

THE ANNUAL REPORT  
OF THE  
COUNCIL OF ECONOMIC ADVISERS

LETTER OF TRANSMITTAL

COUNCIL OF ECONOMIC ADVISERS,  
*Washington, D.C., February 11, 2005*

MR. PRESIDENT:

The Council of Economic Advisers herewith submits its 2005 Annual Report in accordance with the provisions of the Employment Act of 1946 as amended by the Full Employment and Balanced Growth Act of 1978.


Sincerely,



N. Gregory Mankiw  
*Chairman*



Kristin J. Forbes  
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# Overview

In 2004, the U.S. economic recovery blossomed into a full-fledged expansion, with strong output growth and steady improvement in the labor market. Real gross domestic product (GDP) grew by 4.4 percent in 2004 for the year as a whole. About 2.2 million new payroll jobs were created during 2004—the largest annual gain since 1999. The unemployment rate fell to 5.4 percent by year’s end, below the average of each of the past three decades. Inflation remained moderate, especially excluding volatile energy prices. The U.S. economy is on a solid footing for sustained growth in the years to come.

This is a marked reversal from the economic situation the Nation faced when President Bush came into office. Four years ago, the economy was sliding into recession after the bursting of the high-tech bubble of the 1990s. The economy was then affected by revelations of corporate scandals, slow growth among our major trading partners, and the terrorist attacks of September 11, 2001. Business investment slowed sharply in late 2000 and remained soft for more than two years. The economy lost over 900,000 jobs from December 2000 to September 2001, and then almost another 900,000 jobs in the three months after the 9/11 attacks.

Prompt and decisive policy actions helped to counteract the effects of these adverse shocks to the economy. Substantial tax relief together with expansionary monetary policy provided stimulus to aggregate demand that softened the recession and helped put the economy on the path to recovery. In addition to providing timely short-term stimulus, the President’s pro-growth tax policies have improved incentives for work and capital accumulation, thereby fostering an environment conducive to long-term economic growth.

This *Report* discusses macroeconomic developments of the past year, the Administration’s forecast for the years to come, and several topics related to salient economic issues.

## The Year in Review and the Years Ahead

Chapter 1, *The Year in Review and the Years Ahead*, reviews economic developments in 2004 and discusses the Administration’s forecast for 2005 to 2010. Solid economic growth continued in 2004, and the Administration’s forecast calls for further expansion in 2005, with real GDP growing faster than its historical average and the unemployment rate continuing to decline. The economy is expected to continue on a path of strong, sustainable growth.

Real GDP expanded by 3.7 percent during the four quarters of 2004, and by 4.4 percent for the year as a whole compared with 2003. The solid advance in real GDP during 2004 was supported by gains in consumer spending, business fixed investment, and, to a lesser extent, housing investment, inventory accumulation, and government spending. Net exports (exports less imports) held down growth in all four quarters as the trade deficit rose in the third quarter to a record high as a percentage of GDP. Progress toward strengthened economic growth among U.S. trading partners led to an increase in exports, but imports continued to outpace exports as U.S. domestic demand and demand for imported oil remained strong. The economy's strong growth performance came about in the face of higher oil prices, which likely reduced growth somewhat during the year. The Administration expects real GDP to grow 3.5 percent during the four quarters of 2005, in line with the consensus of professional forecasters. This growth is expected to be driven by continued gains in consumer spending, investment growth, and stronger net exports.

The labor market strengthened during the year. The unemployment rate, which declined 0.5 percentage point to 5.4 percent by the end of 2004, is projected to edge down further to 5.3 percent by the fourth quarter of 2005. Nonfarm payroll employment, which grew about 180,000 per month during 2004, is projected to grow about 175,000 per month in 2005, in line with other professional forecasts.

Inflation increased from the extremely low levels of 2003, partly because of rapid increases in energy prices. Inflation as measured by the consumer price index excluding food and energy remained in the moderate 2 percent range, and inflation expectations remain low.

The economy made these advances even as energy prices soared, the Federal Reserve raised interest rates, and the demand-side effects of fiscal policy stimulus began to recede in the second half of 2004. This continued growth indicates that the economy has shifted from a policy-supported recovery to a self-sustaining expansion.

## Expansions Past and Present

Chapter 2, *Expansions Past and Present*, compares the current economic expansion to previous expansions. The current expansion and the previous one that started in 1991 followed especially shallow recessions, and both exhibited relatively moderate overall growth in key economic variables. Shallow recessions typically are followed by shallow recoveries and deep recessions by robust recoveries. The recent recession stands out in that there were no consecutive quarters of decline, with revised data showing that real GDP dropped in the third quarter of 2000 and the first and third quarters of 2001, but grew in the intervening quarters.

Consumption and residential investment continued to grow throughout the recession, while business investment fell sharply in the recession and continued to decline for five quarters after the overall economy had bottomed out. Both of these developments likely reflect the important role of fiscal and monetary stimulus in supporting household demand and the unusual extent to which the recession resulted from a collapse in investment following the bubble of the late 1990s. The relationship between firms' abilities to invest and the state of economic activity has been deemed the "financial accelerator," in that changes in activity affect firms' ability to invest and this in turn further affects activity, in a way that tends to accentuate economic fluctuations. Fiscal and monetary policy actions have counterbalanced these forces. Without the boost to disposable income from tax relief, the recession would have been deeper and longer.

The relatively weak payroll employment growth in the initial stages of the current expansion likely reflects both the shallowness of the recession and the unusually strong growth of productivity in the recession and expansion. In an average expansion before the 1990s, employment recovered along with output at the start of the expansion and regained its previous peak about three quarters after the trough. In the expansion of the 1990s, however, employment continued to fall for two quarters after the expansion had commenced and did not reach its previous peak value until another six quarters had passed. In the most recent expansion, employment continued to fall for seven quarters after the recession had ended and regained its prerecession level only at the beginning of 2005, some 12 quarters after the end of the recession.

The moderate employment growth reflects especially strong productivity growth during the current expansion. Productivity growth has averaged 4.2 percent per year at an annual rate in the most recent expansion, up substantially from the 2.5 percent growth rate seen on average from 1995 to 2000. In the short run, greater productivity growth sets the bar higher for employment growth. With increased productivity, a given amount of output can be produced with fewer hours worked, so real GDP must grow more quickly for employment to grow. In the long run, however, higher productivity growth leads to higher income per person, and will thus be expected to be positive for employment growth.

That the recent recessions and expansions have been especially moderate suggests the possibility that the economy has become more stable in general. If so, then part of this stability is likely attributable to more active and timelier stabilization policy. Other factors possibly contributing to a more stable economy include improved inventory management that lessens the volatility of production changes, and the ongoing shift in the U.S. economy toward the service sector, the output of which has typically been more stable than the production of goods.

# Options for Tax Reform

Chapter 3, *Options for Tax Reform*, discusses why tax reform is vital to a stronger economy, and examines several basic prototypes for reform. The President has not endorsed any specific proposal, and the chapter does not advocate the adoption of any particular prototype for reform.

The current Federal tax system is unnecessarily complex and distorts incentives for work, saving, and investment. In addition to the dollar amounts of taxes paid, the tax system imposes two indirect burdens on taxpayers and on the U.S. economy as a whole: the costs (in time and money) of complying with tax rules and the costs (including slower economic growth) of tax-induced distortions of economic activity. The Internal Revenue Service estimated that for tax year 2000, individual taxpayers spent 3.2 billion hours on tax compliance, an average of 25.5 hours per return, and spent \$19 billion on tax preparers, computer software, and similar expenses.

High tax rates reduce incentives for work, saving, and investment, distort economic decisions, and divert resources from productive activity into tax avoidance, ultimately reducing economic growth and lowering living standards. High tax rates lead people to work less, to take their compensation in nontaxable forms such as health insurance, and to alter their portfolios to focus on tax-favored investments. The current tax system also distorts many business decisions, resulting in inefficient use of resources and reduced economic output. Double taxation of corporate income raises the cost of capital and would therefore be expected to have an adverse effect on investment. Double taxation further leads firms to finance investment with debt instead of equity, creates a bias in favor of using business forms such as partnerships and subchapter S corporations that are not subject to the double tax, and discourages paying dividends. The Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) reduced this double tax by reducing the individual income tax rates for both dividends and capital gains, and appears to have led to a sizable increase in dividend payments by firms.

Tax reform proposals generally follow either the principle of taxing consumption or the principle of reforming the existing system to conform more closely to a pure income tax.

Most proposals for tax reform involve variations on a few basic types of taxes. The main types of consumption taxes are the retail sales tax, the value added tax, the flat tax, and the consumed income tax. The *retail sales tax* imposes tax liability when an individual purchases goods or services for consumption, whereas the *value added tax* levies tax on the same base but the tax is collected instead on the value added to the good or service at each stage of its production. The *flat tax* consists of a business tax and an individual-level tax, both with a single flat tax rate, in which wages are taxed at the individual

level rather than being included in the business tax base. This allows for building progressivity into the system by providing an exemption of, say, \$40,000 for a family of four. While these taxes appear to be quite different, they are equivalent from an economic standpoint because consumption is the overall tax base in each case.

Important benefits could also be obtained through simplification and reform of the current tax system. A reformed version of the current system would reduce transition and adjustment costs, and considerable benefits could be obtained by simplifying and rationalizing tax provisions that overlap or are otherwise overly complex.

The Administration's tax program has already significantly reformed the tax system. Achievements include lowering marginal tax rates, reducing the double tax on corporate income, simplification, and improved fairness for families. The tax relief passed during the President's first term also increased the overall progressivity of the Federal tax system. The bottom 40 percent of the population in terms of income received the largest percentage reductions in total Federal taxes, and the share of taxes paid by the top 20 percent in terms of income increased as a result of the tax cuts enacted since 2001.

Possible additional reforms would be to lower tax rates further and broaden the base; rationalize the current multitude of saving incentives; further reduce or eliminate the remaining double taxation of corporate income; and simplify the complex system of depreciation rules. Reform within the current system would also address the Alternative Minimum Tax (AMT), which adds considerable complexity, and which, under current law, is expected to affect a rapidly growing number of taxpayers over the next five years.

Although tax reform has been discussed for many years, it is a particularly pressing need at the current time. Increasing numbers of taxpayers will be affected by the Alternative Minimum Tax, which will be a major source of frustration and complexity. In addition, the tax reductions enacted since 2001 will expire in a few years unless they are extended or a new, reformed tax system is adopted. If these provisions are allowed to expire, the result will be substantial increases in taxes on taxpayers in all income groups, with the largest percentage increases being imposed on lower- and middle-income households.

