

# ECONOMICS TODAY

NINETEENTH EDITION



Roger LeRoy Miller

# OUR NATIONAL INCOME ACCOUNTS AND REAL GDP SINCE 1929\*

In this table, in which all amounts are in billions of dollars, we see historical data for the various components of nominal GDP. These are given in the first four columns. We then show the rest of the national income accounts going from GDP to NDP to NI to PI to DPI. The last column gives real GDP.

Year	The Sum of Expenditures				Equals	Less	Equals	Plus	Less	Equals	Less		Plus	Equals	Less	Equals	Real GDP (2009 Dollars)	
	Personal Consumption Expenditures	Gross Private Domestic Investment	Government Purchases of Goods and Services	Net Exports	Gross Domestic Product	Depreciation	Net Domestic Product	Net U.S. Income Earned Abroad	Statistical Discrepancy	National Income	Corporate Profits	Social Security Taxes	Taxes on Production and Imports Net of Subsidies	Net Transfers and Interest Earnings	Personal Income	Personal Income Taxes and Nontax Payment		Disposable Personal Income
1929	77.3	16.7	8.9	0.3	103.2	9.9	93.3	0.8	9.4	84.7	10.5	0.0	2.6	14.3	85.9	2.6	83.3	***
1933	45.8	1.6	8.3	0.1	55.7	7.6	48.1	0.3	9.0	39.4	-1.2	0.3	6.4	13.1	47.0	1.5	45.5	***
1940	71.0	13.4	1.2	1.4	100.1	9.4	90.7	0.4	11.5	79.6	2.0	2.3	15.0	18.0	78.3	2.6	75.7	***
1944	108.2	7.7	97.1	-2.2	210.9	12.0	198.9	3.5	19.8	182.6	23.8	5.2	18.9	30.6	165.3	19.0	146.3	***
1950	192.1	55.1	38.8	0.7	286.7	23.6	263.1	1.5	24.8	239.8	37.7	6.9	19.7	52.1	227.6	20.7	206.9	***
1955	257.9	69.7	75.3	0.4	403.3	34.3	369.0	2.6	35.3	336.3	46.9	11.1	25.5	58.1	310.9	35.6	275.3	***
1960	331.7	78.9	111.6	4.2	526.4	55.6	470.8	3.1	1.0	474.9	49.9	20.7	66.5	63.2	401.0	51.0	350.0	2758.7
1965	443.8	118.2	151.5	5.6	719.1	70.7	648.4	5.3	-0.3	653.4	76.1	29.6	84.2	75.4	538.9	65.7	473.2	3607.0
1970	647.7	170.1	254.2	3.9	1075.9	136.8	939.1	6.4	-5.4	940.1	86.2	46.4	86.6	143.7	864.6	103.1	761.5	4717.7
1973	851.1	266.9	306.4	4.1	1428.5	178.1	1250.4	12.6	-6.0	1257.0	133.4	75.5	112.0	202.4	1138.5	132.4	1006.1	5418.2
1974	932.0	274.5	343.1	-0.8	1548.8	206.2	1342.6	15.5	-7.3	1350.8	125.7	85.2	121.6	231.0	1249.3	151.0	1098.3	5390.2
1975	1032.8	257.3	382.9	15.9	1688.9	237.5	1451.4	13.0	-13.3	1451.1	138.9	89.3	130.8	274.8	1366.9	147.6	1219.3	5379.5
1976	1150.2	323.2	405.8	-1.6	1877.6	259.2	1618.4	16.9	-20.5	1614.8	174.3	101.3	141.3	300.2	1498.1	172.3	1325.8	5669.3
1977	1276.7	396.6	435.8	-23.1	2086.0	288.3	1797.7	20.3	-19.3	1798.7	205.8	113.1	152.6	327.0	1654.2	197.5	1456.7	5930.6
1978	1426.2	478.4	477.4	-25.4	2356.6	325.1	2031.5	21.6	-23.2	2029.9	238.6	131.3	162.0	361.5	1859.5	229.4	1630.1	6260.4
1979	1589.5	539.7	525.5	-22.6	2632.1	371.1	2261.0	31.9	-44.7	2248.2	249.0	152.7	171.6	403.0	2077.9	268.6	1809.3	6459.2
1980	1754.6	530.1	590.8	-13.0	2862.5	426.0	2436.5	34.2	-43.9	2426.8	223.6	166.2	190.5	470.3	2316.8	298.8	2018.0	6443.4
1981	1937.5	631.2	654.7	-12.5	3210.9	485.0	2725.9	32.9	-36.7	2722.1	247.5	195.7	224.2	541.2	2595.9	345.2	2250.7	6610.6
1982	2073.9	581.0	710.0	-19.9	3345.0	534.3	2810.7	36.5	-6.8	2840.4	229.9	208.9	225.9	603.1	2778.8	354.1	2424.7	6484.3
1983	2286.5	637.5	765.7	-51.6	3638.1	560.5	3077.6	37.1	-54.2	3060.5	279.8	226.0	242.0	657.0	2969.7	352.3	2617.4	6784.7
1984	2498.2	820.1	825.2	-102.8	4040.7	594.3	3446.4	36.3	-38.7	3444.0	337.9	257.5	268.7	701.4	3281.3	377.4	2903.9	7277.2
1985	2722.7	829.6	908.4	-114.0	4346.7	636.7	3710.0	25.4	-51.2	3684.2	354.5	281.4	286.9	754.5	3515.9	417.4	3098.5	7585.7
1986	2898.4	849.1	974.5	-131.9	4590.1	682.2	3907.9	16.9	-76.6	3848.2	324.4	303.4	298.5	803.2	3725.1	437.2	3287.9	7852.1
1987	3092.1	892.2	1030.8	-144.9	4870.2	728.0	4142.2	17.5	-40.5	4119.2	366.0	323.1	317.3	842.5	3955.3	489.0	3466.3	8123.9
1988	3346.9	937.0	1078.2	-109.5	5252.6	782.4	4470.2	22.6	0.6	4493.4	414.9	361.5	345.0	903.3	4275.3	504.9	3770.4	8465.4
1989	3592.8	999.7	1151.9	-86.7	5657.7	836.1	4821.6	24.8	-64.2	4782.2	414.2	385.2	371.4	1006.8	4618.2	566.1	4052.1	8777.0
1990	3825.6	993.5	1238.4	-77.9	5979.6	886.8	5092.8	34.6	-91.3	5036.1	417.2	410.1	398.0	1093.7	4904.5	592.7	4311.8	8945.4

\*Note: Some rows may not add up due to rounding.

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In this table, in which all amounts are in billions of dollars, we see historical data for the various components of nominal GDP. These are given in the first four columns. We then show the rest of the national income accounts going from GDP to NDP to NI to PI to DPI. The last column gives real GDP.

