply of athletes available for the professional ranks would be reduced, increasing the wages professional teams must pay. Also, when wages are suppressed by a cartel, we do not anticipate a surplus of labor that would spur nonprice competition in the form of talent improvement. If anything, a cartel that seriously suppressed wages would induce a reduction in athletic talent available to the college and professional ranks.

[30]Even Becker acknowledges the legitimacy of the incentive to cheat on cartels:

> Since collusion, even if by merger, is the only way to internalize and thus incorporate these effects, one might expect every industry to evolve into an effectively monopolized one. But just as all firms together have a strong incentive to depart from the competitive solution, each separately has an equally strong incentive to depart from monopoly solution. . . . Since all firms want to expand output, collusion has a tendency to break down because of "chiseling" by the members. Each firm, in effect, hopes that all others act monopolistically while it acts competitively (Becker 1971, pp. 99–100).

Becker recognizes that the effectiveness of a cartel depends on the costs imposed on violators for departing from the cartel agreement. In the sports market, this means that the NCAA would have to have a means of imposing sufficient costs on colleges for seceding from the NCAA and setting up their own sports association that would allow for payment of athletes to more than cover the benefits of secession.

[31]Many economists who argue that the NCAA is an effective employer cartel would be the first to contend that it would be extremely difficult, if not impossible, for a collection of 850 firms in any other industry to maintain an effective cartel in any other product or resource market.

[32]The NAIA and the NLCAA could expand their sports programs considerably by allowing for payments.

[33]It would appear that officials of the NCAA or athletic associations in other countries would take advantage of their experience with running sports associations and their understanding of the exploitive rules of the NCAA and seek to organize alternative sports associations by enlisting the support of colleges, if not of their conferences.

[34]Proponents of the cartel thesis might react, as they have reacted in private conversation with the authors, that if member colleges are capable of cohering over the long run within the NCAA to produce a joint product, they are every bit as capable of cohering within the NCAA to cartelize the market for the purpose of suppressing athletes' wages. The argument is a non sequitur, mainly because of the brand-name benefits of being associated with the NCAA. Membership in the NCAA would collapse if there were no brand-name benefits—no demand-enhancing benefits—associated with membership: few schools would long endure the penalties (which run into the millions of dollars) that the NCAA imposes for rule infraction.

[35]*Smith* v. *Pro Football, Inc.,* 593 F.2d 1173,1179 (D.C. Cir. 1978).

[36]*Smith* v. *Pro Football, Inc.,* 593 F.2d 1173,1179 (D.C. Cir. 1978), p. 1179.

[37]Indeed, to the extent that the NCAA is successful in increasing the demand for college athletics, we would expect athletes' wages to rise. Given the increase in the price of attending college relative to the prices of other goods, the wages of athletes have effectively risen over time.

[38]Farrell (1985).

[39]*United States* v. *Addyston Pipe* and *Steel Co.,* 85 F. 271 (6th Cir. 1898), *affd* 175 U.S. 211 (1899).

[40]*United States* v. *Addyston Pipe* and *Steel Co.,* 85 F. 271 (6th Cir. 1898), *affd* 175 U.S. 211 (1899).

[41]See generally Bork (1978, pp. 26–30).

[42]593 F.2d 173 (D.C. Cir. 1978).

[43]593 F.2d 173 (D.C. Cir. 1978), p. 1179.

[44]The court ultimately held that the player draft was an unreasonable restraint of trade because of its anticompetitive impact on the market for players' services. 593 F.2d 173 (D.C. Cir. 1978), p. 1189. See also *Mackey* v. *National Football League,* 543 F. 2d 606 (8th Cir. 1976); Weistart and Lowell (1985, p. 128) (criticizing the narrowness of *Smith's* rule-of-reason analysis); and Robinson (1980).

[45]104 S. Ct. 2948 (1984).

[46]I104 S. Ct. 2948 (1984), p. 2954.

[47]104 S. Ct. 2948 (1984).

[48]104 S. Ct. 2948 (1984), p. 2959.

[49]104 S. Ct. 2948 (1984), pp. 2961, 2959. See also *Broadcast Music, Inc*. v. *CBS,* 441 U.S. 1 (1979); *Continental* ~v., *Inc*. v. *GTE Sylvania, Inc.,* 433 U.S. 36 (1977).

[50]104 S. Ct. at 2969, citing Bork (1978, p. 278).

[51]I104 S. Ct. at 2969, p. 2961.

[52]104 S. Ct. at 2969.

[53]104 S. Ct. at 2969. The court struck down the NCAA's television contracts, finding that they restricted output and demand without producing offsetting procompetitive benefits. For an analysis of output as the key factor in balancing the competitive effects, see Sullivan (1984, p. 171).

[54]104 S. Ct., p. 2961.

[55]104 S. Ct., p. 2961.

[56]104 S. Ct., p. 2969.

[57]Ibid. The court rejected Justices White and Rehnquist's argument that the NCAA regulations were noneconomic in nature (nonmarket goods) that produced a social benefit in promoting amateur athletics. Instead, the majority said antitrust laws only permit an examination into the competitive impact of the restraint, not whether they

promote public interest or other values. See *National Society of Professional Engineers* v. *United States,* 435 U.S. 679 (1978); Sullivan (1982, p. 1).

[58]104 S. Ct., p. 2971.

[59]104 S. Ct., p. 2971. See also *Gunter Hartz Sports, Inc.* v. *United States Tennis Association, Inc.,* 665 F.2d, pp 222,223 (8th Cir. 1981); *Neeld* v. *National Hockey League,* 594 F.2d, pp. 1297, 129~1300 (9th Cir 1979); Weistart and Lowen (1979).

[60]See, e.g., *Hennessey* v. *NCAA,* 564 F. 2d, pp. 1136, 1151–53 (5th Cir. 1977); see Seib, "Antitrust and Nonmarket Goods, The Supreme Court Fumbles Again," *Washington Law Review,* 60 (1985), pp. 721, 729; "Antitrust and Nonprofit Entities," *Harvard Law Review,* 94· (1981), p. 802. R. Haveman and K. Knopf, *The Market System* (1966), p. 209.

[61]This might include more severe collective restraints if the NCAA was faced with "intraband competition from other products, produced by another association or league as may be developing with the College Football Association (CFA) whose purpose is to promote the interest of major college football schools." Ibid., p. 2968 n. 55. See generally, Weistart and Lowell (1985, pp. 760–762 and 768–769).

