

# Economics as a science



# 1

## CHAPTER OUTLINE

### Why Study Economics?

- To Learn a Way of Thinking
- To Understand Society
- To Understand Global Affairs
- To Be an Informed Citizen

### The Scope of Economics

- Microeconomics and  
Macroeconomics
- The Diverse Fields of  
Economics

### The Method of Economics

- Descriptive Economics and  
Economic Theory
- Theories and Models
- Economic Policy

### An Invitation

### Appendix: How to Read and Understand Graphs

**economics** The study of how individuals and societies choose to use the scarce resources that nature and previous generations have provided.

**Economics** is the study of how individuals and societies choose to use the scarce resources that nature and previous generations have provided. The key word in this definition is *choose*. Economics is a behavioral, or social, science. In large measure, it is the study of how people make choices. The choices that people make, when added up, translate into societal choices.

# Why Study Economics?

To Learn a Way of Thinking

Three fundamental concepts:

- Opportunity cost
- Marginalism
- Efficient markets

# Why Study Economics?

To Learn a Way of Thinking

## Opportunity Cost

**opportunity cost** The best alternative that we forgo, or give up, when we make a choice or a decision.

**scarce** Limited.

# Why Study Economics?

## To Learn a Way of Thinking

### Marginalism

**marginalism** The process of analyzing the additional or incremental costs or benefits arising from a choice or decision.

**sunk costs** Costs that cannot be avoided because they have already been incurred.

# Why Study Economics?

## To Learn a Way of Thinking

### Efficient Markets—No Free Lunch

**efficient market** A market in which profit opportunities are eliminated almost instantaneously.

The study of economics teaches us a way of thinking and helps us make decisions.

# Why Study Economics?

## To Understand Society

**Industrial Revolution** The period in England during the late eighteenth and early nineteenth centuries in which new manufacturing technologies and improved transportation gave rise to the modern factory system and a massive movement of the population from the countryside to the cities.

The study of economics is an essential part of the study of society.

# Why Study Economics?

## To Understand Global Affairs

An understanding of economics is essential to an understanding of global affairs.

## To Be an Informed Citizen

To be an informed citizen requires a basic understanding of economics.



# The Scope of Economics

## Microeconomics and Macroeconomics

**microeconomics** The branch of economics that examines the functioning of individual industries and the behavior of individual decision-making units—that is, firms and households.

**macroeconomics** The branch of economics that examines the economic behavior of aggregates—income, employment, output, and so on—on a national scale.

Microeconomics looks at the individual unit—the household, the firm, the industry. It sees and examines the “trees.”  
Macroeconomics looks at the whole, the aggregate. It sees and analyzes the “forest.”

# The Scope of Economics

## Microeconomics and Macroeconomics

**TABLE 1.1 Examples of Microeconomic and Macroeconomic Concerns**

<b>Divisions of Economics</b>	<b>Production</b>	<b>Prices</b>	<b>Income</b>	<b>Employment</b>
<b>Microeconomics</b>	<i>Production/output in individual industries and businesses</i>	<i>Price of individual goods and services</i>	<i>Distribution of income and wealth</i>	<i>Employment by individual businesses and industries</i>
	How much steel How much office space How many cars	Price of medical care Price of gasoline Food prices Apartment rents	Wages in the auto industry Minimum wage Executive salaries Poverty	Jobs in the steel industry Number of employees in a firm Number of accountants
<b>Macroeconomics</b>	<i>National production/output</i>	<i>Aggregate price level</i>	<i>National income</i>	<i>Employment and unemployment in the economy</i>
	Total industrial output Gross domestic product Growth of output	Consumer prices Producer prices Rate of inflation	Total wages and salaries Total corporate profits	Total number of jobs Unemployment rate

# The Scope of Economics

## The Diverse Fields of Economics

**TABLE 1.2 The Fields of Economics**

<i>Behavioral economics</i>	uses psychological theories relating to emotions and social context to help understand economic decision making and policy. Much of the work in behavioral economics focuses on the biases that individuals have that affects the decisions they make.
<i>Comparative economic systems</i>	examines the ways alternative economic systems function. What are the advantages and disadvantages of different systems?
<i>Econometrics</i>	applies statistical techniques and data to economic problems in an effort to test hypotheses and theories. Most schools require economics majors to take at least one course in statistics or econometrics.
<i>Economic development</i>	focuses on the problems of low-income countries. What can be done to promote development in these nations? Important concerns of development for economists include population growth and control, provision for basic needs, and strategies for international trade.
<i>Economic history</i>	traces the development of the modern economy. What economic and political events and scientific advances caused the Industrial Revolution? What explains the tremendous growth and progress of post-World War II Japan? What caused the Great Depression of the 1930s?

