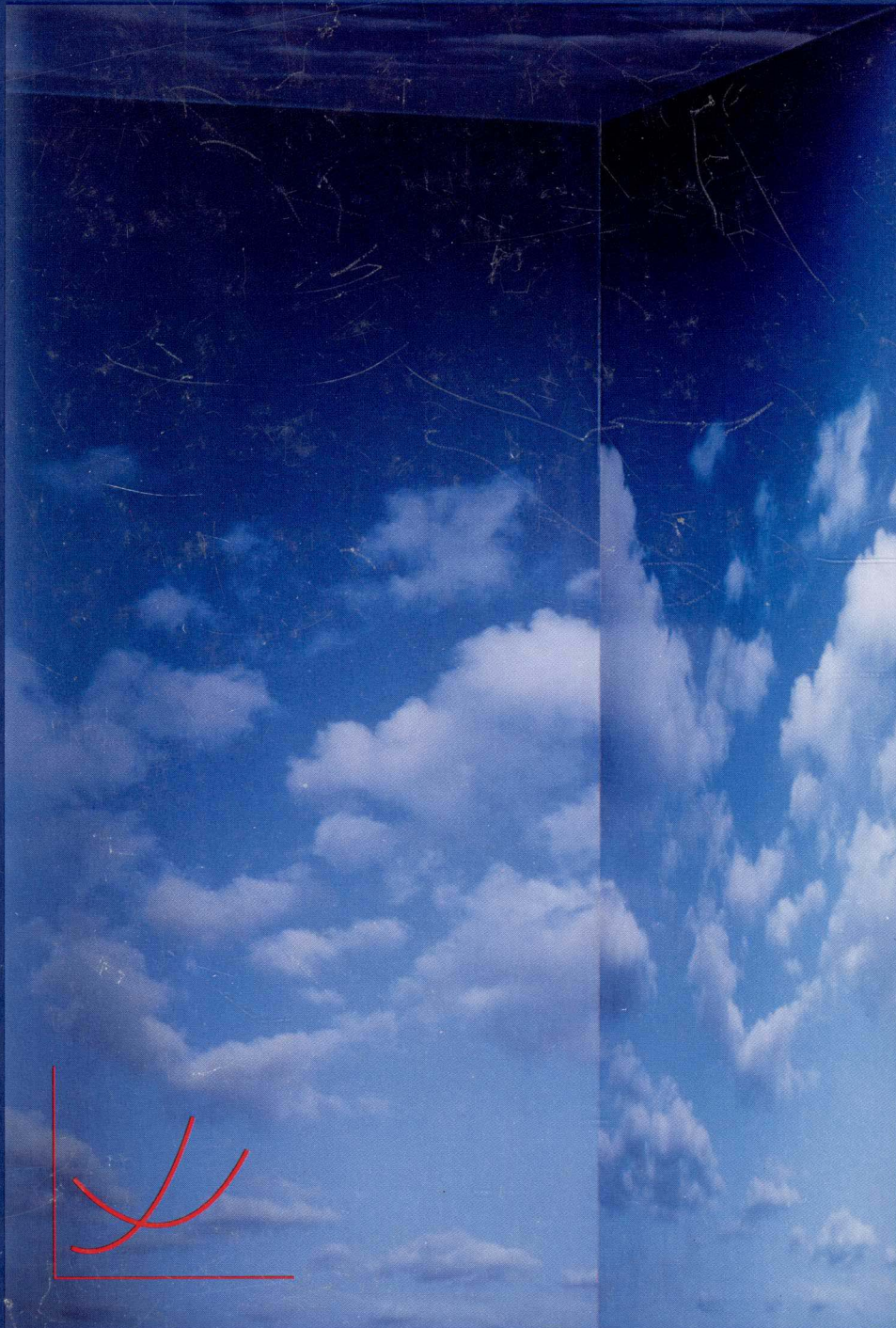


ECONOMICS

Principles & Applications



Robert P. Thomas

E C O N O M I C S

P r i n c i p l e s & A p p l i c a t i o n s

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in collaboration with

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ABOUT THE AUTHOR

Robert Thomas lives with his wife and two children on Camano Island, Washington. He received his undergraduate degree from Carleton College and his M.A. and Ph.D. from Northwestern University. He is currently Professor of Economics at the University of Washington where he teaches principles of economics and economic history. He has written several books, and published numerous scholarly articles. Thomas served for three years as the economic advisor for a United States senator, and for three years as the University of Washington's faculty representative to the Washington State legislature. This experience proved to him the value of economics in formulating public policy.

In addition to his academic career, the author has briefly owned and operated both a radio station and gasoline station, built his own house and barn, cleared and fenced his land, grown grapes, and raised cattle, sheep, donkeys, and collie dogs — all of which have taught him patience and the ultimate value of specialization. His ventures have been rewarding experiences, if not always financially profitable. But none have been as rewarding as teaching the principles of economics course, which remains his favorite professional activity.



PREFACE

TO THE INSTRUCTOR

• A NEW APPROACH TO TEACHING •

Every economics teacher has felt frustrated by how little students retain from their principles course. Sometimes students might vaguely recall a concept. At other times they can even push a curve around. But when we ask them to apply a concept to a real-world problem, inevitably the results are disappointing. In part, this is because we are unable to convey the relevance of economics to everyday life. Years of experience in teaching principles has shown me that there are two levels of economic understanding that a first course must achieve. The first is a basic understanding of the logic of economics. The second is a rudimentary ability to apply economic principles to real-world problems. By the end of a course students often have mastered the first, but seldom the second. Yet unless they are able to apply the basic concepts to the world around them, the technical tools recently mastered are forgotten soon after the final exam is over.

