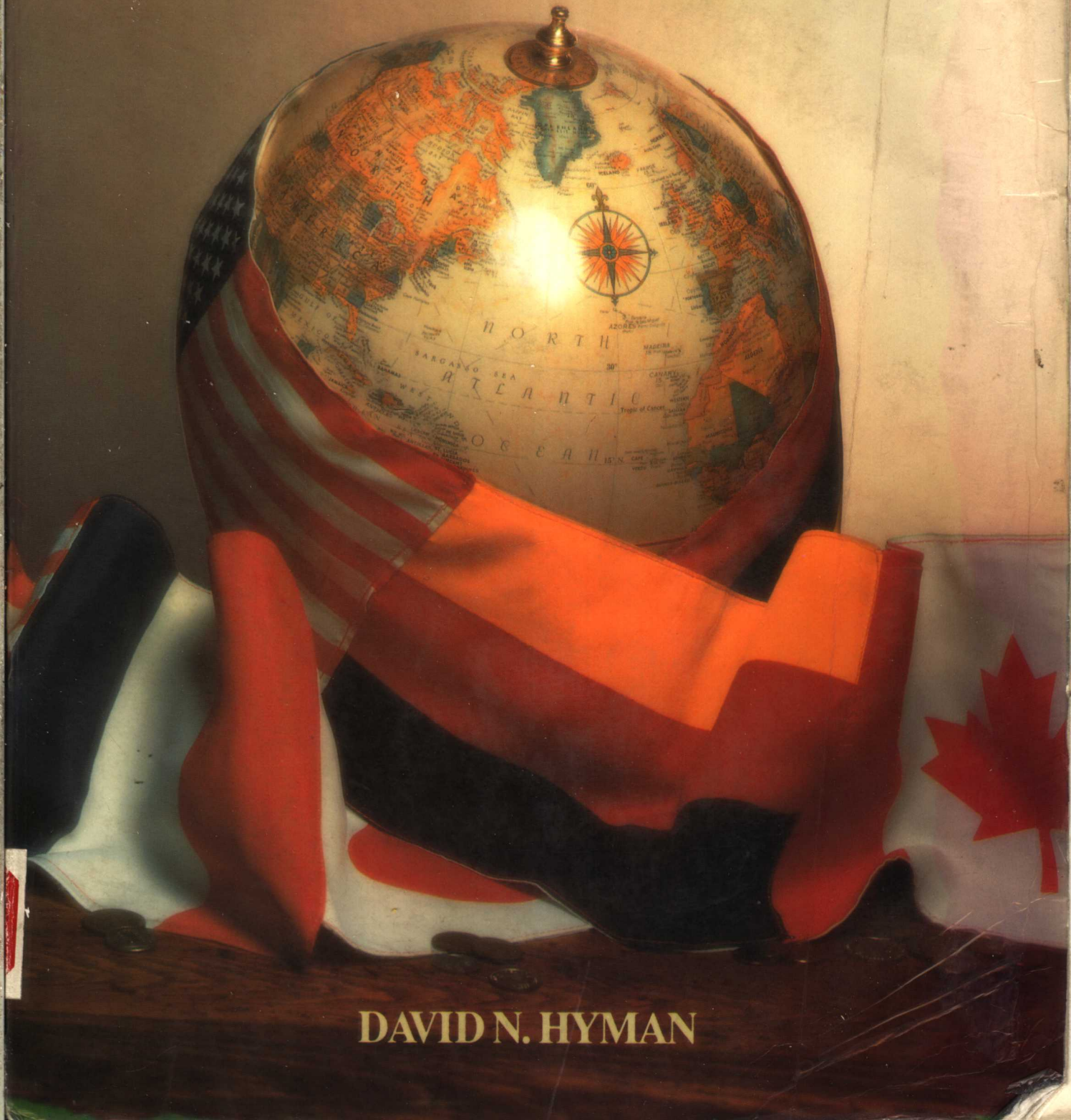


MICROECONOMICS

Second Edition



DAVID N. HYMAN

MICROECONOMICS

SECOND EDITION

DAVID N. HYMAN

North Carolina State University

Homewood, IL 60430
Boston, MA 02116

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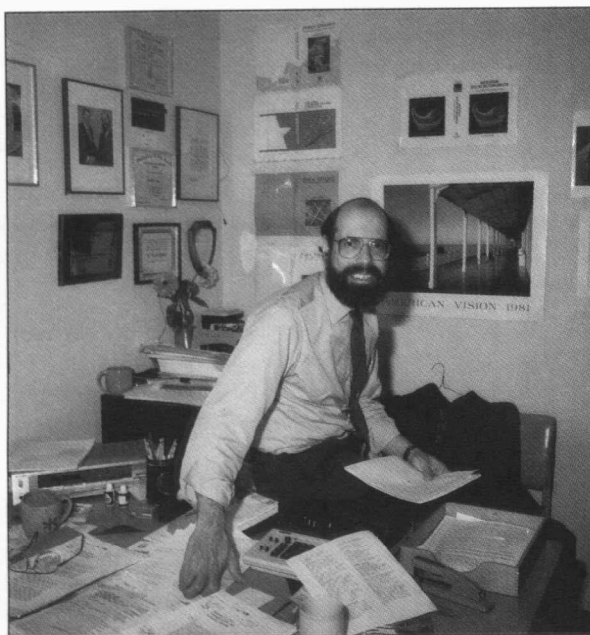
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About the Author

David N. Hyman is Professor of Economics at North Carolina State University where he has taught since receiving his Ph.D. in economics from Princeton University in 1969. In addition to being the author of *Economics*, Dr. Hyman is the author of widely used texts in public finance and microeconomics and is one of the most experienced textbook authors in the field of economics. Professor Hyman has taught principles of economics to large numbers of students



over the past 24 years and has been the recipient of several awards for outstanding teaching. His research on economic issues has been published in respected academic journals.

Professor Hyman's broad range of professional experience outside academia gives him the breadth of knowledge required to write a comprehensive and relevant text. He was a Senior Fulbright Research Scholar in Italy in 1980 and held a CNR (National Research Council of Italy) Fellowship from 1976 to 1977 while doing research at the University of Turin in Italy. He has had considerable government experience in Washington, D.C., where he has worked as a budget analyst and has served on the staffs of the Office of the U.S. Comptroller of the Currency of the Treasury Department and the Board of Governors of the Federal Reserve System. In 1988 he was a consultant to President Reagan's Council of Economic Advisers. During this time he authored Chapter 2, "Fiscal Policy and Economic Expansion" of the *Economic Report of the President* (1989). In 1989 he was senior staff economist on President Bush's Council of Economic Advisers.