Year	The Sum of Expenditures				Equals	Less	Equals	Plus	Less	Equals	Less		Plus	Equals	Less	Equals	Real GDP (2009 Dollars)	
	Personal Consumption Expenditures	Gross Private Domestic Investment	Government Purchases of Goods and Services	Net Exports	Gross Domestic Product	Depreciation	Net Domestic Product	Net U.S. Income Earned Abroad	Statistical Discrepancy	National Income	Corporate Profits	Social Security Taxes	Taxes on Production and Imports Net of Subsidies	Net Transfers and Interest Earnings	Personal Income	Personal Income Taxes and Nontax Payment		Disposable Personal Income
1991	3960.2	944.3	1298.2	-28.7	6174.0	931.1	5242.9	31.6	-88.4	5186.1	451.3	430.2	429.6	1196.1	5071.1	586.6	4484.5	8938.9
1992	4215.7	1013.0	1345.4	-34.8	6539.3	959.7	5579.6	31.1	-111.0	5499.7	475.3	455.0	453.3	1294.7	5410.8	610.5	4800.3	9256.7
1993	4471.0	1106.8	1366.1	-65.2	6878.7	1003.6	5875.1	32.0	-152.3	5754.8	522.0	477.4	466.4	1357.8	5646.8	646.6	5000.2	9510.8
1994	4741.0	1256.5	1403.7	-92.5	7308.7	1055.6	6253.1	23.8	-136.7	6140.2	621.9	508.2	512.7	1437.3	5934.7	690.5	5244.2	9894.7
1995	4984.2	1317.5	1452.2	-89.9	7664.0	1122.8	6541.2	28.7	-90.4	6479.5	703.0	532.8	523.1	1555.9	6276.5	743.9	5532.6	10163.7
1996	5268.1	1432.1	1496.4	-96.4	8100.2	1176.0	6924.2	31.8	-56.6	6899.4	786.1	555.1	545.5	1649.2	6661.9	832.0	5829.9	10549.5
1997	5560.7	1595.6	1554.2	-102.0	8608.5	1240.0	7368.5	24.1	-12.2	7380.4	865.8	587.2	577.8	1725.4	7075.0	926.1	6148.9	11022.9
1998	5903.0	1735.3	1613.5	-162.7	9089.1	1310.3	7778.8	18.3	60.2	7857.3	804.1	624.7	603.1	1762.3	7587.7	1026.4	6561.3	11513.4
1999	6316.9	1884.2	1726.0	-261.4	9665.7	1400.9	8264.8	27.1	32.5	8324.4	830.2	661.3	628.4	1779.3	7983.8	1107.5	6876.3	12071.4
2000	6792.4	2033.8	1834.4	-375.8	10284.8	1514.2	8770.6	37.0	99.4	8907.0	781.2	705.8	662.7	1875.5	8632.8	1232.3	7400.5	12559.7
2001	7103.1	1928.6	1958.8	-368.7	10621.8	1604.0	9017.8	51.8	114.9	9184.5	754.0	733.2	669.0	1958.8	8987.1	1234.8	7752.3	12682.2
2002	7384.1	1925.0	2094.9	-426.5	10977.5	1662.1	9315.4	48.6	72.8	9436.8	907.2	751.5	721.2	2092.6	9149.5	1050.3	8099.2	12098.8
2003	7764.5	2027.9	2220.8	-502.6	11510.7	1727.2	9783.5	68.0	13.6	9865.1	1056.4	779.3	758.9	2217.1	9487.6	1000.9	8486.7	13271.1
2004	8260.0	2276.7	2357.4	-619.2	12274.9	1831.7	10443.2	90.0	8.7	10541.9	1283.3	829.2	817.6	2437.4	10049.2	1046.0	9003.2	13773.5
2005	8794.1	2527.1	2493.7	-721.2	13093.7	1982.0	11111.7	93.5	35.6	11240.8	1477.7	873.3	873.6	2594.1	10610.3	1208.5	9401.8	14234.2
2006	9304.0	2680.6	2642.2	-770.9	13855.9	2136.0	11719.9	68.5	217.2	12005.6	1646.5	922.6	940.5	2893.8	11389.8	1352.1	10037.7	14613.8
2007	9750.5	2643.7	2801.9	-718.5	14477.6	2264.4	12213.2	126.4	-17.3	12322.3	1529.0	961.4	980.0	3143.8	11995.7	1487.8	10507.9	14873.7
2008	10013.6	2424.8	3003.2	-723.0	14718.6	2363.4	12355.2	173.0	-97.4	12430.8	1285.1	988.2	989.4	3262.5	12430.6	1107.6	10995.4	14830.4
2009	9847.0	1878.1	3089.1	-395.5	14418.7	2368.4	12050.3	147.2	-73.0	12124.5	1392.6	964.4	967.8	3282.4	12082.1	1144.9	10937.2	14418.7
2010	10202.2	2100.8	3174.0	-512.6	14964.4	2381.6	12582.8	205.9	-49.2	12739.5	1740.6	984.1	1001.2	3421.6	12435.2	1191.5	11243.7	14783.8
2011	10689.3	2239.9	3168.7	-580.0	15517.9	2452.6	13065.3	260.7	69.7	13395.7	1877.7	918.2	1037.2	3628.7	13191.3	1403.9	11787.4	15020.6
2012	11050.6	2511.7	3158.6	-565.6	16155.3	2542.9	13612.4	252.9	106.3	13971.6	2009.5	950.7	1065.6	3798.0	13743.8	1498.0	12245.8	15354.6
2013	11392.3	2665.0	3114.2	-508.3	16663.2	2646.6	14016.6	257.8	258.7	14533.1	2102.1	1106.1	1088.0	3898.9	14135.8	1659.1	12476.7	15583.8
2014	11865.9	2860.0	3152.1	-529.9	17348.1	2761.5	14586.6	258.4	136.3	14981.3	2161.0	1162.9	1163.5	4280.9	14774.8	1792.1	12982.7	15961.7
2015	12267.9	3017.8	3184.0	-531.9	17937.8	2832.6	15105.2	259.3	251.1	15615.6	2049.9	1207.9	1179.0	4264.9	15443.7	1957.3	13486.4	16341.8
2016 <sup>a</sup>	12734.8	3211.3	3219.5	-554.3	18611.3	2930.4	15680.9	261.4	244.5	16186.7	2151.3	1238.4	1185.4	4520.3	16131.9	2110.3	14021.6	16734.5
2017 <sup>a</sup>	13213.0	3417.3	3255.4	-566.7	19319.0	3031.7	16287.3	263.7	227.7	16778.7	2169.8	1264.2	1194.7	4590.8	16740.8	2163.0	14577.8	17136.7

a = author's estimates

# MACROECONOMIC PRINCIPLES

## Nominal versus Real Interest Rate

$$i_n = i_r + \text{expected rate of inflation}$$

where  $i_n$  = nominal rate of interest  
 $i_r$  = real rate of interest

## Marginal versus Average Tax Rates

$$\text{Marginal tax rate} = \frac{\text{change in taxes due}}{\text{change in taxable income}}$$
$$\text{Average tax rate} = \frac{\text{total taxes due}}{\text{total taxable income}}$$

## GDP—The Expenditure and Income Approaches

$$\text{GDP} = C + I + G + X$$

where  $C$  = consumption expenditures  
 $I$  = investment expenditures  
 $G$  = government expenditures  
 $X$  = net exports

$$\text{GDP} = \text{wages} + \text{rent} + \text{interest} + \text{profits}$$

## Say's Law

Supply creates its own demand, or *desired* aggregate expenditures will equal *actual* aggregate expenditures.

## Saving, Consumption, and Investment

$$\text{Consumption} + \text{saving} = \text{disposable income}$$
$$\text{Saving} = \text{disposable income} - \text{consumption}$$

## Average and Marginal Propensities

$$\text{APC} = \frac{\text{real consumption}}{\text{real disposable income}}$$
$$\text{APS} = \frac{\text{real saving}}{\text{real disposable income}}$$
$$\text{MPC} = \frac{\text{change in real consumption}}{\text{change in real disposable income}}$$
$$\text{MPS} = \frac{\text{change in real saving}}{\text{change in real disposable income}}$$

## The Multiplier Formula

$$\text{Multiplier} = \frac{1}{\text{MPS}} = \frac{1}{1 - \text{MPC}}$$
$$\text{Multiplier} \times \frac{\text{change in autonomous real spending}}{\text{real spending}} = \frac{\text{change in equilibrium real GDP}}{\text{real GDP}}$$

## Relationship between Bond Prices and Interest Rates

The market price of existing (old) bonds is inversely related to “the” rate of interest prevailing in the economy.