## Immigration

Chapter 4, *Immigration*, examines the economic impact and implications of immigration. In recent decades, the United States has experienced a surge in immigration not seen in over a century. Immigration has touched every facet of the U.S. economy and, as the President has said, America is a stronger

and better Nation for it. A comprehensive accounting of the benefits and costs of immigration shows that the benefits of immigration exceed the costs.

Immigrants have settled in all parts of our Nation and have generally succeeded in finding jobs quickly, helped in large measure by the flexibility of the U.S. labor market. One indicator of this success is that foreign-born workers in the United States have a higher labor force participation rate and a lower unemployment rate than foreign workers in most major immigrant-receiving countries.

While flexible institutions may speed the economic integration of the foreign-born, the distribution of the gains from immigration can be uneven. Less-skilled U.S. workers who compete most closely with low-skilled immigrants have experienced downward pressure on their earnings as a result of immigration, although most research suggests these effects are modest. Also, communities contending with a large influx of low-skilled immigrants may experience an increased tax burden as immigrant families utilize publicly provided goods such as education and health care.

U.S. immigration policy faces a complicated set of challenges, perhaps more so now than ever before. Policy should preserve America's traditional hospitality to lawful immigrants and promote their economic contributions. Yet these goals must be balanced with the Nation's many needs, including the imperative for orderly and secure borders. These challenges have only grown in a post-9/11 world. The persistence of undocumented immigration and problems with employment-based immigration suggest that current policy falls short in addressing the demand for immigrant workers and the need for national security. The President's proposed Temporary Worker Program recognizes these problems and would implement necessary reforms.

## Expanding Individual Choice and Control

Chapter 5, *Expanding Individual Choice and Control*, examines the role played by property rights in providing the link between people's effort and their reward. Having property rights allows people to know that they will reap the rewards of their efforts and entrepreneurship.

When used in economics, the term *resource* refers not just to natural resources, such as land or clean air, but to anything of value, such as skills. A *property right* refers broadly to the arrangements society uses to assign people control over resources. Property rights have a variety of names, including deeds, titles, permits, vouchers, allowances, or accounts. Patents and copyrights are also property rights, establishing control over inventions, books, songs, and other creative concepts. The essential idea is the same in each case: the owner of the property right controls how something valuable is used.

That control is defined using a bundle of specific rights. The bundle is commonly thought to consist of three main elements: the right to exclusive use of the resource, the right to income derived from the resource, and the ability to transfer those rights. Property rights can include a range of those elements, from weak rights (which might only include the right to use the resource) to strong rights in all three elements.

Property rights have a profound effect on the choices people make. In addition to giving them the incentive to maintain and invest in things, people will use resources more prudently if they own them. Property rights are essential for markets to function. The lack of a clear title might prevent a car purchase. A home buyer is unlikely to sign on the dotted line if she is not sure that the seller actually owns the house. Without property rights, would-be entrepreneurs cannot secure loans they might need to help their businesses grow.

Property rights are essential to the efficient operation of markets, which in turn allocate resources to their most highly valued use. Clearly defined rights are important in avoiding overuse of resources and in encouraging the improvement of resources. Property rights further provide incentives to invest in, maintain, and improve resources over time. The benefits of homeownership come about because individuals have control and responsibility over their property and their lives.

The thoughtful application of property rights has already brought about a number of policy improvements. Introducing a property-rights regime for air quality reduced emissions almost 30 percent more than the required level and achieved annual cost savings estimated at hundreds of millions of dollars per year. The use of property rights for fisheries has mitigated overfishing while increasing commercial fishermen's profits and promoting a more stable industry. The application of property rights to education has facilitated greater school choice and improved student performance. These uses of property rights have given control to people with the best information and incentives to use the resources in question.

Providing people with ownership, individual choice, and control of assets could help address several current concerns. Giving families more control over their retirement by establishing personal retirement accounts they actually own would improve the Social Security system. Offering people greater control over the money used for their health care would reduce health care spending and increase the number of people with health care insurance. Providing countries greater ownership (that is, more control) over how they use the development assistance they receive will make them active partners in the programs funded.

# Innovation and the Information Economy

Chapter 6, *Innovation and the Information Economy*, provides an overview of recent developments in information technology and discusses some of the economic issues relevant to this especially dynamic sector of the economy. Innovation and information technology are increasingly key contributors to economic growth and productivity. Our Nation's growing prosperity depends on fostering an environment in which innovation will flourish.

Information technology has made many workplace tasks easier, boosting people's productivity. One recent study finds that labor productivity in the nonfarm business sector grew at an annual rate of 2.4 percent from 1996 through 2001, and attributes nearly three-quarters of this growth to the accumulation of information technology capital together with improvements in how people use this capital. Of the 2.9 percent growth in real gross domestic product (GDP) in 2003, some 0.8 percentage point was attributable to information technology.

A key development of the growing information economy is that more people are using computers and communicating over the Internet. Usage of the Internet includes email and the rapid growth of e-commerce, which includes transactions with consumers and transactions between businesses. Consumers have benefited from e-commerce through the greater variety of goods available online and through the additional competition and lower prices resulting from the spread of e-commerce. A downside is the rise of online theft, vandalism, and fraud. The Administration has taken actions to protect property rights and ensure that the Internet and other new technologies are safe venues for commerce.

The process by which innovations such as the Internet come about involves the invention, commercialization, and diffusion of new ideas. At each of these stages, people are spurred to action by the prospect of reaping rewards from their investment. Government thus has an important role to play in defining and protecting property rights in intellectual and physical capital so that entrepreneurs will be spurred to innovate.

In a free market, innovators vie to lower the cost of goods and services, to improve their quality and usefulness, and—most importantly—to develop new goods and services that promise benefits to customers. An innovation will succeed if it passes the market test by profitably delivering greater value to customers. Successful innovations blossom, attracting capital and diffusing rapidly through the market, while unsuccessful innovations can wither just as quickly. In this way, markets allow capital to flow to its highest-valued uses. Competition drives the broad diffusion of innovative low-cost, high-quality information services. This has held true in markets for mobile wireless telephones, satellite television, and dial-up and broadband Internet services.



This engine of growth can falter, however, if government policies distort the market signals that guide innovative activity. Well-meaning policies to promote the diffusion of a service or foster entry into new markets can have unintended consequences. A policy to subsidize an existing service so that more people will consume it can deter development of innovative new services that people might otherwise prefer. In addition, potential pioneering investors forced to share the fruits of their investment with new entrants would find it less profitable to invest in the first place, and a new market may never be developed. As circumstances change and industries evolve, existing government regulations may need rethinking. In particular, economic regulations aimed at correcting an absence of competition may lose their rationale when competition from new technologies emerges.

## The Global HIV/AIDS Epidemic

Chapter 7, *The Global HIV/AIDS Epidemic*, examines the economic issues posed by the acquired immunodeficiency syndrome (AIDS) epidemic. The disease has already killed over 25 million people, and currently over 40 million people are living with the human immunodeficiency virus (HIV), the virus that causes AIDS. The chapter discusses the nature of the crisis, its consequences, and what governments can do to create affordable access to existing treatments while encouraging research toward the development of new medical therapies to combat this disease.

The impact of HIV/AIDS varies across the world, both in terms of the scale of the epidemic and the ability to treat infected individuals. Less-developed countries are particularly hard hit on both accounts. Almost two thirds of all people with HIV live in sub-Saharan Africa, a region that makes up only one tenth of the world's population. At the same time, few infected individuals in the region receive adequate treatment for the disease.

While the disease's impacts on human health and mortality are widely recognized, the HIV/AIDS epidemic also has devastating economic consequences that exacerbate the humanitarian crisis. AIDS deepens poverty, intensifies food shortages, and, in some cases, erases decades of economic progress. HIV/AIDS-related illnesses directly decrease the income of an affected household. Even if an infected family member is able to work, a sick worker is likely to be less productive than a healthy one. The disease predominantly affects the working-age population, and thus can leave too few people to support the aging and young populations. AIDS can also impose debilitating costs on other members of a household, for example as other family members may need to miss work or school to care for a patient. The disease can further change the way that affected families make long-term decisions,

because they do not expect family members to live as long and because their needs become more immediate due to pressing health concerns. As a result, children may be pulled out of school in order to supplement the declining family income, resulting in a loss in the children's future earning potential. Impacts such as this can combine to create a vicious cycle of increased poverty in the short run and an inability of households to improve their condition in the long run.

The President has made fighting the worldwide HIV/AIDS epidemic a priority of U.S. foreign policy. He has taken bold action against the crisis through his Emergency Plan for AIDS Relief. Understanding the unique challenges presented by this epidemic is essential to designing policies to prevent the spread of the disease and to treat those who are already infected. A comprehensive and integrated approach of prevention, treatment, and care is essential to quelling the epidemic. In poor countries, treatment affordability and the lack of health care infrastructure are major concerns. Compassionate pricing policies and aid from developed nations can play an important role in expanding access to treatment.

To continue the development of better treatments and to work toward eradication of HIV/AIDS, drug companies need to maintain the highest possible quality of research. Intellectual property laws are important to ensuring appropriate incentives for innovation to create the next generation of therapies and to develop a safe and effective vaccine.

## Modern International Trade

Chapter 8, *Modern International Trade*, examines the benefits of free trade and discusses the progress the Administration has made in opening global markets. Open markets and free trade raise living standards both at home and abroad. Any move toward economic isolationism would threaten the competitive gains made by U.S. exporters while harming U.S. consumers and firms that benefit from imports.

The President's policy of opening markets around the world is based on a long history of intellectual support for free trade, starting with the nineteenth century theory of comparative advantage advanced by David Ricardo. Ricardo illustrated the ways in which free trade allows countries to mutually benefit from specializing in producing products at which they are adept and then exchanging those products. This rationale remains the same, even with advances in technology and new types of trade. The principle of comparative advantage applies to the burgeoning trade in services, in which the performance of U.S. service workers and firms has been particularly strong. The United States exports more services than it imports, and this surplus has been

growing in recent years. Moreover, U.S. services exports tend to involve relatively highly skilled and highly paid occupations, such as engineering, financial services, or architectural services.