The goal of this book is to help you take your students one step further along the road toward mastering economics. By learning basic economic principles and applications of these principles, your students will come to appreciate that the economic way of thinking helps them to think consistently and coherently about a wide range of social problems. Professors of economics know that the principles of economics can help make sense out of confusion, tie together a seemingly unrelated group of facts, suggest alternatives that are not readily apparent, and uncover implications that would otherwise remain hidden. Students in the principles course should, at the very least, come to appreciate the power of economic thinking. This appreciation will give them an incentive to learn the principles because they are useful, to retain what they have learned, and, perhaps, to take more economics courses. •

• HOW THIS TEXT USES APPLICATIONS •

This book is not an issues book in the traditional sense. It is a principles of economics text that extensively employs applications. Teaching economic theory in a principles course is essential. Without the theoretical foundations, students can at best read opinions on all sides of an issue, look at statistics, and learn that there are apparently good arguments supported by statistics on both sides of any important issue. But they will not be able to take a clear position themselves, to sort sense from nonsense. The principles of economics in this book are taught as the tools of analysis. This is accomplished by first raising certain problems or issues (in the chapter *previews*), teaching the tools necessary for analysis (in the chapter body), and finally applying these tools to analyze the problem (in the *preview*

analyses). Along the way there are also shorter, self-contained boxed applications to help keep students interested. The problems that the chapter previews raise have been carefully selected so that a basic economic analysis will require no more than the tools covered in that chapter. Newspaper or magazine articles are often unsuitable for this purpose, because most require too much prior knowledge.

Existing textbooks do an excellent job of preparing students to acquire the first level of economic thinking — mastery of economic concepts — but they do little to help them attain the ability to apply the theory learned. While “applications” are now appearing more frequently in principles textbooks, their purpose is primarily to illustrate a theoretical principle. Though better than nothing,

this is just the opposite of the way I believe they should be employed. Using theory to clarify a problem gives students an opportunity to appreciate the power of economic analysis and to begin using economic reasoning themselves. This technique provides a motivation for mastering abstract economic concepts by demonstrating that economic principles are useful for more than answering questions on examinations.

In *Economics: Principles and Applications*, no economic principle or concept is taught unless it can be put to work immediately. Because economic analysis is so widely applicable, following this precept does no serious injury to the traditional way economic theory is presented in the principles course. The overall text organization and the topic coverage within chapters do not depart radically from the organization and coverage found in current leading texts. What is different is that each chapter begins with two or three previews of real-world problems that beg for economic analysis. The economic concepts are then presented in the traditional manner and fleshed out

through the use of relevant illustrations. The final step consists of applying the newly learned concepts to the previews, exploring the implications, and outlining possible resolutions or new ways of understanding economic phenomena based on the relationship between concepts and events.

There are over 200 applications in this book, some short and some more extended. Because time is already too short in a one-semester micro or macro course, I have written the chapters in such a way that none of the applications is mandatory. This built-in flexibility allows the instructor to assign only those applications you feel are most important or that you have time to discuss. Because the applications require no more explanation of concepts than the chapter itself provides, they may even be recommended as optional reading! Instructors who enjoy a heavier focus on applications can build their class presentation around them, although an understanding of the basic text concepts in no way presumes that the students have read the applications. •

• THE CONTENT •

The Introduction (Chapters 1–5) The book begins with a set of fundamental economic ideas. The purpose of this first section is to show students the types of problems that economic theory can help them understand and to instill a sense of how economics can provide answers to real-world problems.

The book is constructed to split into separate micro and macro texts, both sharing this common introductory section with the combined volume. These five chapters focus on how the market determines relative values and allocates scarce resources. Besides serving as the beginning section of a course devoted to microeconomics, the first section provides the basic microeconomic framework necessary for the study of macroeconomics. In addition to the traditional topics, there are two unique appendixes, “Economics of Information” (Chapter 3) and “Government Expenditures and Revenues” (Chapter 5).

Microeconomics (Chapters 6–19 in Both the Combined Volume and the Micro Split) A high degree of consensus exists among economists as to the theoretical content of a principles course in microeconomics. The book thus follows a traditional pattern of presentation. Part 2, “Pure Competition,” is devoted to considering the determinants of demand and supply and to presenting the theory of pure competition. Part 3, “Price Searching,” takes up price searching, or imperfectly competitive markets. For those instructors who want to incorporate some elementary game theory into their principles course, the appendix to Chapter 12 presents an introduction to using the game theory approach to oligopoly. Part 4, “Factor Mar-

kets,” consists of three chapters on this important topic. The final section is Part 5, “Market Failure and Public Policy.”

Macroeconomics (Chapters 20–32 of the Combined Volume and Chapters 6–18 of the Macro Split) There are two special features of the macroeconomic section: the consensus that exists among economists about macroeconomics is emphasized over differences, and international trade topics are integrated into each chapter where relevant.

Because macroeconomic theory has undergone great changes in recent years, there is less agreement among teachers of economics about how to teach macroeconomics than about how to teach microeconomics. However, this book assumes that we are beyond the point where it is useful to pigeonhole theories. Modern macroeconomics has emerged from the recent decades more balanced — both less activist and less conservative — than in the past. Although important differences continue to exist among economists over macroeconomic models and policy, it is important for first-time students of macroeconomics to realize that a substantial degree of consensus does exist. *Economics: Principles and Applications* does not neglect or gloss over the differences among various modern macroeconomic schools of thought. Instead, these differences are discussed when appropriate within the context of those general principles of macroeconomics on which there is consensus.

Part 5, “Introduction to Macroeconomics,” consists of three chapters that lay the foundation for studying the macroeconomy. The first chapter of this sequence covers

national income accounting. It introduces basic macroeconomic variables. Chapter 21 (macro split Chapter 7) then introduces the basic macroeconomic model used throughout the book: the aggregate-demand/aggregate-supply model. The analytical similarity between this model and the supply/demand model of price theory, combined with the advantages of being able to deal directly with changes in the price level and to be able to handle supply shocks explicitly, makes this a superior pedagogical approach. The section concludes with a chapter on the key macroeconomic problems: growth, unemployment, and inflation. The appendix to this chapter, “How You Can Keep Track of the Macroeconomy — A Do-It-Yourself Kit,” introduces students to the statistical series that track the performance of the economy.

