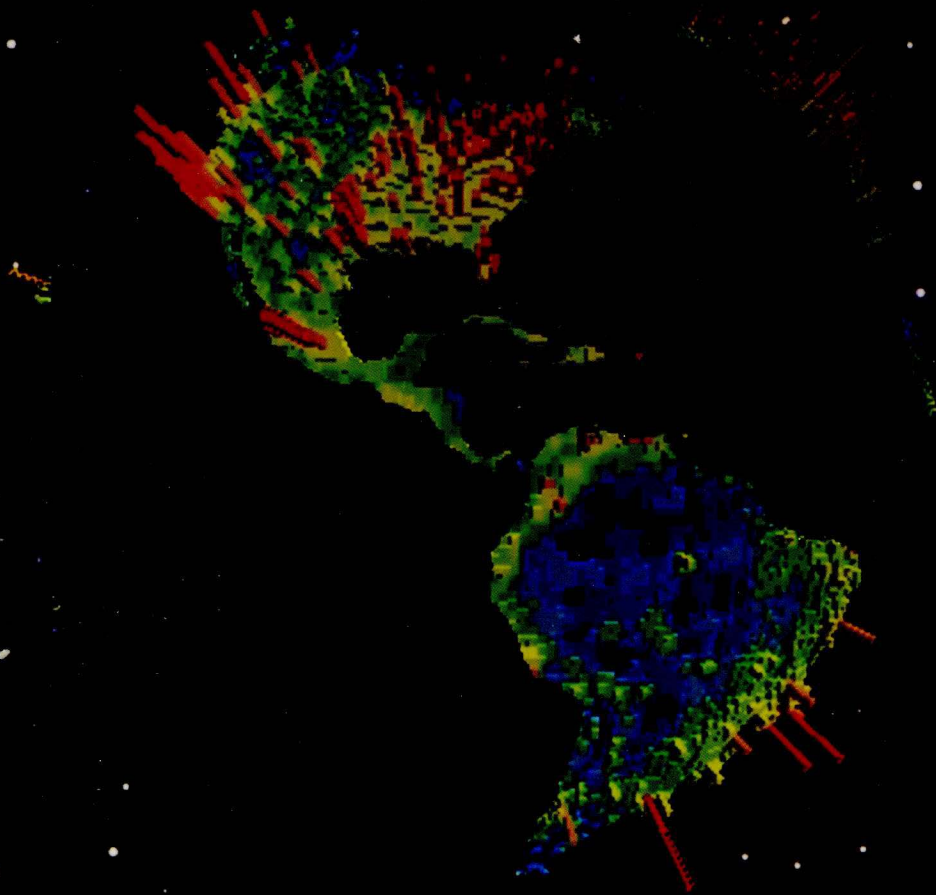


# Economics



Paul A. Samuelson  
William D. Nordhaus

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# ECONOMICS

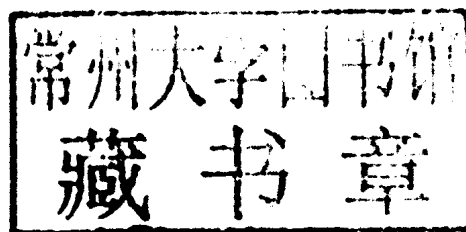
Nineteenth Edition

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*To our families, students, and colleagues*

## ECONOMICS

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We survey the centrist approach to economics in the pages that follow. Millions of students in China, India, Latin America, and emerging societies have sought economic wisdom from these pages. Our task is to make sure that the latest and best thinking of economists is contained here, describing the logic of the modern mixed economy, but always presenting in a fair manner the views of those who criticize it from the left and the right.

But we go a step further in our proclamation. We hold that there must be a *limited centrism*. Our knowledge is imperfect, and society's resources are limited. We are also mindful of our current predicament. We see that unfettered capitalism has generated painful inequalities of income and wealth, and that supply-side fiscal doctrines have produced large government deficits. We observe that the major innovations of modern finance, when operating in an unregulated system, have produced trillions of dollars of losses and led to the ruin of many venerable financial institutions.

Only by steering our societies back to the limited center can we ensure that the global economy returns to full employment where the fruits of progress are more equally shared.

Paul A. Samuelson  
February 2009

As we complete this nineteenth edition of *Economics*, the U.S. economy has fallen into a deep recession as well as the most serious financial crisis since the Great Depression of the 1930s. The federal government has invested hundreds of billions of dollars to protect the fragile network of the U.S. and indeed the world financial system. The new Obama administration has worked with Congress to pass the largest stimulus package in American history. The economic turmoil, and the manner in which countries respond to it, will shape the American economy, its labor market, and the world financial system for years to come.