Continued.

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# The Scope of Economics

## The Diverse Fields of Economics

**TABLE 1.2 The Fields of Economics (continued)**

<i>Environmental economics</i>	studies the potential failure of the market system to account fully for the impacts of production and consumption on the environment and on natural resource depletion. Have alternative public policies and new economic institutions been effective in correcting these potential failures?
<i>Finance</i>	examines the ways in which households and firms actually pay for, or finance, their purchases. It involves the study of capital markets (including the stock and bond markets), futures and options, capital budgeting, and asset valuation.
<i>Health economics</i>	analyzes the health care system and its players: government, insurers, health care providers, and patients. It provides insight into the demand for medical care, health insurance markets, cost-controlling insurance plans (HMOs, PPOs, IPAs), government health care programs (Medicare and Medicaid), variations in medical practice, medical malpractice, competition versus regulation, and national health care reform.
<i>The history of economic thought,</i>	which is grounded in philosophy, studies the development of economic ideas and theories over time, from Adam Smith in the eighteenth century to the works of economists such as Thomas Malthus, Karl Marx, and John Maynard Keynes. Because economic theory is constantly developing and changing, studying the history of ideas helps give meaning to modern theory and puts it in perspective.
<i>Industrial organization</i>	looks carefully at the structure and performance of industries and firms within an economy. How do businesses compete? Who gains and who loses?

Continued.

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# The Scope of Economics

## The Diverse Fields of Economics

**TABLE 1.2 The Fields of Economics (continued)**

<i>International economics</i>	studies trade flows among countries and international financial institutions. What are the advantages and disadvantages for a country that allows its citizens to buy and sell freely in world markets? Why is the dollar strong or weak?
<i>Labor economics</i>	deals with the factors that determine wage rates, employment, and unemployment. How do people decide whether to work, how much to work, and at what kind of job? How have the roles of unions and management changed in recent years?
<i>Law and economics</i>	analyzes the economic function of legal rules and institutions. How does the law change the behavior of individuals and businesses? Do different liability rules make accidents and injuries more or less likely? What are the economic costs of crime?
<i>Public economics</i>	examines the role of government in the economy. What are the economic functions of government, and what should they be? How should the government finance the services that it provides? What kinds of government programs should confront the problems of poverty, unemployment, and pollution? What problems does government involvement create?
<i>Urban and regional economics</i>	studies the spatial arrangement of economic activity. Why do we have cities? Why are manufacturing firms locating farther and farther from the center of urban areas?

## Trust and Gender



While many transactions happen in

## The Method of Economics

**positive economics** An approach to economics that seeks to understand behavior and the operation of systems without making judgments. It describes what exists and how it works.

**normative economics** An approach to economics that analyzes outcomes of economic behavior, evaluates them as good or bad, and may prescribe courses of action. Also called *policy economics*.

# The Method of Economics

## Descriptive Economics and Economic Theory

**descriptive economics** The compilation of data that describe phenomena and facts.

**economic theory** A statement or set of related statements about cause and effect, action and reaction.



# The Method of Economics

## Theories and Models

**model** A formal statement of a theory, usually a mathematical statement of a presumed relationship between two or more variables.

**variable** A measure that can change from time to time or from observation to observation.

**Ockham's razor** The principle that irrelevant detail should be cut away.

# The Method of Economics

## Theories and Models

### All Else Equal: *Ceteris Paribus*

***ceteris paribus***, or **all else equal** A device used to analyze the relationship between two variables while the values of other variables are held unchanged.

Using the device of *ceteris paribus* is one part of the process of abstraction. In formulating economic theory, the concept helps us simplify reality to focus on the relationships that interest us.

# The Method of Economics

## Theories and Models

### Expressing Models in Words, Graphs, and Equations

Methods of expressing the quantitative relationship between two variables:

- *Graphing* (as presented in appendix)
- *Equations*, for example:

If over time U.S. households collectively spend, or consume, 90 percent of their income and save 10 percent of their income, we could then write:

$$C = .90 Y \quad \text{and} \quad S = .10 Y$$

where  $C$  is consumption spending,  $Y$  is income, and  $S$  is saving.

