PRINCIPLES OF

# MICROECONOMICS


FRED M. GOTTHEIL

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To my wife Diane

To my children, Lisa and Joshua,
who grew up together, not just as
sister and brother, but as best friends

# PREFACE

At the end of fall semester a few years ago, I told my class of 1,000 Economics 101 students that I wanted to see how much of the course they would be able to recall four months after the final exam. I asked them to take a post-final exam in early April, covering the same material. A few hundred showed up to take the April exam. The results were instructive, and perhaps not too surprising.

These were very bright students. The scholastic entrance requirements to the University of Illinois are quite high. During the semester, they were able to handle the math and graphs without difficulty. Yet, when it came to the April exam—only four months after the final—there was much confusion explaining, and even more graphing, market equilibrium, national income determination, and other basic ideas.

If I ever thought that the analysis offered in lectures and in the textbook is what students really ingest during the semester, that thought was very quickly dispelled.

Why is the half-life of what we teach so short? Are we trying to teach too much? *Is our basic principles course getting away from being an analysis of basic principles?* Have we forgotten that there is an opportunity cost every time we add material to a course or textbook? Are our textbooks more plumbers' manuals on technique than analyses of a social science subject? What do we want our students to know? Can we talk to our students and be heard?

I wrote this textbook with these questions in mind. It is written for the student, not for the professor. These are two very different readers. To my surprise, I found it difficult to keep the focus on the student who comes to the material without prior knowledge. It was much easier to write to the professor. Most of my rewriting had to do with correcting the focus. Much of the differences in style, content, and depth of analysis between my text and the others on the market reflects this focus. My preference was to sacrifice the number of topics for depth and to present the basics in as non-threatening a style as possible.

A major problem I confronted in every chapter was what material to exclude while still covering the basic principles with analytic rigor. I chose to challenge the student holding a yellow highlighter. If I could get that student to read without highlighting, perhaps I could light a fire in the student's mind. This book is my answer to that challenge.

## AN APPROACH TO MICROECONOMICS

How do you make fixed and variable costs seem important so that students see the connection between these costs and their own personal experiences? Perhaps by engaging them directly in the world of economic enterprise. In this book, students become the focus of economic activity. I ask them to consider setting up a business, making each of them a decision maker who purchases factors of production, chooses the scale of production, worries about prices, and determines how to calculate profit and loss. In this way, the economic concepts emerge naturally and take on a very real meaning.

### The Use of Continuing Scenarios

The core chapters maintain a continuing storyline. I put the student on an island economy where fish is the staple food and commercial fishing a commonplace economic activity. The student sets up and runs a fishing firm. Fishing is something students can easily visualize and imagine themselves doing. The technology involved is relatively uncomplicated and the product—fish—is familiar and about as close to a homogeneous product as there is. The competition that takes place in the fish market, with price responding to changes in demand and supply, is also very immediate.

The fishing scenario anchors the chapter on supply and demand and several chapters that follow. It is used in analyzing price controls, appears in Chapter 7 on business organization, is the centerpiece in the Chapter 8 on costs of production, and appears later in Chapter 9 on maximizing profit. Using this format, the economic concepts build on each other.

In the chapters on price determination, the analysis shifts to the ice-making industry (ice is used by the fishing industry). The student, still in the fishing world of earlier chapters, sees the ice-making firm first as a monopoly. Then, as more firms enter with product differentiation, the monopoly dissolves into monopolistic competition, and finally into perfect competition. In the chapters on factor pricing, the setting changes completely to the coal mining industry in Harlan County, Kentucky. The same coal mining scenario appears in Chapter 15 on wage determination under competitive conditions, in Chapter 16 on monopsony and unions, and finally in Chapter 18 on interest rate determination.

## Teaching the *MC* = *MR* Rule

The importance of the profit maximization rule of $MC = MR$ cannot be overstated. In most texts, this paramount idea first appears in the context of price determination in perfect competition. It reappears again in each of the market structure chapters. I was never happy with this traditional approach. Why? It forces students to fight their way through to $P = MR = MC = ATC$, while simultaneously trying to grasp marginal revenue analysis and digest the significance of the $MC = MR$ rule. That may seem like a reasonable enough exercise to professors. However, to beginning students and nonmajors—who were probably warned through the grapevine that economics is difficult and boring—this presentation of the material may be ample confirmation. I think there is a better way to introduce one of the most important ideas we teach in micro theory.

