

Seventh Edition

INTRODUCTION TO

Agricultural Economics

John B. Penson, Jr.
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Pearson

1776

Adam Smith published *Wealth of Nations*.

1815

Start of the 1815–1821 depression; widespread foreclosures, bank failures, high unemployment and trade balance problems.

1848

John Stuart Smith published *Principles of Political Economics*.

1853

Recession saw business activity fall almost 20 percent.

1862

President Abraham Lincoln created the first Department of Agriculture and signed the Morrill Land Grant College Act.

1865

Beginning of the 1865–1867 recession following the Civil War; lasted 32 months.

1700–1899

1873

Panic resulted from failure of largest bank in the United States; depression lasted 5 years. The United States returned to the gold standard.

1874

Georgia established the first state Department of Agriculture.

1890

Alfred Marshall published *Principles of Economics*.

Passage of the Sherman Anti-Trust Act prohibiting certain business activities deemed by government regulators to be anti-competitive.

1907

Bank panic; 246 U.S. banks collapse.

1913

Federal Reserve Act passed by Congress.

1914

Assembly line production adopted by Henry Ford led to mass production concept.

Clayton Anti-Trust Act passed, establishing the Federal Trade Commission.

Agricultural Extension Service was formed, a major step in direct education for farmers.

1916

Federal Farm Loan Act passed.

1918

End of WW I; return of troops to the work force led to high unemployment.

1919

American Farm Bureau Federation formally organized.

1900–1929

1921

The first farm market news radio report was broadcast over KDKA, Pittsburgh. Packers and Stockyards Act enacted.

1922

The Capper–Volstead Act exempts farm cooperatives from federal anti-trust legislation.

Grain Futures Trading Act enacted.

1926

The Cooperative Marketing Act of 1926 passed; permitted farmers or their associations to acquire, exchange, and disseminate a variety of price and market information.

1929

October 24th Wall Street Crash; beginning of the 11-year Great Depression.

1930

Smoot–Hawley Tariff Act passed; raised trade barriers; exacerbated collapse of global trade.

1932

Great Depression deepened; 10,000 U.S. banks fail; unemployment rate approached 25 percent.

1933

The United States abandoned the gold standard.

Federal Deposit Insurance Corporation established to protect depositors.

Glass–Steagall Act passed, restricting banks from entering risky business.

Farm Credit Administration established, regulating Farm Credit System credit for agriculture.

Agricultural Adjustment Act passed authorizing farm price supports and adjustment programs.

1935

Social Security Act passed.

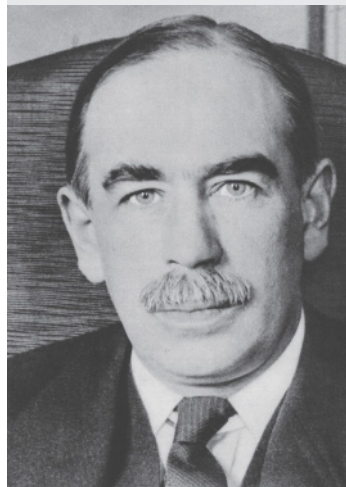
WPA work program established to provide employment.

1930–1939

1936

John Maynard Keynes published *The General Theory of Employment, Interest and Money*.

Robinson–Patman Act passed, prohibited anti-competitive practices including price discrimination.



Credit: ClassicStock/Alamy Stock Photo.

1937

The Agricultural Marketing Agreement Act signed into law providing authority for federal marketing orders; reaffirmed the marketing agreement provisions of the Agricultural Adjustment Act of 1933.

1941

Huge government spending for WW II caused economic boom that brought end to the Great Depression.

1944

Bretton Woods accord established economic policy following WW II. This accord led to the creation of the World Bank and the General Agreement on Tariffs and Trade (GATT).

International Monetary Fund established.

1945

Commercial fertilizer gained use to help increase yields.

1946

The National School Lunch Program established.

1948

Paul Samuelson became first American to win the Nobel Prize in Economic Sciences.



Credit: Bachrach/Getty Images.

1940–1959

1949

Concept of target prices initiated under the direction of secretary of agriculture Charles F. Brannan.

1951

Treasury pressured the Federal Reserve to maintain low fixed interest rates on government bonds as it issues government securities to finance Korean War defense spending.

1954

The Food for Peace Program (Public Law 480) enacted; led to a permanent expansion of U.S. exports of agricultural products.

1956

Unemployment Assistance Act passed.

1963

Milton Friedman introduced concept of monetarism; later received Nobel Prize in Economic Sciences in 1976.



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1964

Congress passed President Kennedy's \$12 billion tax cut; the economy takes off.

Food Stamp Act passed; provides financial assistance for the purchase of food for low-income people (known today as the Supplemental Nutrition Assistance Program or SNAP).