# The Method of Economics

## Theories and Models

### Cautions and Pitfalls

#### *The Post Hoc Fallacy*

***post hoc, ergo propter hoc*** Literally, “after this (in time), therefore because of this.” A common error made in thinking about causation: If Event A happens before Event B, it is not necessarily true that A caused B.

#### *The Fallacy of Composition*

**fallacy of composition** The erroneous belief that what is true for a part is necessarily true for the whole.

# The Method of Economics

## Theories and Models

### Testing Theories and Models: Empirical Economics

**empirical economics** The collection and use of data to test economic theories.

# The Method of Economics

## Economic Policy

Criteria for judging economic outcomes:

1. Efficiency
2. Equity
3. Growth
4. Stability

# The Method of Economics

## Economic Policy

### Efficiency

**efficiency** In economics, allocative efficiency. An efficient economy is one that produces what people want at the least possible cost.

### Equity

**equity** Fairness.

# The Method of Economics

## Economic Policy

### Growth

**economic growth** An increase in the total output of an economy.

### Stability

**stability** A condition in which national output is growing steadily, with low inflation and full employment of resources.



# REVIEW TERMS AND CONCEPTS

*ceteris paribus, or all else equal*

descriptive economics

economic growth

economic theory

economics

efficiency

efficient market

empirical economics

equity

fallacy of composition

Industrial Revolution

macroeconomics

marginalism

microeconomics

model

normative economics

Ockham's razor

opportunity cost

positive economics

*post hoc, ergo propter hoc*

scarce

stability

sunk costs

variable

# CHAPTER 1 APPENDIX

## How to Read and Understand Graphs

A **graph** is a two-dimensional representation of a set of numbers, or data.

### Time Series Graphs

A **time series graph** shows how a single measure or variable changes over time.