Richer economic models that take into account the features of the modern world show that countries as a whole still gain from free trade. There are, however, differing impacts of trade on different parts of the economy and the labor force. Policies aimed at supporting individuals affected by trade are thus vital to ensuring that its gains are widely shared. To this end, the Administration has proposed a reform of the overall workforce training system to help Americans obtain marketable skills needed to compete for jobs in emerging and innovative fields. The Administration recognizes that effective workforce training requires the cooperation of the private sector and community colleges and has worked to nurture these partnerships through the High Growth Job Training Initiative at the Department of Labor and through the recently enacted Community-based Job Training Grants. In addition, the Administration has proposed the establishment of Personal Reemployment Accounts, an innovative approach to worker retraining, and has worked to enhance the long-standing Trade Adjustment Assistance program, which provides training and income support to workers directly hurt by import competition. As part of the Trade Act of 2002, eligibility was extended to workers indirectly affected by trade, such as workers employed by firms that supply goods and services to industries directly affected by trade competition. Benefits were enhanced to include a health insurance tax credit and a wage supplement for older workers who found new jobs that did not pay as well as their previous jobs. This assistance, which will total \$12 billion over 10 years, will ease the adjustment for displaced workers and help them move into jobs for which their skills are most in demand.

Foreign direct investment is playing an increasingly important role in world trade, as companies invest across borders to gain skills, technology, resources, and market access. A good deal of evidence suggests that increased employment at the foreign subsidiaries of U.S. firms is associated with a corresponding increase in employment in the U.S. parent company. Similarly, recent research shows that one dollar of spending on capital investments abroad by U.S. firms is associated with an additional three and a half dollars of spending on capital investment at home. The available evidence thus suggests that, on the whole, overseas expansion by U.S. firms goes hand-in-hand with expansion at home. Subsidiaries of foreign firms operating in the United States make important positive contributions to the U.S. economy as well. Foreign direct investment into the United States is associated with the adoption of new technology, techniques, and skills by locally-owned companies. U.S. subsidiaries of foreign companies employed 5.4 million U.S. workers in 2002, nearly 5 percent of total private-sector employment. This is up from 3.9 million workers in 1992 (4.3 percent of total private employment at that time).

The Administration has pushed aggressively to open global markets to trade through multilateral talks under the auspices of the World Trade Organization (WTO), and through agreements to liberalize trade between the United States and various partners. The Administration has worked to ensure that the benefits promised under the agreements are realized for U.S. consumers, workers, manufacturers, farmers, and service providers. At the same time, lower trade barriers benefit people in U.S. trading partner countries. When U.S. trading partners do not fulfill their obligations, the Administration has sought their compliance through a practical, problem-solving approach. When that fails, however, the Administration has utilized formal dispute-settlement mechanisms.

The integration of the Chinese economy into the global trading system has been an important development in recent years. The Administration has worked to ensure that China lives up to the agreements it has signed, including lowering its barriers to trade, addressing concerns about intellectual property protection, and adopting and enforcing the rules of the multilateral trading regime. Trade between the United States and China has been growing rapidly. For goods trade through November 2004, China ranked as the third-largest trading partner of the United States. For most of the period since China's WTO accession, U.S. exports to China have been growing at a rate faster than its imports from China, but this export growth is occurring from a much smaller base.

The Administration's vigorous pursuit of trade liberalization has paid off in progress on the Doha Development Agenda. The United States played a leading role in the intensive negotiations that led to an agreement establishing a framework for the ongoing talks at the WTO. These talks, which were launched in 2001 in Doha, Qatar, have focused on measures that will especially benefit developing nations, including the elimination of agricultural export subsidies. Trade agreements were also concluded in 2004 with Australia, Morocco, Bahrain, and with the participants in the Central American Free Trade Agreement (CAFTA), including Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic. At the same time, the United States continued negotiations with the five nations of the Southern African Customs Union (Botswana, Lesotho, Namibia, South Africa, and Swaziland) while launching new negotiations with Thailand, Panama, and the Andean nations Colombia, Ecuador, and Peru. The President has also announced to Congress his intention to begin free trade agreement negotiations with the United Arab Emirates and Oman. When combined with agreements already negotiated by the Administration, partner countries accounting for almost \$50 billion in 2003 trade have committed to eventually eliminate tariffs on almost all U.S. exports. Tariffs that averaged as high as 19.6 percent for U.S. exports will be reduced to zero as a result of these agreements.

# Conclusion

The last year has seen the U.S. economy strengthen from recovery into a solid and sustainable expansion. With the near-term outlook bright, this provides an opportunity to put renewed focus on longer-term economic challenges. The President's agenda is focused on these challenges—on taking the actions needed to bring about a better economic future shared by all Americans. The President's policies are designed to foster rising living standards at home, while encouraging other nations to follow our lead.

# The Year in Review and the Years Ahead

The recovery of the U.S. economy blossomed into a full-fledged expansion in 2004, with solid output growth and steady improvement in the labor market. Payroll employment increased by about 2.2 million jobs, the largest annual gain since 1999, and the economy expanded 3.7 percent during the four quarters of the year. The economy made these advances even as energy prices soared, the Federal Reserve raised interest rates, and the demand-side effects of fiscal policy stimulus began to recede in the second half. Such continued growth indicates that the economy has shifted from a policy-supported recovery to a self-sustaining, healthy expansion.

This chapter reviews the economic developments of 2004 and discusses the Administration's forecast for the years ahead. The key points in this chapter are:

- Real gross domestic product (GDP) grew solidly during 2004. Business investment in equipment and software accelerated, and consumer spending growth remained strong.
- Labor markets strengthened during the year. The unemployment rate continued to decline, and employers created more than 2 million new jobs.
- Inflation rose from the extremely low levels of 2003, partly because of rapid increases in energy prices. Nevertheless, core consumer price index (CPI) inflation has remained in the moderate 2 percent range, and inflation expectations remain low.
- The Administration's forecast calls for the economic expansion to continue this year, with real GDP growing faster than its historical average and the unemployment rate continuing to decline. The economy is expected to continue on a path of strong, sustainable growth.

## Developments in 2004 and the Near-Term Outlook

Real GDP grew a robust 3.7 percent during the four quarters of 2004, above the average historical pace. (Real GDP growth was 4.4 percent on a year-over-year basis comparing GDP for 2004 as a whole with GDP for 2003 as a whole.) Growth was supported by gains in consumer spending, business fixed investment, and, to a lesser extent, housing investment, inventory accumulation, and government spending. Net exports (exports less imports) held down growth in all four quarters as the trade deficit rose in the third quarter to a record high as a percentage of GDP. Strengthening economic growth among our trading partners led to an increase in exports, but imports

continued to outpace exports as U.S. domestic demand and demand for imported oil remained strong. The rise in crude oil prices reduced growth somewhat during the year (Box 1-1).

The Administration expects real GDP to grow 3.5 percent during the four quarters of 2005, in line with the consensus of professional forecasters. This growth is forecast to be driven by continued gains in consumer spending, investment growth (although slower than in 2004), and stronger net exports. The unemployment rate, which declined 0.5 percentage point to 5.4 percent during the four quarters of 2004, is projected to edge down further to 5.3 percent by the fourth quarter of 2005. Nonfarm payroll employment, which grew about 180,000 per month during 2004, is projected to grow about 175,000 per month in 2005, in line with other professional forecasts.

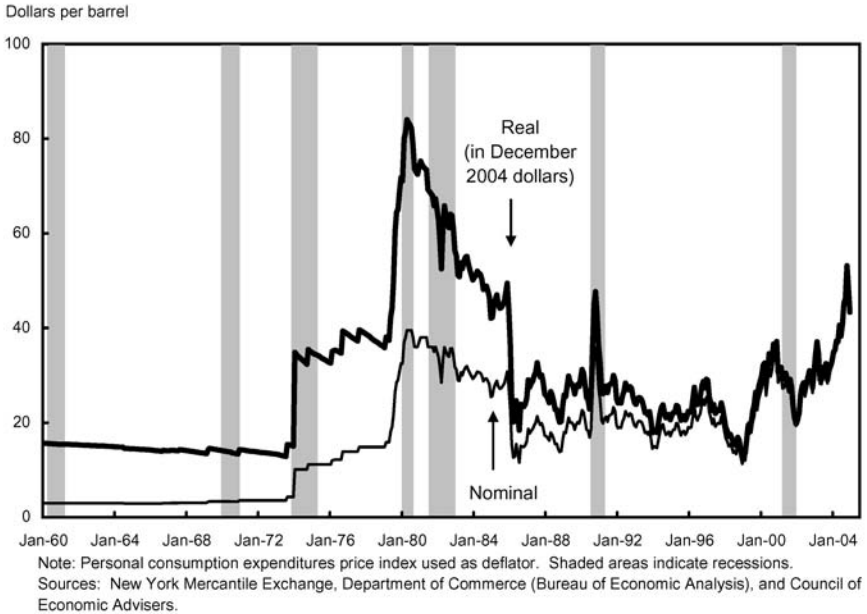
### **Box 1-1: Oil Prices and the Economy**

Rising oil prices hindered growth in 2004. Boosted by strong world demand and both domestic and foreign supply disruptions, the price of crude oil purchased by refiners increased almost continuously from \$29 per barrel in December 2003 through October 2004 when it peaked at \$46 per barrel. A more-widely followed (but less comprehensive) measure, the spot price of West Texas Intermediate crude oil, peaked even higher, at \$53 per barrel for the month of October. These prices were historical highs in nominal terms, and were about 60 percent of the all-time high in real terms (Chart 1-1). Crude oil prices then dropped off in November and December. For 2004 as a whole, refiners' acquisition cost was almost \$9 per barrel above its year-earlier level.

High oil prices are a headwind for the economy because they raise the cost of production, thus weakening the supply side of the economy, and absorb income that could have been used for other purchases, thus weakening the demand side of the economy. The United States imports about two-thirds of its crude oil (about 10 million barrels per day), and so the higher oil prices caused the bill for imported oil to increase by about \$32 billion (or 0.3 percent of GDP) in 2004. This increase acted like a tax holding back aggregate demand.

One rule of thumb is that a \$10 per barrel increase in the price of oil reduces the level of real GDP by roughly 0.4 percent after four quarters. Thus the roughly \$9 per barrel increase in average oil prices for 2004 may have held back real GDP growth by 0.3 or 0.4 percentage point. If oil prices move as expected by the futures market, average oil prices in 2005 will only slightly exceed the 2004 average—so oil prices are expected to be only a minor impediment to 2005 growth.

**Chart 1-1 Real and Nominal Price of West Texas Intermediate Crude Oil**  
 At its peak in 2004, the real price of crude oil was lower than in the early 1980s.



## Consumer Spending

Consumer spending continued its solid growth in 2004. Real personal consumption expenditures, which account for 70 percent of GDP, rose 3.9 percent during the four quarters of 2004. Consumer spending has been boosted by continued gains in disposable personal income and a rebound in household wealth. Real disposable personal income—after-tax income adjusted for inflation—rose by 2.3 percent at an annual rate during the first 11 months of 2004. Household net worth, meanwhile, grew at a 6 percent annual rate in the first three quarters of 2004 (on top of a 13-percent gain during 2003), as equity prices moved up and housing prices continued to increase.