Part 7, “The Real Sector” (combined volume Chapters 23–26, macro split Chapters 9–12), covers the subject of aggregate supply and demand in more depth. Chapter 23 (macro split Chapter 9) covers the Keynesian cross as a theory of aggregate demand, applicable when the price level is fixed. In the next chapter we learn that Keynesian economic theory reveals much of what lies behind aggregate demand. This section ends with a chapter on fiscal policy. Part 8, “The Monetary Sector” (combined volume Chapters 27–29, macro split Chapters 13–15), covers the essentials of money, banking, and monetary policy. Finally, Part 9, “Macroeconomic Problems” (combined volume Chapters 30–32, macro split Chapters 16–18), provides an in-depth look at inflation, unemployment, and growth and productivity. A special appendix to Chapter 31 (macro split Chapter 17) discusses and contrasts the various schools of macroeconomic thought.

Applications in Macroeconomics As in the microeconomics portion, numerous applications help motivate the

theoretical discussions. It is clearly more difficult to provide macro applications because of the more limited number of examples available for analysis. To overcome this problem, macro applications often turn to historical developments in macroeconomic theory. The purpose of these applications is to show the relevance of macroeconomic theory to the real world and to build an appreciation for the difficulties of developing and implementing economic policy in both the past and the present.

Integration of International Topics Many domestic economic events can best be understood within the context of the international economy. The United States can no longer be usefully treated for most purposes as separate unto itself. Discussions of the federal budget deficit today are likely to include the balance of payments deficit, and discussions of monetary policy often refer to the international value of the dollar. For this reason the text contains special sections devoted to the implications of the international economy for the topic being discussed. There is another reason for this integration. Many instructors run out of time before they can adequately cover international trade. The integration of trade and trade theory into the basic discussion of macroeconomics is a partial remedy to the time constraint.

International Topics (Combined Volume Chapters 33–36, Macro Split Chapters 19–22) The concluding section is devoted to international trade and economic development. These topics are presented within the context of the increasing importance of international trade, the cyclical problems of the value of the dollar, the growth of protectionist sentiment, the persistent balance of payments deficit, and the international debt crisis. •

• PEDAGOGY •

In addition to the previews/analyses and boxed applications, each chapter of this text offers these learning aids:

Learning objectives

Chapter introductions

Set-off in-text definitions

Full-color graphs, many with detailed teaching captions

Numbered summaries

Listing of required economic concepts

Review questions

Problems

Application problems

Please turn to page xvi for a visual introduction to these features. •

• PACKAGE •

Economics: Principles and Applications comes with a full range of teaching and study-support items. Every component of this package has been developed to complement the text and to help the instructor and students maximize the time spent on the course.

Test Bank Available in two separate volumes, Test Bank I (micro) and Test Bank II (macro) offer a combined total of more than 3,600 test questions. These are divided into true/false and multiple-choice questions, which are identified by topic and level of difficulty. The test bank is also available in a state-of-the-art, computerized version for IBM PC, Apple II, and Macintosh microcomputers.

Test Bank I was written by Colleen Cameron of the University of Southern Mississippi, and Test Bank II was written by Gary Burbridge of Grand Rapids Junior College. All questions have been independently checked and their answers verified for accuracy and consistency with the text.

Study Guide Designed to help students review important chapter concepts, extend their ability to apply economic analysis, and prepare for exams, the *Study Guide* to accompany *Economics: Principles and Applications* will be useful for students at all levels of ability. Each chapter contains: learning objectives; a review of required economic concepts; a chapter review with incorporated exercises; graphing exercises; a practice test with multiple-choice and true/false questions; applications exercises; a “common mistakes” section that highlights errors students often make and shows how to avoid them; and full answers to all exercises and practice-test questions.

The *Study Guide* was written by Dale W. Warnke and Edward J. Starshak of the College of Lake County. It is available both in a combined volume and in separate micro and macro volumes.

Instructor's Manual Because switching texts is so often a time-consuming project, the *Instructor's Manual* to accompany *Economics: Principles and Applications* is structured to help simplify course planning. In addition to the special section “Teaching with Applications,” for each text chapter the *Instructor's Manual* provides: learning objectives; required economic concepts; a list of applications and the concepts that each application utilizes; detailed lecture notes; full answers to all end-of-chapter questions and problems; additional exercises and discussion questions; and additional application exercises.

The manual is packaged in a three-ring binder to make it easier for you to incorporate your own lecture notes. It is also available on floppy disk in ASCII format for those instructors who prefer to create a personalized version. The *Instructor's Manual* was written by the author and William Knight of Prince George's Community College.

Computerized Graphing Tutorial Developed for use with an IBM PC or compatible, the graphing tutorial contains two disks of lessons related to core topics in the textbook. Simple enough for students to use without supervision, this valuable learning aid focuses on important concepts in each chapter and enables students to utilize the computer to practice using graphs in the solution of problems. The tutorial includes the following features: 300 questions arranged by chapter; a drawing program that allows students to draw and manipulate graphs in response to questions (no special equipment beyond a graphics card is necessary); and a built-in error-catching routine that tells students if an answer is incorrect and why it is incorrect.

The graphing tutorial was written and programmed by Tod Porter and Teresa Riley of Youngstown State University. It is available free to instructors upon adoption and may be copied for students.

HyperCard Tutorial Developed specifically for use with *Economics: Principles and Applications*, the *HyperCard Macintosh Tutorial* brings key concepts to life through high-interest animation. Ideal for use as a classroom demonstration or in a student lab, the tutorial works through 50 text graphs as it discusses key concepts. All the images and text in the tutorial are designed for use in a large lecture room and can be projected with a Macintosh computer, standard overhead projector, and a projection pad hook-up. The disk is available free to instructors and may be copied for students. The *HyperCard Macintosh Tutorial* was written by John Pisciotta of Baylor University.