## Government Spending and Taxation Multipliers

$$M_g = \frac{1}{\text{MPS}}$$
$$M_t = -\text{MPC} \times \frac{1}{\text{MPS}}$$

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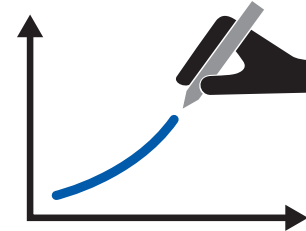


# Practice, Engage, and Assess



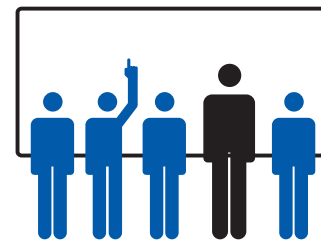
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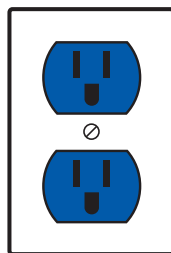
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NINETEENTH  
EDITION

# Economics Today

Roger LeRoy Miller

*Research Professor of Economics,  
University of Texas-Arlington*



New York, NY

# Dedication

To Bob Disbrow,  
I could not have found a better  
mentor in sports and finance.  
Thanks,

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# ONE-SEMESTER COURSE OUTLINE

## Macroeconomic Emphasis The Macro View

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2. Scarcity and the World of Trade-Offs
3. Demand and Supply
4. Extensions of Demand and Supply Analysis
5. Public Spending and Public Choice
6. Funding the Public Sector
7. The Macroeconomy: Unemployment, Inflation, and Deflation
8. Measuring the Economy's Performance
9. Global Economic Growth and Development
10. Real GDP and the Price Level in the Long Run
11. Classical and Keynesian Macro Analyses
12. Consumption, Real GDP, and the Multiplier
13. Fiscal Policy
14. Deficit Spending and the Public Debt
15. Money, Banking, and Central Banking
16. Domestic and International Dimensions of Monetary Policy
17. Stabilization in an Integrated World Economy
18. Policies and Prospects for Global Economic Growth
32. Comparative Advantage and the Open Economy
33. Exchange Rates and the Balance of Payments

## Microeconomic Emphasis The Micro View

1. The Nature of Economics
2. Scarcity and the World of Trade-Offs
3. Demand and Supply
4. Extensions of Demand and Supply Analysis
5. Public Spending and Public Choice
6. Funding the Public Sector
19. Demand and Supply Elasticity
20. Consumer Choice
21. Rents, Profits, and the Financial Environment of Business
22. The Firm: Cost and Output Determination
23. Perfect Competition
24. Monopoly
25. Monopolistic Competition
26. Oligopoly and Strategic Behavior
27. Regulation and Antitrust Policy in a Globalized Economy
28. The Labor Market: Demand, Supply, and Outsourcing
29. Unions and Labor Market Monopoly Power
30. Income, Poverty, and Health Care
31. Environmental Economics
32. Comparative Advantage and the Open Economy
33. Exchange Rates and the Balance of Payments

## Balanced Micro-Macro

1. The Nature of Economics
2. Scarcity and the World of Trade-Offs
3. Demand and Supply
4. Extensions of Demand and Supply Analysis
5. Public Spending and Public Choice
6. Funding the Public Sector
20. Consumer Choice
21. Rents, Profits, and the Financial Environment of Business
22. The Firm: Cost and Output Determination
23. Perfect Competition
24. Monopoly
28. The Labor Market: Demand, Supply, and Outsourcing
29. Unions and Labor Market Monopoly Power
7. The Macroeconomy: Unemployment, Inflation, and Deflation
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14. Deficit Spending and the Public Debt
15. Money, Banking, and Central Banking
16. Domestic and International Dimensions of Monetary Policy
32. Comparative Advantage and the Open Economy
33. Exchange Rates and the Balance of Payments

How do we motivate students in economics? I believe that we should present them with economic explanations for what is happening around them and throughout the world. Theory may be the backbone of our discipline, but its application is the only way we can help our students understand the importance of economics in their daily lives and for their futures.

## New and Increased Emphasis on Behavioral Economics

The theory of bounded rationality forms the basis of behavioral economics. This theory is expanded upon in the introductory chapter, and in many other chapters. More importantly, in keeping with the desire to show the applicability of theory, *every single chapter in the 19th edition has a behavioral economics example.*

## New Additional End-of-Chapter Problems

In this 19th edition, you will find six to eight new problems at the end of each chapter. Many are based on the interactive graphs within the chapter. They require students to apply their critical thinking skills learned from the chapter.

## New Questions in MyEconLab

With the 19th edition, we have added close to 500 new assignable questions in MyEconLab, expanding the database of questions to an average of over 100 questions per chapter.

## MyEconLab—Getting Better with Each Edition

- **Figure Animations:** Figure animations provide a step-by-step walk-through of select figures. Seventy percent of all figures are animated. Figure animations have been updated to reflect changes to the 19th edition.
- **Concept Checks:** Each section of each learning objective concludes with an on-line Concept Check that contains one or two multiple-choice, true/false, or fill-in questions. These checks act as “speed bumps” that encourage students to stop and check their understanding of fundamental terms and concepts before moving on to the next section. The goal of this digital resource is to help students assess their progress on a section-by-section basis, so they can be better prepared for homework, quizzes, and exams.
- **Graphs Updated with Real-Time Data from FRED®:** Data graphs in the eText are continually updated with the latest data from FRED®, which is a comprehensive, up-to-date data set from the Federal Reserve Bank of St. Louis. Students can display a pop-up graph that shows new data plotted in the graph. The goal of this digital feature is to provide students with the most current macro data available so that they can observe the changing impacts of these important variables on the economy.

Assessments using current macro data help students understand changes in economic variables and their impact on the economy. Real-time data analysis exercises in MyEconLab also communicate directly with the Federal Reserve Bank of St. Louis’s FRED® site and automatically update as new data are available.

These exercises allow students to practice with data to better understand the current economic environment.

- **Self Checks:** Self Checks appear at the end of every Learning Objective section. Self Check questions allow students to check their understanding of the key concepts they just read before moving on. All questions and answers are available in MyEconLab.
- **Dynamic Study Modules:** Dynamic Study Modules, available within MyEconLab, continuously assess student performance on key topics in real time, and provide additional and personalized practice content. Dynamic Study Modules exist for every chapter and are available on all mobile devices for on-the-go studying.
- **Digital Interactives:** Digital Interactives are dynamic and engaging assessment activities that promote critical thinking and application of key economic principles. Each Digital Interactive has 3–5 progressive levels and requires approximately 20 minutes to explore, apply, compare, and analyze each topic. Many Digital Interactives include real-time data from FRED®, allowing professors and students to display, in graph and table form, up-to-the-minute data on key macro variables. Digital Interactives can be assigned and graded within MyEconLab, or used as a lecture tool to encourage engagement, classroom conversation, and group work.
- **Learning Catalytics®:** Learning Catalytics® generates classroom discussion, guides lectures, and promotes peer-to-peer learning with real-time analytics. Now students can use any device to interact in the classroom, engage with content, and even draw and share graphs.
- **Enhanced eText for MyEconLab:** The Pearson eText for MyEconLab gives students access to their textbook anytime, anywhere. In addition to note-taking, highlighting, and bookmarking, the Pearson eText offers interactive and sharing features.

## Continuing Emphasis on Public Policy

Public policy issues concern your students just as they concern everyone else. Much of the theory throughout this text relates to exactly how changing public policies affect all of us.

- In Chapter 2, readers will find out why “free” tax-filing services from the IRS really aren’t free.
- When water becomes scarcer because of droughts, how politicians respond affects everyone, as your students will read in Chapter 4.
- Poorly defined property rights to airspace occupied by drones is an issue addressed in Chapter 5

### ISSUES & APPLICATIONS

#### The U.S. Navy Expands Production Possibilities via a New Technology

U.S. Navy photo by Mass Communication Specialist 2nd Class Kristopher Mirsop/Released



#### CONCEPTS APPLIED

- Production Possibilities
- Production Possibilities Curve
- Technology

The U.S. Navy faces an on-going task of producing ship-borne weapons that deliver explosive forces to remote targets. At the same time, the Navy is seeking to expand its fleet of ships afloat. Consequently, the Navy faces an economic problem involving production possibilities.

# THE CONTINUING QUEST TO KEEP STUDENT INTEREST HIGH

From the very beginning, *Economics Today* was created to maintain high interest by its readers. Many of the pedagogical devices developed in earlier editions have been perfected and the content for this 19th edition is completely new. They include:

- **A chapter-opening vignette** about a serious application of each chapter's theory with a continuing **Issues & Applications feature** at the end of every chapter. All of these are new to this edition.
- **Learning Objectives** accompany each major chapter section to help focus student reading comprehension and allow for self-assessment to ensure that students have grasped key concepts.
- A "grabber" **Did You Know That ...** feature starts off every chapter. All of these are new.

## 6 Funding the Public Sector




**YOU SHOULD BE ASKING...** How should we pay for the infrastructure that we need to support our growing economy? The U.S. income tax system is the primary source of revenue for state and local governments. But how do these governments affect the economy? How do they affect the quality of life? This chapter provides an objective and comprehensive look at these issues. See the end of the chapter for details.