[62]104 S. Ct., pp. 2963–64; Sullivan (1982).

[63]104 S. Ct., p. 2966.

[64]104 S. Ct., p. 2965.

[65]See, e.g., *United States* v. *Griffith,* 334 U.S. 100 (1948); *Berkey Photo, Inc.,* v. *Eastman Kodak Co.,* 603 F.2d 263 (2d Cir. 1979), *cert. denied,* 444 U.S. 1093 (1980); *United States* v. *Machinery Corp.,* 110 F. Supp. 295 (D. Mass. 1953), *aff'd,* 347 U.S. 521 (1954); Sullivan and Hovenkamp (1984, pp. 431, 455).

[66]Sullivan and Hovenkamp (1984, p. 455). See also 2 P. Areeda and D. Turner (1978) sec. 403 at p. 271; 3 P. Areeda and D. Turner (1970) sec. 710, at pp. 148–50 (reduced output by the monopolist will be offset by expanded output by other competitors); *Berkey Photo, Inc.* v. *Eastman Kodak Co.,* 603 F.2d 263 (2d Cir. 1979), *cert. denied,* 444 U.S. 1093 (1980). The analysis should not differ for monopsony as compared with monopoly. A monopoly buyer, a monopsonist, is one who has the ability to reduce demand by forcing the seller to sell at a lower price. The contention is that the NCAA is a monopsonist that forces the athlete to sell his or her service at a lower wage than that prevailing in a competitive market, resulting in a deadweight loss similar to that achieved by a monopoly seller. Ibid., p. 17–18. For reasons discussed herein, the monopsony theory is contrary to actual practice found by the Supreme Court in *NCAA*. Questions also exist whether the Sherman Act covers buyer cartels or monopsony power. During the debates, Senator Sherman said, "There is nothing in the bill to prevent a refusal by anyone to buy something. All that it says is that people producing or selling a particular article shall not make combinations to advance the price of the necessaries of life." 20 Congo Rec. 1458 (1889) *quoted in* Hovenkamp, *Antitrust Law, Policy and Procedure,* p. 18. More recent authority is to the contrary. See *In re Beef Industry*

Antitrust Litigations, 600 F.2d 1148 (5th Cir. 1979), *cert. denied,* 449 U.S. 905 (1980).

[67]See generally Sullivan (1984, p. 1) and Easterbrook (1984, p. 1).

[68]104 S. Ct., p. 2969.

[69]104 S. Ct., p. 2954. The CFA was formed during the same period of time that the NCAA's power to regulate was on the increase. To be sure, the CFA, made up of five major conferences that emphasize football, was created to increase the influence of the major football colleges within the NCAA structure.

[70]Hovenkamp, *Economics and Federal Antitrust Law* (1985), pp. 111–13. The economies might include (1) operation at an efficient scale, (2) avoiding high market costs, (3) reducing market costs or improving market opportunities, and (4) avoiding the free rider problems such as in the advertising of the product.

[71]See e.g., *Broadcast Music* v. *CBS,* 441 U.S. 1 (1979); *Appalachian Coals, Inc.* v. *United States,* 268 U.S. 344 (1933); *Chicago Board of Trade* v. *United States,* 246 U.S. 231 (1918); *Buffalo Broadcasting* Co., *Inc.* v. *American Society of Composers,* 744 F.2d 917 (2d Cir. 1984).

[72]See generally Sullivan (1982). See also *Northwest Wholesale Stationers, Inc.* v. *Pacific Stationery and Printing Co.,* 105 S. Ct. 2613 (1985); *Aspen Skiing Co.* v. *Aspen Highlands Skiing Corp.,* 105 S. Ct. 2847 (1985); *Copperweld Corp.* v. *Independence Tube Corp.,* 104 S. Ct. 2731 (1984).

[73]104 S. Ct. 2731, 2740–43 (1984).

[74]104 S. Ct. 2731, 2740–43 (1984). The Court held that a parent corporation is incapable of conspiring with its wholly owned subsidiary under Section One of the Sherman Act.

[75]105 S. Ct. 2613 (1985).

[76]105 S. Ct. 2613 (1985), p. 2621.

[77]See, e.g., *Klor's, Inc.* v. *Broadway-Way Stores, Inc.,* 359 U.S. 207 (1959); *Fashion Originators Guild of America, Inc.* v. *FTC,* 312 U.S. 457 (1941).

[78]105 S. Ct. at 2620–22.

[79]105 S. Ct. at 2620–22, p. 2620.

[80]105 S. Ct. 2847 (1985). See also *Lorain Journal* v. *United States,* 342 U.S. 143 (1951) (the right to refuse to deal not unqualified).

[81]See generally *Transamerica Computer Co.* v. *IBM,* 698 F.2d 1377 (9th Cir.), *cert. denied,* 104 S. Ct. 370 (1983); *Berkey Photo Inc.* v. *Eastman Kodak Co.,* 603 F.2d 263 (2d Cir. 1979), *cert. denied,* 444 U.S . 1093 (1980); *Telex Corp.* v. *IBM,* 510 F.2d 894 (10th Cir.), *cert. denied,* 423 U.S. 802 (1975).

[82]105 S. Ct. at 2857–60.

[83]105 S. Ct. at 2857–60, p. 2860. See also Sullivan and Hovenkamp (1984, p. 52).

[84]105 S. Ct. at 2857–60, p. 2859. The Court accepted the Areeda and Turner analysis that "'exclusionary' conduct comprehends at the most behavior not only (1) tends to impair the opportunities of rivals, but also (2) either does not further competition on the merits or does so in an unnecessarily restrictive way." as quoted in 105 S. Ct. at 2857–60, p. 2859 n.32.

[85]Defenders of the cartel thesis seem to imagine that the NCAA has been able to maintain its monopsony stranglehold over member colleges through academic accreditation controls that require NCAA approval of the member colleges' athletic programs. For example, Alchian and Allen write, "The answer [to the question of how the NCAA maintains control] is that any college violating the athletic 'code' could find its academic credentials threatened" (Alchian and Allen, 1977). It is difficult for us to handle such concerns in any other way than to say the imagined controls simply do not exist.

Chapter 21

[1]As late as the late-1980s an official with the American Association of University Professors confessed to recalling only two dozen cases over the course of a decade in which faculty members were released for "good cause," out of over one million college and university professors and lecturers (Nazario, 1989).

[2]As reported in a *Los Angeles Times* editorial (1992).

[3]As reported in *Science* (1988).