Professor Hyman is also a professional fine art photographer whose works are in the permanent collection of the Corcoran Gallery of Art in Washington, D.C. His photographs have been exhibited in many galleries and museums and have been published in art photography books and on the covers of several novels. For recreation, he enjoys playing the flute and working in his garden.



Preface

The second edition of *Economics* builds on the foundation of success of its first edition. I remain convinced that students have an innate interest in the subject of economics that can be stimulated by a text that applies and uses economic theory, showing how the economy functions. In this new edition I have added features that help students fathom the modern global economy. I have also added many more applications that demonstrate how the discipline of economics is relevant to students' personal lives and to the business, managerial, and policy issues that they read and hear about.

Economics is a vital component of any student's education. Knowledge of economic principles is essential for success in dealing with day-to-day affairs in the modern world. The rapid evolution of global interdependence among both highly industrialized and less developed economies demands a fundamental change in the way we teach principles of economics. In the second edition, I use every opportunity to demonstrate the increasing importance of interna-

tional trade in the U.S. economy. I have also integrated more international examples relating to business and policy issues in foreign nations, including examples that discuss the perils of hyperinflation and the painful transition from central planning to free markets in the Soviet Union and eastern Europe.

While highlighting international economics, I have not neglected basic issues that show students the relevance of economics in their daily lives. The text makes heavy use of marginal analysis and basic supply and demand analysis, and applies both microeconomic and macroeconomic analysis to a wide range of issues. I have revised many portions of the text to improve clarity of exposition.

My goal in writing this book is to communicate the relevance of economics to everyday life by blending examples and applications with economic theory in each chapter. The text is a comprehensive learning resource that I hope students will enjoy reading and using.

David N. Hyman

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I also express my gratitude to a panel of specialists who examined our real-world applications: Terence Alexander (international), University of California; Lewis Cain (historical), Loyola University; Phil Friedman (macroeconomic), Bentley College; Wendell McCulloch (international business), California State University; Charles E. Staley (historical), State University of New York; Michael K. Taussig (environmental), Rutgers.

The staff of Richard D. Irwin were helpful throughout the revision and production process for this book. Gary Nelson, sponsoring editor, provided many useful suggestions for the second edition. Joan Hopkins supervised the development process of the new edition and worked very closely with me on perfecting the various drafts of the book. Susan Trentacosti efficiently managed the production process and Tara Bazata provided an elegant and functional design for the book. I am grateful to all those at Irwin for the many hours of work and thought that they put into the process of producing the polished text.

My colleagues at North Carolina State University were always available to help me sound out my ideas and supply information on their areas of specialization. I also wish to heartily thank my students at North Carolina State University who always keep me on my toes and provide the inspiration for developing many of the new ideas and applications that appear in this new edition. Carolyn Smith, provided remarkably efficient secretarial assistance and helped me in keeping up with my deadlines while maintaining her good humor.

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D. N. H.

A Note on Learning

RESOURCES: HOW TO GET THE MOST OUT OF THIS COURSE

Economics is all about the best utilization of resources. Applying this principle to your study of economics, how should you go about maximizing the return on the time you will invest? What resources should you use as you begin your study?

Your primary resource is this textbook (and the accompanying **Study Guide**). You'll find it beneficial to read the assigned chapters before your classroom lectures; keeping up with the reading assignments is especially important in economics because later chapters build on the principles in earlier ones.

This text has been designed with your learning in mind. Besides its careful and detailed unfolding of basic economic principles, the book contains a number of useful learning aids that will help improve your comprehension of the material. The introduction to each chapter is followed by a **Concept Preview** that outlines the key points you'll be exploring and that you should understand when you've finished the chapter. At the end of each major chapter section is a **Concept Check**: a series of questions that will help you test your grasp of what you've just read. Stop and respond to these questions to make sure you've acquired the background you'll need to go on to the next section. The Concept Checks will also be useful when you're reviewing material for a test. You'll notice, too, the yellow **Concept Symbols** in the margin. These point the way to the discussions that explain chapter objectives. You'll see them again in the end-of-chapter questions—if you need to reread to answer questions, the concept symbols will help you quickly find the appropriate section(s).

Throughout each chapter, **Key Terms** are highlighted in color type and defined when introduced. These terms are defined in the margins and are also listed at the end of the chapter. The marginal definitions will be a valuable aid in building your economic vocabulary. In the back of the book you'll find all of the text's key terms in a comprehensive **Glossary**.

Learning economic theory is first-rate mental exercise—but how do we translate theory into application? In addition to the many relevant real-world examples provided throughout the text, each chapter also contains one or more boxed analyses that enlarge on and illustrate an important concept discussed in the text. Entitled **Principles in Practice**, each of these commentaries offers you a close-up view of an economic theory in action, from supply and demand to the pros and cons of trade protectionism. Some of the commentaries have a business focus and are subtitled either **Managerial Methods** or **Business Briefs**. These business-oriented features concentrate on decision making within businesses and on the competitive environment in which business firms operate. Other ones are subtitled **Policy Perspectives**; these apply economic principles to policy issues.

This edition of the text contains two new features that apply economics to the real world. **The Global Economy: World and International Focus** highlights important international trade or global economic issues to help you appreciate the increased international dimensions of the subject of economics. A global economy feature appears in almost every chapter of the text and often provides you with an opportunity to see how the theory discussed in each chapter can be applied to better understand a key international or global issue.

YOUR LEARNING AIDS

Inside Information highlights sources of economic information or analyzes issues relating to the accuracy of economic information.

Economics

What It's All About

CHAPTER 1

When you graduate from college, will it be difficult or easy for you to find a job? How will changes in the prices of things you want to buy affect your standard of living? Will you be able to qualify for a car loan or a mortgage? What impact will federal budget deficits have on your future well-being as your tax funds are used to pay interest on the national debt? Will foreign competition deprive you of a job?

As these questions make clear, economics is about you: student, consumer, employee, and voter. Economics is about the constraints you face, the choices you make, and your interdependence with others for survival.

In economics you'll study the opportunities and obstacles all of you will confront as you seek to make a living and to satisfy your desires for both the necessities and luxuries of life. As you learn economic principles you'll develop a systematic way of thinking about the consequences of human behavior and the way the economy functions. You'll also gain insights into social problems and various approaches to resolving or alleviating them. The emphasis in this book is on how you can use economics as a practical tool to comprehend and deal responsibly with personal, business, and social issues.