The Electronic Scorecard Macro Simulation The *Electronic Scorecard* encourages students to develop their economic decision-making skills by tracking and manipulating current macro data. Ideal as part of any macroeconomics course, this unique simulation sets up, in spreadsheet fashion, an organized listing of important economic and financial variables. Students can then monitor the economy by inputting real data — available from the business section of a national newspaper — on a weekly basis and manipulating it in response to exercises assigned by the instructor. An accompanying *Instructor's Manual* includes suggested exercises and ideas for incorporating the software into the course.

Available for use with an IBM PC and suitable for use with any macroeconomics text, the simulation is available free to all adopters and to students at a nominal charge. The *Electronic Scorecard* was developed and written by J. Richard Aronson of Lehigh University.

Graphing Video Because an understanding of the nature of graphs is essential to students' grasp of economic principles, a unique graphing video is offered free to each adopter of *Economics: Principles and Applications*. Intended for use as a student introduction to graphs, this ten-minute animated video reviews the basics of how graphs are used in economics and explores such key concepts as how shifts occur and how slopes are calculated. Ideal for showing in a first class, the video was produced especially for The Dryden Press to accompany our principles of economics texts.

Transparency Acetates *Economics: Principles and Applications* is accompanied by a set of color overhead transparencies designed for classroom use. The complete acetate set features: more than 150 graphs taken from the book; large print for easier classroom projection; and consistency of colors used in the transparencies and in the text graphs so that students can more easily follow along with lectures •

TO THE STUDENT

*I hear and I forget
I see and I remember
I do and I understand
- Confucius*

I am looking at your picture. Well, perhaps not yours, but a group of students in a class like yours. I have it pinned up over my Macintosh. Economics is often considered, at best, to be a difficult course to take, and at worst a boring and difficult one. This is reflected in the picture. Some students are religiously writing down every word the professor is saying as if afraid of missing a vital point. Some, however, clearly wish they were somewhere else. One male is reading a newspaper, and another is looking at an attractive female. Neither has his mind on economics.

Every morning when I sat down to write this book, I looked at the picture and asked myself how I could present that day's topic in a way that would both interest you as a student and best help you to master the subject. Getting your attention is important because both the author and your professor believe that the course in the principles of economics you are just beginning is the most important course you will take in college.

The main reason for this belief is that economics as a way of thinking has proven to be so useful. The economic way of thinking, once you have acquired the skill, will allow you to derive sense from nonsense and to clarify and think consistently about a wide range of social and personal problems. Indeed, the range of applicability for economic thinking is practically unlimited. Acquire the ability to think like an economist and a whole new world will open up for you. That is an exciting prospect. We want you to make the most of this opportunity.

So why is economics often considered difficult and boring? The main reason, I believe, is that many students get little more out of taking the subject than a grade and credit hours. They never acquire the ability to apply the economics they learn. There appear to be two stages to learning how to think like an economist: The first is to be able to understand the logic of economic theory; the second, to be able to apply that logic to real-world problems. You must master both stages if you are going to obtain the most benefits, or perhaps any benefit at all, from your study of economics.

There is a way to do this and to avoid the pitfalls that have claimed many of your fellow students: Combine the learning of economic theory with the direct application of that theory to real-world problems. This book is designed to allow you to do just that.

It is almost as simple as one, two, three.

One. Each chapter begins with two or more previews of problems which hopefully you will recognize as interesting and/or important enough to require analysis. These are problems that you would like to be able to analyze for yourself as an economist would. But before you can do this you must have the necessary economic tools—the tools that you will acquire in the chapter. Mastering these tools is Step Two.

Two. The body of the chapter presents the economic concepts (tools) needed to correctly analyze the problems. Unless you master these tools you will not be able to understand how economists reach the conclusions they do. Reading the text is not enough. You will soon forget what you read. Once you have finished studying the chapter, check your level of mastery by reviewing the key terms and answering at least some of the questions at the end of the chapter. Now, you are ready for Step Three, which is the crucial step in mastering economics.

Three. You must read each application to see how the tools you have just acquired can be used to analyze the problems set forth in the previews. Seeing how the tools are applied will not only show you the power of the economic way of thinking, but will help you reach the second stage of economic knowledge—the ability to apply economics for yourself. After all, why else should you spend the time studying economics? When you see how the tools can be used, you will remember them. Finally, begin to apply your newly acquired knowledge by attempting one or more of the application problems presented at the end of the chapter. When you begin to use economics, you will begin to understand the discipline.

You recall that we said above that learning economics is almost as easy as one, two, three. There is something else that is required: *consistency of effort*. Economics is a cumulative discipline. Each succeeding chapter, or lesson, builds upon the previous one. You will save yourself a lot of grief if you keep up with your assignments. Learning to think like an economist is a substantial, but not an impossible, undertaking. It is something like setting the goal of doing 1,000 sit-ups or push-ups during the academic term. It's not hard if you religiously do 10 a day but it's very difficult, perhaps impossible, if you try to do all 1,000 the last day of the term.

You are now ready to begin. I envy you. There is a thrill to intellectual discovery that can't be obtained in any other way. I hope that learning economics from this book is as interesting for you as it was for me to write it. •

ACKNOWLEDGMENTS

The writing of a textbook this size is a giant undertaking, at least it was for me. What started out as a leisurely hike through the mountains quickly turned into the writing equivalent of the Bataan death march. Fortunately, I was not alone. That I survived the ordeal and the book is finished is due in large measure to *Becky Ryan*, Acquisitions Editor at The Dryden Press. Becky combined the qualities of a sympathetic listener with a frequent, but judicious, use of the bayonet to prod me toward completion. Becky also served as the developmental editor for the project even after receiving a well-deserved promotion to her current position. Her contribution to the book goes far beyond the role of editor. It was Becky who first recognized the possibilities of a rough outline and sample chapters I submitted. It was Becky who sponsored the project within her company, took the heat when things didn't go according to schedule, and saw to it that my vision actually materialized into a book. Becky's contribution appears on every page of this book.