[4]Nazario (1989).

[5]Other campuses in the University of California system, however, rejected the Berkeley change in tenure rules (Nazario 1989).

[6]In commenting on San Diego State's decision to abolish whole departments, the editors at the *Los Angeles Times* lamented, "To anyone on the inside [of universities], it is sickening to see the best thrown to the wolves this way while the worst, protected by an antiquated and ill-conceived work rule, snooze on at state expense" (Editors, *Los Angeles Times* 1992).

[7]Sowell (1993) and Anderson (1992).

[8]Sowell (1993; p. 276)

[9]As reported by the editors, *Los Angeles Times* (1992).

[10]Carmichael (1988).

[11]Editors, *Chronicle of Higher Education* (1992, p. 54).

[12]Epstein and MacLane (1991; p. 87).

[13]Aigner (1993).

[14]Sowell (1993; p. 277).

[15]McCormick and Meiners (1988) have argued that academic democracy undercuts faculty productivity, primarily because of the absence of any clearly identified residual claimant. They argue that the more democratic an academic institution, the less the research output, as measured by publication, and they provide some evidence in support of their thesis.

[16]Students also gain from the trade of wages for health insurance between their professors and their universities, because the reduced costs of operating a university translate into lower tuition and fee payments.

[17]Granted, tenure may be required by accrediting associations. However, there is no reason that groups of universities could not operate outside accrediting associations or organize their own accrediting association without the tenure provision—if tenure were, on balance, a significant impairment to academic goals. In many respects, the accrediting association rules can be defended on the same competitive grounds that recruiting rules of the National Collegiate Athletic Association are defended (McKenzie and Sullivan, 1987).

[18]To avoid any confusion, it may be more accurate to say that the more easily the tasks can be defined and the simpler it is for external observers to directly observe and evaluate the jobs, the greater the reliance of the job holder on an authoritarian/hierarchical decision-making structure.

[19]Alchian and Demsetz (1972).

[20]See Olson (1965).

[21]Olson (1965).

[22]It may be worth noting that departments and schools within universities differ in the type of education delivered. The education provided in professional schools—for example, law, medicine, and business—may be heavily weighted with private-goods emphases; at the same time, the education in other schools—for example, fine arts—may be heavily weighted with public-goods emphases.

[23]Carmichael (1988).

[24]Carmichael (1988, p. 454).

[25]Carmichael (1988, p. 471).

[26]Editors, *Los Angeles Times* (1992).

[27]Weak professors may be construed, for purposes of discussion, as all professors "below average." Given that half or more of all professors may be "below average," weak professors can constitute the controlling majority.

[28]Carmichael (1988, p. 470).

[29]If pay raises are determined exclusively on the basis of merit, the benefits of tenure would naturally be diluted. Incumbents would then have an incentive to choose inferior recruits. They would also have an incentive to depreciate the worth of their colleagues' work and, in other ways, divert the attention of their productive colleagues away from production, the net effect of which can be that academic

discord and conflicts are encouraged (see McKenzie 1979a, b), which Sowell inappropriately attributes almost totally to tenure (Sowell, 1993; p. 275).

[30]If inferior incumbents are inclined to select only recruits who are believed to be below themselves, then the recruits the inferior incumbents select can be elevated by superior incumbents making the inferior incumbents believe that they are better than they really are.

[31]McKenzie (1979a, b) has explored at length the impact of the academic pay system on the incentives of faculty members to engage in productive and predatory behavior.

[32]Arrow (1963). To apply a line of analysis developed in Chap. 21 on public choice economics, suppose that three professors-voters within an economics department each rank research in microeconomic theory, macroeconomic theory, and policy analysis in a way that reflects each one's own research strengths and interests:

Professor A	Professor B	Professor C
Micro	Macro	Policy
Macro	Policy	Micro
Policy	Micro	Macro

If these professors are asked to evaluate a publication in microeconomics relative to a macroeconomic publication, the vote will be two to one in favor of the micro publication, with A and C appraising the micro publication more highly. However, if they are asked to evaluate the micro publication relative to an article in policy economics, the policy piece will be favored, again with a vote of two to one, but it will be B and C who favor the policy piece. Likewise, if the policy piece must be evaluated relative to the macro piece, the majority (A and B) will favor the macro piece.

[33]Olson (1965).

[34]As Miller (1992) has shown, the benefits of "corporate organization" eventually break down when the parties follow completely rational, individualistic precepts.

[35]Sowell maintains that "think tanks" demonstrate that tenure is not necessary in order for independent thinking to be promoted, arguing that "the claim that tenure is necessary to promote free expression flies in the face of the experience of many 'think tanks,' which have no tenure but have produced some of the most controversial writings of our times, including fundamental challenges to the orthodoxy pervading academic social science departments" (Sowell, 1993; p. 274). However, it should be noted that many of the think tanks Sowell has in mind often have narrowly defined political goals that, much like profits in private firms, guide the research, publications, and evaluative efforts. Hence, much like private firms, they are able to rely extensively on a hierarchical decision-making structure, far removed from the democratic decision making among people in academic departments.

[36]See Lazear and Rosen (1981).

[37]Lazear (1981) explores the logic of how and when firms might underpay new employees early in their careers and overpay them later in their careers, the purpose of which is to be able to provide employees with an increased reward for productivity improvements.

[38]Miller (1992) details the problems that firms, even those controlled by clearly defined residual claimants, have in making credible commitments.

[39]The terms "underpaid" and "overpaid" are in quotation marks to highlight the short-term perspective taken when the terms are used. We would expect faculty members to be paid their market value over the long run.

[40]See Epstein and MacLane (1991).

[41]For a discussion of the linkage between the viability of ethical rules and group size, see Buchanan (1966).

[42]Simon (1990).

Chapter 22

[1]McKenzie (1977).

[2]Neumann (1986, pp. 15–16).

[3]Stokes and Miller (1962); Neumann (1986); Carpini and Keeter (1996), and Browning (1974).

[4]Goldberg 2003.

[5]Princeton Survey Research Associates (2004).

[6]Pew Research Center Survey (2004).

[7]Princeton Survey Research Associates (2004). Dozens of other studies revealing widespread political ignorance among Americans on several dozen economic and social policies are summarized in Somin (2003).

[8]See Tullock (1967); Krueger (1974); McChesney (1997).

[9]Tullock (1967).

[10]Krueger (2005).

[11]Krueger (2005).

[12]See Arrow (1963).