**APPLY YOUR KNOWLEDGE** A few years ago, California began taxing remote sales—revenues of firms based outside the state but with a sufficient physical presence within the state to permit taxation of their California sales under federal law. Some forecasts had indicated that the state would bring in about \$450 million in additional sales tax revenues via taxation of remote sales. In fact, the additional revenues generated by extending sales taxes to California-based revenues of out-of-state firms amounted to closer to \$100 million. A number of other states recently have implemented their own remote sales taxes. Many of these states are, like California several years ago, anticipating significant increases in tax collections. In this chapter, you will learn why most economists predict that the states are overestimating gains in revenues from taxation of remote sales.

### ISSUES & APPLICATIONS

#### Will Taxing "Remote Sales" Be a Salvation for Sinking State Budgets?



For years, states rarely collected from sellers the sales taxes on out-of-state purchases that consumers made by mail or via orders placed online. Although many states technically required consumers to file special forms to pay "use taxes" on such purchases, few consumers followed through, and states determined that the costs of collecting those taxes outweighed the extra revenues. Recently, however, a number of states have changed course and begun trying to collect sales taxes on the "remote sales" that out-of-state firms make to residents of their states.

**DID YOU KNOW THAT...** The Midwestern U.S. states are endowed with 80 percent of the fresh water available in the United States and with 20 percent of the fresh water in existence on the planet? In recent years, residents of these states have been developing techniques for transferring some of this water to people residing in other U.S. states and even to residents of other nations. By specializing in water-redistribution technologies, these Midwestern residents hope to engage in trade of fresh water for other goods and services with people living in locations hundreds and even thousands of miles away.

- A variety of examples are provided:

**DOMESTIC TOPICS AND EVENTS** are presented through thought-provoking discussions, such as:

- The Law of Demand in the Market for Cable TV Subscriptions
- Analyzing Tweets to Predict Stock Market Swings

#### EXAMPLE

##### The Law of Demand in the Market for Cable TV Subscriptions

Between 2000 and 2017, the inflation-adjusted average nationwide price of a cable TV subscription rose from \$39 per month to about \$67 per month. During the same period, the nationwide number of cable TV subscriptions declined from more than 68 million to just over 50 million. Thus, consistent with the law of demand, a significant reduction in the number of cable TV subscriptions has taken place in response to a substantial increase in the inflation-adjusted price of cable TV subscriptions.

**FOR CRITICAL THINKING**  
*Is there an inverse relationship between the price of cable TV subscriptions and the number of subscriptions that people purchase? Explain.*

Sources are listed at the end of this chapter.

**MyEconLab** Concept Check

**IMPORTANT POLICY QUESTIONS** help students understand public debates, such as:

- That Noisy Drone Hovering by Your House? Your Property Rights Are Unclear
- Ending the U.S. Oil Export Ban

#### POLICY EXAMPLE

##### Policies Generate Higher Water Input Costs and Cut Agricultural Commodity Supplies

Large quantities of a number of agricultural commodities are grown each year in California. Farmers who reside in this state provide large portions of the nation's almonds, apples, cotton, oranges, grapes, lemons, rice, walnuts, and other commodities.

In recent years, both the U.S. government and the California government have responded to severe droughts by redirecting large volumes of water away from farmers in favor of city water systems and to rivers and streams with endangered fishes. Farmers have had to pay much higher prices to obtain water for their crops from private sources, which has pushed up considerably the cost of this key input. As a consequence, supplies of agricultural commodities have declined in California.

**FOR CRITICAL THINKING**  
*What do you suppose has happened to the positions of the supply curves in the markets for commodities such as almonds, apples, cotton, oranges, grapes, lemons, rice, and walnuts?*

Sources are listed at the end of this chapter.

**BEHAVIORAL EXAMPLES** introduce behavioral economics examples with provocative questions such as:

- Tips and Quality-Adjusted Prices
- Why Doesn't Higher Pay Persuade Some Women to Avoid Traditional Gender Roles?

#### BEHAVIORAL EXAMPLE

##### Tips and Quality-Adjusted Prices

Alongside the explicit prices that consumers pay for services such as the provision of food at restaurants, drinks at bars, and taxi services, many consumers of such services commonly extend tips—additional payments—to those who deliver such services. In many instances, therefore, the overall prices that consumers end up paying for these services turn out to be higher than the services' posted prices.

What accounts for the observed behavior of consumers who include tips within overall prices for many services? Some observers have suggested three possible rationales: (1) attempts by consumers to build their own self-esteem by rewarding others, (2) altruistic motives of consumers, or (3) a sense of obligation by consumers. The key economic explanation for tipping, however, starts with the fact that consumers who purchase products such as food at restaurants, mixed drinks, or taxi services know how much they are willing to pay for services provided in a satisfactory way. Firms that allow employees who provide such services to accept tips typically employ people with hard-to-measure skills in providing the services. By allowing tipping, firms enable consumers to pay a price consistent with the overall quality of the service they actually do receive. That is, tipping behavior ensures a quality-adjusted price that consumers are willing to pay for a delivered service.

**FOR CRITICAL THINKING**  
*How could laws that ban tips cause a reduction in the quality of the delivery of services?*

Sources are listed at the end of this chapter.

**MyEconLab** Concept Check



## INTERNATIONAL EXAMPLE

### How African Nations Are Developing Comparative Advantages in Agriculture

The African continent contains about half of the uncultivated but arable land in the world. It also contains many people who could, in principle, farm much of this land. Nevertheless, for many years, African countries have imported most agricultural products.

During the past decade, a number of African nations have developed comparative advantages in several varieties of corn and coffee. The continent's comparative-advantage turnaround has been assisted by adoption of drought-resistant crop varieties. The key change, however, has been the widespread acquisition of additional physical and human capital. African farmers are using more machinery to plant and harvest their crops. Furthermore, they are acquiring training in how to apply modern farming

techniques. These developments have enabled African farmers to reduce considerably the opportunity cost of agricultural products in terms of other goods and services. As the opportunity costs of African agricultural goods have declined, new comparative advantages in producing these goods and gains from specialization and trade have followed.

#### FOR CRITICAL THINKING

Why do you think that increased specialization in specific agricultural products has accompanied growth in African exports of those products?

Sources are listed at the end of this chapter.

## INTERNATIONAL EXAMPLES AND INTERNATIONAL POLICY EXAMPLES

emphasize the continued importance of international perspectives and policy, such as:

- Looking for Hard-to-Find Items in Venezuela? Ask for the *Bachaqueros*
- How African Nations Are Developing Comparative Advantages in Agriculture

All of these are new to this edition and each has three references from which the information was obtained (these references can be found at the back of each chapter).

**WHAT IF? FEATURES** in each chapter aim to help students think critically about important real-world questions through the eyes of an economist. All of these are new.

- *What If...* the government engages in policies that force down the price of an item subject to external benefits while leaving its supply curve's position unchanged?
- *What If...* joining a new regional trade bloc shifts existing trade to countries within that bloc and away from countries in another regional trade bloc?

#### WHAT IF...

joining a new regional trade bloc shifts existing trade to countries within that bloc and away from countries in another regional trade bloc?

If joining a new regional trade bloc shifts existing trade from the old bloc to the new one, then formation of the new trade bloc has generated trade diversion. The consequence is that formation of the new regional trade

bloc has failed to bring about an expansion of total world trade. Thus, the aggregate amount of international trade will remain unaffected by formation of the new bloc.

**YOU ARE THERE FEATURES** demonstrate to students how real people in the real world react to changes in our economic environment and to policy changes. All of these are new.

- Addressing Rail-Freight Transportation Externalities
- Reducing the Opportunity Cost of Waiting in Gridlocked Traffic, at a Price

#### YOU ARE THERE

Addressing Rail-Freight Transportation Externalities

Noble Boykin, Jr., an attorney in Savannah, Georgia, is at his wit's end. Each day, about eight freight trains pass along a three-mile stretch through the city near his law firm's location. Locomotive operators blast their horns at each of the 24 rail crossings along the route. If Boykin and other attorneys at the firms are in the midst of recording depositions from clients or witnesses when trains pass, they must halt for time-consuming "train breaks." If a phone call with a court official is in progress as a train approaches, Boykin has a choice between apologetically postponing the call or quickly stepping into a closet. Boykin's home also is located near the same stretch of rails. Passing trains often delay his daily commutes, and he sometimes is awakened during the night by the soundings of the locomotives' horns.