Personal saving fell to 0.8 percent of disposable personal income in the first 11 months of the year, down from an average of 1.4 percent in 2003. The Administration forecast assumes that the saving rate will be roughly flat in the coming years. Consumer spending is projected to continue its solid growth in 2005, supported by solid consumer sentiment (which was above average historical levels in December), projected real compensation gains, and the recent rebound in household wealth. Real consumer spending is projected to grow somewhat more slowly than overall real GDP during the projection period to 2010.



## Residential Investment

The housing sector remained strong through year-end 2004. Residential investment increased 6 percent during the four quarters of 2004, following a 12 percent gain during 2003. Demand for new housing has been stimulated by low mortgage rates. Rates on 30-year fixed-rate mortgages averaged 5.8 percent in 2004—about the same as a year earlier, but lower than at any other time in the past 30 years. Sales of new single-family homes during 2004 were the highest since at least 1963, when the government began tracking this information, and the homeownership rate was a record 69 percent.

The strength in housing demand has been reflected in home prices. An index of prices for houses involved in repeat transactions (that is, sales prices of the same house over time) increased by 13 percent during the four quarters ended in the third quarter of 2004—the biggest four-quarter increase since the late 1970s. The rapid increase in demand and prices has further helped support gains in home construction. Housing starts totaled 1.95 million units during 2004, making it the strongest year for housing starts since 1978.

The growth of new housing starts will likely slow in 2005. Long-term Treasury rates are projected to increase, leading mortgage rates to edge up as well. In addition, demographics suggest that the formation of new households is unlikely to support additional increases in housing activity. Taken together, these factors suggest that residential construction is likely to edge lower in the next couple of years and to remain roughly flat during the years through 2010.

## Business Fixed Investment

Real business fixed investment (firms' outlays on equipment, software, and structures) grew 9.9 percent during 2004, following a 9.4 percent gain during 2003. Growth was concentrated in equipment and software (up 13.6 percent), while nonresidential construction edged lower. Within the equipment and software category, growth during the four quarters of 2004 was particularly strong in computer equipment and software. Investment in transportation equipment also grew rapidly in 2004, overtaking its pre-9/11 level in the fourth quarter.

Nonresidential structures investment edged down during the four quarters of 2004, with a notable decline in investment in power and communications facilities. Real nonresidential construction has been stagnant since 2002, as vacancy rates in both office and industrial buildings have remained high. Construction of shopping centers and other multi-merchant structures has been robust, however.

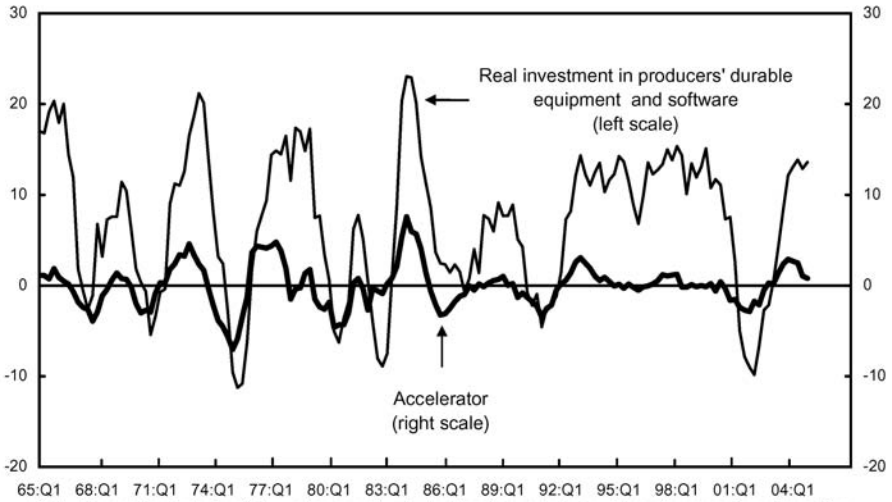
Projections of future investment growth are based, in part, on the observation that growth in investment spending correlates well with the acceleration (that is, the change in the growth rate) of business output (Chart 1-2); the

**Chart 1-2 Investment Growth and the Acceleration of Nonfarm Business Output**

Equipment and software investment grows most rapidly when the rate of increase in output is increasing. Investment grew rapidly in 2004, partly because of the pick-up in the rate of output growth.

Four-quarter percent change in investment

Percentage-point change in output growth



Note: The accelerator is the eight-quarter annualized rate of nonfarm output growth less the same figure lagged four quarters.

Sources: Department of Commerce (Bureau of Economic Analysis) and Council of Economic Advisers.

reasons for this correlation are discussed more fully in Chapter 2, *Expansions Past and Present*. Equipment investment spending grew quite fast during 2003 and 2004, consistent with the rapid acceleration of nonfarm output growth from 2001 to 2003. The 3.5 percent growth projected for real GDP during the four quarters of 2005 is solid but below the growth rates of 2003 and 2004. It follows, therefore, that the growth of investment is likely to be slower in 2005 than in 2004. In addition, the termination of the special investment expensing provisions allowed under the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) is likely to have advanced into 2004 some investment spending that might have been planned for early 2005. The end of this policy could limit investment growth in the first quarter of 2005.

## Business Inventories

Businesses rebuilt inventories in 2004; inventory investment was solidly positive during the year, after being slightly negative in 2003. Inventory investment contributed an average of 0.35 percentage point to real GDP growth during the four quarters of 2004.

Inventories appear to be lean relative to economy-wide sales and shipments, with the inventory-to-sales ratio for manufacturing and trade close to its historic low. Assessing just how lean these inventories are is difficult, however,

as ongoing improvements in supply-chain management (such as just-in-time practices, discussed in Chapter 2) have reduced the need for inventory stocks. Inventories grew almost as fast as sales in 2004, and the inventory-to-sales ratio for manufacturing and trade edged down only slightly last year. Inventory investment in 2005 is projected to be sufficient to hold the inventory-to-sales ratio approximately constant, and the pace of inventory investment is projected to contribute little to GDP growth in 2005.

## Government Purchases

Real Federal purchases (consumption expenditures and gross investment) grew at a 4 percent rate during the four quarters of 2004, with most of that growth accounted for by defense spending. Total nominal Federal expenditures (including transfer and interest payments) slowed to a 5 percent rate of growth during 2004 from a 6 percent rate in 2003.

After several difficult years, the budget position of states and localities improved recently due to a combination of spending restraint and renewed growth of revenues. The level of real state and local consumption and gross investment was little changed during 2004, the lowest growth in real spending since the early 1980s. State and local revenues have been boosted by increased household income and consumer spending, as well as by additional federal grants authorized under JGTRRA. Spending restraint, together with a pickup in revenues, boosted the net saving of state and local governments to roughly \$11 billion during the first three quarters of 2004, roughly reversing the *dissaving* during the year-earlier period. Real state and local spending is projected to pick up from last year's slow growth, to about 2 percent per year during the projection period.

## Exports and Imports

The trade deficit expanded substantially during 2004. Real exports increased 4 percent, as economic growth strengthened among our major trading partners, but real imports increased even faster (at a 9.2 percent rate), partly due to the more robust recovery in the United States than abroad. The trade deficit on goods and services reached about 5¼ percent of GDP in the third quarter of 2004.

The rapid increases in real imports were widespread and included capital goods and industrial supplies, petroleum, and consumer goods.

All the major categories of real nonagricultural exports (capital goods, industrial supplies, motor vehicles, consumer goods, and services) contributed to the growth of overall exports. Agricultural exports declined, however, as exports of beef fell on concerns about “mad cow” disease. Due to the detection of the first known case of “mad cow” disease in the United States in late

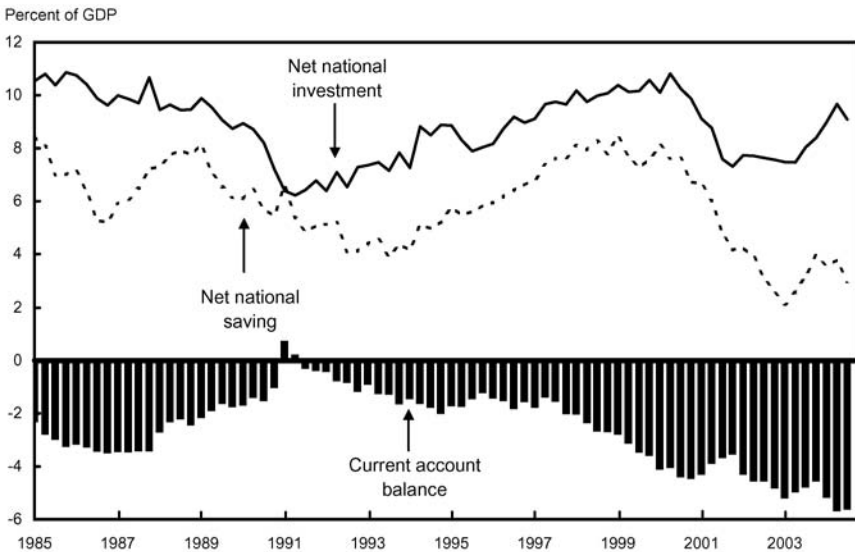
2003, a number of countries that together account for most U.S. beef exports have completely or partially halted purchases of American beef. As a result, beef exports—which were \$3.1 billion in 2003—have now fallen to about \$0.5 billion at an annual rate.

The rapid growth of imports relative to exports largely reflects faster growth in the United States than among our trading partners, as U.S. demand for imports increases faster than foreigners' demand for our exports. For example, the U.S. economy grew faster than its trading partners in the Organization for Economic Cooperation and Development (OECD) during the four quarters of 2003 (4.4 percent versus 2.2 percent), and the OECD growth estimate for the four quarters of 2004 also shows slower growth elsewhere in the OECD (2.7 percent) than the 3.7 percent official estimate of growth for the United States.

The current account deficit, which primarily reflects the trade deficit but also includes net international flows of investment income and transfers, widened to about 5.6 percent of GDP in the second and third quarters. The current account deficit represents the inflow of capital that is needed to finance domestic U.S. investment in excess of domestic saving. Over the latter half of the 1990s and the early 2000s, the U.S. current account deficit expanded as domestic investment grew faster than saving (Chart 1-3). More recently, the current account deficit has expanded as the national saving rate has fallen.

**Chart 1-3 Saving, Investment, and the Current Account Balance**

Lower national saving primarily accounts for the widening of the current account deficit since 2000.