After reading this chapter, you should be able to:

1. Describe the mechanisms of the economy and the discipline of economics.
2. Understand the concepts of scarcity and opportunity cost.
3. Discuss major branches of economic inquiry: microeconomics, macroeconomics, positive analysis, and normative analysis.
4. Understand the concept of an economic model and its uses.
5. Explain rational behavior and marginal analysis, a method of analyzing the way we make decisions.

CONCEPT PREVIEW

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Concept Checks provide students with three review questions at the end of each major section designed to help test their comprehension and mastery of the main points in that section.

Concept symbols highlight discussions of important concepts listed in the chapter objectives (Concept Previews).

Key terms, printed in color and defined when introduced, list important chapter words and concepts that students need to know.

Marginal definitions allow students to understand and apply important key terms when they are first used in the text.

Inside Information

Getting Information on Financial and Commodity Markets



Do you own any shares of stock? Have you ever traveled to a foreign country? Are you interested in learning about ways to make money? If so, you'll be interested in the functioning of the financial and commodity markets that we will discuss in this part of the book.

If you want to follow the markets on a daily basis, you can look in your daily paper. You will be able to get most stock and mutual-fund prices in the financial section. If you're interested in the price of precious metals you can track the prices of gold, silver, and platinum.

Specialized newspapers have more detailed information than most regular daily papers. Two of the best are *Barron's* and *The Wall Street Journal*. The "Money & Investing" section of *The Wall Street Journal* is a major source of daily market information for thousands of businesses and private investors. On the left side

of this section's first page is a series of graphs and tables that show market trends based on the Dow Jones Industrial Average, the Standard & Poor's 500, and NASDAQ, as well as trends in prices on the London and Tokyo stock exchanges. You'll find data on bond prices and interest rates as well as the U.S. dollar's price against 15 major world currencies. Also in this section are recent prices of gold, West Texas intermediate crude oil, wheat, and steers.

Naturally, as you would expect for a newspaper like *The Wall Street Journal*, you will find a wealth of information on stocks, bonds, and mutual funds; but you will also find detailed information on commodities and foreign exchange rates. For example, the "Currency Trading" column will give you the U.S. equivalent for the currencies of nearly 50 countries and also will show you the price of foreign currency in terms of U.S. dollars. If you are traveling abroad, this is the first place to look to estimate the number of pounds, yen, or francs you'll need to purchase foreign goods and services.

Turn to the commodities section to find cash prices for grains, feeds, foods, fats and oils, fibers and textiles, regular and precious metals, and various grades of crude oil and refined petroleum products including gasoline, propane, No. 2 heating oil, and butane.

Finally, check the columns on credit markets. You can find key interest rates such as the federal funds rate (the interest rate banks pay for short-term loans from other banks) and the prime rate (the rate banks charge their most creditworthy customers). Also listed are interest rates for certificates of deposit, treasury securities, corporate bonds, municipal bonds, and mortgages. All this information, updated regularly, is in a single newspaper!

Concept Previews list learning objectives for each chapter.

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PART I: Introduction to Economics

to be an expert in welding, electrical wiring, painting, and upholstery. Even if you were skilled in all these operations, it might take you as long as a year to produce a finished car.

With a division of labor, the numerous tasks involved would be assigned to many workers, each specializing in one task. By dividing tasks, managers can use sophisticated machinery and equipment and produce many more cars than would be possible if each worker tried to do all the tasks. A division of labor exists in a broader sense throughout the economy. People with specialized skills function as physicians, police officers, architects, musicians, and farmers.

CONCEPT CHECK

1. Under what circumstances might an economy operate at a point within rather than on its production possibilities curve?
2. What is meant by the term *productive efficiency*?
3. How does the division of labor increase production?

ECONOMIC GROWTH: EXPANDING PRODUCTION POSSIBILITIES

From year to year, growth in available supplies of economic resources, improvements in resource quality, and advances in technology can expand production possibilities in a society. **Economic growth** is the expansion in production possibilities that results from increased availability and increased productivity of economic resources. **Shift** economic growth occurs over time, the production possibilities curve will shift outward. This means that the economy will be able to produce more of all goods. In this section we'll consider three sources of economic growth.

1. Increased quantities of economic resources.
2. Improved quality of economic resources.
3. Advances in technology.

Annual Growth in Available Resources

An increase in available economic resources allows us to produce more. Other things being equal, the more workers willing and able to work, the more capital, and the more land, the greater the production possibilities. This means the production possibilities curve will shift outward in response to an increase in available economic resources, as you can see in the graph in Box 5. Production possibilities that were previously unattainable will now be feasible. Increases in economic resources available for production will therefore result in a new production possibilities curve. The shaded area in the graph represents previously unattainable combinations of food and clothing that become feasible when resources become more plentiful or their quality improves.

The availability of new capital is especially effective in pushing the production possibilities curve outward, because new capital often complements labor, land, and other natural resources. This means that additional capital tends to increase the productivity of available labor and land. For example, supplying workers with more and better equipment increases the output per worker. Similarly, using more capital per acre of farmland can be very effective in increasing the production of food per acre. Growth in capital is an especially important determinant of our well-being as individuals, because increases in capital per worker result in more goods per person, thereby increasing the material well-being of each of us.

Economic growth
The expansion in production possibilities that results from increased availability and increased productivity of economic resources.

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PART I Introduction to Economics

Principles in Practice

Policy Perspective

The Economics of Drinking, Driving, and Highway Deaths:
An Example of Positive Analysis

What does drunken driving have to do with economics? The answer is "a whole lot," according to recent positive analysis of the impact on fatal motor vehicle accidents of raising the drinking age and taxing beer.

For people in the United States between the ages of 16 and 24, automobile accidents are a leading cause of death. Evidence suggests that policies increasing the cost of obtaining alcoholic beverages also reduce

highway deaths. For example, taxes on beer increase the price of beer and tend to decrease its consumption. Similarly, raising the drinking age to 21 makes it more difficult for persons under that age to obtain alcoholic beverages.

Since 1984, all 50 states have raised their minimum drinking age to 21. Positive analysis by economists of the impact of the increased drinking age has concluded that it would reduce nighttime fatal crash involvements by 13 percent.²

Recent research also suggests that increased taxes on beer can be very effective in reducing drinking by young people. Most young drinkers haven't been drinking long enough to become habitual alcohol users, and they typically have low incomes. Because a tax on beer will cause its price to increase, it's likely to induce young drinkers with low incomes to cut back their consumption of beer. Positive analysis of the impact of taxes on beer suggests that this too can save lives. Economists in a recent study estimated that if beer taxes in the United States had increased faster than they actually did between 1975 and 1982, over 1,000 lives of youths between the ages of 18 and 20 could have been saved annually!³

You may have your own views about the legal drinking age or the increased taxes on beer. You may very well change your views in response to positive analysis of the economics of drinking and driving!