1965

President Johnson signed landmark amendment to the Social Security Act creating Medicare and Medicaid.

1960–1979

1972

Arab oil embargo during the Arab–Israeli war raised fuel prices.

1973

Beginning of a recession lasting until March 1975; affected by OPEC quadrupling oil price and spending on Vietnam War.

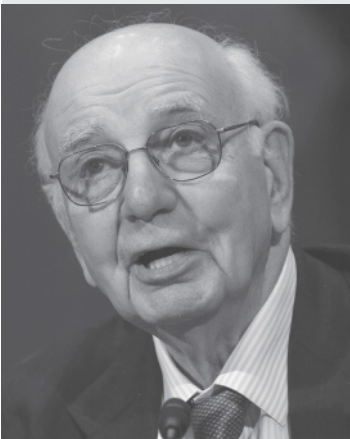
1978

Airline Deregulation Act passes; removed government controls over airfares and routes.

1979

Inflation shot up; new Federal Reserve chairman Paul Volker responded by reducing the money supply.

Grain embargo imposed against the Soviet Union following the invasion of Afghanistan.



Credit: Alex Wong/Staff/Getty Images.

1981

Recession lasting 16 months.

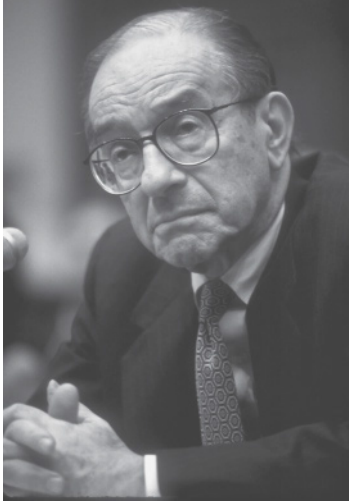
President Reagan advocated supply-side economics.

1985

The Conservation Reserve Program (CRP) created by the U.S. Department of Agriculture largely to reduce soil erosion and improve water quality.

1987

Stock market plunged; new Federal Reserve chairman Alan Greenspan acted to stabilize the economy.



Credit: Richard Ellis/Alamy Stock Photo.

1980–1995

1989

Massive failure of savings and loan associations.

Fall of the Berlin Wall signaled the end of the cold war.

1990

The World Wide Web created.

1993

The North American Free Trade Agreement (NAFTA) approved; created a trilateral trade bloc in North America among the United States, Mexico, and Canada.

1994

NAFTA removes tariff barriers between the United States, Canada and Mexico.

Congress approved legislation allowing branch banking nationwide.

Farmers began using satellite technology to track and to plan their farming practices.

1995

World Trade Organization was formed in GATT Uruguay round.

1996

President Clinton signed welfare legislation that required work in exchange for assistance.

World Trade Organization (WTO) created; principal international forum governing world trade. Federal Agriculture Improvement and Reform Act, also known as the Freedom to Farm Act, was implemented. This legislation revised and simplified direct payment programs for crops and eliminated milk price supports through direct government purchases.

1999

Congress partially repealed the 1933 Glass–Steagall Act; allows commercial banks, investment banks, and securities firms to consolidate.

1996–2005

2000

The U.S. Department of Agriculture unveiled organic standards for foods, and the official organic seal developed.

2001

Collapse of the speculative dot-com bubble.

September 11th terrorist attacks on World Trade Center.

President Bush signed third largest tax cut in U.S. history.

2002

The Farm Security and Rural Investment Act enacted; addressed a great variety of issues related to agriculture, ecology, energy, trade, and nutrition. Euro currency introduced.

2007

Housing bubble burst, contributed to the subprime mortgage crisis and the Great Recession. Global financial crisis ensues.

2008

Federal government rescued some of the nation's largest investment firms; Lehman Brothers investment bank failed.

Congress passes TARP legislation helping firms like General Motors and Chrysler avoid bankruptcy.

The Food, Conservation, and Energy Act passed, increasing benefits of food stamp recipients, and increasing support for the production of cellulosic ethanol.

2009

Congress passed legislation providing tax cuts and new spending to spur economic growth; deficit reaches \$1.4 trillion; Great Recession declared over in June.

2006–2012

2010

Congress passed legislation aimed at preventing risky behavior and regulatory failures.

Congress passed the Health Care Reform Bill known as Obama Care.

Sovereign debt crisis deepened in Europe.

2011

President Obama signed the Budget Control Act extending national debt ceiling.

2012

U.S. economy experienced weak growth as the unemployment rate remained historically high in a recovery period.

Agriculture Reform, Food, and Jobs Act passed, revised several aspects of agricultural policy.