We should remember, however, that the financial crisis of 2007–2009 came after more than a half-century of spectacular increases in the living standards of most of the world, particularly those living in the affluent countries of North America, Western Europe, and East Asia. People are asking, “Will the twenty-first century repeat the successes of the last century? Will the affluence of the few spread to poor countries? Alternatively, will the four horsemen of the economic apocalypse—famine, war, environmental degradation, and depression—spread to the North? Do we have the wisdom to reshape our financial systems so that they can continue to provide the investments that have fueled economic growth up to now? And what should we think about environmental threats such as global warming?”

These are ultimately the questions we address in this new edition of *Economics*.

## **The Growing Role of Markets**

You might think that prosperity would lead to a declining interest in economic affairs, but paradoxically an understanding of the enduring truths of economics has become even more vital in the affairs of people and nations. Those who remember history recognize that the crises that threatened

financial markets in the twenty-first century were the modern counterpart of banking panics of an earlier era.

In the larger scene, the world has become increasingly interconnected as computers and communications create an ever more competitive global marketplace. Developing countries like China and India—two giants that relied heavily on central planning until recently—need a firm understanding of the institutions of a market economy if they are to attain the living standards of the affluent. At the same time, there is growing concern about international environmental problems and the need to forge agreements to preserve our precious natural heritage. All these fascinating changes are part of the modern drama that we call economics.

## **ECONOMICS Reborn**

For more than half a century, this book has served as the standard-bearer for the teaching of introductory economics in classrooms in America and throughout the world. Each new edition distills the best thinking of economists about how markets function and about what countries can do to improve people’s living standards. But economics has changed profoundly since the first edition of this text appeared in 1948. Moreover, because economics is above all a living and evolving organism, *Economics* is born anew each edition as the authors have the exciting opportunity to present the latest thinking of modern economists and to show how the subject can contribute to a more prosperous world.

Our task then is this: We strive to present a clear, accurate, and interesting introduction to the principles of modern economics and to the institutions of the American and world economies. Our primary goal is to emphasize the core economic principles that will endure beyond today’s headlines.

## THE NINETEENTH EDITION

As economics and the world around it evolve, so does this book. Our philosophy continues to emphasize six basic principles that underlie earlier editions and this revision:

**1. The Core Truths of Economics.** Often, economics appears to be an endless procession of new puzzles, problems, and dilemmas. But as experienced teachers have learned, there are a few basic concepts that underpin all of economics. Once these concepts have been mastered, learning is much quicker and more enjoyable. *We have therefore chosen to focus on the central core of economics—on those enduring truths that will be just as important in the twenty-first century as they were in the twentieth.* Microeconomic concepts such as scarcity, efficiency, the gains from specialization, and the principle of comparative advantage will be crucial concepts as long as scarcity itself exists. In macroeconomics, we emphasize the two central approaches: Keynesian economics to understand business cycles, and the neoclassical growth model to understand longer-term growth trends. Within these frameworks, established approaches such as the consumption function take place alongside new developments in financial macroeconomics.

**2. Innovation in Economics.** Economics has made many advances in understanding the role of innovation. We are accustomed to the dizzying speed of invention in software, where new products appear monthly. The Internet is revolutionizing communications and study habits and is making inroads into commerce.

In addition, we emphasize innovations in economics itself. Economists are innovators and inventors in their own way. History shows that economic ideas can produce tidal waves when they are applied to real-world problems. Among the important innovations we survey is the application of economics to our environmental problems through emissions-trading plans. We explain how behavioral economics has changed views of consumer theory and finance. One of the most important innovations for our common future is dealing with global public goods like climate change, and we analyze new ways to deal with international environmental problems, including approaches such as the Kyoto Protocol. We must

also track innovations in policy, such as the changing approach to monetary policy in the Federal Reserve.

**3. Small Is Beautiful.** Economics has increased its scope greatly over the past half-century. The flag of economics flies over its traditional territory of the marketplace, but it also covers the environment, legal studies, statistical and historical methods, gender and racial discrimination, and even family life. But at its core, economics is the science of choice. That means that we, as authors, must choose the most important and enduring issues for this text. In a survey, as in a meal, small is beautiful because it is digestible.