² William D. Marshall, Allen P. Williams, and Paul Zarkin, "Raising the Alcohol Purchase Age: Its Effects on Fatal Motor Vehicle Deaths in Twenty-six States," *Journal of Legal Studies* 16, no. 1 (January 1987), pp. 249-66.
³ Michael Grossman and Henry Jaffer, "Beer Taxes, the Legal Drinking Age, and Youth Motor Vehicle Fatalities," *National Bureau of Economic Research, Working Paper No. 1914*, May 1986.

Normative Analysis

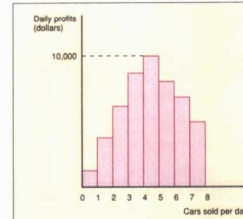
Positive analysis cannot be used to evaluate an outcome. For example, positive analysis of government welfare programs can look at the impact of such programs on the incentives of recipients to work and on national production but it cannot try to determine whether the programs are good or bad. To evaluate these programs' performance we must establish criteria or norms against which we'll compare actual outcomes.

Clear, easy-to-understand
graphs explain and illustrate
economic concepts.

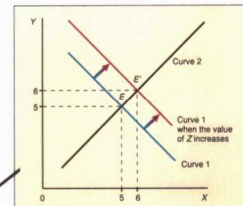
Principles in Practice boxes show students how economic topics relate to business, financial, personal, social, policy, and international issues.

Graphs CHAPTER 1 APPENDIX

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Box 7 A Bar Graph for a Discrete X Variable
The variable on the X axis cannot take on values for fractions. The relationship between profits and cars sold per day can be depicted as a bar graph rather than by a smooth curve. If, however, the units on the X axis were packed together more closely, the bars would become so thin that their tops would trace out a smooth curve like the one drawn in A of Box 6.



Box 8 Intersections
The intersection of curve 1 and curve 2 gives the value of X for which the value of Y is the same along both curve 1 and curve 2. Curve 1 is drawn under the assumption that the value of some third variable, Z, is fixed. If the value of Z increases, curve 1 moves to a new position and a new point of intersection, E', gives the value of X that corresponds to the same value of Y along the two curves.

INTERSECTIONS AND TANGENCIES

The graphs used in this book are two-dimensional. This means they plot values for two variables. In many cases, however, a third variable can be introduced in a two-dimensional graph by showing how changes in its value affect the values of the two initial variables.

Intersections

In many graphs drawn to facilitate economic analysis, two curves will be drawn on the same set of axes. The intersection of two curves is the point at which they cross. An intersection usually reveals some important economic information. The graph in Box 8 shows the intersection of two curves at point E. The value of X at this point is such that the corresponding value of Y is the same for the relationship indicated by curve 1 and that indicated by curve 2. (In Chapters 3 through 5 you'll have lots of practice in interpreting the intersections of two curves.)

Intersection
The point at which two curves drawn on the same set of axes cross.

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PART III Product Markets

tially increase costs of production and make it difficult for a firm to compete with its rivals. Offering incentives for advancement, providing on-the-job training, and rewarding productive workers for their efforts ultimately can result in greater profits for the firm's owners.

The Global Economy: World and International Focus
The Globalization of U.S. Business

You've probably heard quite a bit about the Japanese and other foreign businesses buying or building plants in the United States and acquiring U.S. businesses. It might surprise you to know that as of the early 1990s, the percentage of total corporate assets that U.S. companies held abroad was a whopping three times the percentage of Japanese corporate assets held abroad! Many large U.S. corporations are "global enterprises" investing heavily abroad. Their profitability no longer depends on the U.S. economy alone. In the late 1980s, U.S. business firms scrambled to build plants and acquire equipment in foreign nations. By 1988, U.S. nonfinancial corporations held nearly 17 percent of their business assets in foreign nations. This percentage was greater than that of any other nation of the world at that time.

U.S. corporations were using their foreign plants to supply goods and services to overseas markets, thereby using foreign workers and relying less on exporting. In some cases, U.S. companies produce the same product in plants throughout the world. For example, in 1989 Motorola Inc. had plants making electronic pagers in Florida and Kuala Lumpur, Malaysia. However, its design and engineering divisions were in the foreign plant.¹ Big corporations like Ford Motor Company are expanding their operations in Europe. A full 98 percent of the parts and machinery Ford uses to build its European cars are made in Europe rather than exported from the United States. Companies like Ford have concluded they can gain more market share abroad by producing their products there rather than by exporting them from the United States.

The plants that U.S. companies build in Europe are modern and efficient. Because labor costs in Europe are not generally lower than in the United States, reduction in labor costs is not a prime motive for such overseas investment. Instead, firms invest overseas to be closer to major markets they serve. For example, the tool-making Stanley Corporation has a major production facility for wood planes in Sheffield, England, where it produces all its planes (including those it sells in the United States). Stanley built its plant overseas because it reasoned that the European market was more important to its sales than the U.S. market. U.S. firms argue that the prime reason for globalizing their operations is to increase foreign sales abroad and therefore increase total profit. If they succeed in selling more and increasing profit, globalization of their business need not reduce job opportunities at home. On the contrary, insofar as their operations increase business income here and consumers' income abroad, it can in the long run increase the demand for U.S. products and contribute to an increase in domestic job opportunities.

All this globalization makes it difficult to distinguish American-made products from those that are imported. For example, when you buy a Zenith TV you might naturally assume that you are "buying American." However, Zenith produces TVs in Mexico while many TVs from Sony (a Japanese company) and Philips (a Dutch company) are produced in the United States.

In effect, the world has become a global production line with specific processes concentrated in various nations. It's no longer unusual to see goods at one stage of

¹ See Louis Uchitelle, "U.S. Business Loosens the Link to the Mother Country," *The New York Times*, May 29, 1989.



The Global Economy: World and International Focus discusses important international trade or global economic issues showing the increased international dimensions of the subject of economics.

Economic Thinkers boxes illustrate the ideas, contributions, and backgrounds of major figures in economic history.

The Business Firm CHAPTER 8

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the preceding example were \$200,000. Because annual accounting cost was \$90,000, the accountant would report an annual profit of \$110,000! Melissa, being shrewd, would realize that her actual economic profit was only \$27,000 that year. The normal profit for Melissa's store is \$83,000, the opportunity cost of her owner-supplied inputs. Suppose her annual sales revenues were instead only \$100,000. The accountant would report a \$10,000 annual profit. However, Melissa would realize that she actually lost \$73,000 based on her economic costs that year! She would go out of business as soon as possible if she didn't expect an improvement in sales.