Becky did not work alone. *Eric Elvekrog* served as developmental editor for the supplementary materials. *Jeanne Calabrese* was responsible for the design of the book and its cover. She designed a book that is at the same time functional and beautiful. *Dan Swanson* turned my graphs into a publishable form. *Karen Steib* served as the project editor, keeping in order the thousands of details that make up a book, often creating order out of apparent disorder. *Mary Englehart* did such a skillful job of copy-editing that I would often read her corrections and say to myself, "That's how I should have written it in the first place." *Kathy Pruno* and *Pat Lewis* also assisted at this stage. *Karen Vertovec*, *JoAnn Learman*, *Marcia LaBrenz*, *Linda Melton*, and *Nancy Dietz* did the proof-reading. *Susan Jansen* was in charge of producing the supplementary materials package. *Barb Bahnsen*, *Katie Mattingly*, and *Jan Doty* round out the production team that made this text and package possible.

Finally, three economists deserve mention. *Charles Nelson* listened patiently to problems and offered numerous helpful suggestions while the book was being written. *Nic Nigro* helped me formulate the questions at the end of each chapter. *Bill Weber*, in addition to his contributions as an author, carefully read the manuscript for errors. For the hours of time he put into this project, both the Dryden staff and I are deeply indebted.

My family was supportive of my efforts. My wife, Bonnie, patiently suffered through the writing of this book as did, with somewhat less patience, my children, Robert and Megan, both of whom experienced the opportunity cost of an author/father in terms of less time together.

Finally, my friend Jim Schwab came to my rescue by re-pairing a failing hard disk without losing a single page of text. My thanks to all of you.

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Robert Thomas
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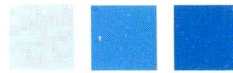
ABOUT THE COLORS USED IN THE GRAPHS

The design of this book is colorful. This helps to hold interest and reflects the real-world nature of the applications. But most importantly, the colors have a pedagogical function in the graphs. Each curve has its own assigned color that is used consistently throughout the text. This helps students sort out and remember the many new concepts they are learning. It also makes graphing more understandable for students who have a harder time making the connection between written explanations and visual representation.

Below is a list of the color coding used throughout the text.



- Supply
- Marginal cost
- Marginal physical product
- Total product
- Average physical product
- Short-run aggregate supply
- Leakages/injections approach for determining real GNP
- GNP statistics time series



- Total cost
- Average total cost
- Isocosts
- Indifference curves
- Time series for M1
- Short-run Phillips curve



- Demand
- Marginal revenue
- Aggregate demand
- Aggregate expenditures
- Consumption function
- Time series for price indices



- Isoquants
- Time series for natural rate of unemployment
- Time series for M2



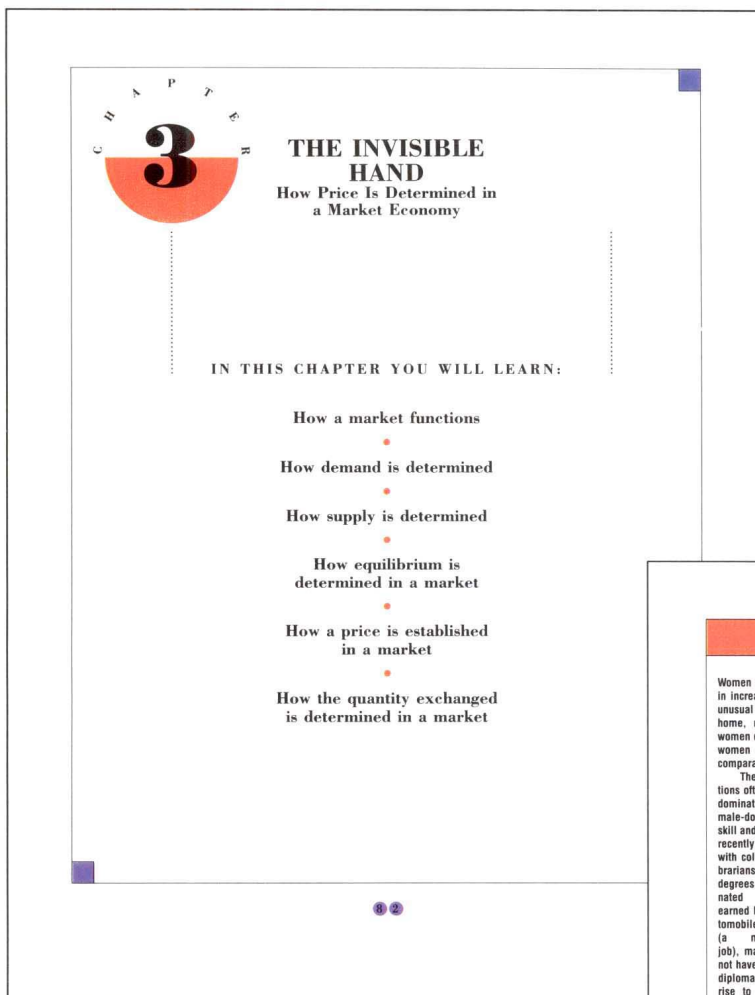
- Long-run average total cost
- Average variable cost
- Total variable cost
- Production possibilities frontiers
- Laffer curves
- Treasury bill interest rates