Choosing the subjects for this text required many hard choices. To select these topics, we continually survey teachers and leading scholars to determine the issues most crucial for an informed citizenry and a new generation of economists. We drew up a list of key ideas and bid farewell to material we judged inessential or dated. *At every stage, we asked whether the material was, as best we could judge, necessary for a student's understanding of the economics of the twenty-first century.* Only when a subject passed this test was it included. The result of this campaign is a book that has lost more than one-quarter of its weight in the last few editions and has trimmed three chapters for this edition. Farm economics, the history of labor unions, Marxian economics, advanced treatment of general equilibrium, regulatory developments, and the lump-of-labor fallacy have been trimmed to make room for modern financial theory, real business cycles, and global public goods.

**4. Policy Issues for Today.** For many students, the lure of economics is its relevance to public policy. The nineteenth edition emphasizes policy in both microeconomics and macroeconomics. As human societies grow, they begin to overwhelm the environment and ecosystems of the natural world. Environmental economics helps students understand the externalities associated with economic activity and then analyzes different approaches to making human economies compatible with natural systems. New examples bring the core principles of microeconomics to life.

A second area of central importance is financial and monetary economics. We have completely revised our treatment here. Previous treatment emphasized the quantity of money as the prime channel through which the central bank influences the economy. This

approach no longer reflects the realities of a modern financial system. Today, the Fed exercises its policies by targeting the short-run interest rate and providing liquidity to financial markets. With the nineteenth edition, we fully incorporate these changes in three central chapters.

**5. Debates about Globalization.** The last decade has witnessed pitched battles over the role of international trade in our economies. Some argue that “outsourcing” is leading to the loss of thousands of jobs to India and China. Immigration has been a hot-burner issue, particularly in communities with high unemployment rates. Whatever the causes, the United States was definitely faced with the puzzle of rapid output growth and a very slow growth in employment in the first decade of the twenty-first century.

One of the major debates of recent years has been over “globalization,” which concerns the increasing economic integration of different countries. Americans have learned that no country is an economic island. Immigration and international trade have profound effects on the goods that are available, the prices we pay, and the wages we earn. Terrorism can wreak havoc on the economy at home, while war causes famines, migration, and reduced living standards in Africa. No one can fully understand the impact of growing trade and capital flows without a careful study of the theory of comparative advantage. We will see how the flow of financial capital has an enormous influence on trading patterns as well as understand why poor countries like China save while rich countries like the United States are borrowers. The nineteenth edition continues to increase the material devoted to international economics and the interaction between international trade and domestic economic events.

**6. Clarity.** Although there are many new features in the nineteenth edition, the pole star for our pilgrimage for this edition has been to present economics clearly and simply. Students enter the classroom with a wide range of backgrounds and with many preconceptions about how the world works. Our task is not to change students’ values. Rather, we strive to help students understand enduring economic principles so that they may better be able to apply them—to make the world a better place for themselves, their families, and their communities. Nothing aids understanding better than clear, simple exposition. We have labored

over every page to improve this survey of introductory economics. We have received thousands of comments and suggestions from teachers and students and have incorporated their counsel in the nineteenth edition.

### Optional Matter

Economics courses range from one-quarter surveys to year-long intensive honors courses. This textbook has been carefully designed to meet all situations. If yours is a fast-paced course, you will appreciate the careful layering of the more advanced material. Hard-pressed courses can skip the advanced sections and chapters, covering the core of economic analysis without losing the thread of the economic reasoning. This book will challenge the most advanced young scholar. Indeed, many of today’s leading economists have written to say they have relied upon *Economics* all along their pilgrimage to the Ph.D.

### Format

The nineteenth edition employs in-text logos and material to help illustrate the central topics. You will find a distinctive logo indicating warnings for the fledgling economist, examples of economics in action, and biographical material on the great economists of the past and present. But these central topics are not drifting off by themselves in unattached boxes. Rather, they are integrated right into the chapter so that students can read them and see how they illustrate the core material. Keep these sections in mind as you read through the text. Each one is either:

- A warning that students should pause to ensure that they understand a difficult or subtle point.
- An interesting example or application of the analysis, often representing one of the major innovations of modern economics.
- A biography of an important economic figure.

New features in this edition include fresh end-of-chapter questions, with a special accent on short problems that reinforce the major concepts surveyed in the chapter.

Terms printed in **bold type** in the text mark the first occurrence and definition of the most important words that constitute the language of economics.

But these many changes have not altered one bit the central stylistic beacon that has guided *Economics* since the first edition: to use simple sentences, clear explanations, and concise tables and graphs.