The volume of items shipped by rail in the United States has risen more than 10 percent since 2010. Trains contain more cars, and the greater weights pulled by locomotives also have slowed many trains along their routes. Consequently, trains typically require more time to traverse distances than in past years. In many locales, the results have been longer periods of noisy train operations and related traffic delays for people such as Boykin.

A growing number of U.S. communities are requiring rail firms to incur costs for the noise and delays they create. Some cities have instructed their police forces to issue tickets assessing fines of hundreds of dollars on rail firms each time their operations are judged to have created unjustifiable traffic delays. A few are even requiring firms to erect walls beside portions of their track to provide sound buffers. In these ways, rail companies are being required to take into account spillover effects of their activities in the market for freight transportation services.

#### CRITICAL THINKING QUESTIONS

1. How does a city's decision to assess substantial fines on rail operators that persistently generate traffic congestion affect the supply curve for rail services within the city?
2. Why do you think that the federal government requires rail operators to mount expensive horns and sound them—at prescribed decibel levels—at all street crossings? (Hint: What significant negative spillovers can a train create at a street crossing?)


Sources are listed at the end of this chapter.

# MYECONLAB: PRACTICE, ENGAGE, AND ASSESS

**MyEconLab** is a powerful assessment and tutorial system that works hand-in-hand with *Economics Today*. **MyEconLab** includes comprehensive homework, quiz, test, and tutorial options, allowing instructors to manage all assessment needs in one program.

### For the Instructor

- Instructors can select a prebuilt course option, which creates a ready-to-go course with homework and quizzes already set up. Instructors can also choose to create their own assignments and add them to the preloaded course. Or, instructors can start from a blank course.

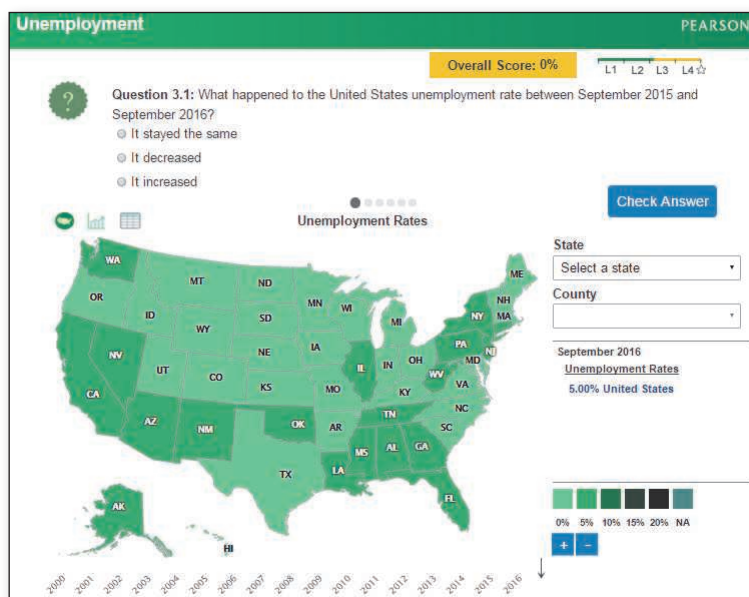
- All end-of-chapter problems are assignable and automatically graded in MyEconLab and, for most chapters, additional algorithmic, draw-graph, and numerical exercises are available to choose among.
- Instructors can also choose questions from the Test Bank and use the Custom Exercise Builder to create their own problems for assignment.
- The powerful Gradebook records each student's performance and time spent on the Tests and Study Plan, and generates reports by student or by chapter.
- **Math Review Exercises** in MyEconLab. MyEconLab now offers a rich array of assignable and auto-graded exercises covering fundamental math concepts geared for economics students. Aimed at increasing student confidence and success, the new math skills review Chapter R is accessible from the assignment manager and contains over 150 graphing, algebra, and calculus exercises for homework, quiz, and test use.
- **Real-Time Data Analysis Exercises** are marked with  and allow instructors to assign problems that use up-to-the-minute data. Each RTDA exercise loads the appropriate and most currently available data from FRED®, a comprehensive and up-to-date data set maintained by the Federal Reserve Bank of St. Louis. Exercises are graded based on that instance of data, and feedback is provided.
- In the eText available in [MyEconLab](#), select figures labeled **Real-Time Data** now include a pop-up graph updated with real-time data from FRED®.
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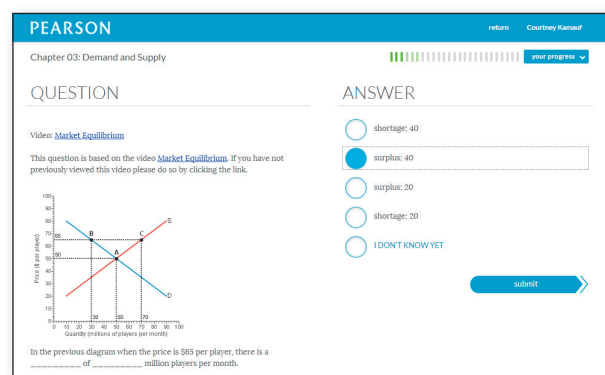
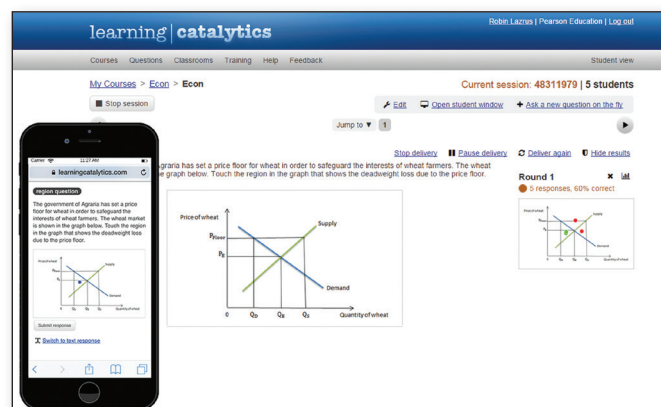
**Dynamic Study Modules:** Dynamic Study Modules continuously assess student performance on key topics in real time. Dynamic Study Modules exist for every chapter to provide additional practice for students around key concepts.

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To learn more, and for a complete list of digital interactives, visit [www.myeconlab.com](http://www.myeconlab.com).



## SUPPLEMENTAL RESOURCES

### Student and instructor materials provide tools for success.

**Test Bank (Parts 1, 2, and 3)** offer more than 10,000 multiple-choice and short answer questions, all of which are available in computerized format in the TestGen software. The significant revision process by author Jim Lee of Texas A&M University–Corpus Christi and accuracy reviewer Conor Molloy of Suffolk County Community College ensure the accuracy of problems and solutions in these revised and updated Test Banks. The Test Bank author has connected the questions to the general knowledge and skill guidelines found in the Association to Advance Collegiate Schools of Business (AACSB) assurance of learning standards.

**The Instructor's Manual**, prepared by Jim Lee of Texas A&M University–Corpus Christi, includes lecture-ready examples; chapter overviews; objectives; outlines; points to emphasize; answers to all critical analysis questions; answers to all end-of-chapter problems; suggested answers to “You Are There” questions; and selected references.

**PowerPoint lecture presentations** for each chapter, revised by Jim Lee of Texas A&M University–Corpus Christi, include figures, key terms, and concepts from the text.

**Clicker PowerPoint slides** allow professors to instantly quiz students in class and receive immediate feedback through Clicker Response System technology.

**The Instructor Resource Center** puts supplements right at instructors' fingertips. Visit [www.pearsonhighered.com/irc](http://www.pearsonhighered.com/irc) to register.

*Economics Today*, 19th edition, is available as an eBook and can be purchased at most eBook retailers.

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I do welcome ideas and criticisms from professors and students alike and hope that you enjoy the latest edition of *Economics Today*.

R.L.M.

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# The Nature of Economics

# 1



oleksandr Sokolov/123RF.com

Just two decades ago, about a third of women with medical or doctoral degrees and aged 40 to 44 were childless, but today this fraction has fallen to a fifth. In addition, twenty years ago less than half of women holding a master's degree had two or more children, whereas now 60 percent are rearing multiple children. What accounts for the increased willingness of women with higher levels of education to bear children? In this chapter, you will learn that the answer lies in altered *incentives* to bear and raise children. Incentives, you will discover, play a crucial role in influencing all of the economic choices that people make, including decisions about whether to become parents.