In this book, a complete chapter—Maximizing Profit—is devoted to the idea. This chapter appears before we discuss the intricacies of market structures and price determination. Profit maximization is followed by Chapter 10, Identifying Markets and Market Structures, which examines the outstanding characteristics of each market structure. This allows for an early comparison of market structures. The stage is then set for price determination in each market *which is done in one chapter.* With the $MC = MR$ rule already thoroughly developed and the various markets described, $MC = MR$ is both the organizing principle of the chapter and the universally applied rule. Price analysis focuses on this one central idea.

This approach is not only logical, but even more important, makes it easier for students to understand and retain the principles. Incidentally, I begin price determination in Chapter 11 with monopoly, then move to monopolistic competition, and conclude with perfect competition. Because students are already familiar with the downward-sloping demand curve (from Chapter 3 on supply and demand), I can show its connection to monopoly pricing. Then, I can explain why the demand curve becomes flatter as more firms enter the market. This leads to a discussion of monopolistic competition and finally to perfect elasticity in perfect competition. In this way, I avoid throwing a horizontal demand curve right at them from out of nowhere.

## THE TEXT'S STYLE

I have emphasized that this text was written for the student, not for the professor. This is a commitment I made to myself when I started the project years ago. If nothing else sets this textbook apart, this does. My idea has been to make economics exciting, to show its importance in our everyday business of life and to get students to understand the economists' way of thinking. I tried always to keep the analysis within reach of students. Make it real, even personal. Allow them to enjoy the subject matter, not just to think about the coming exam.

We absorb ideas in many ways: through our heads, our hearts, and our innards. An idea that stirs you emotionally has staying power. If you can feel it in your bones, it becomes more than an intellectual exercise. I kept that in mind in every chapter and in every paragraph written. The style is intentionally conversational, but the discussion is always serious. If the story is really understood, it will be remembered. Economists have something to say. That's what my textbook is about.

## USE OF PERSONAL NAMES

I believe that economics is about people. As you read through the chapters, you can't help but see many, many names that personalize the discussion. Claudia Preparata buys fish, Diane Pecknold inherits a tobacco farm, Charles Edwards owns a coal mine, Nick Rudd is in the ice-making business. These, along with over 90 more, are real people. They are all friends of my son Joshua who died in 1989, age 19, a victim of lymphoma. The textbook is my way of honoring Josh and honoring as well the beautiful people who were a part of his life.

## THE TEXTBOOK'S ACCESSORIES

### Study Guide

A Study Guide is the students' principal *reality check*. Do they really know the material? It must be not only student-friendly, but a companion piece that reflects the text's heart and soul. Too often, study guides are written by individuals whose connection to the text author is via e-mail. The study guide becomes generic. Not so here. David Wishart, professor of economics at Wittenberg University, who wrote the Study Guide, is not only a close friend but an outstanding teacher who began his teaching career working with me in the principles course at Illinois. We have worked on this project together for a long, long time. His Study Guide captures the spirit of the text, making it that much easier for students to use.

### Instructor's Manual

An Instructor's Manual is the one private connection between the classroom instructor and the author. As the text author, I felt it was important to the instructor, particularly the first-time instructor, that I write the manual myself. The manual is a companion piece to the text. It provides ideas on how to approach each chapter, tips on how to present the chapter's material, and alternative illustrations that can be used to explain points of theory and policy. It also discusses how to turn student questions into teaching opportunities. In each chapter of the manual, the corresponding text chapter outline and its key terms are included for easy reference. The manual also provides detailed answers to the many questions that appear at the end of each chapter in the text.

### Test Bank

The Test Bank that accompanies my text includes over 3,000 objective questions, including many that I have written myself. Robert Toutkoushian of the University of Minnesota assembled this test bank, which is available in both printed and computerized formats.