Because economists always measure costs as opportunity costs, normal profit is always included as a cost of operating the firm. When measuring costs, remember that the normal profit is included in those costs because it's a measure of the value of owner-supplied resources.

- How do accounting costs differ from economic costs?
- Explain why profits calculated on the basis of accounting costs won't always accurately measure a firm's economic profits.
- What is economic profit? Explain why a firm for which total revenue exceeds its accounting cost for the year might really be incurring losses.

CONCEPT CHECK

SUMMARY

1. A business firm is an organization under one management set up for the purpose of earning profit for its owners by making one or more items available for sale in markets.
2. Business firms can be grouped according to industries selling similar products. Each firm might operate more than one physical facility, called a plant.
3. Sole proprietorships, partnerships, and corporations are different types of business organizations. Sole proprietorships and partnerships are owned by individuals, while corporations have a legal identity separate from their owners. A corporation is owned by its stockholders.
4. Limited liability is a legal provision that protects stockholders by limiting their liability for debts of the corporation to the amount of funds they invested by purchasing stock.
5. Corporate and noncorporate firms fulfill similar functions, including production of goods and services, assignment of tasks to workers, contracting with other firms, and personnel management.
6. Firms that supply themselves with all materials and services at all stages of production are vertically integrated. A firm's degree of vertical integration is influenced by the transaction costs of contracting with other firms for materials and services.
7. In analyzing supply decisions by firms, it's useful to make some simplifications by assuming that firms produce a single product and seek to maximize profits.
8. Profit over a certain period is the difference between a firm's total revenue and total cost over that period.
9. Economic cost is the monetary value of all inputs used in a particular activity or enterprise over a given period. Economic cost exceeds accounting cost by the value of the services of owner-supplied inputs. The value of the services of owner-supplied inputs is called implicit cost. Economic profits are always based on economic costs. Normal profit is the part of the firm's costs that is included in profit when profit is calculated on the basis of accounting cost instead of economic cost.

KEY TERMS

Business firm 215	Partnership 215	Personnel management 221	Accounting cost 225
Plant 215	Corporation 216	Multiproduct firm 223	Equity 225
Vertical integration 215	Dividend 216	Normal profit 228	Economic profit 228
Conglomerate 215	Retained earnings 216	Profit 223	
Industry 215	Limited liability 217	Economic cost 224	
Sole proprietorship 215	Manager 219	Implicit costs 224	

Key Terms are listed again at the end of the chapter with page numbers to help reviewing.

Concept Reviews check understanding of chapter objectives.

Problems and Applications help check understanding of important concepts in both expository and graphic form.

Concept Symbols refer back to chapter objectives and text discussions needed to answer questions.

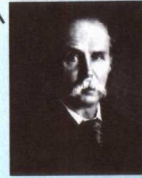
Suggested Readings list articles or selected chapters in textbooks and other reference works that will enhance comprehension.

Market Transactions CHAPTER 3

69

Economic Thinkers

Alfred Marshall



His decision to study mathematics instead of theology may have given the world one of its most brilliant and influential economists. Alfred

Marshall was born in London in 1842. Despite intense pressure from his ambitious father, Marshall declined a theological scholarship to Oxford and instead worked toward a master's degree in mathematics at Cambridge. After receiving his degree in 1865, he remained at Cambridge to teach mathematics, and it was there that he began seriously to study economics.

Because he admired the classical economic writers, such as Adam Smith and David Ricardo, Marshall initially concentrated on using his knowledge of mathematical principles to reinforce the tenets of the classical school. His first effort was to translate into mathematical equations the text of John Stuart Mill's *Principles*. As his ideas gained

acceptance, Marshall's influence grew. In 1885 he was appointed to the Chair of Political Economy at Cambridge, a position he retained for nearly 25 years.

In his ground-breaking *Principles of Economics*, published in 1890, Marshall set forth many of the principles that underlie contemporary microeconomic theory. Through his teachings and writings Marshall influenced many of the leading economists of succeeding generations. A century later, his *Principles* text still has much to offer an economics student. As you study supply and demand, elasticity, equilibrium, the short run, and the long run, reflect on the astonishing fact that each of these concepts originally was popularized by Alfred Marshall.

The Market Demand Curve and the Law of Demand

A **demand schedule** is a table that shows how an item's quantity demanded would vary with price, other things being equal. The table in Box 1 shows a hypothetical demand schedule for grade A eggs sold per week in a local farmers' market. The first column of the table shows possible prices per dozen eggs. The quantity demanded, shown in the second column, represents the weekly number of eggs that buyers are willing and able to purchase at each price. The schedule is based on the assumption that there's no change in any other demand influence except price. The schedule shows a number of possible outcomes in the market. The actual quantity purchased over the period depends on the price of eggs given all other determinants of the amount buyers will buy.

The data in the hypothetical demand schedule indicate an inverse relationship between price and quantity demanded. When price goes down, the quantity demanded goes up. For example, at a price of \$2 per dozen, the quantity of eggs demanded per week is only 1,000 dozen. At a price of \$1.50 per dozen, buyers would demand 3,000 dozen eggs per week.

The **law of demand** states that, in general, other things being equal, the lower the price of a good, the greater the quantity of that good buyers will purchase over a given period. Conversely, the law implies that buyers will purchase less of a good over any given period if its price increases while nothing else changes. The law is relevant to all goods and services, not just grade A eggs. For example, the lower the price of subway rides, other things being equal, the greater the quantity

Demand schedule

A table that shows how a good's quantity demanded would vary with price, given all other demand determinants.

Law of demand

The principle stating that, in general, other things being equal, the lower the price of a good, the greater the quantity of that good buyers are willing and able to purchase over a given period.

The **Summary** at the end of each chapter enumerates the important concepts just learned.

230 PART III Product Markets

CONCEPT REVIEW

1. How does a corporation differ from a sole proprietorship and a partnership? Why are most large business firms in the United States corporations?
2. List the functions of business firms and explain how a vertically integrated firm differs from a firm that is not vertically integrated.
3. What simplifications are usually made by economists to construct a model of supply by a business firm?

Why is the opportunity cost of using some resources in a business not included in cost as measured by accountants? Why must implicit costs be added to accounting cost to accurately measure economic profit?