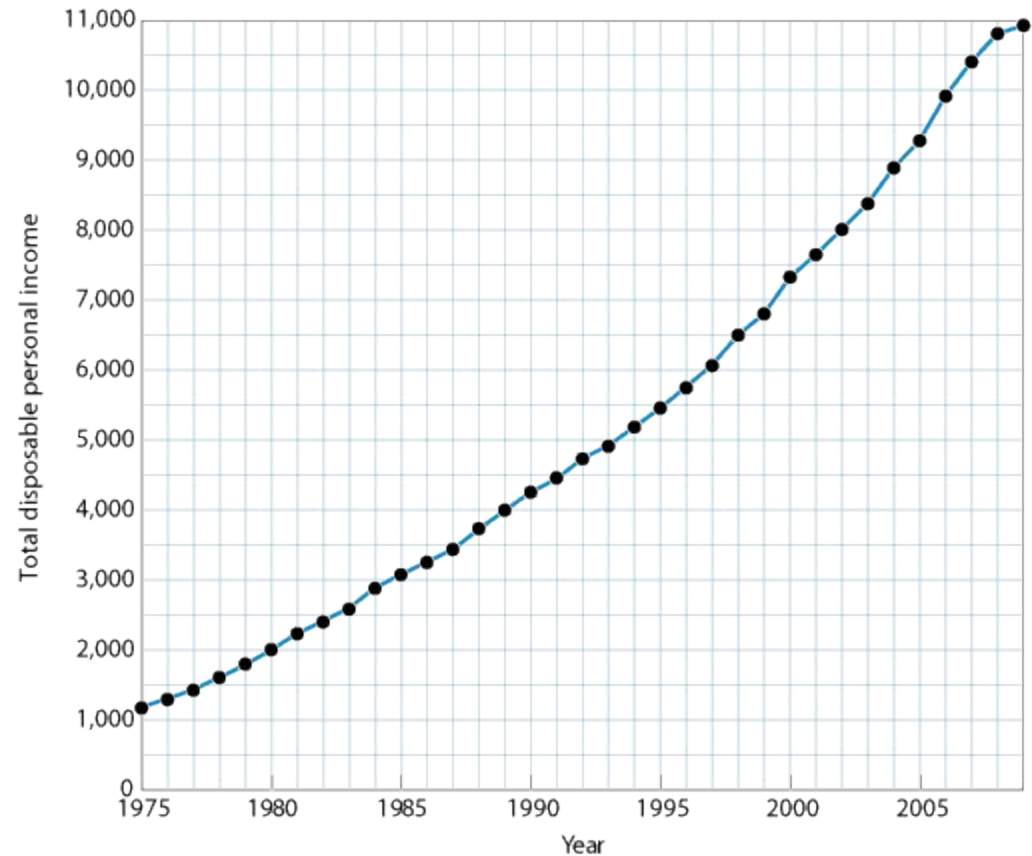
# CHAPTER 1 APPENDIX

## How to Read and Understand Graphs

### Time Series Graphs

**TABLE 1A.1 Total Disposable Personal Income in the United States, 1975–2009 (in billions of dollars)**

Year	Total Disposable Personal Income	Year	Total Disposable Personal Income
1975	1,187.3	1993	4,921.6
1976	1,302.3	1994	5,184.3
1977	1,435.0	1995	5,457.0
1978	1,607.3	1996	5,759.6
1979	1,790.8	1997	6,074.6
1980	2,002.7	1998	6,498.9
1981	2,237.1	1999	6,803.3
1982	2,412.7	2000	7,327.2
1983	2,599.8	2001	7,648.5
1984	2,891.5	2002	8,009.7
1985	3,079.3	2003	8,377.8
1986	3,258.8	2004	8,889.4
1987	3,435.3	2005	9,277.3
1988	3,726.3	2006	9,915.7
1989	3,991.4	2007	10,403.1
1990	4,254.0	2008	10,806.4
1991	4,444.9	2009	10,923.6
1992	4,736.7		

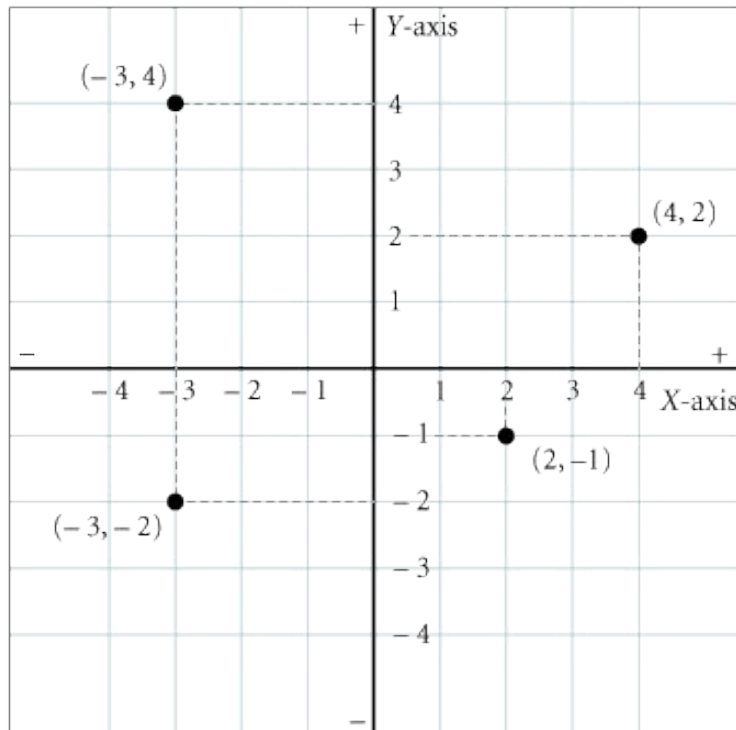


**▲ FIGURE 1A.1 Total Disposable Personal Income in the United States: 1975–2009 (in billions of dollars)**

# CHAPTER 1 APPENDIX

## How to Read and Understand Graphs

### Graphing Two Variables on a Cartesian Coordinate System



◀ **FIGURE 1A.2** A Cartesian Coordinate System

A Cartesian coordinate system is constructed by drawing two perpendicular lines: a vertical axis (the Y-axis) and a horizontal axis (the X-axis). Each axis is a measuring scale.