INTRODUCTION TO AGRICULTURAL ECONOMICS

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SEVENTH EDITION

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Cover Photo: James Pintar/Fotolia
Printer/Binder: LSC Communications
Cover Printer: Lehigh-Phoenix
Text Font: Garamond 3 LT Pro, 11/13

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Library of Congress Cataloging-in-Publication Data

Names: Penson, John B., Jr., author. | Capps, Oral, author. | Rosson, C. Parr, author. | Woodward, Richard T., author.

Title: Introduction to agricultural economics/John B. Penson, Jr., Oral Capps, Jr., C. Parr Rosson III, Richard T. Woodward.

Description: Seventh edition. | Hoboken: Pearson, 2017. | Includes bibliographical references and index.

Identifiers: LCCN 2017002085 | ISBN 9780134602820 | ISBN 013460282X

Subjects: LCSH: Agriculture—Economic aspects.

Classification: LCC HD1415 .P374 2017 | DDC 338.1—dc23 LC record available at <https://lcn.loc.gov/2017002085>

*We thank our families for their patience and support,
and dedicate this book to them:*

*My wife Donna; children Matt, John, and Laura;
and my mother Mary Elizabeth for her interest in literature JBP*

*My wife Debbie, sons Kevin and Eric, and my mother Shirley and grandmother
May Manuel—my most ardent supporters. I am forever grateful to them for inspiring
me to do my best and to always finish strong! OCJ*

My wife Helen and sons CP, Henry, and Jonathan CPR

My wife Rosie and children Christopher and Sophia RTW

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Preface

The purpose of this book is to provide beginning students in agriculture with a systematic introduction to basic economic concepts and issues as they relate to a major segment of the U.S. economy—the food and fiber industry. This process requires an understanding of the microeconomic and macroeconomic forces influencing the decisions of producers and consumers of food and fiber products, including (1) farmers and ranchers, (2) the agribusinesses that supply them with production inputs and credit, (3) the agribusinesses that process food products and manufacture fiber products, and (4) the agribusinesses that provide marketing and related services at the wholesale and retail levels to both domestic consumers and overseas markets.

The integration of micro-macro-trade linkages provided in our book helps students understand these linkages which are so important in today's economy. The coverage of demand and supply concepts with examples helps students understand later concepts covered in macroeconomics and trade. References back to microeconomic concepts when discussing macroeconomic and trade concepts help cement these interrelationships for students.

NEW TO THIS EDITION

The 7th edition has been thoroughly revised to provide students with the most up-to-date coverage of this dynamic sector within the global economy. Key updates include the following:

- A new four-color design to better capture student interest and make the economic concepts expressed within the art program easier to grasp;
- Expanded TEQ (Testing Your Economic Quotient) questions at the end of each chapter to aid student self-study efforts;
- Major restructuring of Chapter 11 dealing with government's role in agriculture, including updated coverage of current farm commodity policy;
- Extensive revision of Chapters 12–15 dealing with key macroeconomic topics and how macroeconomic events affect agriculture;
- All tables and figures have been updated to reflect the most currently available data.

CONCEPTUAL OVERVIEW

This book goes beyond the farm gate to address the entire food and fiber industry, which represents a notable percentage of the U.S. national output. This book places a strong emphasis on the macroeconomics of agriculture, the role of government in agriculture, and international agricultural trade. Experience over the last several decades certainly has shown that farmers and ranchers, agribusinesses, financial institutions, and consumers of food and fiber products are significantly affected by macroeconomic policies and trade agreements.

Conceptually, the book begins with defining the field of agricultural economics with examples and the structure of the nation's food and fiber industry. The book then builds from microeconomics to macroeconomics to international economics. The student is initially introduced to concepts and examples of consumer behavior and behavior of the firm, concluding with derivation of the market demand and supply under perfect competition and then imperfect competition. The book offers



extensive coverage of the important concept of elasticity and its relevance to understanding revenue and economic welfare implications for both consumers and producers. Microeconomic coverage also includes addressing concepts in natural resources and government programs, important facets of agricultural economics. The extensive coverage of microeconomic concepts including imperfect competition helps students understand the coverage of macroeconomics at the firm, market, and economy level. Finally, the coverage of international trade helps students understand the events in today's global economy.

TEXT STRUCTURE AND CHAPTER PEDAGOGY

Our book is divided into six parts and includes 18 chapters. Part 1 consists of two chapters and serves as an introduction to the material. We begin the book by answering the question raised in Chapter 1, "What is agricultural economics?" We define the field of economics and then develop our definition of agricultural economics based on the role agricultural economists play at the micro and macro levels. Chapter 2 provides a historical background by discussing the changing structure of agriculture during the post–World War II period and of the sectors that supply farmers and ranchers with inputs, process their output, sell value-added products to domestic consumers, and trade food and fiber products in the global marketplace.