[13]McKenzie and Lee (2010, Chap. 5).

[14]Crain and Hopkins 2001.

[15]Stigler 1971; Breyer 1985.

[16]Posner (1974, p. 337).

[17]Associated Press (May 5, 2005).

[18]Olson (1965, Chaps. 1, 2).

[19]Hamilton, Jay, and Madison 1964.

[20]Davis 2005.

[21]Excerpted with permission from Gordon Tullock (1992, pp. 111–114).

Chapter 23

[1]See McKenzie (2001).

[2]As reported by Castle and Jolly (2008).

[3]Microsoft explains its decision on the two versions of Windows XP on its home site, http://www.microsoft.com/About/Legal/EN/US/Antitrust/EUDecision/Default.aspx.

[4]As reported by O'Brien (2009).

[5]See the press release from the European Commission, November 30, 2010, Antitrust: Commission probes allegations of antitrust violations by Google. Retrieved February 18, 2011 from http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/1624&format=HTML&aged=0&language=EN&guiLanguage=en.

[6]As reported by Elmer-DeWitt (2009).

[7]As reported by Lawson (2009).

[8]See McKenzie (2001).

[9]Bork (1978, p. 4).

[10]As reported by Whoriskey (2009).

[11]As reported by Wingfield (2011)

[12]Baumol and Ordover (1985, p. 257).

[13]See Romer (1994).

[14]Schumpeter (1942, p. 83).

[15]Schumpeter (1942, p. 83).

[16]Schumpeter (1942, p. 84).

[17]Schumpeter (1942, p. 86).

Chapter 24

[1]Ariely (2008, p. 28)

[2]Thaler and Sunstein (2008, pp. 6–7).

[3]Thaler (1992, p. 198).

[4]Thaler (1992, p. 197).

[5]Camerer and Loewenstein (2004, p. 3).

[6]Thaler (1992, p. 191).

[7]Thaler (1991, p. xiii).

[8]Thaler (1991, p. xiii). In passing, it needs to be noted that Becker's demonstration that downward sloping demand curves could be obtained from people acting randomly was a matter of intense debate between Becker and Austrian economists Israel Kirzner in the early 1960s, with Kirzner stressing that an assumption of random behavior on the part of economic actors was missing a major part of the process underlying rational behavior, which is that people are expected to revise in systematic ways their plans when confronted with new information as they interact with others who are continually revising their plans to new information. See Becker (1962, 1963) and Kirzner (1962, 1963).

[9]Ariely (2008, p. 25).

[10]Ariely (2008, pp. 26–29).

[11]Ariely (2008, p. 26).

[12]Ariely (2008, pp. 51–53).

[13]Ariely (2008, p. 53).

[14]Ariely (2008, p. 54).

[15]Although the thrust of our critique of the behavioral literature in the following chapter, we need to note a minor point here: in his report on his surveys Ariely doesn't report whether the two sets of prices were offered to the same group or totally different groups of students and whether the number of customers was greater when the two prices were lowered, with the possibility that the greater percentage emerged largely from additional students taking the Kisses, not buyers switching from the truffle to the Kiss.

[16]Skouras, Avlonitis, and Indounas (2005, p. 362), citing Kahneman (1994); Kahneman and Tversky (2000b); Thaler (2001).

[17]Thaler (1991, p. xxi).

[18]Thaler (1991, p. xxi).

[19]Lehrer (2009, p. xv).

[20]Kahneman and Tversky (2000b, p. 18). Behavioral economists Jones and Cullis (2000, p. 82) observe, "Increasingly, evidence suggests that 'homo-economicus rationality' fails to describe adequately the behaviour of individuals. To rely on such behavioural assumptions when evaluating social policy options may prove misleading." Nevertheless, as behavioral economist Thaler (1994, p. xvi) has noted, "No matter how strange a particular action might seem to be, some economist can usually construct a rational explanation."

[21]Tversky and Kahneman summarize their view of prospect theory:

> Prospect theory departs from the tradition that assumes the rationality of economic agents; it is proposed as a descriptive, not a normative, theory. The idealized assumption of rationality in economic theory is commonly justified on two grounds: the conviction that only rational behavior can survive in a competitive environment, and the fear that any treatment that abandons rationality will be chaotic and intractable. Both arguments are questionable. First, the evidence indicates that people can spend a lifetime in a competitive environment without acquiring a general ability to avoid framing effects or to apply linear decision weights. Second, and perhaps more important, the evidence indicates that human choices are orderly, although not always rational in the traditional sense of this word (Tversky and Kahneman 2000, p. 65).

[22]Kahneman and Tversky (2000a), p. 3.).

[23]Smith (1759, ¶ VI.I.7).

[24]Kahneman and Tversky (2000a, p. 2).

[25]Kahneman and Tversky (2000a, p. 2).

[26]Kahneman and Tversky (2000a, p. 6).

[27]Kahneman and Tversky (2000b, p. 21), citing Allais (1953).

[28]Kahneman and Tversky (2000b, p. 21), citing Allais 1953).

[29]Kahneman and Tversky (2000b, p. 21).

[30]According to Kahneman and Tversky, "Prospect theory distinguishes two phases in the choice process: an early phase of editing and a subsequent phase of evaluation. The editing phase consists of preliminary analysis of the offered prospects, which often yield a simpler representation of these prospects. In the second phase, the edited prospects are evaluated [with a subject weight applied to each choice option] and the highest value is chosen" (Kahneman and Tversky 2000b, p. 28, reprinted from Kahneman and Tversky 1979).

[31]When sixty-six subjects were given a choice between $6,000 with a probability of 0.45 and $3,000 with a probability of 0.90, 86 percent of the subjects took the second option, even though both options have the same expected value. However, when (presumably) same sixty-six subjects were given a choice between an option of $6,000 with a probability of 0.001 and $3,000 with a probability of 0.002, with the expected values of both being the same, 73 percent took the $6,000 option—showing, according to Kahneman and Tversky that the option taken depends not just on the expected value but added weighting of the discount rate and/or the size of the payoff (Kahneman and Tversky 2000b, pp. 21–22).

[32]Risk aversion occurs when people choose a sure-thing gain that is of lower monetary value than a gamble involving gains. Risk seeking is when people turn down a sure thing in favor of a gamble with a lower expected value. Again, risk seeking is observed when losses are at stake.

[33]McKenzie (2010a).

[34]Kahneman and Tversky (2000a, p. 3).