# CHAPTER 1 APPENDIX

## How to Read and Understand Graphs

### Plotting Income and Consumption Data for Households

**TABLE 1A.2** Consumption Expenditures and Income, 2008

	Average Income before Taxes	Average Consumption Expenditures
Bottom fifth	\$ 10,263	\$ 22,304
2nd fifth	27,442	31,751
3rd fifth	47,196	42,659
4th fifth	74,090	58,632
Top fifth	158,652	97,003

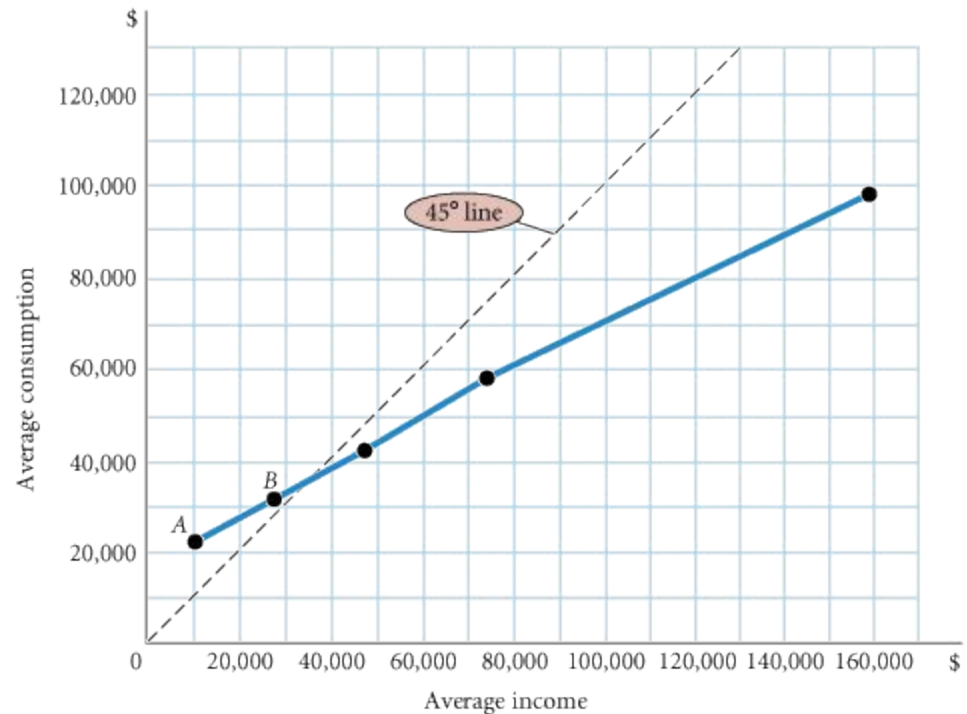
► **FIGURE 1A.3** Household Consumption and Income

A graph is a simple two-dimensional geometric representation of data.

This graph displays the data from Table 1A.2. Along the horizontal scale (X-axis), we measure household income. Along the vertical scale (Y-axis), we measure household consumption.

Note: At point A, consumption equals \$22,304 and income equals \$10,263.

At point B, consumption equals \$31,751 and income equals \$27,442.