### Student Software

In this age of computing, no text package would be complete without tutorial software. The software that accompanies this text will give students a different slant on the material and help draw them into the subject.

## Other Supplements

A set of acetate transparencies is available to adopters of the text. These transparencies were chosen to illustrate key ideas in the micro principles course. They were carefully prepared the ensure that they are legible when projected as overheads.

The same set of images is also available on PowerPoint slides for computer-assisted lecturing. These slides employ transitions that suggest relationships between ideas for maximum presentation impact.

One other ancillary item will be especially helpful to students. The Graphing Primer, prepared by Rob Toutkoushian, takes them step by step through the processes of interpreting, understanding, and creating graphs.

# ACKNOWLEDGMENTS

I am grateful to many people for help and encouragement throughout the development of this textbook. Many came to the project in a strictly professional capacity; most ended up as good friends. I owe them more than they believe is their due. At the beginning, George Lobell was enthusiastic about the idea of the textbook and believed that it would make a difference in the profession. He read many chapters, stayed in close touch, and still does. I thank this textbook for introducing me to George. David Wishart was a dear friend before we started the project, and working together on this textbook added another dimension to our friendship. Tricia Nelson and Pat Wakeley were development editors whose skills improved earlier versions of this manuscript immensely. Jack Calhoun, South-Western's economics editor, sold me on the idea of the team concept of publishing. It was Dennis Hanseman, the development editor at South-Western, who saw the project to completion. Responding to Dennis was like taking prelims all over again. But he made it all work. I owe him much, and thank him for his patience and his friendship. Finally, Craig Ramsdell, Rebecca Roby, and Laura Cleveland played major roles in translating my word-processed drafts and rough sketches into the pleasing book you hold in your hands.

During this book's long gestation period, I have benefited from the comments and suggestions of many reviewers. My heartfelt thanks go to the following economists. This book is much improved because of their efforts.

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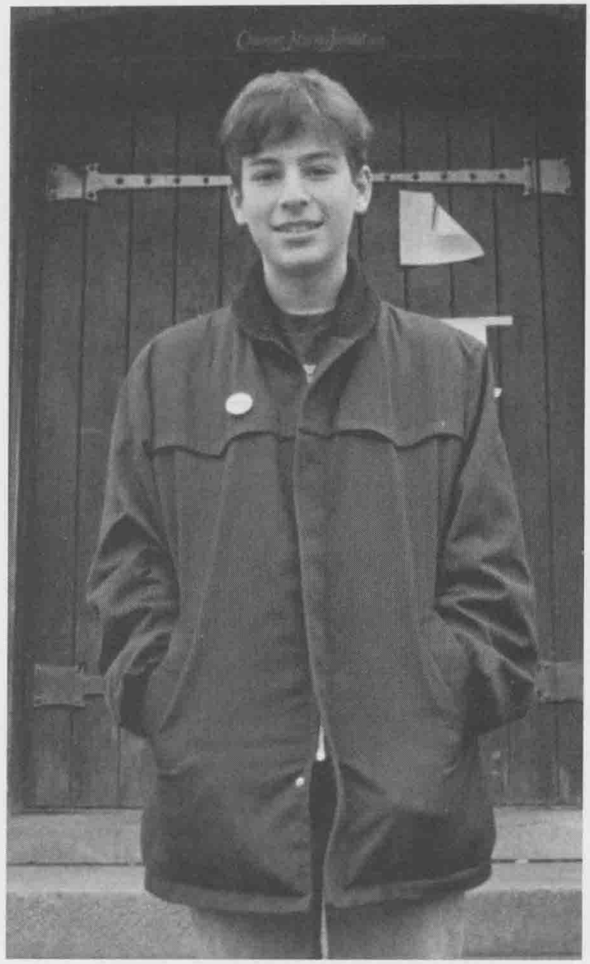
*Fred Gottheil*
*University of Illinois*

# Farewell

'His eyes would light up and he'd talk fast
and you couldn't help being excited
about the band or record
he'd discovered, too.'