Part 2 helps students understand the economic decisions made by consumers of food and fiber products. Topics include the forces influencing consumer behavior (Chapter 3); the concept of market demand for a particular product (Chapter 4); and the elasticity of demand (Chapter 5). The specification of key elasticity measures is supplemented by empirical examples and their relevance to decision-making in the food and fiber industry, including the potential magnitude of consumer response and its implication on producer revenue.

Part 3 covers the supply side of the market. Chapter 6 focuses on issues related to resource use and production responses by businesses in the short run. Chapter 7 discusses the economic forces underlying the firm's input use, the expansion of the firm, and the choice of commodities. An introduction to the market supply curve and determination of market clearing prices and quantities under perfect competition (Chapter 8) and imperfect competition (Chapter 9) completes this part. This section of the book includes empirical examples that illustrate the magnitude and applicability of the relationships covered in these chapters.

Part 4 addresses the role of government in the food and fiber industry. Natural resources, the environment, and agriculture are covered in Chapter 10. This chapter includes the role of government regulation, which reflects the increasing recognition that natural resources and the environment are scarce resources and require careful management. The government's role in providing subsidies to agriculture, curbing market power, and providing for a secure and safe food supply is addressed in Chapter 11.

Part 5 focuses on the macroeconomics of agriculture. Chapter 12 outlines the general linkages between product markets and national output. Chapter 13 documents the importance of monetary and fiscal policy to the performance of the economy. The consequences of business fluctuations in the economy are covered in Chapter 14. Chapter 15 covers the relationship between macroeconomic policy and its effects on the economic performance of agriculture.

Part 6 focuses on international agricultural trade issues. Chapter 16 examines the growth and instability of agricultural trade, including the relative dependence on exports and imports, as well as the foreign exchange market, the international monetary system, and the effects of foreign exchange rates on U.S. agricultural trade. Chapter 17



explores the rationale behind international trade as well as the beneficiaries of international trade. Finally, Chapter 18 focuses on agricultural trade policy and preferential trade agreements. This includes issues dealing with trade restriction and whether preferential trade agreements create or divert trade.

Each chapter concludes with a summary and a list of key terms. A “Testing Your Economic Quotient” section contains questions and problems to reinforce the key issues covered. Understanding the answers to these questions and problems will help students properly prepare for exams. References also are listed at the end of each chapter.

INSTRUCTOR ANCILLARIES

To access supplementary materials online, instructors need to request an instructor access code. Go to www.pearsonhighered.com/irc, where you can register for an instructor access code. Within 48 hours after registering, you will receive a confirming e-mail, including an instructor access code. Once you have received your code, go to the site and log on for full instructions on downloading the materials you wish to use.

ACKNOWLEDGMENTS

We wish to thank the many students who have given us comments and suggestions during the development phases of this and previous editions of the book. We also thank the following reviewers for their valuable feedback: Marlies Boyd, Modesto Junior College; Stephen King, Western Kentucky University; Pierre Boumtje, Southern Arkansas University; and Xiaowei Cai, California Polytechnic State University.

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What Is Agricultural Economics?

Chapter Outline

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Agricultural economics is an applied social science that deals with how producers, consumers, and societies use scarce resources in the production, marketing, and consumption of food and fiber products. In agricultural markets, the forces of supply and demand are at work. Credit: Brad McMillan/Cartoon Stock.

Agriculture certainly is among the most prominent sectors of any economy. Psalm 104 illustrates this point: “Bless the lord, O my soul, thou dost cause the grass to grow for the cattle, and plants for man to cultivate, that he may bring forth food from the Earth.” Unequivocally, from biblical times agriculture has been a discipline worthy of study. We specifically are interested in the economic relationships inherent in the agricultural sector.



The roots of agricultural economics perhaps can be traced back to ancient Egypt, arguably to the first agricultural economist, Joseph. Joseph interpreted the dreams of the Pharaoh of Egypt and correctly predicted seven years of feast and seven years of famine.

What is agricultural economics? If you were to say “Agricultural economics is the application of economic principles to agriculture,” you would be technically correct—but in a narrow context. This definition does not recognize the economic, social, and environmental issues addressed by the agricultural economics profession. To perceive agricultural economics as being limited only to the economics of farming and ranching operations would be incorrect. These operations account for only 2% to 4% of the nation’s output. Actually, the scope of agricultural economics goes well beyond the farm gate to encompass a broader range of food- and fiber-related activities. When viewed from this broader perspective, the agricultural sector accounts for approximately 12% to 15% of the nation’s output.