[35]Kahneman and Tversky (2000a, p. 3), citing a number of experiments and survey findings they and other behavioralists had undertaken.

[36]Odean (1998).

[37]Genesove and Mayer (2001).

[38]Shiller (2005, p. 83).

[39]Kahneman and Tversky (1979).

[40]Tversky and Kahneman (1981).

[41]Kahneman and Tversky (2000a, p. 5).

[42]Kahneman and Tversky (2000a, p. 5).

[43]Kahneman and Tversky (2000b) and Tversky and Kahneman (2000).

[44]Kahneman and Tversky (2000b, p. 22).

[45]Kahneman and Tversky (2000b, p. 35).

[46.] Kachelmeier and Shehata (1992).

[47]Loewenstein and Sicherman (1991).

[48]Thaler (2001, p. 244)

[49]Kahneman and Tversky (2000a, p. 12).

[50]Pratt, Wise, and Zeckhauser (1979).

[51]Leclerc, Schmitt, and Dubé (1995).

[52]Thaler (2000b, p. 279).

[53]Pratt, Wise, and Zeckhauser (1979).

[54]Kahneman and Tversky (2000a).

[55]Kahneman and Tversky (2000a, p. 12–13).

[56]Kahneman and Tversky (2000a, p. 7).

[57]Kahneman and Tversky (2000a, p. 7), citing Fischhoff, Slovic, and Lichtenstein (1980).

[58]Ariely (2008, pp. 26–31).

[59]Ariely (2008, pp. 129–133).

[60]Kahneman, Knetsch, and Thaler (1986).

[61]Thaler (2000b, pp. 273–276).

[62]See McKenzie (2010, Chap. 7).

[63]Becker, Ronen, and Sorter (1974).

[64]Thaler (2000b, p. 274).

[65]Weiss, Hall, and Dong (1980).

[66]For a review of various explanations for queues, see Chap. 17.

[67]Thaler (2000a, pp. 248–249).

[68]Thaler (2000a, p. 248).

[69]Thaler (2000a, p. 248).

[70]Thaler (2000a, p. 249).

[71]Thaler (2000b, p. 276).

[72]Aronson and Mills (1959)

[73]Aronson and Mills (1959)

[74]Gerard and Mathewson (1966)

[75]As reported by Jones and Cullis (2000, pp. 75–76).

[76]Arkes and Blumer (1985).

[77]Gourville and Soman (1998).

[78]As reported by Jones and Cullis (2000).

[79]Cowles and Jones (1937).

[80]For an array of behavioral finance studies, see Thaler (1993 and 2005).

[81]Shiller (2005).

[82]Shiller (2008).

[83]Shiller (2008).

[84]Shiller (2005, p. 18).

[85]Shiller (2005).

[86]Shiller (2005, chap. 2).

[87]Shiller (2005, pp. 151–153), citing Bikhchandani, Hirshleifer, and Welch (1992); and Banerjee (1992).

[88]Shiller (2005, p. 43 and chap. 3).

[89]Shiller (2005, chap. 3).

[90]Cowen (2008b).

[91]Shiller (2008, chap. 4).

[92]Becker, Stolberg, and Labaton (2008).

[93]U.S. Census Bureau historical data accessed December 22, 2008 from http://www.census.gov/hhes/www/housing/hvs/historic/index.html.

[94]Streitfeld and Morgensom (2008).

[95]As reported by Holmes (1999).

[96]As reported by Holmes (1999).

[97]Calomiris and Wallison (2008) and Duhigg (2008).

[98]Streitfeld and Morgenson (2008).

[99]Calomiris and Wallison (2008).

[100]Cited by Shiller (2008, p. 40).

[101]Shiller (2008, p. 41).

[102]Shiller (2005 and 2008).

[103]Shiller (2008, chap. 3).

[104]Coleman, LaCour-Little, and Vandell (2008).

[105]Shiller (2008, p. 1).

[106]See reports in *The New York Times* (Norris and Bajaj 2008) and *The Wall Street Journal* (Mollenkamp et al. 2008).

[107]Shiller (2008).

[108]Reynolds, Simon and Gosselin (2008).

[109]As reported by Sorkin (2008).

[110]As reported by Oliphant and Simon (2008).

[111]A distinguished advocate of massive federal stimulus packages (even greater than the stimulus package proposed by President Barack Obama) that would have a multiplied effect in the neighborhood of 1.5 was Nobel Laureate and *New York Times* columnists Paul Krugman who insisted that the country, and world, had fallen into Keynesian "liquidity trap," reminiscent of Keynes' analysis of conditions of the 1930s (2008 and 2009).

[112]As reported by Puzzanghera (2009).

[113]As reported by Bensinger (2009) and Dash (2009).

[114]Reynolds and Nicolas (2009).

[115]For accounts of the unfolding policy events in late 2008, see Lewis (2008); Gosselin and Reynolds (2008); Andrews (2008); Herszenhorn, Labaton, and Landler (2008); Hitt, Solomon, and Paletta (2008); Anderson, Bajaj, and Wayne (2008); Hitt and Solomon (2008), Herszenhorn 2008, Simon and Gaouette (2008).

[116]Simon (1957, p. 198).

Chapter 25

[1]Thaler (2008, p. 7).

[2]Thaler and Sunstein (2008, p. 9).

[3]McKenzie (1982).

[4]Gigerenzer and Todd (1999) and Gigerenzer, Todd, and the ABC Research Group (1999) and Gigerenzer (2008).

[5]See McKenzie (2010a, Chap. 8).

See McKenzie (2010a, Chap. 7).

[7]See McKenzie (2010a, Chap. 8, written with neuroeconomist Paul Zak and neuroscientist Jessica Turner.

[8]Thaler (2000b), p. 274).

[9]Shiller (2005, 2008).

[10]Posner (2009, p. 84).

[11]Posner (2009, p. 106).

[12]Posner (2009, chap. 3).

[13]Thaler and Sunstein (2008, p. 7).

[14]Ariely (2008, p. xxi).

[15]Thaler and Sunstein (2008, p. 7).

[16]Ariely (2008, p. xxi).

[17]Ariely (2008, p. xxi).

[18]Levitt and List (2007).

[19]List (2006).

[20]Benz and Meier (2006).

[21]Hoffman et al. (1994).

[22]Laury and Taylor (2006).

[23]Ariely (2008).

[24]Ariely (2008) and Thaler and Sunstein (2008).

[25]Simon (1982).

[26]Thaler (1991).