PROBLEMS AND APPLICATIONS

1. How would you determine how to group firms into industries? How can you use the concept of elasticity of demand to help establish industry groups?
2. Suppose you're a management analyst for a fast-food chain selling meals similar to those at McDonald's. Make a list of the firm's inputs and outputs.
3. A major auto producer hires you to evaluate the desirability of acquiring a firm that produces tires. The firm would be vertically integrated into the auto firm and would produce tires only for use in new cars manufactured for sale by the company. What factors would you consider when making your evaluation of the acquisition?
4. Write an equation to calculate total revenue for a single-product firm. How would you calculate total revenue for a multiproduct firm? How would you calculate total profit for both of these firms?
5. A corporation earns \$100,000 profit. None of this profit is paid out as dividends to stockholders. What does the corporation do with the profits?
6. A corporation has assets valued at \$5 million. It also

has debts of \$2 million. What is the corporate equity? The next best use of funds tied up in the corporation is an investment that would earn a 10 percent annual return. What is the normal profit for the corporation?

7. If you were starting a new business, what factors would you consider before choosing to organize as a sole proprietorship or a partnership?
8. Your firm's accountant calculates that its annual profit is \$10,000. Under what circumstances will the firm's economic profit also be \$10,000?
9. You own a small retail clothing store that you manage yourself. You rent your facilities, but you have \$30,000 of your own funds tied up in the firm after making allowance for your debts. How would you calculate your implicit costs? How would you use these costs to supplement information provided by you on accounting costs?
10. "Normal profit really is a cost; that's why it isn't included in economic profit." Do you agree with this statement? Why or why not? What can cause normal profit to differ among firms?

SUGGESTED READINGS

Bail, Donald A., and Wendell H. McCulloch, Jr. *International Business: Interaction and Externality*. 3rd ed. Homewood, Ill.: Richard D. Irwin, 1990. This textbook discusses various aspects of international business.

Chandler, Alfred. *Strategy and Structure*. Cambridge, Mass.: MIT Press, 1962. This is a classic analysis of the impact of business organization on performance and cost.

Kono, Toyohiro. *Strategy & Structure of Japanese Enterprises*. Armonk, N.Y.: M.E. Sharpe, 1984. This is an intriguing and well-written analysis of the organization and goals of firms in Japan.

Nickels, William G.; James M. McHugh; and Susan M. McHugh. *Understanding Business*. 2nd ed. Homewood, Ill.: Richard D. Irwin, 1990. In this comprehensive textbook on all aspects of business enterprise, Chapter 4 details forms of business organization while Chapter 5 discusses practical problems involved in starting a small business.

Williamson, Oliver E. *The Economic Institutions of Capitalism*. New York: Free Press, 1985. Chapters 4 and 5 discuss issues in vertical integration of firms. Chapters 11 and 12 examine issues relating to the modern corporation.

Career Profile

Rhonda Williams



"How economists understand human behavior has a major impact on our culture," says Rhonda Williams, an assistant professor jointly in the economics and African-American studies departments at the University of Maryland. "Economics must constantly be critiqued because it can be too confining, but it's a good lens through which to begin your critical thinking."

Williams became interested in economics at the early age of eight, when her family moved to Athens, Ohio, for her father's job as a professor at Ohio University. The move exposed her to rural white poverty in Appalachia. "I had already learned something about black poverty through my parents' work in the civil rights movement," she recalls. "But now I saw that even some of my white classmates lived in shacks and had no dental care. This led me to think about systematic inequality and the question of where wealth comes from."

This early interest was followed in due time by an undergraduate degree in economics from Harvard and a Ph.D. from the Massachusetts Institute of Technology in 1983. Williams's first teaching job was at the University of Texas at Austin. She then taught at both Yale and the New School for Social Research in New York City. When she accepted her current job, she says,

"I was glad to be back at a state institution. It was a conscious choice on my part due to the composition of the student body—more blacks and more students from working-class backgrounds."

Williams knew early in her college years that she wanted to be a teacher/scholar. "I'm at the more privileged end of the teaching spectrum," she observes. "I spend about 30 percent of my time teaching, 30 percent on professional activities, and the balance on research." She's enthusiastic about her current research project, a National Science Foundation-funded empirical analysis of race/gender job competition and industry wage differentials. So far she's spent four years on the theoretical research and nearly a year building the data set. "It's a slow process, but it's rewarding to be able to do work that is both interesting and important to me as a political economist," Williams says.

Her professional activities keep her quite busy too. Williams is a member of the economic policy task force of the Joint Center for Political and Economic Studies and of the pay equity advisory committee of the Institute for Women's Policy Research. She also serves on the board of directors of the National Economic Association and the board of editors of the journal *Feminist Studies*. She's an associate editor of the forthcoming *Encyclopedia of Marxist Economics*. And she still finds time to write articles for a number of other journals, as well as organizing and speaking at conferences.

As for the third aspect of her career, Williams continues to enjoy teaching. "I consider education an active political process," she explains. Whether her students are conducting a voter registration drive or simply watching TV, she believes their knowledge of economics gives them an awareness of the contradictions and conflicts in what they observe and a sensitivity to change.

Williams opines that the most useful traits for master's or Ph.D. candidates in economics are self-confidence and good analytical skills. They should realize the university is as political as other major institutions where they will face the power plays, sexism, and racism endemic to hierarchies, so negotiating skills will also be useful. "Advanced study of political economics will help you put the world in context," she says.

Career Profiles introduces the diversity of careers available to those who major in economics.

Graphs

A Basic Tool for Analyzing Economic Relationships

CHAPTER
1
Appendix

Do graphs make you nervous? If so, relax—you're about to discover how helpful they'll be as you study economics.

Economists use graphs often to express relationships, such as the way the maximum possible production of one item is affected by the production of another item. Graphic analysis is a tool to aid you in learning economics and using it to reach important conclusions. Graphs show how the value of one variable changes as the value of some other variable is increased or decreased.

PLOTting POINTS ON A SET OF AXES

A two-dimensional graph has a vertical axis along which one variable, designated in general by the symbol Y , is measured. Another variable, the X variable, is measured on the horizontal axis. As the value of X changes, so will the value of Y .

The origin of the axes is the point, designated by 0, at which both X and Y take on values of zero. The axes drawn for most economic data are at a right angle, with measurement scales drawn horizontally and vertically from the origin, because most data used in economics are positive rather than negative. If, however, Y were to take on negative values, the vertical axis would have to be extended downward below the origin to accommodate negative values of Y . Similarly, if X were to take on negative values, the horizontal axis would have to be extended to the left of the origin to accommodate the points.

The table in Box 1 shows a relationship between X and Y . The second column gives the value of Y for each value of X in the first column. The pairs of numbers on each line of the table denote a *functional relationship* between X and Y . The functional relationship implies that the value of the Y variable changes as the value of the X variable increases or decreases. In this sense the value of Y depends on or is a function of the value of X . You can use the table to find the value of Y for each value of X or vice versa.