Before we define agricultural economics further, let us first examine the scope of economics and the role that agricultural economists play in today’s economy. This examination will allow us to propose a more definitive answer to the question raised by the chapter title. A more in-depth assessment of the nation’s food and fiber industry is presented in Chapter 2.

SCOPE OF ECONOMICS

Two frequently used clichés describe the economic problem: “You can’t have your cake and eat it too” and “There’s no such thing as a free lunch.” Because we—individually or collectively—cannot have everything we desire, we must make choices. Consumers, for example, must make expenditure decisions with a budget in mind. Their objective is to maximize the satisfaction they derive from allocating their time between work and leisure, and from allocating their available income to consumption and saving, given current prices and interest rates. Producers must make production, marketing, and investment decisions with a budget in mind. Their objective is to maximize the profit of the firm, given its current resources and current relative prices. After considering the costs and benefits involved, society also must make choices on how to allocate its scarce resources among different government programs most efficiently.

Scarce Resources

The term *scarcity* refers to the finite quantity of resources that are available to meet society’s needs. Because nature does not freely provide enough of these resources, only a limited quantity is available. **Scarce resources** can be broken down into the following categories: (1) natural and biological resources; (2) human resources; and (3) manufactured resources.

Scarce resources can be divided into natural and biological resources, human resources, and manufactured resources.

Natural and Biological Resources Land and mineral deposits are examples of scarce **natural resources**. The quality of these natural resources in the United States differs greatly from region to region. Some lands are incapable of growing anything in their natural state, and other lands are extremely fertile. Still other areas are rich in coal deposits or oil and natural gas reserves. In recent years, our society also has become aware of the increasing scarcity of fresh water, especially in the West. Whereas energy-related natural resources have represented critical scarce resources in recent decades,



water could become *the* critical scarce natural resource in the near future. In addition to natural resources, scarce resources also include **biological resources** such as livestock, wildlife, and different genetic varieties of crops.

Human Resources Human resources are services provided by laborers and management to the production of goods and services that also are considered scarce. Laborers, for example, provide services that, combined with scarce nonhuman resources, produce economic goods.¹ Workers in the automotive industry provide the labor input to produce cars and trucks. Farm laborers provide the labor input to produce crops and livestock. Labor is considered scarce even when the country's labor force is not fully employed. Laborers supply services in response to the going wage rate. Agribusinesses may not be able to hire all the labor services they desire at the wage they wish to pay.

Management, another form of human resource, provides entrepreneurial services, which may entail the formation of a new firm, the renovation or expansion of an existing firm, the taking of financial risks, and the supervision of the use of the firm's existing resources so that its objectives can be met. Without entrepreneurship, large-scale agribusinesses would cease operating efficiently.

Manufactured Resources The third category of scarce resources is **manufactured resources** or, more simply, **capital**. Manufactured resources are machines, equipment, and structures. A product that has not been used up in the year it was made also is considered a manufactured resource. For example, inventories of corn raised but not fed to livestock or sold to agribusinesses represent a manufactured resource.

Scarcity is a relative concept. Nations with high per capita incomes and wealth face the problem of scarcity like nations with low per capita incomes and wealth. The difference lies in the degree to which resource scarcity exists and the forms that it takes.

Making Choices

Resource scarcity forces consumers and producers to make choices. These choices have a time dimension. The choices consumers make today will have an effect on how they will live in the future. The choices businesses make today will have an effect on the future profitability of their firms. Your decision to go to college rather than get a job today was probably based in part on your desire to increase your future earning power or eventual wealth, knowing what your earning potential would be if you did not attend college.

The choices one makes also have an associated **opportunity cost**. The opportunity cost of going to college now is the income you are currently foregoing by not getting a job now. The opportunity cost of a consumer taking \$1,000 out of his or her savings account to buy a cell phone or other assorted technological devices is the interest income this money would have earned if left in the bank. An agribusiness firm considering the purchase of a new computer system also must consider the income it could receive by using this money for another purpose. The bottom line expressed in economic terms is whether the economic benefits exceed the costs, including foregone income. Simply put,

Scarcity refers to the fixed quantity of resources that are available to meet societal needs.

Opportunity cost refers to the implicit cost associated with the next best alternative in a set of choices available to decision makers.

¹ Goods and services produced from scarce resources also are scarce and are referred to as economic goods. Economic goods are in contrast to free goods, in which the quantity desired is available at a price of zero. Air has long been a free good, but pollution (a negative good), which makes the air unfit to breathe, is changing this notion in some areas.



opportunity cost is a concept associated with economic decisions. It refers to the implicit cost associated with the next best alternative.

To illustrate the concept of opportunity cost, consider the following hypothetical example. Suppose that RJR Nabisco has three alternatives for manufacturing snack foods:

Alternative 1: manufacture cookies alone and obtain a profit of \$30 million.