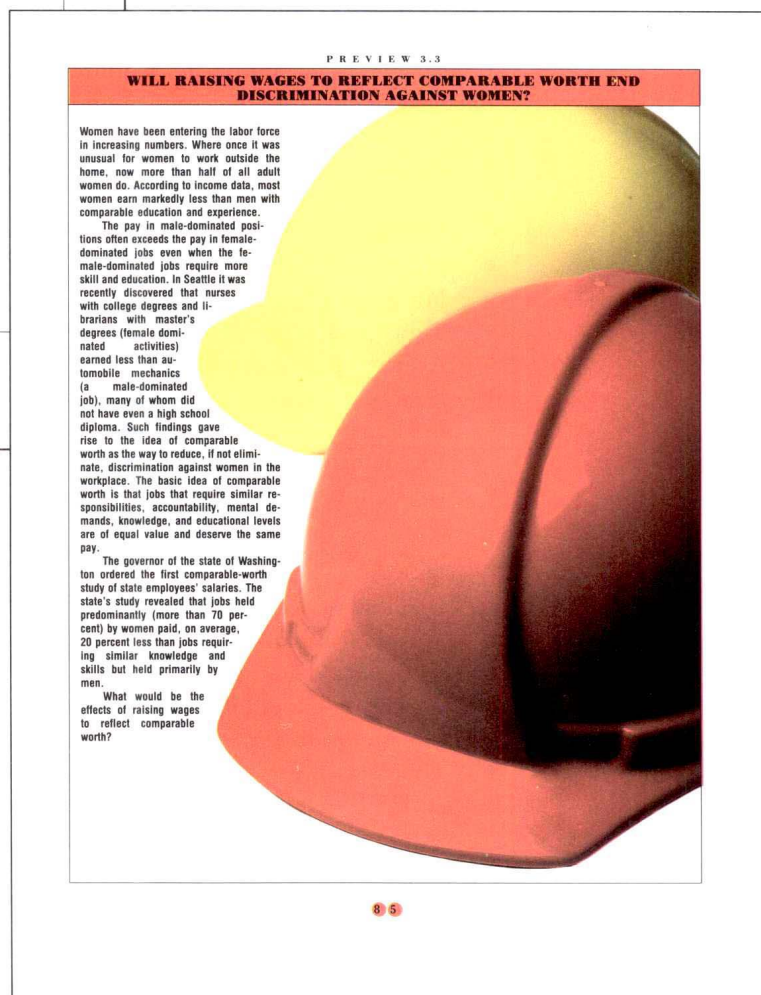
- Perfectly inelastic supply
- Long-run aggregate supply
- Long-run Phillips curve

In addition, all shifts move from lighter shades to darker shades.

INTRODUCING THE BOOK



▲ Chapter opening outlines the key topics to be covered.



▲ Chapter previews set up economic problems that will be analyzed at the end of the chapter using chapter concepts.

Boxed applications provide brief examples of how economic concepts help make sense of real-world situations.

APPLICATION
3.1
MOTHERS TO BE AND THE LAW OF DEMAND

Just before midnight on a cold, rainy Seattle night, a TV news reporter and cameramen from a local TV news program arrived at the parking lot of a hospital for a fast-breaking story. In each of several cars in the lot sat a pregnant woman with her husband. The reporter tried to interview several of the soon-to-be mothers, all of whom were clearly in labor and equally clearly didn't want to talk about it. The reporter then spoke with two of the husbands, who said they didn't have insurance that covered maternity care.

Then at the stroke of midnight, in front of the cameras, all of the car doors opened at the same time, and each expectant woman made her way slowly across the parking lot and through the emergency room door. The

TV cameras following the procession into the hospital revealed pandemonium. Each husband was demanding that his wife be admitted first, and most wives were asking only to be allowed to lie down. The reporter managed a hurried interview with a harried hospital worker, who stated in no uncertain terms, "This happens every night, and I am getting real tired of it."

The very next night, the TV reporter interviewed the mothers, each holding her newborn child. These interviews revealed that since none of the families involved had medical insurance, each family would have to pay all the costs of delivery. The hospital charged \$240 a day and counted any part of a day as a whole day. If an expectant mother checked in at 11 p.m., she was charged for that entire day. Rather than pay \$240 for one hour of care, the new mothers had elected to tough it out in the parking lot until after midnight.

The TV reporter also interviewed the hospital administrator, who announced that the hospital would be changing its pricing policy and would now charge an hourly rate of \$10 per hour for less than a full day. When the price of one hour of care fell from \$240 to \$10 for women who found themselves in labor at 11:00 p.m., there was an increase in the quantity of hospital care demanded.



Women whose labor was still manageable were no longer likely to wait the extra hour if they were already at the hospital, because the cost of the one hour of care they would receive between 11:00 p.m. and midnight was now only \$10 rather than \$240. Thus, to the extent that conditions allow, even women in labor can reduce or expand their consumption of hospital care by an hour in response to a price change, providing another example of the working of the law of demand.

For a high-rise apartment, the additional cost of providing two exits to the outside may exceed the additional benefits of reducing the risk of injury or death from fire. Lower-cost substitutes for an extra door, such as smoke alarms, fire extinguishers, or "No Smoking" signs, may also reduce the risk of injury or death from fire.

Similarly, the statement that everyone should have the medical care he or she needs appears to be a sound statement, but how much medical care does a person need? Most people would agree that persons seriously injured in automobile accidents should have immediate medical attention whether they can pay for it or not. Also, a person suffering from a heart attack or cancer is clearly in need of medical care. How about the man with influenza or the woman with athlete's foot? Are they also in need? The costs of treating influenza and athlete's foot are real. There is, and always will be, a limited number of physicians. If their time is used treating the needs of flu sufferers and persons with itchy feet, they are not available to treat patients with heart disease and lung cancer.

If medical care, like any scarce good, is made free to consumers, there is no incentive to economize on its use, even if the doctors do not charge a fee. Flu sufferers will be tempted to substitute a trip to the doctor for taking two aspirins and going to bed. Persons with itchy feet might well decide they need professional attention rather than purchasing an over-the-counter medication from their pharmacist.

For purposes of economic analysis, a need turns out to be a want when closely examined. The question then becomes: To what degree are

TABLE 3.2
The Supply Schedule for Wheat

PRICE (DOLLARS PER BUSHEL)	QUANTITY SUPPLIED (MILLIONS OF BUSHELS PER YEAR)
0	0
1	10
2	20
3	30
4	40
5	50
6	60
7	70

Demand, which reflects the forces operating on buyers in a market, represents one-half of the forces that affect market price. Supply, which reflects the forces operating on sellers, makes up the other half.