News-Gazette file photo

Part of being young is the feeling of being indestructible. Josh Gottheil, who died last month after a two-year battle against leukemia, probably understood that he wouldn't live forever. But he never stopped working to bring the music he loved to the world around him. Rock and roll would carry on.

The punk movement—simultaneously cynical and realist and suicidal and idealistic—tried in a frenzy to wipe out the commercialism and mass media hallucination which blurred life's realities, even unpleasant ones like death. There were bands named Dead Kennedys, Dead Milkmen, the prototype Dead Boys, and Gottheil's local band, Dead Relatives.

When he was only a sophomore in high school, Gottheil became a drummer for the short-lived band, but he was no angry punk. He heard the message in the music and he set out, ambitious at a tender age, to deliver it to the community.

At 17, he already had promoted dozens of concerts for teens in community centers and church foundations. He was the least pushy music promoter I ever met, enticing me to see at least one political rock and folk concert through his complete, quiet reticence.

It was the music that spoke to and through him.

At one concert he arranged, I watched Billy Bragg and Michelle Shocked get their introductions to the area. And I saw Josh, standing by the door at Mabel's, anxious to see that the message and the feeling came across.

His bands rarely disappointed.

Among the many other national bands he brought to Champaign's clubs were Living Colour, They Might Be Giants, Soul Asylum, Throwing Muses, Jane's Addiction, Dead Milkmen, Husker Du, Let's Active, Timbuk 3, Ministry, and the Pixies.

"The scene wouldn't be what it was today without Josh," said Chris Corpora, an area rock promoter of Trashcan Productions. "He didn't look the part and he risked his own money.

About four years ago he started teen nights when there was a lull in the scene. I don't want to deify him, but he had an incredible will, poise, and the wherewithal to get contracts signed and do things he probably shouldn't have been able to do. When I was 15, I couldn't even read a contract."

Even in the hard-core punk scene, Josh maintained a romantic side, often bringing roses for the girls in his favorite bands, notably Throwing Muses and the Pixies.

"He was always in love with every girl in a band," said Katy Spack, one of many people who considered Josh a best friend.

"He made friends with the Pixies and we flew to California to see them play in San Francisco," Spack said. "They invited him on stage to sing."

For a couple of summers, he worked at the desk at Crystal Lake Pool, announcing the adult swim and checking in bags. After high school, he took some college classes in philosophy and math at Parkland and at the UI, where his father, Fred, is a professor of economics. When he got sick, "it didn't look like he needed to go to college," according to Spack. "He was real busy doing all the music and he always had a lot of money. He was the only 16-year-old that had $2,000 in his checking account."

Another friend, Shara Gingold, actually wrote a book about her crush on Josh.

"He was two years older. The book is called 'I Love You, Josh. Do You Even Know I Exist?'," said Gingold, who lives in Urbana. "I think that it was (the fact that) he was very understanding and caring. We'd meet to play tennis and then we'd just sit and hit the tennis ball against the wall and talk about everything."

Last year, his health started to improve. He gained weight. He was working at Record Swap, surrounding himself in music during the day for the concerts he promoted at night. He had teamed with Chicago promoter Tony Polous, established a limited partnership called Concert One Productions, rented an office in Chicago's Mercantile Building, and developed the financing for big arena shows.

"Josh was destined to be huge," said Polous from the Chicago office. "He was the most effective, easy-going person I ever met. It's not hard to master being pushy and strong. Josh mastered being effective in an unassuming way.

"When he had to go back to the hospital, he never let on how sick he was. Every day I'd call him and he'd ask about what this manager was doing or that agent and he'd make decisions. We never really talked about his health. I never thought he was going to die. I think about him every day."

Despite his illness, Josh moved to Chicago last fall to be immersed in the music business.

"It was a chance, a break, an exciting thing to do. The world was his to conquer," said Fred Gottheil from his UI office. "I remember going up to visit and spend the night. The wind was howling, but he was so proud of the apartment. He was designing tickets on his computer, telling me (about) all the bands he had booked, his new ideas, bubbling with enthusiasm for the possibilities. The move was exhilarating for him. He called home quite frequently, but (Chicago) was where he had to be."