Source: Department of Commerce (Bureau of Economic Analysis).

Looking ahead, stronger growth in U.S. trading partners appears to favor continued gains in export growth. Growth among the non-U.S. members of the OECD is projected to increase from 2.7 percent during the four quarters of 2004 to 3.0 percent during the four quarters of 2005. This growth should support growth in U.S. exports. This effect will likely be augmented by an expected rise in the U.S. share of world exports, owing in part to recent declines in the value of the dollar against other major currencies. Overall, the Administration projects real exports to grow noticeably faster than GDP in 2005. The projected moderation of U.S. GDP growth in 2005 and 2006 together with the recent change in the exchange value of the dollar suggest that growth in real imports will slow in the future.

## Employment

Nonfarm payroll employment increased about 2.2 million during 2004, the largest annual gain since 1999. The unemployment rate declined to 5.4 percent in December 2004, well below the 6.3 percent peak of June 2003. The unemployment rate in 2004 was below the averages of the 1970s, the 1980s, and the 1990s.

Job gains were spread broadly across major industry sectors in 2004. The service-providing sector accounted for 85 percent of job growth during the year, in line with its 83 percent share of overall employment. The goods-producing sector accounted for the remaining 15 percent of the gains, in line with its 17 percent share of overall employment. Within the goods-producing sector, employment growth was concentrated in construction; manufacturing employment also increased, the first such gain since 1997.

These employment figures reflect the benchmark adjustment of the employment data in early February 2005. The employment data for 2004 will also be affected by next year's benchmarking process, which will cover the period from March 2004 to March 2005.

The Administration projects that employment will increase at a pace of about 175,000 jobs per month on average during the 12 months of 2005—a projection that is in line with the consensus of private forecasters. The unemployment rate is projected to edge down to 5.3 percent by the fourth quarter of 2005. Employment growth is not expected to slow by as much as output growth because productivity (output per hour) is projected to increase at a slower pace than in 2004, and more of the projected output growth may be translated into labor demand and employment in 2005 than in 2004.

# Productivity

Recent productivity growth has been extraordinary. Nonfarm productivity has grown at a 4.2 percent annual rate since the business-cycle peak in the first quarter of 2001, a period that includes both recession and recovery. This is a 1.8 percentage point acceleration from the already rapid 2.4 percent annual growth rate recorded from 1995 to 2001 (Chart 1-4).

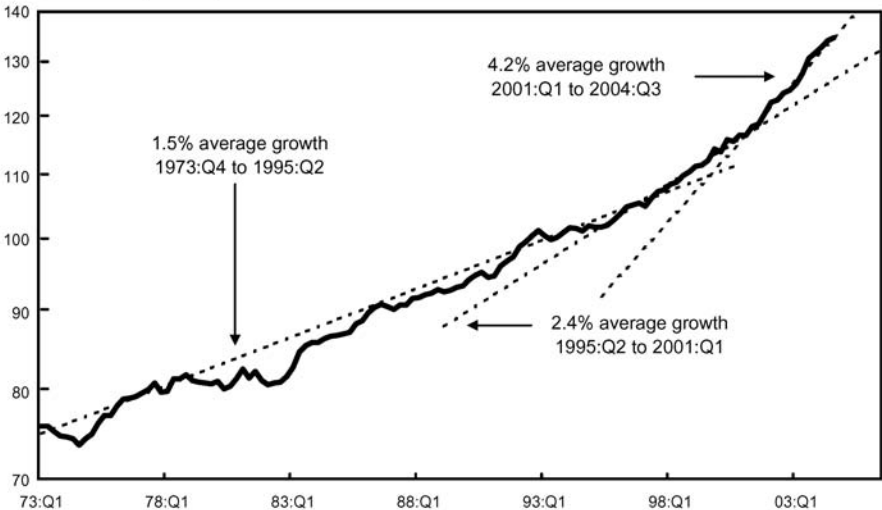
Although the cause of the 1995 acceleration is not well understood, plausible explanations have been offered relating to capital deepening, especially of informational and organizational capital. But none of these explanations helps to explain the post-2000 productivity acceleration, which occurred despite a slowing of investment in both conventional capital goods and information technology (IT).

# Wages and Prices

Following very low inflation during 2003, most measures of inflation increased during 2004, with the largest increases in those price indexes that include energy. For example, the consumer price index (CPI) increased 3.3 percent over the 12 months of 2004, well above the 1.9 percent rise

**Chart 1-4 Labor Productivity, Nonfarm Business Sector**  
Productivity growth, which was already rapid after 1995, accelerated further after 2000.

Index, 1992 = 100 (ratio scale)



Note: This official productivity measure is based on the product-side measure of real output.  
Sources: Department of Labor (Bureau of Labor Statistics) and Council of Economic Advisers.

during the previous year. Excluding the volatile food and energy components, core consumer prices increased 2.2 percent during 2004, up from 1.1 percent during 2003. About 0.4 percentage point of the year-to-year acceleration in the core CPI is accounted for by used car prices, which dropped sharply in 2003 before rebounding in 2004. Consumer energy prices increased 17 percent in 2004—with particularly large (27 percent) increases in petroleum-based energy prices. Food prices increased 2.7 percent during 2004, down slightly from their 3.6 percent rise in 2003.

Hourly compensation of workers grew solidly during the year, mostly because of rising benefits. Private-sector hourly compensation, as measured by the employment cost index (ECI), increased 3.8 percent during the 12 months of 2004—down slightly from its 4.0 percent year-earlier pace. The wages and salaries component of this measure rose 2.4 percent during the year, while benefits increased by 6.9 percent. The increase in hourly benefits was led by an increase in employer contributions to defined benefit programs—which increased at a 66 percent annual rate during the first three quarters of 2004, according to the employer costs for employee compensation index (derived from the same survey as the ECI, but with different weights). This rapid increase occurred as employers made “catch-up” contributions to their pension plans to offset some of the underfunding that developed in recent years. Employer-paid health premiums rose 7.3 percent during 2004 according to the ECI, a smaller increase than the 10.5 percent during 2003.

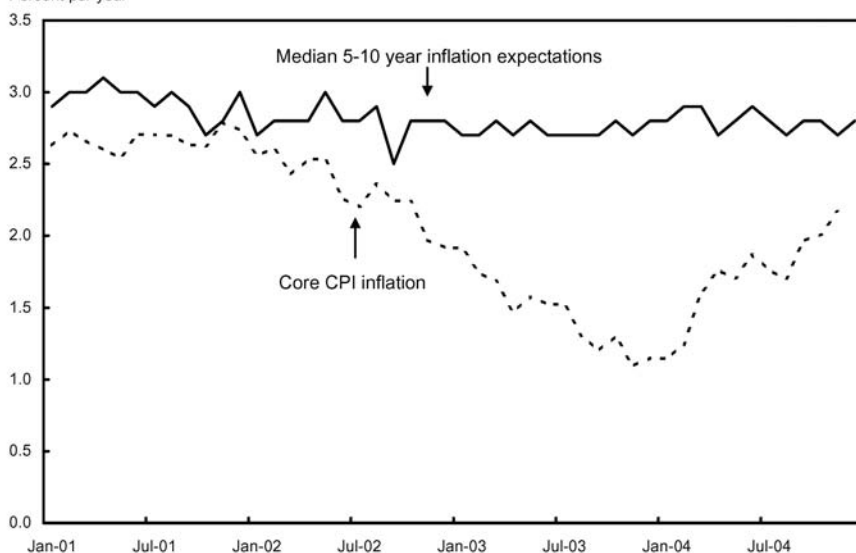
The effects of these gains in hourly compensation on unit labor costs were mostly offset by the rapid growth rate of productivity during the first three quarters of 2004. Unit labor costs rose at only a 0.7 percent annual rate during the first three quarters of 2004, after falling from 2001 through 2003. Most of the increase in prices during 2004 was attributable to widening gross profit margins rather than to increasing costs, suggesting some tightness in product markets. Consistent with this product-market tightness, delivery lags lengthened during the first half of 2004, as reported by manufacturing supply managers. These supply delivery lags increased much more slowly toward year-end, however, and the experience of the last two expansions suggests that these lags are likely to recede as the economy reconfigures itself for sustained growth.

Last year’s increase in inflation appears likely to have been a temporary phenomenon rather than the beginning of a sustained increase. Inflation, as measured by the CPI, is expected to stabilize at a 2.4 percent annual rate in future years, up only slightly from the 2.2 percent increase in the core CPI during 2004. In 2005 and 2006, the overall consumer price index is projected to be held down by anticipated declines in energy prices consistent with the declines implicit in the futures market for crude oil. The inflation fluctuations during the past year have not affected long-term inflation expectations, which remain stable (Chart 1-5).

### Chart 1-5 Inflation and Inflation Expectations

Long-term inflation expectations remain stable in the face of the recent uptick in core CPI inflation.

Percent per year



Sources: Department of Labor (Bureau of Labor Statistics) and the University of Michigan.

The projected path of inflation as measured by the GDP price index is similar, but a bit lower. It is projected to fall to 1.9 percent during the four quarters of 2005, down slightly from the 2.2 percent annual rate of increase in the GDP price index excluding food and energy during 2004. During the next several years, the GDP price index is projected to increase at a 2.0 or 2.1 percent annual rate—a stable pace of inflation consistent with the projected unemployment rate of 5.1 percent.

These inflation projections—although revised up from a year ago—are close to those of the consensus of professional economic forecasters.

The wedge between the CPI and the GDP measures of inflation has implications for Federal budget projections. A larger wedge would reduce the Federal budget surplus because cost-of-living adjustments for Social Security and other indexed programs rise with the CPI, whereas Federal revenue tends to increase with the GDP price index. For a given level of nominal income, increases in the CPI also cut Federal revenue because they raise income tax brackets and affect other inflation-indexed features of the tax code. Of the two indexes, the CPI tends to increase faster in part because it measures the price of a fixed basket of goods and services. In contrast, the GDP price index increases less rapidly because it reflects the choice of households and businesses to shift their purchases away from items with increasing relative prices



and toward items with decreasing relative prices. In addition, the GDP price index includes investment goods, such as computers, whose relative prices have been falling rapidly. Computers, in particular, receive a much larger weight in the GDP price index (1 percent) than in the CPI (0.2 percent).