[27]Kahneman and Tversky (2000a).

[28]See Lee (1969).

[29]Kahneman and Tversky (2000b)

[30]Kahneman and Tversky (2000b, p. 33).

[31]Lee (1969).

[32]Thaler and Sunstein (2008); Ariely (2008).

[33]Indeed, they might come to hope that there would be more students choosing *A* so that there would be more money to be made, but then with some thought and experience with the options, they might expect fewer of their classmates to choose *A*.

[34]Boulding (1970, p. 2).

[35]See McKenzie (2010a, Chap. 8).

[36]Franciosi et al. (1996).

[37]List (2003 and 2004).

[38]Smith (2008), citing Smith (1962, 1982); Davis and Holt (1993); Kagel and Roth (1995); Plott (1988, 2001).

[39]Smith (2008, p. 64), citing Gode and Sundar (1993) and Sundar (2004).

[40]Smith (2008, pp. 64–65), citing (Sundar 2004).

[41]Thaler and Sunstein (2008, p. 8).

[42]Ariely (2008, p. xx).

[43]Thaler and Sunstein (2008, p. 8).

[44]Thaler and Sunstein (2008, p. 2).

[45]Thaler and Sunstein (2008, p. 11).

[46]Thaler and Sunstein (2008, p. 4).

[47]Thaler and Sunstein (2008, p. 10).

[48]Thaler and Sunstein (2008, chap. 6).

[49]Thaler and Sunstein (2008, p. 10).

[50]Thaler and Sunstein (2008, p. 24).

[51]Thaler and Sunstein (2008, p. 26).

[52]Thaler and Sunstein (2008, p. 177).

[53]Thaler and Sunstein (2008, pp. 135–136).

[54]Thaler and Sunstein (2008, p. 136).

[55]Thaler and Sunstein (2008, p. 140).

[56]Thaler and Sunstein (2008, p. 141).

[57]Thaler and Sunstein (2008, pp. 142–144).

[58]Thaler and Sunstein (2008, p. 191).

[59]Ariely (2008, p. 7).

[60]Ariely (2008, pp. 2–6).

[61]Ariely (2008, p. 19).

[62]Ariely (2008, p. 28).

[63]Ariely (2008).

[64]Ariely's research on candy prices needs to be considered with some skepticism for two reasons. First, he does not say whether the group of subjects remains the

same when the prices of the chocolates are lowered by a penny. Because he undertook his candy sales on a college campus, we suspect that percentages are for different groups of students. Second, Ariely does not give the number of students in the two samples. It could be that few people switched from buying the truffle to buying the kiss when both goods' prices were lowered by a penny. There could have been simply far more people picking up the kiss when its price was lower, leading to a higher percentage. After all, when the kiss was priced at zero, people did not have to spend time searching for change or waiting for change to "buy" one. "Free" might still have an effect, but the point is that the effect might not have been for the reasons Ariely suggests.

[65]Ariely (2008, p. 62).

[66]Ariely (2008, p. 54).

[67]Ariely (2008, pp. 76–77).

[68]Ariely (2008, p. 75).

[69]Ariely (2008, p. 86).

[70]Ariely (2008, chap. 5).

[71]Ariely (2008, pp. 114–115).

[72]Ariely (2008, p. 116).

[73]Ariely (2008, p. 119).

[74]Ariely (2008, pp. 124–125).

[75]Ariely (2008, pp. 136–138).

[76]Thaler and Sunstein (2008, p. 10).

[77]Thaler and Sunstein (2008, p. 14).

[78]Thaler and Sunstein (2008, p. 10).

[79]Thaler and Sunstein (2008, p. 5).

[80]Thaler and Sunstein (2008, p. 5).

[81]Ariely (2008, p. xxi).

[82]Thaler and Sunstein (2008).

[83]Thaler and Sunstein (2008, p. 5).

[84]Thaler and Sunstein (2008, p. 5).

[85]Thaler and Sunstein (2008, p. 5).

[86]Thaler and Sunstein (2008, p. 5).

[87]V. Smith (2008).

[88]V. Smith (1962).

Chapter 26

[1]Emory University economist Paul Rubin worked with McKenzie on an early version of a paper that has worked its way into this book as this chapter. We are indebted to Professor Rubin for allowing us to revise and extend at will our earlier joint effort.

[2]White House Council on Women and Girls (2011).

[3]As reported by Dey and Hill (2007, p. 6) and Cauchon (September 14, 2010), citing the U.S. Bureau of Labor Statistics.

[4]See Blau and Kahn (1997); Anker and Hein (1986); Psacharopolos and Tzannatos (1992); DeNavas-Walt, Cleveland, and Webster (2003); and Rose and Hartmann (2004).

[5]Caiazza, Shaw, and Werschkul (2003); and Bureau of Labor Statistics (2003).

[6]Goldin (1989).

[7]Holm (2004); and Gneezy, Niederle, and Rustichini (2003).

[8]For reviews of the economic literature on labor-market wage differences, see Alexis (1974), Marshall (1974), Cain (1986), and Gunderson (1989).

[9]See Browne (1995, 1998, 2002). McKenzie's own work on linking labor-market outcomes to mate selection, done in separate papers with Paul Rubin (which has been converted to this chapter) and with Steven Frank (Frank and McKenzie 2006) was done before McKenzie learned of the Kingsley Browne pioneering work.

[10]Browne (1995, 1998).

[11]Jerome Barkow, Leda Cosmides, and John Tooby explain why certain modern behaviors can be expected to be "hard wired":

> What we think of as all human history—from, say, the rise of the Shang, Minoan, Egyptian, Indian, and Sumerian civilizations—and everything we take for granted as normal parts of life—agriculture, pastoralism, governments, police, sanitation, medical care, education, armies, transportation, and so on—are all the novel products of the last few thousand years. In contrast to this, our ancestors spent the last two million years as Pleistocene hunter-gatherers, and, of course, several hundred thousand years before that as one kind of forager or another. These relative spans are important because they establish which set of environments and conditions defined the adaptive problems the mind was shaped to cope with: Pleistocene conditions, rather than modern conditions. This conclusion stems from the fact that the evolution of complex design is a slow process when contrasted with historical time. Complex, functionally integrated designs like the vertebrate eye are built up slowly, change by change, subject to the constraint that each new design feature must solve a problem that affects reproduction better than the previous design. The few thousand years since the scattered appearance of agriculture is only a small stretch in evolutionary terms, less than 1 percent of the two million years our ancestors spent as Pleistocene hunter-gathers. For this reason, it is unlikely that new complex designs—ones requiring the coordinated assembly of many novel, functionally integrated features—could evolve in so few generations . . . Moreover, the available evidence strongly supports this view of a single, universal panhuman design, stemming from our long-enduring existence as hunter-gatherers (1992, p. 5).