Said former Champaign-Urbana DJ Charlie "The Quaker" Edwards, who shared the Chicago apartment, "He had a real vitality, youth, and infectiousness. His eyes would light up and he'd talk fast and you couldn't help being excited about the band or record he'd discovered, too. Even though there was almost 20 years age difference between us, we'd listen to albums and talk about the bands and share a mutual excitement.

"He was a really good, serious businessman. Much better than I could have been, always dealing with five shows at once. He really loved it, too. He just loved the music."

"Definitely, there are people who are into (punk) because it is a fad," Gottheil said three years ago. "But for the people who really believe in it, it won't die for them."

Josh Gottheil died April 4 at Barnes Hospital in St. Louis, three months short of his 20th birthday. There was a turn-away crowd for his funeral on April 7 at the Sinai Temple in Champaign. Because he did so much to bring a new attitude about music in this area, one of the bands he helped find national prominence, Throwing Muses, has donated its performance at a benefit concert this Sunday at Mabel's, with proceeds going to the Josh Gottheil Memorial Fund for Lymphoma Research.

# GLOSSARY

## A

**Absolute advantage** A country's ability to produce a good using fewer resources than the country it trades with.

**Accounting profit** A firm's total revenue minus its total explicit costs.

**Antitrust policy** Laws that foster market competition by prohibiting monopolies and oligopolies from exercising excessive market power.

**Appreciation** A rise in the price of a nation's currency relative to foreign currencies.

**Arbitrage** The practice of buying a foreign currency in one market at a low price and selling it in another at a higher price.

**Average fixed cost (AFC)** Total fixed cost divided by the quantity of goods produced. AFC steadily declines as more of a good is produced.

**Average revenue** Total revenue divided by the quantity of goods or services sold.

**Average total cost (ATC)** Total cost divided by the quantity of goods produced. ATC declines, reaches a minimum, and then increases as more of a good is produced.

**Average variable cost (AVC)** Total variable cost divided by the quantity of goods produced. AVC declines, reaches a minimum, and then increases as more of a good is produced.

## B

**Balance of payments** An itemized account of a nation's foreign economic transactions.

**Balance of trade** The difference between the value of a nation's merchandise exports and its merchandise imports.

**Balance on capital account** A category that itemizes changes in foreign asset holdings of a nation and that nation's asset holdings abroad.

**Balance on current account** A category that itemizes a nation's imports and exports of merchandise and services, income receipts and payments on investment, and unilateral transfers.

**Balanced oligopoly** An oligopoly in which the sales of the leading firms are distributed fairly evenly among them.

**Brand loyalty** The willingness of consumers to continue buying a good at a price higher than the price of its close substitutes.

**Brand multiplication** Variations on essentially one good that a firm produces in order to increase its market share.

## C

**Capital** Manufactured goods used to make and market other goods and services.

**Capitalism** An economic system in which primary productive property, capital, is owned and managed by individuals. Production of goods and services and distribution of goods and services are determined by market forces. Economic liberty is a highly valued goal.

**Cartel** A group of firms that collude to limit competition in a market by negotiating and accepting agreed-upon prices and market shares.

**Cash assistance** Government assistance in the form of cash.

**Ceteris paribus** The latin phrase meaning "everything else being equal."

**Change in demand** A change in quantity demanded of a good that is caused by factors other than a change in the price of that good.

**Change in quantity demanded** A change in the quantity demanded of a good that is caused solely by a change in the price of that good.

**Change in supply** A change in quantity supplied of a good that is caused by factors other than a change in the price of that good.

**Circular flow model** A model of how the economy's resources, money, goods, and services flow between households and firms through resource and product markets.

**Closed shop** An arrangement in which a firm may hire only union labor.

**Collective bargaining** Negotiation between a labor union and a firm employing unionized labor to create a contract concerning wage rates, hours worked, and working conditions.

**Collusion** The practice of firms to negotiate price and market-share decisions that limit competition in a market.

**Communism** A stateless economic system in which productive property is owned and managed by the community. People contribute to the production of goods and services according to their abilities, and distribution of the goods and services is made according to their needs.

**Comparative advantage** A country's ability to produce a good at a lower opportunity cost than the country with which it trades.