## LEARNING OBJECTIVES

After reading this chapter, you should be able to:

- 1.1** Define economics and discuss the difference between microeconomics and macroeconomics
- 1.2** Identify the three basic economic questions and the two opposing sets of answers
- 1.3** Evaluate the role that rational self-interest plays in economic analysis
- 1.4** Explain why economics is a science
- 1.5** Distinguish between positive and normative economics

**MyEconLab** helps you master each objective and study more efficiently. See the end of the chapter for details.

**DID YOU KNOW THAT...**

married people typically are healthier individuals? Careful study of the relationship between marriage and health indicates that for young people, better health raises the probability of getting hitched. Individuals who experience good health are more likely to meet, fall in love, and marry. Researchers have found that for people over the age of 39, however, married couples benefit from a “protective effect,” in which the state of being married generates better health than that experienced by unmarried people. As a consequence, the probability of a married person living to the next year is higher than an unmarried individual’s probability of surviving another year. This survival-probability differential rises as people age. The main reason for this protective effect is that marriage alters a couple’s behavior. A caring marital partner whose self-interested goal is to maintain a long-term relationship with another individual naturally desires to promote a lengthy lifespan for that person. Thus, the partner encourages that person to make more healthful choices regarding eating habits, monitors the individual’s health for signs of problems that might require care, and offers reminders for the individual to obtain regular physician checkups.

In this chapter, you will learn why contemplating the nature of self-interested responses to **incentives** is the starting point for analyzing choices people make in all walks of life. After all, how much time you devote to studying economics in this introductory course depends in part on the incentives established by your instructor’s grading system. As you will see, self-interest and incentives are the underpinnings for all the decisions you and others around you make each day.

**Incentives**

Rewards or penalties for engaging in a particular activity.

**1.1** Define economics and discuss the difference between microeconomics and macroeconomics

## The Power of Economic Analysis

Simply knowing that self-interest and incentives are central to any decision-making process is not sufficient for predicting the choices that people will actually make. You also have to develop a framework that will allow you to analyze solutions to each economic problem—whether you are trying to decide how much to study, which courses to take, whether to finish school, or whether the U.S. government should provide more grants to universities or raise taxes. The framework that you will learn in this text is the *economic way of thinking*.

This framework gives you power—the power to reach informed judgments about what is happening in the world. You can, of course, live your life without the power of economic analysis as part of your analytical framework. Indeed, most people do. Economists believe, though, that economic analysis can help you make better decisions concerning your career, your education, financing your home, and other important matters.

In the business world, the power of economic analysis can help increase your competitive edge as an employee or as the owner of a business. As a voter, for the rest of your life you will be asked to make judgments about policies that are advocated by political parties. Many of these policies will deal with questions related to international economics, such as whether the U.S. government should encourage or discourage immigration or restrict other countries from selling their goods here.

### Defining Economics

**Economics** is part of the social sciences and, as such, seeks explanations of real events. All social sciences analyze human behavior, as opposed to the physical sciences, which generally analyze the behavior of electrons, atoms, and other nonhuman phenomena.

*Economics is the study of how people allocate their limited resources in an attempt to satisfy their unlimited wants. As such, economics is the study of how people make choices.*

To understand this definition fully, two other words need explaining: *resources* and *wants*. **Resources** are things that have value and, more specifically, are used to produce goods and services that satisfy people’s wants. **Wants** are all of the items that people would purchase if they had unlimited income.

**Economics**

The study of how people allocate their limited resources to satisfy their unlimited wants.

**Resources**

Things used to produce goods and services to satisfy people’s wants.

**Wants**

What people would buy if their incomes were unlimited.

Whenever an individual, a business, or a nation faces alternatives, a choice must be made, and economics helps us study how those choices are made. For example, you have to choose how to spend your limited income. You also have to choose how to spend your limited time. You may have to choose how many of your company's limited resources to allocate to advertising and how many to allocate to new-product research. In economics, we examine situations in which individuals choose how to do things, when to do things, and with whom to do them. Ultimately, the purpose of economics is to explain choices.

[MyEconLab](#) **Concept Check**

## Microeconomics versus Macroeconomics

Economics is typically divided into two types of analysis: **microeconomics** and **macroeconomics**.

*Microeconomics is the part of economic analysis that studies decision making undertaken by individuals (or households) and by firms. It is like looking through a microscope to focus on the small parts of our economy.*

*Macroeconomics is the part of economic analysis that studies the behavior of the economy as a whole. It deals with economywide phenomena such as changes in unemployment, in the general price level, and in national income.*

Microeconomic analysis, for example, is concerned with the effects of changes in the price of gasoline relative to that of other energy sources. It examines the effects of new taxes on a specific product or industry. If the government establishes new health care regulations, how individual firms and consumers would react to those regulations would be in the realm of microeconomics. The effects of higher wages brought about by an effective union strike would also be analyzed using the tools of microeconomics.

In contrast, issues such as the rate of inflation, the amount of economywide unemployment, and the yearly growth in the output of goods and services in the nation all fall into the realm of macroeconomic analysis. In other words, macroeconomics deals with **aggregates**, or totals—such as total output in an economy.

Be aware, however, of the blending of microeconomics and macroeconomics in modern economic theory. Modern economists are increasingly using microeconomic analysis—the study of decision making by individuals and by firms—as the basis of macroeconomic analysis. They do this because even though macroeconomic analysis focuses on aggregates, those aggregates are the result of choices made by individuals and firms.

What change in the world of work has *both* microeconomic *and* macroeconomic effects?

### Microeconomics

The study of decision making undertaken by individuals (or households) and by firms.

### Macroeconomics

The study of the behavior of the economy as a whole, including such economywide phenomena as changes in unemployment, the general price level, and national income.

### Aggregates

Total amounts or quantities. Aggregate demand, for example, is total planned expenditures throughout a nation.

## SELF CHECK

Visit [MyEconLab](#) to practice problems and to get instant feedback in your Study Plan.

## EXAMPLE

### Microeconomic and Macroeconomic Implications of the *Gig Economy*

In years past, most people seeking income-generating labor employment applied for positions with firms that offered on-going wages and benefits such as employer-provided pension or health care plans. Today, however, about one-third of the nearly 160 million people deemed to be “employed” participate in what many observers call the *gig economy*—a setting in which people receive fixed payments for performing specific short-term tasks, or “gigs.”

From a microeconomic perspective, the development of this gig economy has altered the decision-making process for many individuals and firms. Rather than receiving hourly wages and on-going

benefits, gig workers receive multiple contractual payments. Then these workers must choose how to allocate their income to any items they wish to buy, including pension or health care services. Instead of allocating funds for wage or salary payments, firms now devote resources to staffing short-term projects. Resources that previously had been devoted to managing full-time employees have been shifted to the coordination of tasks provided by a wide range of freelancers providing services under terms of short-horizon contracts.

From a macroeconomic viewpoint, expansion of the gig economy during the past decade has contributed to a rise in the part-time share

(continued)

of employment from less than 17 percent less than a decade ago to above 20 percent today. As a consequence, economists now debate whether the overall U.S. economy has really moved closer to being “fully employed” given that many of the new “jobs” that people recently have acquired are held by part-time freelance workers.

### FOR CRITICAL THINKING

*Why do you suppose that economists sometimes disagree about whether to classify freelancers who provide paid consulting services to businesses as “workers” or “firms”?*

Sources are listed at the end of this chapter.

MyEconLab [Concept Check](#)  
MyEconLab [Study Plan](#)

**1.2** Identify the three basic economic questions and the two opposing sets of answers

#### Economic system

A society's institutional mechanism for determining the way in which scarce resources are used to satisfy human desires.

## The Three Basic Economic Questions and Two Opposing Sets of Answers

In every nation, three fundamental questions must be addressed irrespective of the form of its government or who heads that government, how rich or how poor the nation may be, or what type of **economic system**—the institutional mechanism through which resources are utilized to satisfy human wants—has been chosen.