During the 10 years ended in 2003, the wedge between inflation in the CPI-U-RS (a historical CPI series designed to be consistent with current CPI methods) and the rate of change in the GDP price index averaged 0.4 percentage point per year. The wedge was particularly high during 2004 when the CPI increased 1.0 percentage point faster than the GDP price index, reflecting the roughly 50 percent increase in oil prices, which have a much larger weight in consumption prices than in GDP as a whole. Since domestic production accounts for only about a third of U.S. oil consumption, the weight of oil prices in GDP is roughly one-third of its weight in the consumption basket. As this boost from higher oil prices unwinds over the next couple of years, the wedge between CPI and GDP inflation is likely to be lower than its recent average. During the entire 2004 to 2010 period, the wedge is projected to average 0.4 percentage point, equal to the Administration estimate of the wedge in the long term.

## Financial Markets

Stock prices fluctuated within a relatively narrow range for the first eight months of the year, and then increased during the last four months. Over the 12 months of 2004, the Wilshire 5000, a broad index of stock prices, rose 11 percent. These gains built on the 29 percent gains that were recorded during 2003.

Long-term interest rates fluctuated substantially during 2004, but finished the year essentially unchanged. The yield on 10-year Treasury notes fell by 0.3 percentage point from January through March, to about 3.8 percent. The yield then increased sharply in the next two months, rising 0.9 percentage point, coinciding with a pickup in the core CPI and several months of strong job growth. Rates began to fall again in early June, as monthly increases in the core CPI and job growth moderated. The 10-year rate declined during the second half of the year, even as the Federal Reserve's Open Market Committee raised the (overnight) Federal funds rate at every meeting from June through December. The 10-year rate ended the year at about the same level as it had begun.

## The Long-Term Outlook Through 2010

The U.S. economy continues to be well-positioned for long-term growth. The Administration projects that GDP will expand strongly through 2010, inflation will remain contained, and labor markets will continue to

strengthen. The forecast is based on conservative economic assumptions that are close to the consensus of professional forecasters. These assumptions provide a prudent and cautious basis for the budget projections.

## Growth in GDP over the Long Term

The Administration projects that real GDP will grow at an average annual rate of 3.3 percent during the four years of 2005 to 2008 (Table 1-1), roughly in line with the consensus forecast for those years. This pace is slightly above the expected 3.2 percent annual growth in potential GDP (a measure of productive capacity), so the unemployment rate is projected to edge lower from 5.4 percent at the end of 2004 to 5.1 percent by the end of 2006. The unemployment rate is expected to remain flat thereafter as the economy grows at its potential rate of 3.2 percent in 2007 and 2008 and 3.1 percent in 2009 and 2010. As discussed below, potential GDP growth is expected to slow somewhat after 2008, as labor force growth declines.

The projected growth of GDP is conservative relative to recent experience. The economy grew more than 4 percent during 2003 and is estimated to have grown 3.7 percent during the four quarters of 2004. Moreover, Okun's Law, a well-known economic rule of thumb, suggests that potential GDP growth has been about 3.5 percent in recent years (Box 1-2).

TABLE 1-1.—*Administration Forecast*<sup>1</sup>

Year	Nominal GDP	Real GDP (chain-type)	GDP price index (chain-type)	Consumer price index (CPI-U)	Unemployment rate (percent)	Interest rate, 91-day Treasury bills <sup>2</sup> (percent)	Interest rate, 10-year Treasury notes (percent)	Nonfarm payroll employment (millions)
	Percent change, fourth quarter to fourth quarter				Level, calendar year			
2003 (actual) .....	6.2	4.4	1.7	1.9	6.0	1.0	4.0	129.9
2004 .....	6.3	3.9	2.3	3.4	5.5	1.4	4.3	131.3
2005 .....	5.5	3.5	1.9	2.0	5.3	2.7	4.6	133.4
2006 .....	5.6	3.4	2.0	2.3	5.2	3.5	5.2	135.5
2007 .....	5.4	3.2	2.1	2.4	5.1	3.8	5.4	137.5
2008 .....	5.4	3.2	2.1	2.4	5.1	4.0	5.5	139.2
2009 .....	5.3	3.1	2.1	2.4	5.1	4.1	5.6	140.9
2010 .....	5.3	3.1	2.1	2.4	5.1	4.2	5.7	142.5

<sup>1</sup>Based on data available as of December 3, 2004. Figures cited in the text for 2004 are based on data available through January 28, 2005, and so may differ from figures shown here.

<sup>2</sup>Secondary market (bank discount basis).

Sources: Council of Economic Advisers, Department of Commerce (Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), Department of the Treasury, and Office of Management and Budget.

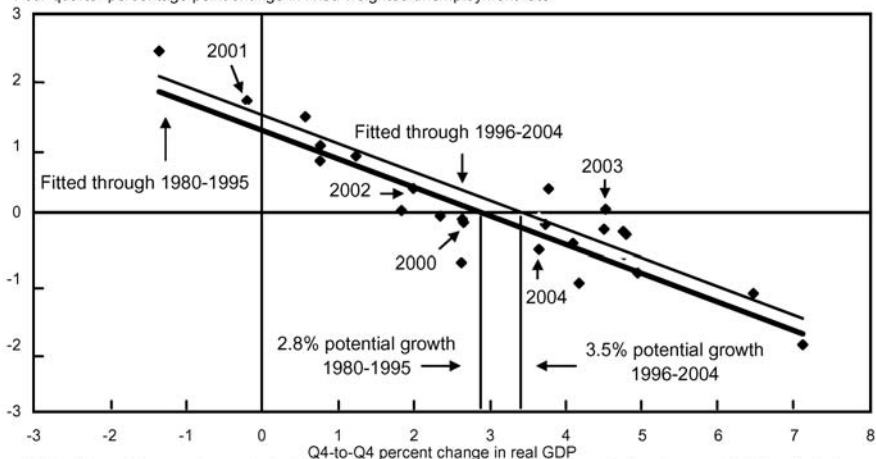
## Box 1-2: Okun's Law

One way of estimating the economy's potential growth rate is through the empirical regularity known as Okun's Law, which relates changes in the unemployment rate to GDP growth (Chart 1-6). The chart plots the four-quarter change in the unemployment rate (which has been adjusted to account for demographic changes) against the four-quarter growth rate of real output. According to Okun's Law, the unemployment rate falls when output grows faster than its potential rate and rises when output growth falls short of that potential. The rate of real GDP growth consistent with a stable unemployment rate is then interpreted as the rate of potential growth; this potential can be estimated as the rate at which the fitted line in Chart 1-6 crosses the horizontal axis. As can be seen by the position of the two parallel lines, the pace of potential real GDP growth appears to have picked up after 1995. The lower line, which is drawn through data for 1980–1995, suggests that potential real GDP grew at a 2.8 percent annual rate during those years. The upper line—which is drawn through data for 1996–2004 and is estimated so as to be parallel to the lower line—suggests that real potential GDP growth accelerated to a 3.5 percent annual rate during the past nine years.

Chart 1-6 **Okun's Law Estimation of Potential GDP Growth**

Real GDP growth in excess of its potential rate lowers the unemployment rate. Potential GDP has accelerated from 2.8 percent per year before 1995 to 3.5 percent thereafter.

Four-quarter percentage point change in fixed-weighted unemployment rate



Note: Change in unemployment rate is the fourth-quarter to fourth-quarter change in the demographically-adjusted unemployment rate. Output growth is the fourth-quarter to fourth-quarter percent change in the geometric mean of the income- and product-side measures of real GDP growth. Real GDP growth in 2004 is based on data for the first three quarters.

Sources: Department of Commerce (Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), and Council of Economic Advisers.

The growth rate of the economy over the long run is determined by its supply-side components, which include population, labor force participation, productivity, and the workweek. The Administration’s forecast for the contribution of different supply-side factors to real GDP growth is shown in Table 1-2.

As seen in the fourth column of the table, the supply-side composition of real GDP growth has been unusual since the beginning of 2001, with exceptionally high productivity growth (4.2 percent at an annual rate) being partially offset by a large decline in the ratio of nonfarm business employment to household employment. This unusual pattern reflects the discrepancy between the slow growth of employment as measured by the employer survey and the more rapid growth of employment as measured by the household survey—a disparity that has not been adequately explained. Declines in the labor force participation rate have also held down real GDP growth during the past four years, although the reasons for these declines may be partly cyclical.

TABLE 1-2.—*Accounting for Growth in Real GDP, 1953–2010*  
[Average annual percent change]

Item	1953 Q2 to 1973 Q4	1973 Q4 to 1995 Q2	1995 Q2 to 2001 Q1	2001 Q1 to 2004 Q3	2004 Q3 to 2010 Q4
1) Civilian noninstitutional population aged 16 and over <sup>1</sup> .....	1.6	1.4	1.2	1.2	1.1
2) Plus: Civilian labor force participation rate .....	.2	.4	.1	-.5	-.1
3) Equals: Civilian labor force <sup>2</sup> .....	1.8	1.8	1.4	.7	1.0
4) Plus: Civilian employment rate .....	-.1	.0	.3	-.4	.1
5) Equals: Civilian employment <sup>2</sup> .....	1.7	1.8	1.7	.4	1.1
6) Plus: Nonfarm business employment as a share of civilian employment <sup>2,3</sup> .....	-.1	.1	.5	-.9	.0
7) Equals: Nonfarm business employment .....	1.6	1.8	2.1	-.6	1.1
8) Plus: Average weekly hours (nonfarm business) .....	-.3	-.3	-.3	-.4	.1
9) Equals: Hours of all persons (nonfarm business) .....	1.3	1.6	1.9	-1.0	1.2
10) Plus: Output per hour (productivity, nonfarm business) .....	2.5	1.5	2.4	4.2	2.5
11) Equals: Nonfarm business output .....	3.8	3.1	4.3	3.2	3.8
12) Plus: Ratio of real GDP to nonfarm business output <sup>4</sup> .....	-.2	-.2	-.5	-.4	-.4
13) Equals: Real GDP .....	3.6	2.8	3.8	2.8	3.3

<sup>1</sup> Adjusted by Council of Economic Advisers to smooth discontinuities in the population series since 1990.

<sup>2</sup> Bureau of Labor Statistics research series adjusted to smooth irregularities in the population series since 1990.

<sup>3</sup> Line 6 translates the civilian employment growth rate into the nonfarm business employment growth rate.

<sup>4</sup> Line 12 translates nonfarm business output back into output for all sectors (GDP), which includes the output of farms and general government.

Note: The periods 1953 Q2, 1973 Q4, and 2001 Q1 are NBER business-cycle peaks. Detail may not add to total because of rounding.

Sources: Council of Economic Advisers, Department of Commerce (Bureau of Economic Analysis), and Department of Labor (Bureau of Labor Statistics).