**Complementary goods** Goods that are generally used together; when the price of one increases, the demand for the other decreases.

**Concentration ratio** A measure of market power. The ratio of total sales of the leading firms in an industry (usually four) to the industry's total sales.

**Conglomerate merger** A merger between two or more firms in unrelated industries.

**Constant returns to scale** Costs per unit of production are the same for any level of production. Changes in plant size do not affect the firm's average total cost.

**Constant slope of a curve** A curve that takes the form of a straight line.

**Consumer sovereignty** The ability of consumers to exercise complete control over what goods and services the economy produces (or doesn't produce) by choosing what goods and services to buy (or not buy).

**Consumer surplus** The difference between the maximum amount a person would be willing to pay for a good or service and the amount the person actually pays.

**Contestable market** A market in which prices in highly concentrated industries are moderated by the potential threat of firms entering the market.

**Corporate bond** A corporate IOU. The corporation borrows capital for a specified period of time in exchange for this promise to repay the loan along with an agreedupon rate of interest.

**Corporation** A firm whose legal identity is separate from the people who own shares of its stock. The firm alone, not the people who own it, is responsible for all debts incurred by the firm. The liability of each stockowner is limited only to what he or she has invested in the firm.

**Countervailing power** The exercise of market power by an economic bloc is ultimately counteracted by the market power of a competing bloc so that no bloc exercises undue market power.

**Craft union** A union representing workers of a single occupation, regardless of the industry in which the workers are employed.

**Creative destruction** Effective competition that exists not among firms within highly concentrated industries but between the highly concentrated industries themselves. Such competition assures competitive prices.

**Cross elasticity of demand** The ratio of a percentage change in quantity demanded of one good to a percentage change in the price of another good. Its value expresses the percentage change in quantity demanded of one good generated by a 1 percent change in the price of the other.

**Customs union** A set of countries that agree to free trade among themselves and a common trade policy with all other countries.

## D

**Debt service** Interest payments on international debt as a percent of a nation's merchandise.

**Demand curve** A curve that depicts the relationship between price and quantity demanded.

**Demand schedule** A schedule showing the specific quantity of a good or service that people are willing and able to buy at different prices.

**Dependent variable** A variable whose value depends upon the value of another variable.

**Depreciation** A fall in the price of a nation's currency relative to foreign currencies.

**Deregulation** The process of converting a regulated firm into an unregulated firm.

**Devaluation** Government policy that lowers the nation's exchange rate; its currency instantly is worth less in the foreign exchange market.

**Dialectics** A process describing the simultaneous growth and destruction of economic systems.

**Differential land rent** Rent arising from differences in the productivity of land.

**Discrimination in labor markets** The practice by firms that denies qualified workers their marginal revenue product (MRP) either by excluding them from competing in a labor market or by paying them less than other workers with identical skills.

**Diseconomies of scale** Increases in the firm's average total cost brought about by the disadvantages associated with bureaucracy and the inefficiencies that eventually emerge with increases in the firm's operations.

**Dividend** That part of a corporation's net income that is paid out to its stockholders.

**Dumping** Exporting a good or service at a price below its cost of production.

## E

**Econometrics** The use of statistics to quantify and test economic models.

**Economic efficiency** The maximum possible production of goods and services generated by the fullest employment of the economy's resources.

**Economic model** An abstraction of an economic reality. It can be expressed pictorially, graphically, algebraically, or in words.

**Economic plan** A set of production targets for all goods and services determined in advance by the state which are consistent with the economy's supply of the resources. The resources are allocated in such a manner (using input-output analysis) as to implement the predetermined production targets.

**Economic profit** A firm's total revenue minus its total explicit and implicit costs.

**Economics** The study of how people work together to transform resources into goods and services to satisfy their most pressing wants, and how they distribute these goods and services among themselves.

**Economies of scale** Decreases in the firm's average total cost brought about by increased specialization and efficiencies in production realized through increases in the scale of the firm's operations.