Alternative 2: manufacture chips alone and obtain a profit of \$25 million.

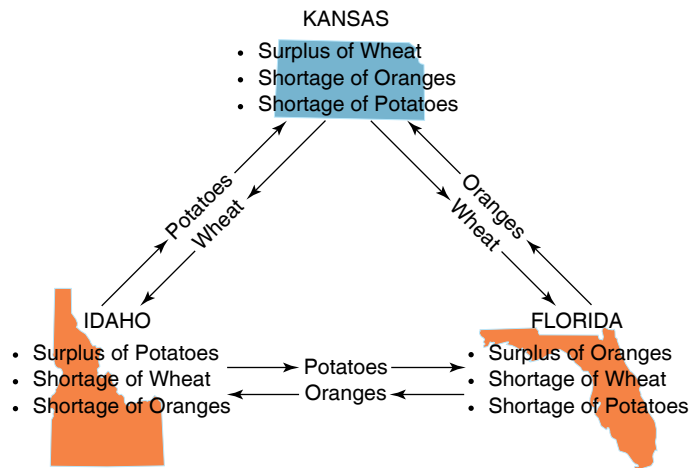
Alternative 3: manufacture both cookies and chips and obtain a profit of \$35 million.

Because Alternative 3 offers the highest profit to RJR Nabisco, it is rational economically for the firm to adopt this choice and consequently manufacture both cookies and chips. However, in doing so, the firm foregoes Alternatives 1 and 2. The implicit cost associated with the next best alternative is to forgo a profit of \$30 million. Thus, \$30 million is the opportunity cost in this example.

Sometimes the choices we make are constrained not only by resource scarcity but also by noneconomic considerations. These forces may be political, psychological, sociological, legal, or moral. For example, some states have blue laws that prohibit the sale of specific commodities on Sundays. A variety of regulations exist at the federal and state levels that govern the production of food and fiber products, including environmental and food safety concerns. For example, specific chemicals are banned from use in producing and processing food products because of their potential health hazard. The Big Green movement in California in 1990 sought to ban the use of all agricultural chemicals that were shown to pose health hazards to laboratory animals. As another example, over the period February 2007 to August 2007, a nationwide recall of Peter Pan peanut butter took place due to its association with salmonella contamination. This product was not available in grocery stores for a period of 27 weeks.

Most resources are best suited for a particular use. For example, the instructor of this course is better qualified to teach this course than to perform open-heart surgery. By focusing the use of our resources on a specific task, we are engaging in **specialization**. With a given set of human and nonhuman resources, specialization of effort generally results in a higher total output. Individuals should do what they do comparatively better than others, given their endowment of resources. Some individuals might specialize in fields such as professional athletics, medicine, or law. Others might specialize in agricultural economics. States and nations may find it to their advantage to specialize in the production of coffee, rice, or computers and import other commodities for which their endowment of natural, human, and manufactured resources is ill-suited. As illustrated in Figure 1-1, Kansas has a surplus of wheat production but a shortage of orange production, while Florida has a surplus of orange production and a shortage of wheat production. Both states have a shortage of potato production, while Idaho has plenty to spare. Specialization in production provides the basis for trade among producers and consumers.

Choices in the allocation of resources made by society (a collection of individuals) might be quite different from the choices made by individual members of society. For example, all nations normally allocate some resources to military uses. Society as a whole must decide how best to allocate its resources between the production of civilian goods and services and the production of military goods, popularly referred to as the choice of “guns versus butter.”

**Figure 1-1**

Specialization and resource allocation.

DEFINITION OF ECONOMICS

With the foregoing concepts of resource scarcity and choice in mind, we may now define the nature and scope of the field of economics as follows:

Economics is a social science that deals with how consumers, producers, and societies choose among the alternative uses of scarce resources in the process of producing, exchanging, and consuming goods and services.

Microeconomics versus Macroeconomics

As with most disciplines, the field of economics can be divided into several branches. **Microeconomics** and **macroeconomics** are two major branches of economics. Microeconomics focuses on the economic actions of individuals or specific groups of individuals. For example, microeconomists are concerned with the economic behavior of consumers who demand goods and services and producers who supply goods and services, and the determination of the prices of those goods and services. Macroeconomics focuses on broad aggregates, such as the growth of the nation's gross domestic product (GDP), the gaps between the economy's potential GDP and its current GDP, and trade-offs between unemployment and inflation. For example, macroeconomists are concerned with identifying the monetary and fiscal policies that would reduce inflation, promote growth of the nation's economy, improve the nation's trade balance (exports minus imports), and reduce the national debt. Macroeconomics explicitly accounts for the interrelationships between the nation's labor, product, and money markets and the economic decisions of foreign governments and individuals.