[12]For a more extensive review of the evolutionary biology/psychology literature relating to pay differences, see Browne (2002).

[13]Cain (1986), Blau (1984), and Reskin and Hartmann (1986).

[14]Becker (1971, p. 14). While Becker stays with the standard assumption in microeconomics that individuals as consumers and workers operate independently, Krueger (1963) and Alexis (1974) assume that group preferences for a "taste for discrimination" are somehow determined jointly, or collectively, the net effect of which is for the powerful group to suppress the wages of the disfavored group.

[15]Becker (1971), Krueger (1963). A tariff on an imported good can be to drive up the price consumers have to pay for the imported good, but the price of the imported good will not rise by as much as the tariff, which means that the after-tariff price the importer receives for the product decreases. On the other hand, the higher price consumers pay for the imported good can cause the demand to shift to the domestic good, thus raising the price domestic producers can charge, which is one important reason domestic producers favor tariffs on their imported competitors.

[16]Piore (1970) and Bergmann (1971). For an array of studies on barriers to the advancement of women at work, see Tinker (1990).

[17]Phelps (1972), Arrow (1972, 1973), Thurow (1975), and Aigner and Cain (1977).

[18]Aigner and Cain (1977).

[19]From this perspective, the prospects of females' withdrawal from the labor force for childbirth can cause females to be paid less than males. Use of the prospects of childbirth as an observed indicator of commitment to full-time work and, hence, productivity, can cause females who plan to have children to be overpaid while females who do not plan to have children to be underpaid (Thurow 1975, p. 178).

[20]Marshall (1974).

[21]Spence (1973).

[22]Piore (1970), Arrow (1973).

[23]Becker (1971, pp. 44–45).

[24]Madden (1973).

[25]Gould (1977) and Hill (1977).

[26]Becker (1971, pp. 81–83).

[27]O'Neill (1983a, pp. 19 and 22); O'Neill 1983b, 1984); and Gunderson (1989).

[28]Of course, another strategy is for females to seek good genes in their mates and deceive other males into providing support for the children. Male jealousy has evolved to control this behavior. This can lead to "mate guarding" and isolation of women. This extreme form of jealousy by no means occurs in modern western societies.

[29]Dawkins (1976).

[30]Frank and McKenzie (2005) have provided a simple mathematical model of how differences in mating attractors imply a gender-pay gap, and vice versa, in a world of constrained resources.

[31]Wilson (1978, p. 20).

[32]For a more discussion of the implications of polygamy for political behavior, see a book by Paul Rubin on *Darwinian Politics* (2002).

[33]Buss (1985, 1992, 2003); Buss and Barnes (1986); and Buss et al. (1990).

[34]Buss (1989, 1990).

[35]The male–female difference in ranks for financial prospects varied between 1 and 7, with an average of 3.7 (Buss 1989, Buss et al. 1990). Another psychological study provided data on changes in mate preferences over time in the United States (Buss 2003). In 1939, males ranked financial prospects of mates 17 and females ranked this attribute 13 among 18 different characteristics. In 1996, the ranks were 13 for males and 11 for females. Both sexes have given increased weight to financial prospects, but the difference between the sexes has narrowed. pattern suggests that mating preferences have adjusted to changing financial opportunities for males and females (Buss 2003).

[36]Elder (1969), Taylor and Glenn (1976), Udry and Eckland (1984).

[37]Elder (1969).

[38]Buss (1989).

[39]Buss (1988a).

[40]Trivers (1985).

[41]Ford and Beach (1951, p. 94).

[42]Gregersen (1982).

[43]Harrison and Saaed (1977).

[44]Weidenbaum [see p. 24 in Buss].

[45]Green, Buchanan, and Heuer (1984).

[46]Townsend and Levy (1990a).

[47]See Hamermesh and Biddle (1994) and Pfann et al. (2000).

[48]Townsend and Levy (1990b).

[49]Hill, Nocks, and Gardner (1987).

[50]Sadalla, Kenrick, and Vershure (1987).

[51]Beigel (1954), Gillis and Avis (1980).

[52]Gillis (1982).

[53]Cameron, Oskamp, and Sparks (1978).

[54]Lynn and Shurgot (1984).

[55]Feingold (1982).

[56]Kendrick et al. (1990).

[57]Townsend (1987, p. 440).

[58]Buss (2003, p. 25).

[59]Holm (n.d.).

[60]In trials not reported here, Holm gave the subjects a third option, $50 for both the subject and his/her co-player.

[61]Holm (n.d., p. 18).

[62]When playing against other females, Swedish females took the hawkish strategy with a frequency that was 89 percent greater than when playing against males (66.7 percent versus 35.3 percent). When playing against females, American females took the hawkish strategy with a frequency that was 131 percent greater than when playing against males. The frequency with which the hawkish strategy was taken by males in both Sweden and the United States was less affected by the gender of their opponents (Holm n.d.; p. 8, Table 1).

[63]Gneezy, Niederle, and Rustichini (2003).

[64]Gneezy, Niederle, and Rustichini (2003, p. 1057).

[65]Gneezy, Niederle, and Rustichini (2003, p. 1057).

[66]Gneezy, Niederle, and Rustichini (2003, p. 1061).

[67]Gneezy, Niederle, and Rustichini (2003, p. 1072).

[68]See Rose and Hartmann (2004). For a sample of the widespread press coverage of the Rose and Hartman study in mid-2004, see Bernstein (2004) and Madrick (2004). For press coverage of the female/male pay gap by occupation developed by the U.S. Census Bureau (Weinberg 2004), see Nyhan (2004).

[69]In their review of only twenty of the numerous female/male wage-gap econometric studies, Treiman and Hartmann (1981, pp. 20–37) found thirty-five identifiable categories of independent variables used to explain the wage gap. See also Cain (1986, pp. 750–752).

[70]See Cain (1986, pp. 750–752); Treiman and Hartmann (1981, pp. 20–37); Blau and Kahn (1997). Treiman and Hartmann (1981) found that from the array of econometric studies, several general conclusions can be drawn, among which are the following (1) increasing the number of variables included in the regression equations reduces the adjusted female/male pay gap; (2) the inclusion of variables for occupation and establishment reduces the pay gap; (3) the inclusion of household responsibilities reduces the pay gap; (4) the pay gap is smaller in the public sector than in the private sector; and (5) including a variable for labor-market experience, and continuity of experience, tends to reduce the pay gap.