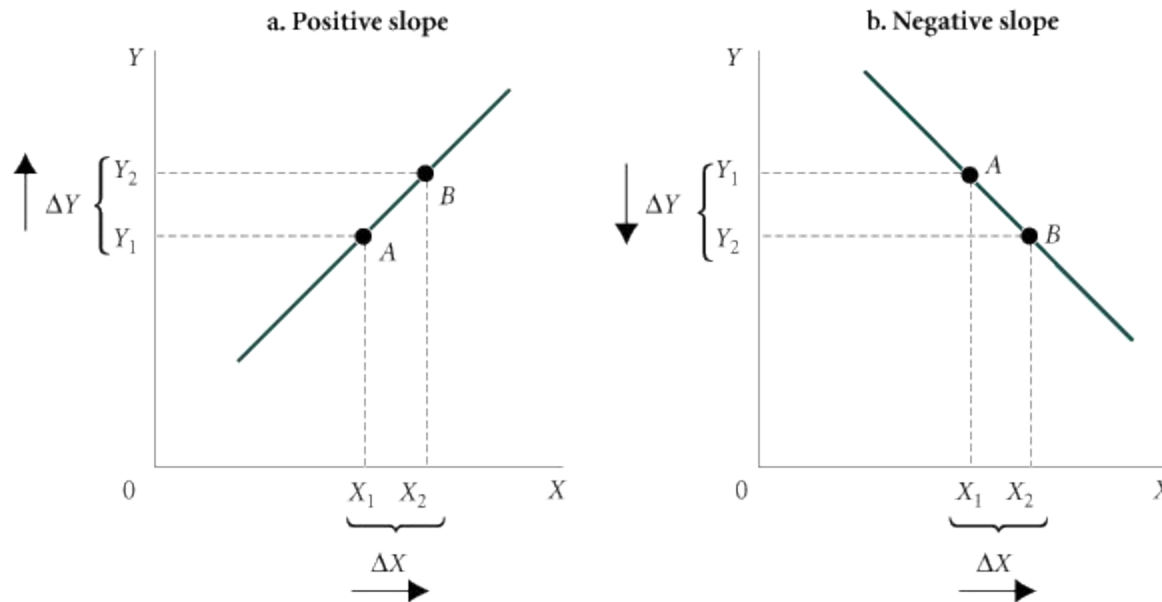
# CHAPTER 1 APPENDIX

## How to Read and Understand Graphs

### Slope

$$\frac{\Delta Y}{\Delta X} = \frac{Y_2 - Y_1}{X_2 - X_1}$$

▼ FIGURE 1A.4 A Curve with (a) Positive Slope and (b) Negative Slope



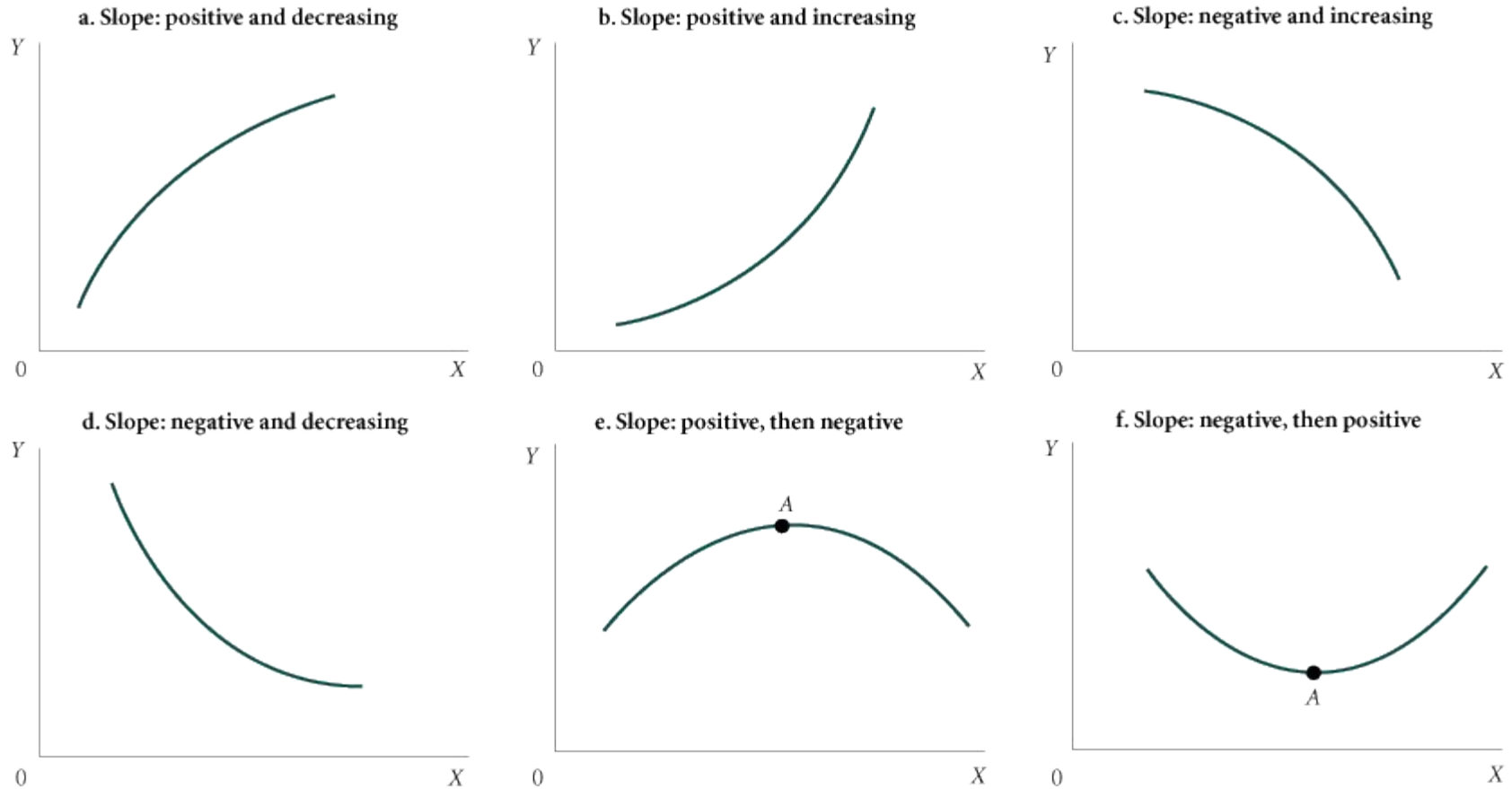
A *positive* slope indicates that increases in  $X$  are associated with increases in  $Y$  and that decreases in  $X$  are associated with decreases in  $Y$ .