Despite the differences between microeconomics and macroeconomics, there is no conflict between these two branches. After all, the economy in the aggregate is certainly affected by the events taking place in individual markets.

A word of caution: we must be careful when generalizing the aggregate or macroeconomic consequences of an individual or a microeconomic event. If not, we run the risk of committing a **fallacy of composition**, meaning that which is true in an individual situation is not necessarily true in the aggregate. For example, suppose Walt Wheatman adopts a new technology that doubles his wheat production. If the thousands of other wheat farmers in the United States and other wheat

Microeconomics is a branch of economics that focuses on the actions or behavior of individual agents or groups of agents.

Macroeconomics is another branch that centers attention on broad aggregates of the economy.



producers worldwide do not follow suit, Walt's income will rise sharply. It would be wrong for Walt or others to conclude, however, that all wheat farmers would achieve income gains if they also adopted this new technology. If other wheat producers did respond, supply would expand substantially, and wheat prices would fall dramatically.

Positive versus Normative Economics

Positive economics deals with what-is and what-would-happen-if questions.

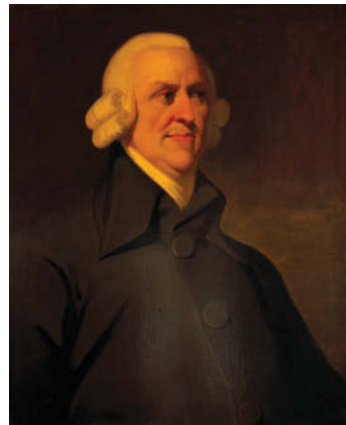
Normative economics focuses on what-should-be or what-ought-to-be questions.

The study of economics also can be divided between **positive economics** and **normative economics**. Positive economics focuses on what-is and what-would-happen-if questions and policy issues. No value judgments or prescriptions are made. Instead, the economic behavior of producers and consumers is explained or predicted. For example, policymakers may be interested in knowing how consumers and producers would respond to a tax cut or alternatively to a tax hike. Or, policymakers may be interested in to what degree the problem of obesity may be mitigated if a notable tax is placed on sugar-sweetened beverages.

Normative economics focuses on determining “what should be” or “what ought to be.” For example, policymakers might inquire as to which of several alternative policies *should be* adopted to maximize the economic welfare of producers and consumers. At the micro level, an automobile manufacturing plant might be interested in knowing the number of vehicles it *should be* producing to maximize profit.²

Alternative Economic Systems

An *economic system* can be defined as the institutional means by which resources are used to satisfy human desires; the term *institutional* refers to the laws, habits, ethics, and customs of the nation's citizens. **Capitalism** is a free market economic system in which individuals own resources and have the right to employ their time and resources however they choose, with minimal legal constraints from government. Prices signal the value of resources and economic goods. Under capitalism, as claimed by the Scottish economist and moral philosopher Adam Smith in his book *An Inquiry into the Nature and Causes of the Wealth of Nations* published



Adam Smith, the pioneer of capitalism.
Credit: GL Archive/Alamy Stock Photo.

² For a more in-depth discussion of positive and normative economics, see Friedman (1974).



Thomas Piketty, the French economist who proposes redistribution of wealth through global taxation. Credit: Rachel Torres/Alamy Stock Photo.

in 1776, individuals' efforts to maximize their own gains in a free market benefit society. One of the most important concepts of *The Wealth of Nations* is Smith's idea of the *invisible hand*. In his investigation as to why some countries are poor and stay poor, while other nations grow and prosper, Smith found that increases in productivity of individuals that come from their individual talents, the division of labor unhindered by government restrictions, and voluntary transactions in a free market result in rising prosperity. The "invisible hand of the market" is a metaphor conceived by Adam Smith to describe the self-regulating behavior of the marketplace.

Capitalism differs sharply from **socialism** or **communism**. Under socialism or communism, resources are generally collectively owned and the government decides how human and nonhuman resources are to be utilized across the various sectors of the economy. Prices largely are set by the government and administered to consumers and farmers. Winston Churchill noted that "socialism is a philosophy of failure, the creed of ignorance, and the gospel of envy; its inherent virtue is the equal sharing of misery" (www.brainyquote.com). *Capital in the 21st Century*, written in 2013 by the French economist Thomas Piketty, argues that inequality in wealth leads to stagnant or declining economic growth. To address this issue, Piketty proposes redistribution of wealth through a global tax.

A measurement of the equality or inequality in the distribution of wealth for any nation can be made by calculating the Gini coefficient, proposed in 1912 by the Italian statistician and sociologist Corrado Gini. A Gini coefficient close to 0 reflects complete equality in the distribution of wealth, while a Gini coefficient close to 1 reflects complete inequality. To provide perspective concerning this metric, since 2007, the Gini coefficient for the United States has risen from 0.463 to 0.477, a change of roughly 3%.