**Elasticity** A term economists use to describe sensitivity.

**Engel's Law** The observation that income elasticities of demand for food are less than one.

**Entrepreneur** A person who alone assumes the risks and uncertainties of a business. The entrepreneur conceives the idea of the business, decides what factors of production to use, and determines how to market the goods and services produced.

**Equilibrium price** The price that equates quantity demanded to quantity supplied. If any disturbance from that price occurs, excess demand or excess supply emerges to drive the price back to equilibrium.

**Equipment capital** The physical plant, machinery, and raw materials that a firm uses in production.

**European Economic Community (EC)** A customs union consisting of France, Italy, Belgium, Holland, Luxembourg, Germany, Britain, Ireland, Denmark, Greece, Spain, and Portugal.

**Excess demand** The difference, at a particular price, between quantity demanded and quantity supplied, quantity demanded being the greater.

**Excess supply** The difference, at a particular price, between quantity supplied and quantity demanded, quantity supplied being the greater.

**Exchange controls** A system in which government, as the sole depository of foreign currencies, exercises complete control over how these currencies can be used.

**Exchange rate** The number of units of foreign currency that can be purchased with one unit of domestic currency.

**Explicit costs** The firm's opportunity costs that take the form of cash payments.

**Exports** Goods and services produced by people in one country that are sold in other countries.

**Externalities** Unintended costs or benefits that are imposed on unsuspecting people and that result from economic activity initiated by others. Unintended costs are called negative externalities; unintended benefits are called positive externalities.

## F

**Factor of production** Any resource used in a production process. Resources are grouped into labor, land, capital, and entrepreneurship.

**Fascism** An economic system in which productive property, although owned by individuals, is used to produce goods and services that reflect state preferences. Economic growth is a highly valued goal.

**Feudalism** An economic system in which primary productive property, land, is organized into large, essentially self-supporting estates (or manors), each owned by a landlord and worked by dependent tenants who, owning no property of their own, are attached to the estates. Hereditary rights to ownership and tenancy perpetuate the arrange-ment between landlord and tenant.

**Firm** An economic unit that produces goods and services in the expectation of selling them to households, other firms, or government.

**Fixed cost** Cost to the firm that does not vary with the quantity of goods produced. The cost is incurred even when the firm does not produce.

**Fixed exchange rate** A rate determined by government and then maintained through the process of buying and selling quantities of its own currency on the foreign exchange market.

**Floating exchange rate** An exchange rate determined strictly by the demands and supplies for a nation's currency.

**Foreign exchange market** A market in which currencies of different nations are bought and sold.

**Foreign exchange reserves** The stock of foreign currencies a government holds.

**Free trade** International trade that is not encumbered by protectionist government policies such as tariffs and quotas.

**Free trade area** A set of countries that agree to free trade among themselves but are free to pursue independent trade policies with other countries.

**Free-rider** Someone who consumes a good or service without paying for it. Typically, the good or service consumed is in the form of a positive externality.

**Fringe benefits** Nonwage compensation that workers receive from employers.

## G

**Game theory** A theory of strategy ascribed to firms' behavior in oligopoly. The firms' behavior is mutually interdependent.

**GATT (General Agreements on Tariffs and Trade)** An agreement to negotiate reductions in tariffs and other trade barriers and to provide equal and nondiscriminating treatment among members of the agreement. Over 100 countries are members of GATT.

**Gini coefficient** A numerical measure of the degree of income inequality in an economy. It ranges from zero, depicting perfect equality, to one, depicting perfect inequality.

**Government failure** The failure of the government to buy the socially optimal quantity of public goods.

## H

**Horizontal merger** A merger between firms producing the same good in the same industry.

**Household** An economic unit of one or more persons living under one roof that has a source of income and uses it in whatever way it deems fit.

## I

**Implicit costs** The firm's opportunity costs of using resources owned or provided by the entrepreneur.

**Import controls** Tariffs and quotas used by government to limit a nation's imports.

**Imports** Goods and services bought by people in one country that are produced in other countries.

**Income elastic** A 1 percent change in income generates a greater than 1 percent change in quantity demanded.

**Income elasticity** The ratio of the percentage change in quantity demanded to the percentage change in income. Its value is the percentage change in quantity demanded generated by a 1 percent change in income.