### **For Those Who Prefer Macro First**

Although, like the previous edition, this new edition has been designed to cover microeconomics first, many teachers continue to prefer beginning with macroeconomics. Many believe that the beginning student finds macro more approachable and will more quickly develop a keen interest in economics when the issues of macroeconomics are encountered first. We have taught economics in both sequences and find both sequences work well.

Whatever your philosophy, this text has been carefully designed for it. Instructors who deal with microeconomics first can move straight through the chapters. Those who wish to tackle macroeconomics first should skip from Part One directly to Part Five, knowing that the exposition and cross-references have been tailored with their needs in mind.

In addition, for those courses that do not cover the entire subject, the nineteenth edition is available in two paperback volumes, *Microeconomics* (Chapters 1 to 18 of the full text) and *Macroeconomics* (Chapters 1 to 3, 15, and 19 to 31 of the full text).

### **Auxiliary Teaching and Study Aids**

Students of this edition will benefit greatly from the *Study Guide*. This carefully designed supplement was updated by Walter Park of the American University. When used alongside classroom discussions and when employed independently for self-study, the *Study Guide* has proved to be an impressive success. There is a full-text *Study Guide*, as well as micro and macro versions. The *Study Guides* are available electronically for online purchase or packaged with the text via code-card access.

In addition, instructors will find both the *Instructor's Resource Manual*, updated for this edition by Carlos Liard-Muriente of Central Connecticut State University, and the *Test Bank*, fully revised by Craig Jumper of Rich Mountain Community College. These supplements are incredibly useful for instructors planning their courses and preparing multiple sets of test questions in both print and computerized formats. The graphs and figures in this edition can also be viewed electronically as PowerPoint slides. The slides can be downloaded from our website ([www.mhhe.com/samuelson19e](http://www.mhhe.com/samuelson19e)). The website also contains chapter summaries, self-grading practice quizzes, and links to the websites suggested for further research at the end of each chapter.

### **CourseSmart eTextbook**

For roughly half the cost of a print book, you can reduce your impact on the environment by purchasing the electronic edition of the nineteenth edition of Samuelson and Nordhaus, *Economics*. CourseSmart eTextbooks, available in a standard online reader, retain the exact content and layout of the print text, plus offer the advantage of digital navigation to which students are accustomed. Students can search the text, highlight, take notes, and use e-mail tools to share notes with their classmates. CourseSmart also includes tech support in case help is ever needed. To buy *Economics*, 19e as an eTextbook, or to learn more about this digital solution, visit [www.CourseSmart.com](http://www.CourseSmart.com) and search by title, author, or ISBN.

### **Economics in the Computer Age**

The electronic age has revolutionized the way that scholars and students can access information. In economics, the information revolution allows us quick access to economic statistics and research. An important feature of the nineteenth edition is the section "Economics and the Internet," which appears just before Chapter 1. This little section provides a road map for the state of economics on the Information Superhighway.

In addition, each chapter has an updated section at the end with suggestions for further reading and addresses of websites that can be used to deepen student understanding or find data and case studies.

### **Acknowledgments**

This book has two authors but a multitude of collaborators. We are profoundly grateful to colleagues, reviewers, students, and McGraw-Hill's staff for contributing to the timely completion of the nineteenth edition of *Economics*. Colleagues at MIT, Yale, and elsewhere who have graciously contributed their comments and suggestions over the years include William C. Brainard, E. Cary Brown, John Geanakoplos, Robert J. Gordon, Lyle Gramley, Gerald Jaynes, Paul Joskow, Alfred Kahn, Richard Levin, Robert Litan, Barry Nalebuff, Merton J. Peck, Gustav Ranis, Herbert Scarf, Robert M. Solow, James Tobin, Janet Yellen, and Gary Yohe.

In addition, we have benefited from the tireless devotion of those whose experience in teaching elementary economics is embodied in this edition. We



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Students at MIT, Yale, and other colleges and universities have served as an “invisible college.” They constantly challenge and test us, helping to make this edition less imperfect than its predecessor. Although they are too numerous to enumerate, their influence is woven through every chapter. Nancy King helped in logistics at the New Haven end of the operation. We are particularly grateful for the contribution of Caroleen Verly, who read the manuscript and made many suggestions for improvement. We are grateful to Dr. Xi Chen, who prepared the economic globes and reviewed the manuscript.

This project would have been impossible without the skilled team from McGraw-Hill who nurtured the book at every stage. We particularly would like to thank, in chronological order to their appearance on the scene: Douglas Reiner, Karen Fisher, Noelle Fox, Susanne Reidell, Lori Hazzard, Matt Baldwin, and Jen Lambert. This group of skilled professionals turned many megabytes and a mountain of paper into a finely polished work of art.