The 4.2 percent rate of productivity growth during the past three and a half years is remarkable, particularly because this period included a recession, and is well above the already strong 2.4 percent productivity growth experienced from 1995 to 2001. The causes of the post-2001 productivity acceleration remain a mystery at this time, and so it seems unwise to presume that the rapid growth of the last few years will be sustained indefinitely. The Administration expects nonfarm labor productivity to grow at a 2.5 percent annual pace over the next six and a quarter years. This is a bit below the assumed 2.6 percent trend rate of growth, similar to the 2.4 percent pace during the 1995–2001 period, and only modestly above the 2.3 percent average pace since the data series began in 1947.

Growth of the labor force (also shown in Table 1-2) is projected to contribute 1.0 percentage point per year, on average, to growth of potential output through 2010. Labor force growth results from changes in the working-age population and the participation rate. The Bureau of the Census projects that the working-age population will grow at an average annual rate of 1.1 percent through 2010. This pace is more rapid in the near future and then trails off after 2008. The last year in which the labor force participation rate increased was 1997, suggesting that the long-term trend of rising participation has ended. Since then, the participation rate has fallen at an average 0.2 percent annual pace.

Demographic factors will likely lead to yet lower participation in future years. Baby boomers are currently in their forties and fifties. Over the next several years they will move into older age brackets with lower participation rates. As a result, the labor force participation rate is projected to edge down an average of 0.1 percent per year through 2010. The decline may be greater, however, after 2008, which is the year that the first baby boomers reach the early-retirement age of 62. Together with the expected deceleration of the growth of the working-age population, the falling participation rate works to slow the growth rate of potential output to 3.1 percent in 2009–2010.

An expanding workweek is projected to add 0.1 percentage point to potential GDP growth during the projection period. Most of this increase occurs in the next couple of years during the period of strong cyclical labor demand, rather than as a permanent feature of long-term growth. The ratio of nonfarm employment to household employment (which, as noted above, subtracted a puzzling 0.9 percentage point from real GDP growth during 2001–2004) is projected to contribute nothing toward real GDP growth during the projection period. It is possible, however, that it might reverse course during the next few years, offsetting its recent weakness. Such a development would add to real GDP growth.

In sum, potential real GDP is projected to grow at a 3.2 percent annual pace through 2008, and then to slow to 3.1 percent in 2009 and 2010. Actual real GDP growth during the six-year forecast period is projected to be slightly higher, at 3.3 percent, as the unemployment rate declines and the workweek expands. The economy is forecast to grow at potential beginning in 2007, and the unemployment rate is projected to stabilize at 5.1 percent.

## Interest Rates over the Long Term

The Administration forecast of interest rates is based on financial market data as well as a survey of economic forecasters. The yield curve, which shows how the yield on Treasury securities rises with the maturity of those securities, is currently steeper than usual. This steepness suggests that financial market participants expect short-term interest rates to rise. The Administration forecast thus projects gradual increases in the interest rate on 91-day Treasury bills to continue through 2010—with most of the increase expected during the next two years. This rate is expected to reach 4.2 percent in 2010, at which point the real interest rate on 91-day Treasury bills will be close to its historical average. The projected path of the interest rate on 10-year Treasury notes is consistent with the path of short-term Treasury rates. By 2010, the 10-year rate is projected to be 5.7 percent, 3.3 percentage points above expected CPI inflation—a typical real rate by historical standards. By 2010, the projected term premium (the difference between the 10-year interest rate and the 91-day rate) of 1.5 percentage points is in line with its historical average.

## The Composition of Income over the Long Term

A primary purpose of the Administration's economic forecast is to estimate future government revenues, which requires a projection of the components of taxable income. The Administration's income-side projection is based on the historical stability of the long-run labor compensation and capital shares of gross domestic income (GDI). During the first three quarters of 2004, the labor compensation share of GDI was only 56.8 percent—well below its 1959–2003 average of 57.9 percent. From this jumping-off point, the labor share is projected to slowly rise to 57.8 percent by 2010.

The labor compensation share consists of wages and salaries, which are taxable, employer contributions to employee pension and insurance funds (that is, fringe benefits), which are not taxable, and employer contributions for government social insurance. The Administration forecasts that the wage and salary share of compensation will be roughly stable during the projection period. One of the main factors boosting non-wage compensation during the

past two years has been employer contributions to defined-benefit pension plans, and although these contributions are likely to remain high in the next few years, they are not projected to rise as a share of compensation after 2004.

The capital share of GDI is expected to fall from its currently high level before plateauing near its historical average. Within the capital share, a near-term decline in depreciation (an echo of the decline in short-lived investment during 2001 and 2002) is expected to boost corporate profits, which in the third quarter of 2004 were about 10.2 percent of GDI (excluding the temporary negative effects of hurricanes)—a figure well above its post-1959 average of 8.5 percent. From 2005 forward, the profit share is expected to slowly edge down toward its long-term average.

The projected pattern of book profits (known in the national income accounts as “profits before tax”) reflects the termination of the window for expensing of equipment investment allowed under the Job Creation and Worker Assistance Act of 2002 and the Jobs and Growth Tax Relief Reconciliation Act of 2003. These expensing provisions reduced taxable profits from the third quarter of 2001 through the fourth quarter of 2004. The expiration of the expensing provisions increases book profits from 2005 forward, however, because investment goods expensed during the three-year expensing window will have less remaining value to depreciate. The share of other taxable income (the sum of rent, dividends, proprietors’ income, and personal interest income) is projected to fall in coming years, mainly because of the delayed effects of past declines in long-term interest rates, which reduce personal interest income during the projection period.

## Conclusion

Supported by expansionary fiscal and monetary policy, the economy now appears to have shifted from a tentative recovery to a sustained expansion. Consumer spending remains strong, businesses are continuing to invest, and employment growth has rebounded. Prospects remain bright for continued growth in the years ahead. And yet much work remains in making our economy as productive as possible. Later chapters of this *Report* explore how pro-growth policies, such as reforming our tax system, expanding the reach of property rights, and encouraging innovation, can enhance our economic performance.

## Expansions Past and Present

The U.S. economy began to expand rapidly in mid-2003, an expansion that carried through to 2004. Real gross domestic product (GDP) rose by 4.0 percent from the third quarter of 2003 to the third quarter of 2004. Employment grew steadily in 2004, with more than 2.6 million jobs created on net since the job market turned around in August 2003. The unemployment rate has declined from a high of 6.3 percent in June 2003 to 5.4 percent in December 2004—a rate below the average unemployment rate of the 1970s, 1980s, and 1990s. Inflation picked up modestly over the course of 2004 but remains low by historical standards, with consumer prices having increased by 3.3 percent during 2004. This state of affairs—strong growth, declining unemployment, and moderate inflation—is remarkable in light of the powerful contractionary forces at work since early 2000: the bursting of the high-tech bubble of the 1990s, revelations of corporate scandals, weak growth in the United States' major trading partners, the war in Iraq, and the impact of the terrorist attacks.

The recent recession and expansion took place against the backdrop of an economy undergoing fundamental changes. At the beginning of the twentieth century, the agricultural sector was the biggest employer; at the beginning of the twenty-first, the service-providing sector employed the most people. Technical progress has spurred productivity growth and raised living standards. The labor force increased enormously, as the population grew and the labor force participation rate of women rose over the course of the last century. The development of new financial instruments helped people become financially secure, and the expansion of the mortgage market has helped a record number of people own homes.

Given these large changes in the structure of the U.S. economy, the nature of economic expansions has probably also changed over time. Enough time has now elapsed in the current expansion to allow fruitful comparisons with previous expansions. The key findings are:

- The last two expansions—the one starting in 1991 and the current one—are similar to each other, but dissimilar to previous expansions. Both have exhibited relatively moderate overall growth in key economic variables.
- The last two expansions followed especially shallow recessions. Generally, shallow recessions are followed by shallow recoveries and deep recessions by robust recoveries.



- Stabilization policy—fiscal and monetary policy—has been particularly active during the last recession and expansion. The boost to disposable income from fiscal policy has been especially strong. Without these strong policies, the recession would have been deeper and longer.

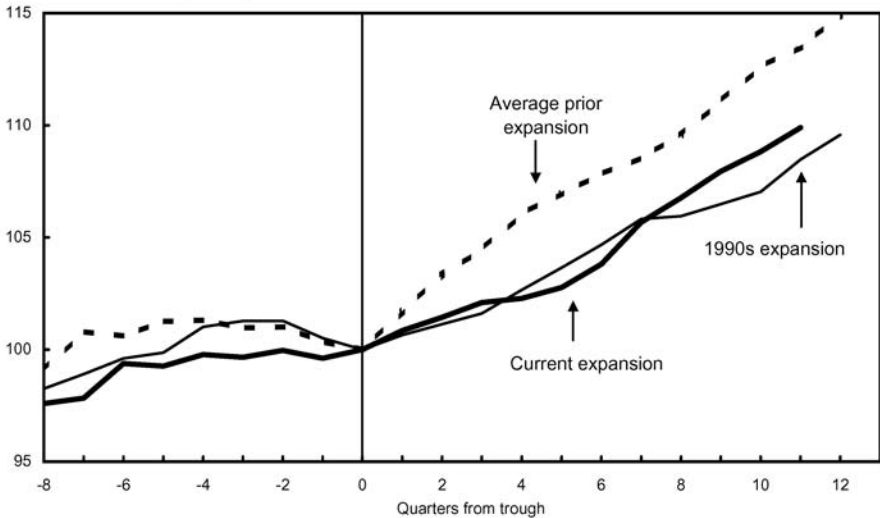
## Overview of the Current Expansion

Chart 2-1 plots the level of real GDP in the current expansion, the expansion of the 1990s, and the average of the five expansions from 1960 to 1990. The average provides a historical benchmark for the behavior of expansions; the year 1960 is chosen as a starting point to balance the need to smooth behavior over multiple expansions with the need to recognize that changes in the nature of the economy over time make earlier expansions less comparable to current ones. In each expansion, real GDP is normalized to 100 at the trough of the preceding recession (which is also the beginning of the expansion). Dates of the troughs are determined by the National Bureau of Economic Research. In the chart, each expansion begins at the vertical line at 0; points to the left of that line occur during the preceding recessions. The slope of each line is related to GDP growth: steeper slopes imply bigger changes in the level of real GDP per quarter, or faster growth.

**Chart 2-1 Real Gross Domestic Product**

The last two expansions have had more moderate GDP growth than the prior ones; but the preceding recessions were also more mild, showing smaller drops in GDP from peak to trough.

Index, level at business cycle trough = 100



Note: Average based on prior expansions since 1960 excluding 1990s expansion.

Source: Department of Commerce (Bureau of Economic Analysis).