The United States has what is commonly referred to as a **mixed economic system**; that is, markets are not entirely free to determine price in some markets but are free in others. The government's intervention in the agricultural arena, for example, is well known. Loan guarantees to crop producers and guarantees to savings and loan depositors are forms of government intervention in the private sector. The government also controls numerous aspects of transportation, communications, education, and finance. Food assistance programs such as the Supplemental Nutritional Assistance Program (SNAP) and the Women, Infants, and Children (WIC) Program also are indicative of a mixed economic system.



DEFINITION OF AGRICULTURAL ECONOMICS

Because agricultural economics involves the application of economics to agriculture, we may define this field of study as follows:

Agricultural economics is an applied social science that deals with how producers, consumers, and societies use scarce and natural resources in the production, processing, marketing, and consumption of food and fiber products.

WHAT DOES AN AGRICULTURAL ECONOMIST DO?

The application of economics to agriculture in a complex market economy such as that of the United States has a long and rich history. We can summarize this activity by discussing the activities of agricultural economists at the microeconomic level and at the macroeconomic level.

Role at Microeconomic Level

Agricultural economists at the micro level are concerned with issues related to resource use in the production, processing, distribution, and consumption of products in the **food and fiber system**. Production economists examine resource demand by businesses and their supply response. Market economists focus on the flow of food and fiber through market channels to their final destination and the determination of prices at each stage. Financial economists are concerned with issues related to the financing of businesses and the supply of capital to these firms. Resource economists focus on the use and preservation of the nation's natural resources. Other economists are interested in the formation of government programs for specific commodities that will support the incomes of farmers and provide food and fiber products to low-income consumers.

Role at Macroeconomic Level

Agricultural economists involved at the macro level are interested in how agriculture and agribusinesses affect domestic and world economies and how the events taking place in other sectors affect these firms and vice versa. For example, agricultural economists employed by the Federal Reserve System must evaluate how changes in monetary policy affect the prices of various food commodities. Macroeconomists with a research interest may use computer-based models to analyze the direct and indirect effects that specific monetary or fiscal policy proposals would have on the farm business sector. Macroeconomists employed by multinational food companies examine foreign trade relationships for food and fiber products. Others address issues in the area of international development.

Marginal Analysis

Economists frequently are concerned with what happens at the margin. A microeconomist may focus on how the addition of another input by a business, or the purchase of another product by a consumer, will change the economic well-being of the business and the consumer. A macroeconomist, on the other hand, may focus on how a change in the tax rate on personal income may change the nation's output, interest rates, inflation, and the federal budget deficit. The key word in this example is *change*, or, more specifically, how a change in price, quantity, and so on will affect other prices and quantities in the economy, and how this situation might change the economic well-being of consumers, businesses, and the economy as a whole. Many of the chapters to follow include a discussion of marginal analysis so as to better understand economic decisions made at the firm, household, or economy level.



Sonny Perdue, the current U.S. secretary of agriculture. Credit: ZUMA Press, Inc./Alamy Stock Photo.



Zippy Duvall, the current president of the American Farm Bureau Federation. Credit: Courtesy of Farm Bureau Federation.

Key agencies that agricultural economists deal with include the Economic Research Service (www.ers.usda.gov), the U.S. Department of Agriculture, and the American Farm Bureau Federation (AFBF) (www.fb.org), the voice of agriculture. The current U.S. secretary of agriculture is Sonny Perdue, and the current president of the AFBF is Zippy Duvall, a farmer from Georgia.

WHAT LIES AHEAD?

Chapter 2 gives an overview of the structure of the nation's food and fiber system and the important role it plays in the U.S. general economy. The remaining parts of the book can be summarized as follows:

- Part 2 focuses on understanding consumer behavior in the marketplace, particularly in explaining the demand for food and fiber products. Chapter 3 presents the theory of consumer behavior. Chapter 4 describes the conditions for consumer equilibrium and determination of market demand. Chapter 5 discusses the measurement and interpretation of demand elasticities.
- Part 3 changes the focus from the behavior of consumers to the behavior of producers of food and fiber products. Emphasis is placed on market equilibrium and market structures. Chapter 6 describes the measurement of production relationships, costs of production, and revenue. Chapter 7 describes the economics of input substitution and describes the economics of product substitution. Chapter 8 describes the determination of output and price under conditions of perfect competition. Finally, Chapter 9 describes the determination of output and price under conditions of imperfect competition.
- Part 4 examines the resource, environmental, and political setting in which producers and consumers of food and fiber products in the United States are immersed. Chapter 10 deals with resource and environmental economics. Chapter 11 focuses