A *negative* slope indicates the opposite—when  $X$  increases,  $Y$  decreases; and when  $X$  decreases,  $Y$  increases.

# CHAPTER 1 APPENDIX

## How to Read and Understand Graphs

### Slope



▲ **FIGURE 1A.5** Changing Slopes along Curves

# CHAPTER 1 APPENDIX

## Some Precautions

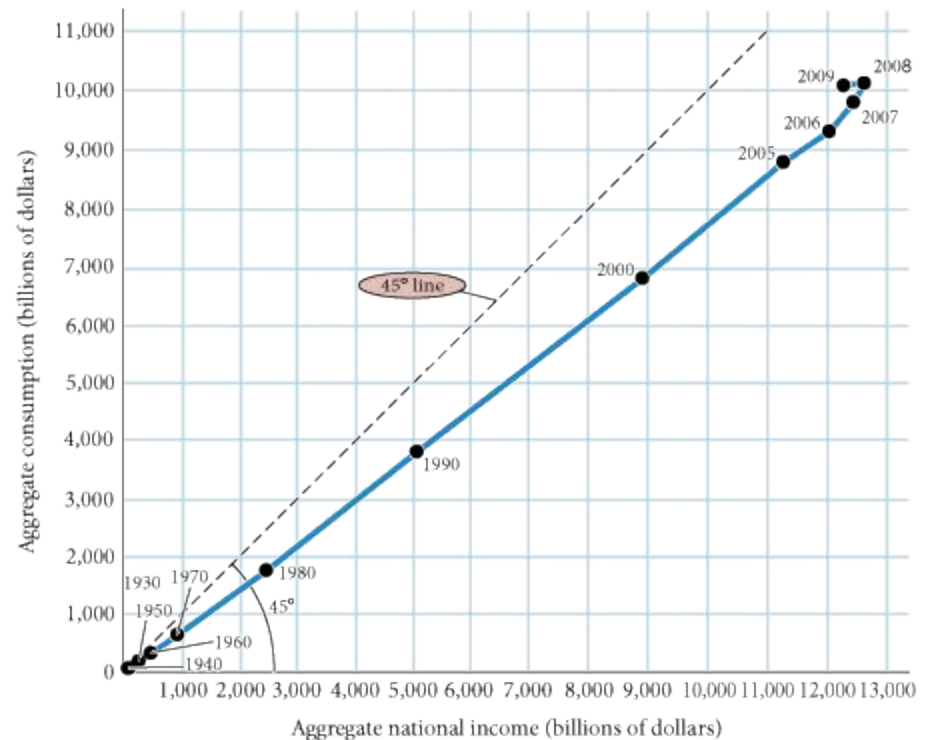
**TABLE 1A.3** Aggregate National Income and Consumption for the United States, 1930–2009 (in billions of dollars)

	Aggregate National Income	Aggregate Consumption
1930	82.9	70.1
1940	90.9	71.3
1950	263.9	192.2
1960	473.9	331.8
1970	929.5	648.3
1980	2433.0	1,755.8
1990	5059.8	3,835.5
2000	8938.9	6,830.4
2005	11,273.8	8,819.0
2006	12,031.2	9,322.7
2007	12,448.2	9,826.4
2008	12,635.2	10,129.9
2009	12,280.0	10,089.1

### ► FIGURE 1A.6 National Income and Consumption

It is important to think carefully about what is represented by points in the space defined by the axes of a graph.

In this graph, we have graphed income with consumption, as in Figure 1A.3, but here each observation point is national income and aggregate consumption in *different* years, measured in billions of dollars.





Cartesian coordinate system

time series graph

graph

X-axis

negative relationship

X-intercept

origin

Y-axis

positive relationship

Y-intercept

slope