## A WORD TO THE SOVEREIGN STUDENT

You have read in history books of revolutions that shake civilizations to their roots—religious conflicts, wars for political liberation, struggles against

colonialism and imperialism. Two decades ago, economic revolutions in Eastern Europe, in the former Soviet Union, in China, and elsewhere tore those societies apart. Young people battered down walls, overthrew established authority, and agitated for democracy and a market economy because of discontent with their centralized socialist governments.

Students like yourselves were marching, and even going to jail, to win the right to study radical ideas and learn from Western textbooks like this one in the hope that they may enjoy the freedom and economic prosperity of democratic market economies.

## The Intellectual Marketplace

Just what is the market that students in repressed societies are agitating for? In the pages that follow, you will learn about the promise and perils of globalization, about the fragility of financial markets, about unskilled labor and highly trained neurosurgeons. You have probably read in the newspaper about the gross domestic product, the consumer price index, the Federal Reserve, and the unemployment rate. After you have completed a thorough study of this textbook, you will know precisely what these words mean. Even more important, you will also understand the economic forces that influence and determine them.

There is also a marketplace of ideas, where contending schools of economists fashion their theories and try to persuade their scientific peers. You will find in the chapters that follow a fair and impartial review of the thinking of the intellectual giants of our profession—from the early economists like Adam Smith, David Ricardo, and Karl Marx to modern-day titans like John Maynard Keynes, Milton Friedman, and James Tobin.

## Skoal!

As you begin your journey into the land of the mixed economy, it would be understandable if you are anxious. But take heart. The fact is that we envy you, the beginning student, as you set out to explore the exciting world of economics for the first time. This is a thrill that, alas, you can experience only once in a lifetime. So, as you embark, we wish you bon voyage!

Paul A. Samuelson  
 William D. Nordhaus

The Information Age is revolutionizing our lives. Its impact on scholars and students has been particularly profound because it allows inexpensive and rapid access to vast quantities of information. The Internet, which is a huge and growing public network of linked computers and information, is changing the way we study, shop, share our culture, and communicate with our friends and family.

In economics, the Internet allows us quick access to economics statistics and research. With just a few clicks of a mouse, we can find out about the most recent unemployment rate, track down information on poverty and incomes, or investigate the intricacies of our banking system. A few years ago, it might have taken weeks to dig out the data necessary to analyze an economic problem. Today, with a computer and a little practice, that same task can be done in a few minutes.

This book is not a manual for driving on the Information Superhighway. That skill can be learned in classes on the subject or from informal tutorials. Rather, we want to provide a road map that shows the locations of major sources of economic data and research. With this map and some rudimentary navigational skills, you can explore the various sites and find a rich array of data, information, studies, and chat rooms. Additionally, at the end of each chapter there is a list of useful websites that can be used to follow up the major themes of that chapter.

Note that some of these sites may be free, some may require a registration or be available through your college or university, and others may require paying a fee. Pricing practices change rapidly, so while we have attempted to include primarily free sites, we have not excluded high-quality sites that may charge a fee.

### **Data and Institutions**

The Internet is an indispensable source of useful data and other information. Since most economic data are provided by governments, the first place to

look is the web pages of government agencies and international organizations. The starting point for U.S. government statistics, [www.fedstats.gov](http://www.fedstats.gov), provides one-stop shopping for federal statistics with links to over 70 government agencies that produce statistical information. Sources are organized by subject or by agency, and the contents are fully searchable. Another good launching site into the federal statistical system is the Economic Statistics Briefing Room at [www.whitehouse.gov/fsbr/esbr.html](http://www.whitehouse.gov/fsbr/esbr.html). Additionally, the Commerce Department operates a huge database at [www.stat-usa.gov](http://www.stat-usa.gov), but use of parts of this database requires a subscription (which may be available at your college or university).

The best single statistical source for data on the United States is the *Statistical Abstract of the United States*, published annually. It is available online at [www.census.gov/compendia/statab](http://www.census.gov/compendia/statab). If you want an overview of the U.S. economy, you can read the *Economic Report of the President* at [www.gpoaccess.gov/eop/index.html](http://www.gpoaccess.gov/eop/index.html).