[71]See Treiman and Hartmann (1981, pp. 20–37); Cain (1986, pp. 750–752). The econometric studies cited use some combination of the following explanatory

variables: education, age, race, mental ability, formal training, actual labor-market experience, proxy for labor-market experience, marital status, health, hours of work, length of service with current employer, size of city of residence, region of residence, various measures of parental background, quality of school absenteeism record, number of children, plans to stop work for reasons other than training, urban/rural, turnover, occupation (census one and three-digit), occupational prestige, Duncan scale of a socioeconomic index, industry, union membership, type of employer (government/private, sex segregated/integrated, size of work force), supervisory status, percentage female in work force, median income of male incumbents, local labor-market conditions, length of trip to work, veteran status, and migration status (Cain 1986, p. 752). Only one study (Malkiel and Malkiel 1973) was able to get the adjusted pay gap down to 1 percent, and then only by looking at salaries in a single company and by switching from adjusting the female mean salaries (the usual method employed by econometricians) to adjusting the male mean salaries. (As indicated above, when the female mean salary was adjusted, the pay gap was 14 percent.)

[72]Consider these additional findings of a male/female wage gap that persists after statistical adjustments have been made for different collections of worker traits that might affect their wages rates:

- Featherman and Hauser (1976) found in their assessment of the annual earnings of married workers in 1973, that females earned 38 percent of males unadjusted and 48 percent adjusted (with a variable for occupation included in the regression analysis, which is important to note because job choice can itself be the product of gender discrimination).
- Sawhill (1973), using annual earnings from the Current Population Survey (CPS) data for workers fourteen and older, found that in 1966 females earned 46 percent of males unadjusted and 56 percent of males adjusted.
- Suter and Miller (1973) also used CPS data for 1966, but restricted their analysis to workers ages thirty to forty-four. They found that females earned 39 percent of males unadjusted and 62 percent adjusted (including a variable for occupation).
- Using annual earnings data from the General Social Survey, Roos (1981) found that for 1974 through 1977, females ages twenty-five to sixty-four earned 46 percent of males unadjusted and 63 percent adjusted (including a variable for occupation).
- Fuchs (1971), using a sample of census hourly wage-rate data for 1959, determined that females earned 60 percent of males unadjusted and 66 percent adjusted.
- Using annual earnings data from the National Longitudinal Survey for 1966, Treiman and Terrell (1975) found that white females earned 42 percent of their male counterparts unadjusted and 67 percent adjusted.
- Focusing on the annual salaries of professional full-time workers in one company for 1966 and 1969–1971, Malkiel and Malkiel (1973) found that females earned 66 percent of males unadjusted and 77 percent adjusted (including a variable for occupation).

- In a survey of college faculty's annual salaries, Astin and Bayer (1972) found that female faculty members earned 78 percent of their male counterparts unadjusted and 87 percent adjusted (including a variable for occupation).
- In another survey of college faculty's annual salaries, Johnson and Stafford (1974) found that while female faculty members in six disciplines (anthropology, biology, economics, mathematics, physics, and sociology) start their careers at salaries close to their male colleagues, they earn only 85 percent of their male counterparts after fifteen years (with the authors attributing the salary differential largely to females' career interruptions and to their having jobs at institutions emphasizing teaching, not research).

[73]Gwartney and Stroup (1973).

[74]General Accounting Office (2003).

[75]Reskin and Hartmann (1986); Blau, Ferber, and Winkler (1998).

[76]Becker (1971).

[77]Fuchs (1988, Chap. 3); Gunderson (1989); Heckman (1980); General Accounting Office (2003).

[78]Dey and Hill (2007, p. 6).

[79]Blau (1998, pp. 129–132).

[80]Daymount and Paul Andrisani (1984, p. 412).

[81]Beller (1985); Jacobsen (1994); and Blau, Simpson, and Anderson (1998).

[82]Devine (1994).

[83]Goldin (1989); Blau and Kahn (1997).

[84]O'Neill and Polachek (1993), Wellington (1993).

[85]Brown and Corcoran (1996).

[86]Blau (1998, p. 138).

[87]General Accounting Office (2003, p. 32 and Table 2).

[88]Miller (2005).

[89]Mathew and Hamilton (2002).

[90]The Pew Research Center reported that in 1990, 65 percent of surveyed couples said having children was "very important" to a good marriage. By 2007, only 41 percent said having children was "very important" to a good marriage. Having children ranked eighth in young couples assessed attributes of a good marriage, behind chore-sharing, good housing, adequate income, happy sexual relationship, and faithfulness (Taylor, Funk, and Clark, 2007).

[91]Beller (1980, 1979).

[92]Leonard (1984) and Oaxaca (1977).

[93]Blau (1998, pp. 138–140). It should be noted that the narrowing of the overall female/male wage gap does not imply an across-the-board narrowing of the wage gap for all age cohorts. Weinberger and Kuhn (2006) have found that the wage gap for older female workers with college degrees did not narrow during the 1989–1999 period. The decline in the *overall* pay gap among college-educated women appears to have been driven by the fact that "younger cohorts of women face a smaller disadvantage, relative to men, than did older cohorts of women at the same age" (Weinberger and Kuhn 2006, p. 2). See also White House Council on Women and Girls (2011).

[94]General Accounting Office (2003).

[95]Coombs and Kenkel (1966); Hill, Rubin, and Peplau (1979); Murstein (1980).

[96]Wiederman and Allgeier (1992); Freedman (1979); Townsend (1987 and 1989).

[97]What actually happens to relative female/male pay depends upon the relative amount of time that each sex diverts from earning an income and achieving socioeconomic status toward looking "attractive." Females may divert more time and resources toward improving their physical appearance and sexuality; however, males may divert more time seeking to give the (mistaken) impression of relatively higher pay and socioeconomic status by, say, buying expensive suits and cars and by honing their skills at office politics that might improve their short-term chances of promotion.

[98]Hudson and den Boer (2004).

[99]Hudson and den Boer (2004) and Rubin (2002) indicate that this demographic situation will also have political ramifications.

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R.B. McKenzie and G. Tullock, *The New World of Economics*,
DOI 10.1007/978-3-642-27364-3,