### The Three Basic Questions

The three fundamental questions of economics concern the problem of how to allocate society's scarce resources:

1. *What and how much will be produced?* Some mechanism must exist for determining which items will be produced while others remain inventors' pipe dreams or individuals' unfulfilled desires.
2. *How will items be produced?* There are many ways to produce a desired item. It is possible to use more labor and fewer machines, or vice versa. It is possible, for instance, to produce an item with an aim to maximize the number of people employed. Alternatively, an item may be produced with an aim to minimize the total expenses that members of society incur. Somehow, a decision must be made about the mix of resources used in production, the way in which they are organized, and how they are brought together at a particular location.
3. *For whom will items be produced?* Once an item is produced, who should be able to obtain it? People use scarce resources to produce any item, so typically people value access to that item. Thus, determining a mechanism for distributing produced items is a crucial issue for any society.

Now that you know the questions an economic system must answer, how do current systems actually answer them?

MyEconLab [Concept Check](#)

### Two Opposing Sets of Answers

At any point in time, every nation has its own economic system. How a nation's residents go about answering the three basic economic questions depends on that nation's economic system.

**CENTRALIZED COMMAND AND CONTROL** Throughout history, one common type of economic system has been *command and control* (also called *central planning*) by a centralized authority, such as a king or queen, a dictator, a central government, or some other type of authority. Such an entity assumes responsibility for addressing fundamental economic issues. Under command and control, this authority decides what items to produce and how many, determines how the scarce resources will be organized in the items' production, and identifies who will be able to obtain the items.



For instance, in a command-and-control economic system, a government might decide that particular types of automobiles ought to be produced in certain numbers. The government might issue specific rules for how to manage the production of these vehicles, or it might even establish ownership over those resources so that it can make all such resource allocation decisions directly. Finally, the government will then decide who will be authorized to purchase or otherwise utilize the vehicles.

**THE PRICE SYSTEM** The alternative to command and control is the *price system* (also called a *market system*), which is a shorthand term describing an economic system that answers the three basic economic questions via decentralized decision making. Under a pure price system, individuals and families own all of the scarce resources used in production. Consequently, choices about what and how many items to produce are left to private parties to determine on their own initiative, as are decisions about how to go about producing those items. Furthermore, individuals and families choose how to allocate their own incomes to obtain the produced items at prices established via privately organized mechanisms.

In the price system, which you will learn about in considerable detail in Chapters 3 and 4, prices define the terms under which people agree to make exchanges. Prices signal to everyone within a price system which resources are relatively scarce and which are relatively abundant. This *signaling* aspect of the price system provides information to individual buyers and sellers about what and how many items should be produced, how production of items should be organized, and who will choose to buy the produced items.

Thus, in a price system, individuals and families own the facilities used to produce automobiles. They decide which types of automobiles to produce, how many of them to produce, and how to bring labor and machines together within their facilities to generate the desired production. Other individuals and families decide how much of their earnings they wish to spend on automobiles.

## WHAT IF...

**the government increases pharmaceutical companies' costs but prevents them from raising their prices?**

In fact, in recent years the U.S. government's Food and Drug Administration (FDA) has required many pharmaceutical firms to use higher-cost production techniques to produce drugs. At the same time, the government has prevented the companies from adjusting their prices to take fully into

account the higher expenses required to utilize the prescribed techniques and equipment. The failure of pharmaceutical prices to fully reflect the rising costs of producing the drugs has provided a signal to the owners of some manufacturers that they should reduce or even halt production.

**MIXED ECONOMIC SYSTEMS** By and large, the economic systems of the world's nations are mixed economic systems that incorporate aspects of both centralized command and control and a decentralized price system. At any given time, some nations lean toward centralized mechanisms of command and control and allow relatively little scope for decentralized decision making. At the same time, other nations limit the extent to which a central authority dictates answers to the three basic economic questions, leaving people mostly free to utilize a decentralized price system to generate their own answers.

A given country may reach different decisions at different times about how much to rely on command and control versus a price system to answer its three basic economic questions. Until 2008, for instance, U.S. residents preferred to rely mainly on a decentralized price system to decide which and how many financial services to produce and how to produce them. Since then, the U.S. government has owned substantial fractions of financial firms and hence has exerted considerable command-and-control authority over production of financial services.

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### SELF CHECK

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**1.3** Evaluate the role that rational self-interest plays in economic analysis

#### Rationality assumption

The assumption that people do not intentionally make decisions that would leave them worse off.

#### YOU ARE THERE

To consider why chicken farmers have an incentive to try to understand the clucks of chickens, take a look at **The Incentive to Understand Chickens' "Speech"** on page 11.

## The Economic Approach: Systematic Decisions

Economists assume that individuals act *as if* they systematically pursue self-motivated interests and respond predictably to perceived opportunities to attain those interests. This central insight of economics was first clearly articulated by Adam Smith in 1776. Smith wrote in his most famous book, *An Inquiry into the Nature and Causes of the Wealth of Nations*, that “it is not from the benevolence [good will] of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.” Thus, the typical person about whom economists make behavioral predictions is assumed to act *as though* he or she systematically pursues self-motivated interest.

### The Rationality Assumption

The **rationality assumption** of economics, simply stated, is as follows:

*We assume that individuals do not intentionally make decisions that would leave them worse off.*

The distinction here is between what people may think—the realm of psychology and psychiatry and perhaps sociology—and what they do. Economics does *not* involve itself in analyzing individual or group thought processes. Economics looks at what people actually do in life with their limited resources. It does little good to criticize the rationality assumption by stating, “Nobody thinks that way” or “I never think that way” or “How unrealistic! That’s as irrational as anyone can get!” In a world in which people can be atypical in countless ways, economists find it useful to concentrate on discovering the baseline. Knowing what happens on average is a good place to start. In this way, we avoid building our thinking on exceptions rather than on reality.

Take the example of driving. When you consider passing another car on a two-lane highway with oncoming traffic, you have to make very quick decisions: You must estimate the speed of the car that you are going to pass, the speed of the oncoming cars, the distance between your car and the oncoming cars, and your car’s potential rate of acceleration. If we were to apply a model to your behavior, we would use the rules of calculus. In actual fact, you and most other drivers in such a situation do not actually think of using the rules of calculus, but to predict your behavior, we could make the prediction *as if* you understood those rules.

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### Responding to Incentives

If it can be assumed that individuals never intentionally make decisions that would leave them worse off, then almost by definition they will respond to changes in incentives. Indeed, much of human behavior can be explained in terms of how individuals respond to changing incentives over time.

Schoolchildren are motivated to do better by a variety of incentive systems, ranging from gold stars and certificates of achievement when they are young, to better grades with accompanying promises of a “better life” as they get older. Of course, negative incentives affect our behavior, too. Penalties, punishments, and other forms of negative incentives can raise the total cost of engaging in various activities.

How did incentive effects of *higher* tax rates in Greece contribute to a *reduction* in tax receipts by the nation’s government?

## INTERNATIONAL POLICY EXAMPLE

### Greece Discovers That Higher Tax Rates Encourage More Tax Evasion

During the past few years, the government of Greece has implemented gradual increases in several tax rates. The government has raised by several percentage points the top basic income tax rate applied to households.

This tax rate is now 42 percent, which is among the highest income tax rates in Europe. In addition, it has imposed an additional 4 percent “solidarity tax rate” on household incomes that initially was to last a single year



but has been extended for several more years. Furthermore, it has increased the corporate income tax rate from 20 percent to 33 percent.

The Greek government intended for the higher tax rates to generate billions of dollars in new tax revenues. In fact, however, the government's tax revenues have *declined* slightly. A key reason for this revenue drop-off has been that residents of Greece responded to the higher tax rates by boosting their efforts to evade paying taxes. Since 2010, when the Greek government began phasing in higher tax rates, the share of taxes actually collected as a percentage of taxes legally owed has declined from about 60 percent—which already was Europe's lowest—to less than 50 percent. Thus, raising tax rates has

given Greek residents a greater incentive to evade taxes, which has contributed to the decrease in government tax revenues that followed the tax-rate boosts.

### FOR CRITICAL THINKING

*How do you suppose that higher tax rates have affected the incentive for Greek residents to engage in tax avoidance, or legally reducing tax liabilities, including earning less income that is subjected to taxation?*

Sources are listed at the end of this chapter.

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## Defining Self-Interest

Self-interest does not always mean increasing one's wealth measured in dollars and cents. We assume that individuals seek many goals, not just increased wealth measured in monetary terms. Thus, the self-interest part of our economic-person assumption includes goals relating to prestige, friendship, love, power, helping others, creating works of art, and many other matters. We can also think in terms of enlightened self-interest, whereby individuals, in the pursuit of what makes them better off, also achieve the betterment of others around them. In brief, individuals are assumed to want the ability to further their goals by making decisions about how items around them are used. The head of a charitable organization usually will not turn down an additional contribution, because accepting the funds yields control over how they are used, even though their use is for other people's benefit.