FACTORS AFFECTING
SUPPLY IN A MARKET

As in the case of demand schedules, there are both price and nonprice factors that affect supply.

PRICE AND SUPPLY

The quantities of goods and services that sellers are willing to supply to the market also depend on the price of the good. Suppliers, like demanders, also follow the fundamental postulate of economics as illustrated by the law of supply.

The law of supply is the principle that as the price at which a good can be sold increases, more of that good will be offered for sale when other things are held constant.

The market price represents the benefit that suppliers receive from selling in the market. As the benefit to suppliers increases with a rise in the price, sellers will respond by offering more in the market. Thus a positive relationship exists between price and the quantity supplied. More will be supplied as the price of the good increases. When economists discuss the relationship between price and supply along a given supply curve, they use the term *quantity supplied*.

A supply schedule shows the amounts of a good or service that individuals or firms will offer for sale at various prices. A higher price will induce suppliers to offer more of a good for sale in the market.

A supply schedule is a tabulation of the relationship between price and the quantity of a good offered for sale; as price increases, the quantity supplied increases.

A possible supply schedule for wheat is shown in Table 3.2. If the price of wheat is \$1 per bushel, the quantity offered in the market will be 10 million bushels. If the price of wheat is \$2 per bushel, the quantity supplied in the market will be 20 million bushels. A further price increase to \$5 per bushel will increase the quantity supplied to 50 million bushels.

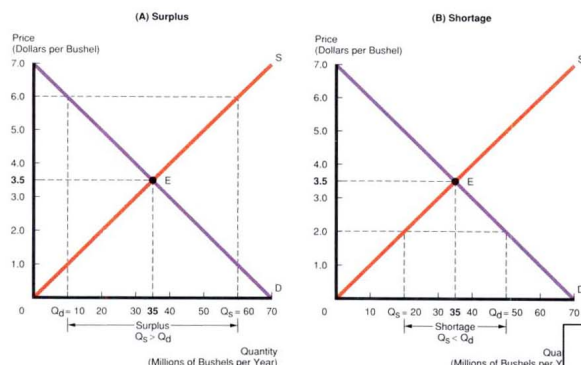
▲ In-text definitions are highlighted for easy reference.

Full-color graphs, many with detailed teaching captions, help students use graphs to understand economic concepts.

FIGURE 3.7
Disequilibrium in the Wheat Market

Disequilibrium exists when a market does not clear because the quantity demanded does not equal the quantity supplied. This will happen when the price is not equal to the equilibrium price. Suppose, as shown in Part A, that the market price for wheat is initially \$6 per bushel, which exceeds the equilibrium price of \$3.50. In this case the quantity demanded will be 10 million bushels and the quantity supplied will be 60 million bushels. The quantity supplied exceeds the quantity demanded, creating a surplus. As long as a surplus exists, there will be an incentive for some suppliers to offer lower prices, and price will fall to the equilibrium value.

Part B shows the case in which the price is below the equilibrium price. Suppose the price is \$2 per bushel, in which case the quantity demanded will exceed the quantity supplied, creating a shortage. When a shortage exists, some buyers will have an incentive to offer higher prices rather than do without, and the price will rise to the equilibrium price of \$3.50 per bushel.



amount of the shortage. Nevertheless, a shortage will continue to exist until the price reaches the equilibrium price of \$3.50, for only at the equilibrium price will the quantity demanded just equal the quantity supplied.

The equilibrium price is discovered in the market by this process of bidding by persons who are dissatisfied with the existing price. Only at the equilibrium price will all buyers and sellers be satisfied with the existing quantities. When no person has any incentive to buy or sell more, the market has reached the equilibrium price.

BENEFITS OF A MARKET

Adam Smith, generally considered to be the first great economist, described the benefits of a market (or industry, as he called it) in a famous passage in his book *The Wealth of Nations*. He likened the workings of a market to an invisible hand:

He generally, indeed neither intends to promote the public interest, nor knows how much he is promoting it. . . . He intends only his own security;



RAISING WAGES TO REFLECT COMPARABLE WORTH

BEEP! BEEP! Yale's Cheap!" read one sign carried by a picket from Local 34 of the Federation of University Employees during a strike of staff workers at Yale University. The picket didn't mean tuition — she meant the wages Yale paid female employees. Her local had determined that the University paid truck drivers, gardeners, cooks, and campus police — all male-dominated occupations that did not require a college degree — more than was paid to staff workers, such as administrative assistants, secretaries, and librarians, which at Yale are all female-dominated occupations. Many of the female-dominated occupations actually were held by persons with college degrees. Local 34 had had enough and demanded comparable wages for jobs of comparable worth. Yale replied that raising wages to reflect comparable worth was not in women's best interest. Raising wages in female-dominated jobs to match the wages of male-dominated occupations would, by increasing the incentives to stay in their present occupations, mire women in dead-end jobs. On the basis of this statement, Local 34 went on strike, supported by many students and faculty.

The strike at Yale occurred two decades after the passage of the Equal Pay Act of 1963 and the 1964 Civil Rights Act, which made illegal sex discrimination on the job or in access to employment opportunities. Yet today females earn less than males on the average, not because these laws are widely ignored, but because women and men are not distributed uniformly throughout the work force. The occupations dominated by women tend to pay less than those dominated by men.

In Seattle, for example, mechanics (a male-dominated occupation) are paid more than nurses or librarians (female-dominated professions), even though these female-dominated professions require more education and entail higher levels of responsibility than does the occupation of fixing cars. Moreover, nurses and librarians often have advanced professional degrees, while some mechanics do not even possess high school diplomas.

Frustrations at market outcomes like these have led to pressure to adjust wages according to the principle of comparable worth. Proponents of paying according to comparable worth assert that within a firm, jobs should be valued in terms of the skill, effort, and responsibilities required. If two jobs are comparable in these characteristics, they should receive equal compensation. According to advocates of the principle of comparable worth, the interaction of the supply and demand for workers in labor markets results in such obvious inequities that it should be replaced with a more equitable system based on comparable worth.