The data from the table in Box 1 are plotted on the set of axes shown in the graph next to the table. Each line of the table has been designated with a letter A followed by a number to identify the points on the graph. The point A_1 corresponds to the pair of values $X = 1$, $Y = 2$. When plotted, these numbers are called the *coordinates* of point A_1 . Similarly, when X is equal to 2, Y is equal to 3. These coordinates correspond to point A_2 on the graph. Point A_3 on the graph is the point at which X is equal to 3 and Y is equal to 4. Similarly, points A_4 and A_5 from the table are plotted on the axes and a line is drawn connecting each point. This line connecting the points corresponding to the coordinates of X and Y from the table depicts the relationship between X and Y . This line is called a *curve* even when its shape is not actually curved. Many of the curves depicting economic relationships in this book will be straight lines.

Origin
On a set of axes, the point designated by 0, at which variables X and Y both take on values of zero.

Coordinates
A pair of numbers that corresponds to values for variables X and Y when plotted on a set of axes.
Curve
A straight or curved line drawn to connect points plotted on a set of axes.

End-of-chapter **Appendixes** provide in-depth analysis of selected topics.

Glossary

A

Absolute advantage The advantage a nation has over other nations in the production of an item if it can produce more of the item over a certain period with a given amount of resources than the other nations can.

Accelerated depreciation allowances Generous deductions from pretax business income that are allowed when firms acquire new equipment or new structures.

Accelerationist hypothesis The theory arguing that attempts by policymakers to reduce the unemployment rate below the natural rate can succeed only in the short run.

Accounting cost Measures the explicit costs of operating a business—those that result from purchases of inputs services.

Acresage control programs Programs that provide cash payments to farmers who agree to take some of their land out of production for certain crops.

Aggregate demand A relationship between aggregate quantity demanded and the economy's price level.

Aggregate demand curve A graph that shows how the amount of aggregate domestic production demanded, measured by real GNP, will vary with the price level.

Aggregate expenditure The sum of consumption expenditures, investment expenditures, government purchases, and net exports during the year.

Aggregate household debt The purchasing power of the sums of money outstanding that households have borrowed and are currently obligated to repay.

Aggregate household wealth The purchasing power of all assets owned by households.

Aggregate purchases The market value of final goods and services that will be purchased at any given level of income.

Aggregate quantity demanded The amount of final products that buyers are willing and able to purchase at each possible price level.

Aggregate quantity supplied The quantity of final products that will be supplied by producers at a given price level.

Aggregate real income The nominal (money) income of a nation, adjusted for inflation. Equivalent to real GNP.

Aggregates Broad totals of economic variables such as production or unemployment.

Aggregate supply A relationship between the price level and aggregate quantity supplied.

Aggregate supply curve A graph showing how aggregate quantity supplied varies with the price level, other things being equal.

Allocative efficiency A condition achieved when resources are allocated in ways that allow the maximum possible net benefit for their use; attained

when all possible mutual gains from exchange are enjoyed.

Antitrust statutes Laws seeking to prevent "unfair" business practices that give rise to monopoly power.

Automatic stabilizers Features of the federal budget that automatically adjust net taxes to stabilize aggregate demand as the economy expands and contracts.

Autonomous consumption The portion of annual consumer purchases that is independent of, and not affected by, current disposable income.

Autonomous purchases Purchases such as investment or autonomous consumption that cause the economy's aggregate purchases line to shift.

Average cost Total cost divided by the number of units of output produced over a given period. Also called *average total cost* or *unit cost*.

Average fixed cost Fixed cost divided by the number of units of output produced over a given period.

Average input cost The price of an input.

Average product (of an input) The total output produced over a given period divided by the number of units of that input used.

Average revenue Total revenue per unit of a good sold.

Average tax rate The amount of taxes paid divided by the dollar value of the item taxed.

Average variable cost Variable cost

End-of-book **Glossary** provides a ready reference of key terms defined in the text and the margins.

The second new feature, **Inside Information**, highlights the sources and uses of economic information. To effectively operate in the modern world requires information. Each of the 10 parts of this text opens up with a feature that helps you learn *where* to go to get economic information. You will learn the important sources of federal government data and of business-related data. This information will be useful to you for term papers and will help you later on as you move into a career as a guide to information that you will need to perform your job.

You'll encounter throughout the text a series of profiles of leading economists entitled **Economic Thinkers**, ranging from Adam Smith to Karl Marx. These profiles provide information about the subjects' major contributions to economic thought and also offer some intriguing personal sidelights. Additionally, to give you an idea of the diversity of careers available to students who choose to major in economics, we present a series of **Career Profiles**. Although there is as much as a 45-year age span among our subjects, and although they are enjoying success in widely different fields, they all have one important thing in common: a degree in economics.

The **Summary** at the end of each chapter enumerates the important concepts you've just learned; the **Concept Review** gives you one more check of your understanding of the chapter objectives; and the **Problems and Applications** give you the opportunity to demonstrate your understanding of these concepts in both expository and graphic form. Like the Concept Checks, these end-of-chapter features are helpful review aids.

At the end of each chapter is a list of **Suggested Readings**: articles or selected chapters in textbooks and other reference works that will enhance your comprehension of key material you've just studied. Go to the **library** and find these readings. You may be surprised to discover how much they can add to your growing store of knowledge about economics.

USE THE STUDY GUIDE

Accompanying *Economics* is an excellent Study Guide prepared by Donald P. Maxwell of Central State University, Edmond, Oklahoma. Each chapter contains learning objectives, a fill-in summary of chapter content, vocabulary exercises using key terms, and a series of activities—work with graphs, fill-in charts and tables, completion exercises, and

more. These exercises are followed by a mini-exam to check your learning and to help you prepare for taking your exams. Time invested with this invaluable resource will yield maximum returns for you.

TALK TO YOUR INSTRUCTOR

Your instructor is an experienced, knowledgeable professional who wants to serve as a resource for you and your classmates. If you consider this text a blueprint for the study of the relationships among economic principles, your instructor can provide the guidance you need to comprehend and connect the details of the blueprint and can serve as your interpreter as you learn the language of economics. In class and after class, ask your instructor questions. Challenge points you disagree with; request clarification of those you don't fully understand. Ask your instructor to recommend additional readings; seek his or her advice about career paths.