**Income inelastic** A 1 percent change in income generates a less than 1 percent change in quantity demanded.

**Increasing returns to scale** A situation in which a firm's minimum long-run average total cost decreases as the level of production increases.

**Independent variable** A variable whose value influences the value of another variable.

**Industrial union** A union representing all workers in a single industry, regardless of each worker's skill or craft.

**Industry** A collection of firms producing the same good.

**Inferior goods** Goods for which demand decreases when people's incomes increase.

**In-kind assistance** Government assistance in the form of direct goods and services, such as Medicaid or food stamps.

**Innovation** An idea that eventually takes the form of new, applied technology.

**Input-output table** A table whose rows (read across) record the specific quantities each producing sector sells to itself and to every other producing sector, and whose columns (read down) record the specific quantities each producing sector buys from itself and from every other producing sector.

**Interest rate** The price of loanable funds, expressed as an annual percentage return on a dollar of loanable funds.

**International debt** The total amount of outstanding IOUs a nation is obligated to repay other nations and international organizations.

**International specialization** The use of a country's resources to produce specific goods and services, allowing other countries to focus on the production of other goods and services.

**Interpersonal comparisons of utility** A comparison of the marginal utilities that different people derive from a good or a dollar.

## K

**Kinked demand curve** The demand curve facing a firm in oligopoly; the curve is more elastic when the firm raises price than when it lowers price.

## L

**Labor** The physical and intellectual effort of people engaged in producing goods and services.

**Labor efficiency** The amount of labor time required to produce a unit of output.

**Labor force** Everyone over age 16 and willing to work.

**Labor specialization** The division of labor into specialized activities that allow individuals to be more productive.

**Labor union** An association of workers, each of whom transfers the right to negotiate wage rates, work hours, and working conditions to the association. In this way, the union presents itself as a single seller of labor on the labor market.

**Laissez-faire** Government policy of nonintervention in market outcomes. Translated, it means "leave it be."

**Land** A natural-state resource such as real estate, grasses and forests, and metals and minerals.

**Land rent** A payment to landowners for the use of land.

**Law of demand** The inverse relationship between price and quantity demanded of a good or service, *ceteris paribus*.

**Law of diminishing marginal utility** The idea that as more of a good is consumed, the utility a person derives from each additional unit diminishes.

**Law of increasing costs** The opportunity cost of producing a good increases as more of the good is produced. The law is based on the fact that not all resources are suited to the production of all goods and that the order of use of a resource in producing a good goes from the most productive to the least.

**Life-cycle wealth** Wealth in the form of nonmonetary assets, such as a house, automobiles, and personal clothing.

**Loanable funds** Money that a firm employs to purchase the physical plant, equipment, and raw materials used in production.

**Loanable funds market** The market in which the demand for and supply of loanable funds determines the rate of interest.

**Location rent** Rent arising from differences in land distances from the marketplace.

**Long run** The time interval during which suppliers are able to change the quantity of all the resources they use to produce goods and services.

**Lorenz curve** A curve depicting an economy's income distribution. It records the percentage of total income that a specific part of the population—typically represented by quintiles ranging from the poorest to richest—receives.

**Loss minimization** Faced with the certainty of incurring losses, the firm's goal is to incur the lowest loss possible from its production and sale of goods and services.

## M

**Macroeconomics** A subarea of economics that analyzes the behavior of the economy as a whole.

**Marginal cost (MC)** The change in total cost generated by a change in the quantity of a good produced. Typically, MC is used to measure the additional cost incurred by adding one more unit of output to production.

**Marginal cost pricing** A regulatory agency's policy of pricing a good or service produced by a regulated firm at the firm's marginal cost, $P = MC$.

**Marginal externality cost (MEC)** The change in an external cost generated by a change in the quantity of a good produced.

**Marginal labor cost** The change in a firm's total cost that results from adding one more worker to production.

**Marginal physical product (MPP)** The change in output that results from adding one more unit of a resource, such as labor, to production. MPP is expressed in physical units, such as tons of coal, bushels of wheat, or number of automobiles.