Why do many women continue to pursue their self-interest by holding traditionally "female" jobs that offer lower pay than work more commonly performed by men?

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## BEHAVIORAL EXAMPLE

### Why Doesn't Higher Pay Persuade Some Women to Avoid Traditional Gender Roles?

In 1980, U.S. women earned 35 percent less, on average, than men. This "gender gap" in earnings has declined in the years since, to just above 20 percent today. The gap remains primarily because many young women continue to choose traditionally female occupations, such as jobs as receptionists, secretaries, and housekeepers. These women allocate their time to such work even though they have more years of education than the average male and hence often would qualify for higher-paying work in other positions.

Behavioral economists have found an element that helps to explain this observation: the large number of women who recently immigrated to the United States from countries using languages with unambiguously feminine names for certain jobs. For instance, the Spanish word for people who engage in cleaning tasks is concretely feminine and translates into English

as "maids." Behavioral economists have found that such languages appear to be closely associated with cultural traditions in which many immigrant women opt for work in predominantly "female" occupations. For these women, higher pay for jobs mainly held by men apparently is an insufficient incentive to induce them to reverse traditional behaviors that reinforce stereotypical gender roles—and that generate lower pay.

### FOR CRITICAL THINKING

*Why do you suppose that second- and third-generation females of U.S. immigrant families are found to be more likely to accept working alongside males in higher-paying jobs?*

Sources are listed at the end of this chapter.

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## Economics as a Science

Economics is a social science that employs the same kinds of methods used in other sciences, such as biology, physics, and chemistry. Like these other sciences, economics uses models, or theories. Economic **models, or theories**, are simplified representations of the real world that we use to help us understand, explain, and predict

**1.4** Explain why economics is a science

### Models, or theories

Simplified representations of the real world used as the basis for predictions or explanations.

economic phenomena in the real world. There are, of course, differences between sciences. The social sciences—especially economics—make little use of laboratory experiments in which changes in variables are studied under controlled conditions. Rather, social scientists, and especially economists, usually have to test their models, or theories, by examining what has already happened in the real world.

## Models and Realism

At the outset it must be emphasized that no model in *any* science, and therefore no economic model, is complete in the sense that it captures *every* detail or interrelationship that exists. Indeed, a model, by definition, is an abstraction from reality. It is conceptually impossible to construct a perfectly complete realistic model. For example, in physics we cannot account for every molecule and its position and certainly not for every atom and subatomic particle. Not only is such a model unreasonably expensive to build, but working with it would be impossibly complex.

The nature of scientific model building is that the model should capture only the *essential* relationships that are sufficient to analyze the particular problem or answer the particular question with which we are concerned. *An economic model cannot be faulted as unrealistic simply because it does not represent every detail of the real world.* A map of a city that shows only major streets is not faulty if, in fact, all you wish to know is how to pass through the city using major streets. As long as a model is able to shed light on the *central* issue at hand or forces at work, it may be useful.

A map is the quintessential model. It is *always* a simplified representation. It is *always* unrealistic. It is, however, also useful in making predictions about the world. If the model—the map—predicts that when you take Campus Avenue to the north, you always run into the campus, that is a prediction. If a simple model can explain observed behavior in repeated settings just as well as a complex model, the simple model has some value and is probably easier to use.

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## Assumptions

Every model, or theory, must be based on a set of assumptions. Assumptions define the array of circumstances in which our model is most likely to be applicable. When some people predicted that sailing ships would fall off the edge of the earth, they used the *assumption* that the earth was flat. Columbus did not accept the implications of such a model because he did not accept its assumptions. He assumed that the world was round. The real-world test of his own model refuted the flat-earth model. Indirectly, then, it was a test of the assumption of the flat-earth model.

Is it possible to use our knowledge about assumptions to understand why driving directions sometimes contain very few details?

## EXAMPLE

### Getting Directions

Assumptions are a shorthand for reality. Imagine that you have decided to drive from your home in San Diego to downtown San Francisco. Because you have never driven this route, you decide to use a travel-planner device such as global-positioning-system equipment.

When you ask for directions, the electronic travel planner could give you a set of detailed maps that shows each city through which you will travel—Oceanside, San Clemente, Irvine, Anaheim, Los Angeles, Bakersfield, Modesto, and so on—with the individual maps showing you exactly how the freeway threads through each of these cities. You would get a nearly complete description of reality because the GPS travel planner will not have used many simplifying assumptions. It is more likely, however, that the

travel planner will simply say, “Get on Interstate 5 going north. Stay on it for about 500 miles. Follow the signs for San Francisco. After crossing the toll bridge, take any exit marked ‘Downtown.’” By omitting all of the trivial details, the travel planner has told you all that you really need and want to know. The models you will be using in this text are similar to the simplified directions on how to drive from San Diego to San Francisco—they focus on what is relevant to the problem at hand and omit what is not.

### FOR CRITICAL THINKING

*In what way do small talk and gossip represent the use of simplifying assumptions?*

**THE CETERIS PARIBUS ASSUMPTION: ALL OTHER THINGS BEING EQUAL** Everything in the world seems to relate in some way to everything else in the world. It would be impossible to isolate the effects of changes in one variable on another variable if we always had to worry about the many other variables that might also enter the analysis. Similar to other sciences, economics uses the *ceteris paribus* assumption. *Ceteris paribus* means “other things constant” or “other things equal.”

Consider an example taken from economics. One of the most important determinants of how much of a particular product a family buys is how expensive that product is relative to other products. We know that in addition to relative prices, other factors influence decisions about making purchases. Some of them have to do with income, others with tastes, and yet others with custom and religious beliefs. Whatever these other factors are, we hold them constant when we look at the relationship between changes in prices and changes in how much of a given product people will purchase.

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**Ceteris paribus [KAY-ter-us PEAR-uh-bus] assumption**

The assumption that nothing changes except the factor or factors being studied.

## Deciding on the Usefulness of a Model

We generally do not attempt to determine the usefulness, or “goodness,” of a model merely by evaluating how realistic its assumptions are. Rather, we consider a model “good” if it yields usable predictions that are supported by real-world observations. In other words, can we use the model to predict what will happen in the world around us? Does the model provide useful implications about how things happen in our world?

Once we have determined that the model may be useful in predicting real-world phenomena, the scientific approach to the analysis of the world around us requires that we consider evidence. Evidence is used to test the usefulness of a model. This is why we call economics an **empirical** science. *Empirical* means that evidence (data) is looked at to see whether we are right. Economists are often engaged in empirically testing their models.

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**Empirical**

Relying on real-world data in evaluating the usefulness of a model.

## Models of Behavior, Not Thought Processes

Take special note of the fact that economists’ models do not relate to the way people *think*. Economic models relate to the way people *act*, to what they do in life with their limited resources. Normally, the economist does not attempt to predict how people will think about a particular topic, such as a higher price of oil products, accelerated inflation, or higher taxes. Rather, the task at hand is to predict how people will behave, which may be quite different from what they *say* they will do (much to the consternation of poll takers and market researchers). Thus, people’s *declared* preferences are generally of little use in testing economic theories, which aim to explain and predict people’s *revealed* preferences. The people involved in examining thought processes are psychologists and psychiatrists, not typically economists. MyEconLab Concept Check

## Behavioral Economics and Bounded Rationality

In recent years, some economists have proposed paying more attention to psychologists and psychiatrists. They have suggested an alternative approach to economic analysis. Their approach, known as **behavioral economics**, examines consumer behavior in the face of psychological limitations and complications that may interfere with rational decision making.

**BOUNDED RATIONALITY** Proponents of behavioral economics suggest that traditional economic models assume that people exhibit three “unrealistic” characteristics:

1. *Unbounded selfishness.* People are interested only in their own satisfaction.
2. *Unbounded willpower.* Their choices are always consistent with their long-term goals.
3. *Unbounded rationality.* They are able to consider every relevant choice.

**Behavioral economics**

An approach to the study of consumer behavior that emphasizes psychological limitations and complications that potentially interfere with rational decision making.