KEEP UP WITH CURRENT EVENTS

People in business read a variety of publications; among them are *The Wall Street Journal*, *The Economist*, *The New York Times*, *U.S. News & World Report*, *BusinessWeek*, and *Fortune*. Alone and in combination, these resources contain a wealth of information you'll find pertinent to your study of economics. All of these publications are available free at your library, and you should plan to become a regular reader. Their analyses, editorials, and features will bring into sharp focus the material you'll



Newspapers, weekly magazines, and business publications are a major resource for understanding economic principles in action.

be studying, from the economics of pollution control to the cost of agricultural subsidies and government assistance to the poor. In the pages of these publications you'll be introduced to new industries and growing companies (your future job market!); to talented young entrepreneurs and corporate leaders with decades of experience; to high government officials and foreign heads of state. Reading these publications regularly gives you the chance to expand your horizons beyond the classroom and to see how the economic principles you're learning work in the real world.

YOUR FRIENDS ARE RESOURCES, TOO

Talk to your classmates outside of class. Discuss what you're learning and how it fits in with your curriculum and your ambitions. Their interests, family backgrounds, job experience, and career plans can be a productive resource for you. Classmates may be related to or acquainted with someone who's succeeding in a career to which you're attracted—and you may be helpful to them in the same way. Consider forming a study group for review and discussion of the material you're covering, or enhance your personal interaction skills by organizing a team to prepare a class project.

CONSIDER ECONOMICS AS A MAJOR

Talk to or read about people who have degrees in economics. You'll find them in literally dozens of fields. The Career Profiles in the book show you just a few of the choices that can be made, but you'll find



The study of economics can lead to success in a diversity of careers.

economics majors are succeeding as entrepreneurs, diplomats, bankers, journalists, Cabinet heads, corporate leaders, consultants, judges, and politicians.

Because economics is such a wide-ranging discipline, it's an excellent adjunct to many programs of study. If your major is business administration, political science, or international relations, a minor in economics will provide valuable insights into the contemporary social environment. If you elect to concentrate in marketing or finance, you can profitably pursue economics as a second major or a minor. A pairing of economics and journalism can help you lay the groundwork for a successful career in business communications. An undergraduate degree in economics also serves as an excellent foundation for graduate work in a variety of fields: business, law, public administration, and health, to name a few.

If you decide to become a professional economist, you almost certainly will need a graduate degree and will be pursuing career opportunities in business, teaching, research, or government. The National Association of Business Economists publishes a helpful booklet, *Careers in Business Economics*,¹ that describes the responsibilities of economists in government, insurance, banking, consulting, investments, industry, and communications. The booklet also outlines the education requirements for business economists and provides information on salaries.

APPLY ECONOMICS IN YOUR LIFE

Above all, recognize that your "laboratory" for economics is no less than the world you live in. In this wider environment are valuable examples that will reinforce the economics you'll be learning from this text and from your class discussion. Be in tune with these applications wherever you find them—news-papers, magazines, television and radio; or from discussions with teachers, friends, and family; or from the everyday experiences of your own life.

I think you'll find that in all your endeavors, you'll be well served by the discipline of the economic way of reasoning. It's hard to think of a situation in which you wouldn't benefit from thinking logically and weighing alternatives. Good luck as you begin your exciting adventure.

D. N. H.

¹ Copies of this booklet may be obtained from the National Association of Business Economists, 28349 Chagrin Blvd., Suite 201, Cleveland, OH 44122. Single copies are free; quantity discounts are available.

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Prologue

THE GLOBAL ECONOMY AND YOUR FUTURE

As we approach the year 2000 the United States is becoming more and more connected to a vast global economy it no longer dominates. Since 1960 we have become increasingly dependent on foreign suppliers to obtain such basic products as petroleum. Over the same period, U.S. businesses have looked abroad and are selling more, opening up branches, and setting up production lines in foreign lands.

Our livelihood and standard of living today is more than ever affected by international developments. To function effectively in the modern global economy, a knowledge of basic economic principles and an understanding of the consequences of international competition are required.

One has only to look around to be convinced of the reality of the new global economy. For example, did you know that over one quarter of the cars sold in the United States today are Japanese brands? Japan's prominent position in the U.S. car market might not be a surprise, but it is startling to realize that many of the Japanese cars Americans drive are produced in factories located right here in the United States. As of 1990, the Japanese operated eight automobile assembly plants in the United States, and their production in those plants accounted for about one-fifth of the cars produced in the nation!

Just as Japan has built factories in the United States, so have U.S. firms built production facilities abroad. For example, Texas Instruments Inc. has a major software development facility located in Bangalore, India. This facility is linked by satellite to the company's headquarters in Dallas. Improvements in communication such as improved computers, the facsimile machine, and satellite communications make it as easy to get information from foreign locations as it is to pick up the telephone and call a coworker in the office across the street. American business moved aggressively in the 1980s to set up assembly lines and service facilities in foreign countries where workers are willing to accept lower wages than those paid in the United States.

Sales, as well as production, of companies have also taken on a greater international dimension. For example, the Colgate-Palmolive Company, as of the beginning of the 1990s, was selling more toothpaste and toiletries outside of the United States than it was selling to consumers in this country. The Hewlett-Packard Company, a major U.S. producer of electronic products, recently moved its personal-computer headquarters to France because of its conviction that Europe will be the hottest

Both imports and exports have become increasingly important for the U.S. economy.



market for PCs in the 1990s. As of 1990, half of Hewlett-Packard's sales of computers were accounted for by foreign buyers. Now more than ever, U.S. businesses and workers are dependent on exports to provide them with income. Americans enjoy the opportunities to purchase a multitude of goods and services from foreign producers, and we're spending larger portions of our income on imports than ever before.

During the 1980s, U.S. businesses sold 11 percent of domestic production abroad—a sharp increase from previous performance. During the 1960s, only 6 percent of U.S. production was exported. Similarly we're importing more goods and services today than we did in the past. In the 1960s, only 6 percent of total purchases in the United States were of imports. In the early 1990s, Americans were allocating 13 cents of each dollar spent on goods and services to imports. Just examine your own wardrobe and your possessions for testimony of this trend. The VCR you own is produced abroad, and it is also likely that your stereo equipment and camera were imported—and probably your shoes and sweaters as well. On the other hand, U.S.-built aircraft are proudly flown throughout the world by foreign flag carriers, and Soviet citizens in Moscow are waiting in line eager to taste the delights of an American "Big Mac."

The world is moving toward freer exchange of both goods and services and of ideas. As of 1992, nations of the European Community will allow unrestricted trade and investment among their member nations. This means that European borders will not prevent European businesses from taking advantage of economic opportunities for profit as they arise.

Inevitably, government officials and politicians must take into account the reaction to changes in policies not only in the U.S. but also abroad. International finance of investment has become commonplace in the modern global economy. Fluctuations