Supporters of the comparable-worth principle have made some progress toward its adoption. Several bills have been introduced in Congress and at state and local levels. More than 30 states have passed comparable-worth laws regulating state employment practices, but many states have been slow to take action. Only two states, Minnesota and Washington, have actually appropriated funds to remove pay inequities at the state level.

Several city governments have also adopted comparable-worth policies. In Colorado Springs 36 female city hall secretaries complained that the city auto mechanics (all men) were scheduled to get much larger raises than they were. Although the Equal Pay Act requires equal pay for the same job, it does not apply to workers doing different jobs. The secre-

Preview analyses use chapter concepts to evaluate the problems presented in the chapter previews.

The list of required economic concepts helps students review important ideas presented in the chapter. Key questions review basic chapter content. Problems ask students to use chapter concepts.

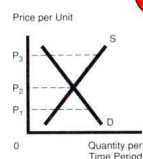
REQUIRED ECONOMIC CONCEPTS

Market	Substitution effect
Industry	Income effect
Competitive (price-taker) market	Demand schedule
Imperfectly competitive (price-searcher) market	Demand curve
Purely competitive market	Market demand curve
Externalities	Law of supply
Wants	Supply schedule
Demands	Supply curve
Fundamental postulate of economics	Market supply curve
Law of demand	Equilibrium price
Law of diminishing marginal value (or utility)	Surplus
	Shortage
	Equilibrium quantity

KEY QUESTIONS

1. How does a market facilitate trade?
2. What are the characteristics of a purely competitive market?
3. What are market externalities?
4. What does equilibrium in the market signify?
5. What is the law of demand? What variables affect demand?
6. What factors affect the quantity demanded?
7. What is the law of diminishing marginal value?
8. What is the substitution effect? The income effect?
9. What is the difference between need and demand?
10. What is the law of supply?
11. How is the market demand curve derived from individual demand curves? The supply curve from individual supply curves?
12. What is the law of increasing costs? What relation does it have to the supply curve?
13. What does a shortage or excess demand indicate?
14. What does surplus or excess supply indicate?

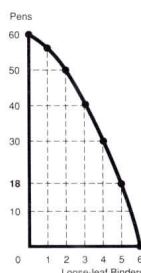
PROBLEMS



1. Refer to the accompanying graph depicting the U.S. sugar market in answering questions below.
 - a. What is the market situation at price P_2 ?
 - b. Suppose the government sets a floor price on sugar at P_1 , that is, a price below which a lower price cannot be charged by the farmer. Which will be larger, quantity demanded or quantity supplied?
 - c. Suppose, instead, a ceiling price of P_3 is set by the government, that is, a price above which it is illegal to charge. Will quantity supplied be greater or quantity demanded?
 - d. Suppose the floor-price regulation is removed. Assuming the market is competitive, what will the final market price be?

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PART 1 INTRODUCING ECONOMICS



10. A two-good economy produces ballpoint pens and loose-leaf notebooks, as shown in the illustration.
 - a. What is the opportunity cost of producing three loose-leaf notebooks? Of producing the third loose-leaf notebook?
 - b. Derive the supply curve for loose-leaf notebooks from the illustration.
11. How can one argue that it is more efficient for a firm to produce another bookcase when it is already operating at a loss? Or is the statement ridiculous?
12. How can demand increase and supply increase and yet the price of grapes increase as the quantity of grapes produced expands over a period of several years?
13. It is common to see or hear about long lines of people waiting — sometimes overnight — to buy tickets for rock concerts.
 - a. What does this fact tell you about the costs of waiting in line to these people? To support your answer, what casual evidence can you gather from observing who is standing in these lines?
 - b. What do the waiting lines tell you about the price of the tickets?
 - c. What reasons do managers of rock groups have for setting ticket prices at the levels they do? Are live concerts the only source of revenue to rock groups? Explain.
 - d. Why would an airline pilot not be likely to stand in line to buy a rock concert ticket? How would he or she probably try to obtain a ticket?
14. Scalping tickets is illegal nearly everywhere in the United States. Scalpers have sold bowl tickets at prices ranging from \$400 to \$600 each. They buy the tickets from the players themselves and from cashiers who acquire them at the printed price and then resell them at a markup.
 - a. What can you conclude about the official price of the bowl tickets?
 - b. Are scalpers violating the law of demand by selling the tickets for \$500 each?
 - c. In general, can scalpers lose money scalping? What are other risks they take? Is their activity costless?
 - d. Do scalpers actually provide benefits to customers? Or do they increase transaction costs to people desiring otherwise unavailable tickets?
 - e. Do scalpers cheat buyers because they charge more than they "ought" to, or do they allocate resources in a more efficient manner?

APPLICATION ANALYSIS

1. In the thirteenth century the famous scholastic philosopher Thomas Aquinas argued for a "just price" based on "the cost of raw materials and labor." He also spoke about a "just wage," with workers being paid in accordance with their social position, their skills, and the nature of the work. In the 1980s the issue of a fair wage for women emerged along with the concept of comparable worth discussed in the chapter. Dissimilar jobs that are of equal "intrinsic value" should be equally compensated, the argument goes, based on a point system of evaluating occupations. Thus in Minnesota a librarian's job was valued as equal to a firefighter's. Thus a policy that started out as "equal pay for equal work" (in the same job) became "equal pay for equal value."
 - a. Is there a similarity between the views of Aquinas and today's comparable-worth advocates?
 - b. As the problem is stated, how do you believe the cost of raw materials and labor in the thirteenth century and the wage of the auto mechanic today were determined? Is the auto mechanic's wage a "fair wage"? How do you know?
 - c. What is "intrinsic value"? Do you think your assessment of it may differ from others' assessment? Will the point-determination level of various jobs be affected by who is on the point evaluation board?

The application analysis gives students an opportunity to test their ability to use economic reasoning.

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