Most of the major economic data are produced by specialized agencies. One place to find general data is the Department of Commerce, which encompasses the Bureau of Economic Analysis (BEA) ([www.bea.gov](http://www.bea.gov)) and the Census Bureau ([www.census.gov](http://www.census.gov)). The BEA site includes all data and articles published in the *Survey of Current Business*, including the national income and product accounts, international trade and investment flows, output by industry, economic growth, personal income and labor series, and regional data.

The Census Bureau site goes well beyond a nose count of the population. It also includes the economic census as well as information on housing, income and poverty, government finance, agriculture, foreign trade, construction, manufacturing, transportation, and retail and wholesale trade. In addition to making Census Bureau publications available, the site allows users to create custom extracts of popular microdata sources including the Survey of Income and Program Participation, Consumer Expenditure

Survey, Current Population Survey, American Housing Survey, and, of course, the most recent census.

The Bureau of Labor Statistics (at [www.bls.gov](http://www.bls.gov)) provides easy access to commonly requested labor data, including employment and unemployment, prices and living conditions, compensation, productivity, and technology. Also available are labor-force data from the Current Population Survey and payroll statistics from the Current Employment Statistics Survey.

A useful source for financial data is the website of the Federal Reserve Board at [www.federalreserve.gov](http://www.federalreserve.gov). This site provides historical U.S. economic and financial data, including daily interest rates, monetary and business indicators, exchange rates, balance-of-payments data, and price indexes. In addition, the Office of Management and Budget at [www.gpo.gov/usbudget/index.html](http://www.gpo.gov/usbudget/index.html) makes available the federal budget and related documents.

International statistics are often harder to find. The World Bank, at [www.worldbank.org](http://www.worldbank.org), has information on its programs and publications at its site, as does the International Monetary Fund, or IMF, at [www.imf.org](http://www.imf.org). The United Nations website ([www.unsystem.org](http://www.unsystem.org)) is slow and confusing but has links to most international institutions and their databases. A good source of information about high-income countries is the Organisation for Economic Cooperation and Development, or OECD, at [www.oecd.org](http://www.oecd.org). The OECD's website contains an array of data on economics, education, health, science and technology, agriculture, energy, public management, and other topics.

### **Economic Research and Journalism**

The Internet is rapidly becoming the world's library. Newspapers, magazines, and scholarly publications are increasingly posting their writing in electronic form. Most of them present what is already available in the paper publications. Some interesting sources can be found at the *Economist* at [www.economist.com](http://www.economist.com) and the *Financial Times* ([www.ft.com](http://www.ft.com)). The *Wall Street Journal* at [www.wsj.com](http://www.wsj.com) is currently expensive and not a cost-effective resource. Current policy issues are discussed at [www.policy.com](http://www.policy.com). The online magazine *Slate* at [www.slate.com](http://www.slate.com) occasionally contains excellent essays on economics.

For scholarly writings, many journals are making their contents available online. WebEc at [www.helsinki.fi/WebEc/](http://www.helsinki.fi/WebEc/) contains a listing of websites for many economic journals. The archives of many journals are available at [www.jstor.org](http://www.jstor.org).

There are now a few websites that bring many resources together at one location. One place to start is *Resources for Economists on the Internet*, sponsored by the American Economic Association and edited by Bill Goffe, at [www.rfe.org](http://www.rfe.org). Also see WWW *Resources in Economics*, which has links to many different branches of economics at [netec.wustl.edu/WebEc/WebEc.html](http://netec.wustl.edu/WebEc/WebEc.html). For working papers, the National Bureau of Economic Research (NBER) website at [www.nber.org](http://www.nber.org) contains current economic research. The NBER site also contains general resources, including links to data sources and the official U.S. business-cycle dates.

An excellent site that archives and serves as a depository for working papers is located at [econwp.wustl.edu/wpawelcome.html](http://econwp.wustl.edu/wpawelcome.html). This site is particularly useful for finding background material for research papers.

Did someone tell you that economics is the dismal science? You can chuckle over economist jokes (mostly at the expense of economists) at [netec.mcc.ac.uk/JokEc.html](http://netec.mcc.ac.uk/JokEc.html).

### **A Word of Warning**

It is an unfortunate fact that, because of rapid technological change, this list will soon be out of date. New sites with valuable information and data are appearing every day . . . and others are disappearing almost as rapidly.

Before you set off into the wonderful world of the Web, we would pass on to you some wisdom from experts. Remember the old adage: You only get what you pay for.

Warning: Be careful to determine that your sources and data are reliable. The Internet and other electronic media are easy to use and equally easy to abuse.

The Web is the closest thing in economics to a free lunch. But you must select your items carefully to ensure that they are palatable and digestible.

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