The behavior of real GDP is similar in the 1990s and current expansions, but both are different from the average prior expansion. In particular, real GDP has risen less robustly during the last two expansions than it did, on average, in the other expansions since 1960.

In the average contraction prior to 1990, the level of real GDP reached its peak approximately four quarters before the eventual trough; in the 1990-1991 contraction, GDP reached its peak two quarters before the trough. There were no consecutive quarters of decline in the most recent contraction, with revised data showing that real GDP dropped in the third quarter of 2000 and the first and third quarters of 2001, but grew in the intervening quarters.

## Consumption

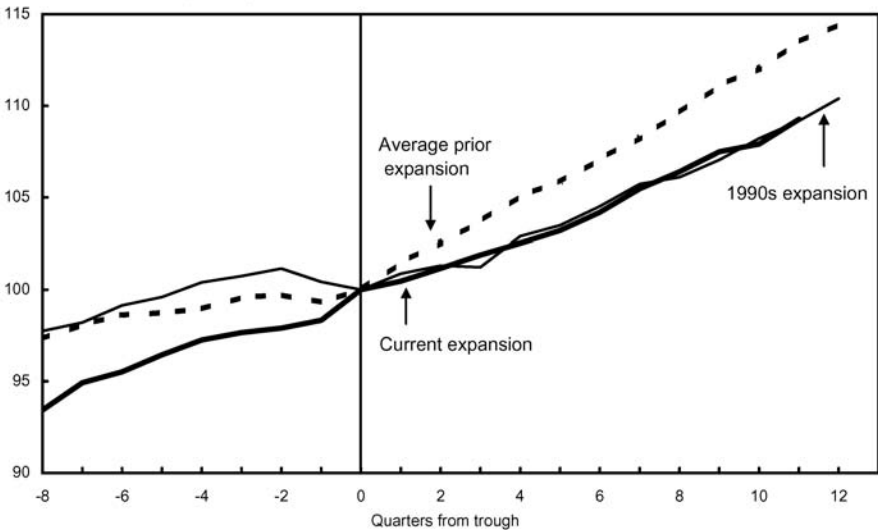
The largest component of GDP, real personal consumption expenditures, shows a similar pattern (Chart 2-2). Consumption behavior during the last two expansions has been almost identical, with the two recent expansions differing from prior expansions.

In the prior recessions, on average, consumption growth moderated starting six quarters before the recession's eventual trough, did not actually fall until two quarters before the trough, and began to rise in the quarter before the trough. In the 1990-1991 recession, consumption rose rapidly until two

**Chart 2-2 Real Personal Consumption Expenditures**

The behavior of consumption has been nearly identical over the last two expansions. Consumption did not fall during the last recession.

Index, level at business cycle trough = 100

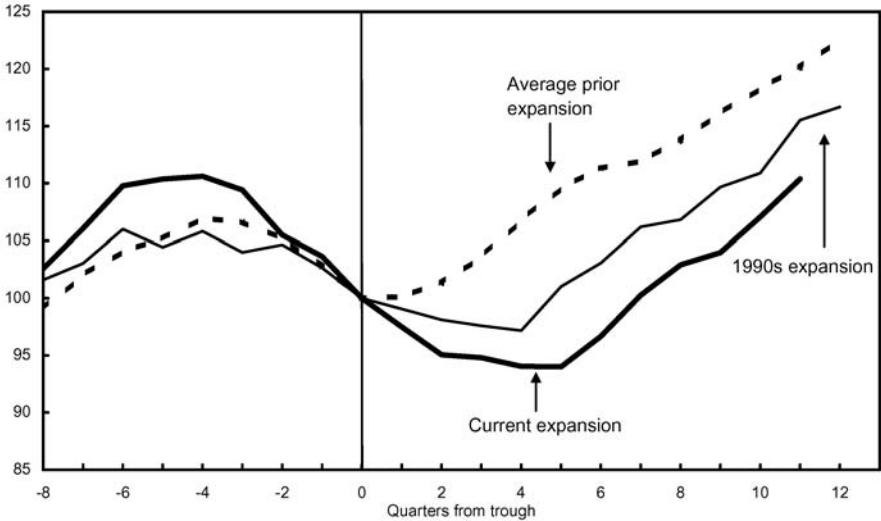


Note: Average based on prior expansions since 1960 excluding 1990s expansion.  
Source: Department of Commerce (Bureau of Economic Analysis).

### Chart 2-3 Real Nonresidential Investment

Nonresidential investment continued to fall in the two most recent expansions even after the business cycle trough had been reached.

Index, level at business cycle trough = 100



Note: Average based on prior expansions since 1960 excluding 1990s expansion.  
Source: Department of Commerce (Bureau of Economic Analysis).

quarters before the trough, dropped sharply until the trough, and mostly grew thereafter. The most recent recession stands out as different in that consumption continued to grow throughout. This likely reflects the important role of fiscal and monetary stimulus in supporting demand and the unusual extent to which the recession resulted from a collapse in investment following the bubble of the late 1990s.

## Investment

In an average expansion prior to 1990, total nonresidential investment started to rise at the business cycle trough, but initially rose at a slower pace than consumption (Chart 2-3). In the expansion of the 1990s, however, investment continued to fall for four quarters after the trough, and in the most recent expansion, investment fell for five quarters after the overall economy had bottomed out.

Residential investment in the average of prior recessions began to drop eight quarters before the business cycle trough and rose quite sharply in the four quarters after the trough (Chart 2-4). The housing market has been strong in the current expansion, though housing investment has been increasing at a more moderate pace than in expansions before 1990. This pattern is likely the result of the unusual circumstance in which residential investment did not falter along with the broader economy. In turn, this lack

of faltering may be attributable to low mortgage rates and to the movement of households' funds out of equities and into housing.

Real house prices have also behaved quite differently across the two most recent expansions. Real prices dropped throughout the expansion of the 1990s, reaching a low in 1995. They have risen by a total of about 44 percent since then. More than half of this increase, about 25 percent, has occurred since 2000. The recent increases in house prices, which have been particularly large in some urban markets, have raised concerns that the housing market may be in a "bubble." It is worth noting in this context that home equity as a share of net worth dropped during the 1990s, as real stock prices rose rapidly while house prices fell for the first half of the decade. This share has been rising since the late 1990s, but remains below its high of about 22 percent reached in 1985. This rebalancing of portfolios, pushing up the share of home equity in net worth closer to its historical norm, raises the demand for housing. This increase in housing demand may thus be partly responsible for the recent run-up in house prices.

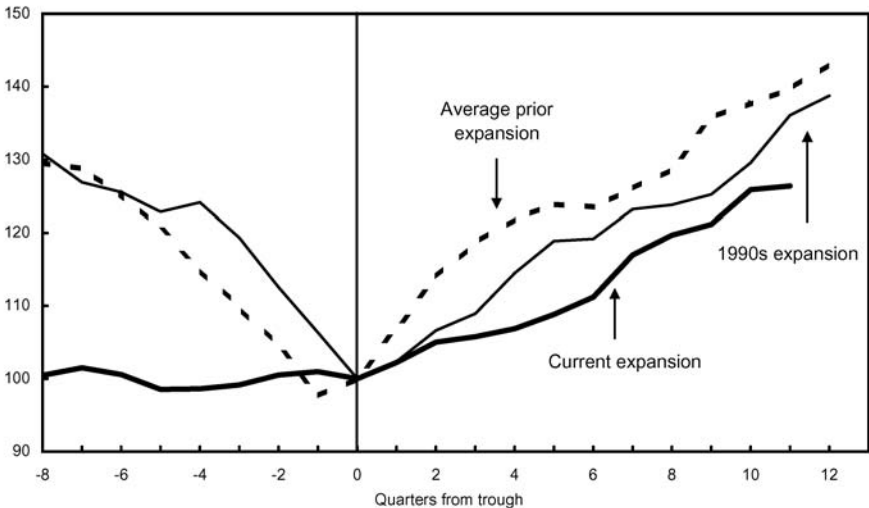
## Exports

At the beginning of the current expansion, exports roughly matched the behavior of expansions prior to 1990, in which exports picked up relatively

Chart 2-4 **Real Residential Investment**

Residential investment has grown moderately in the most recent expansion, after showing little if any decline in the preceding recession.

Index, level at business cycle trough = 100



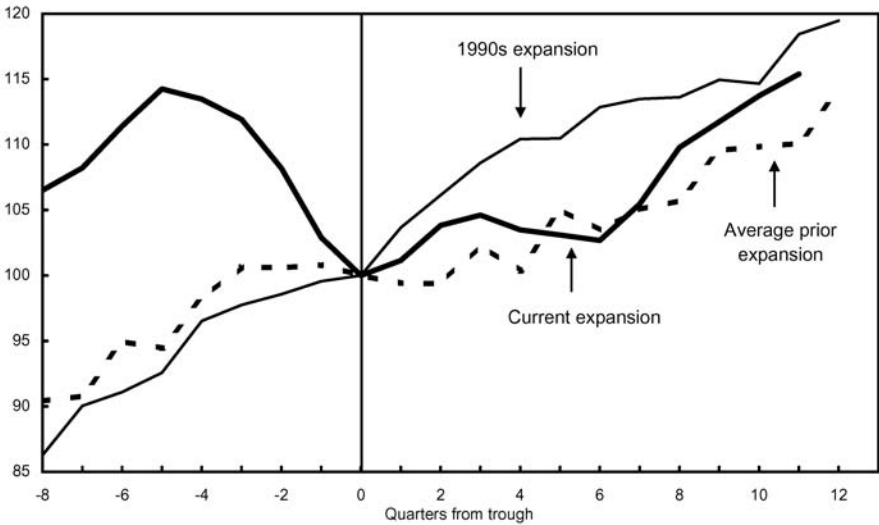
Note: Average based on prior expansions since 1960 excluding 1990s expansion.  
Source: Department of Commerce (Bureau of Economic Analysis).

slowly at the start of the expansion (Chart 2-5). An increase in the rate of growth of exports during the last year has moved their behavior closer to that of the 1990s expansion. The decline in exports during the most recent recession was particularly large relative to previous ones, as economic growth among major U.S. trading partners slowed more than in most past business cycles; in contrast, exports continued to rise during the 1990-1991 recession. Thus both recent recessions and expansions show anomalous behavior, though in different ways.

**Chart 2-5 Real Exports of Goods and Services**

In the current expansion, exports have grown in line with the average prior expansion, after an especially sharp decline in the preceding recession.

Index, level at business cycle trough = 100



Note: Average based on prior expansions since 1960 excluding 1990s expansion.  
Source: Department of Commerce (Bureau of Economic Analysis).

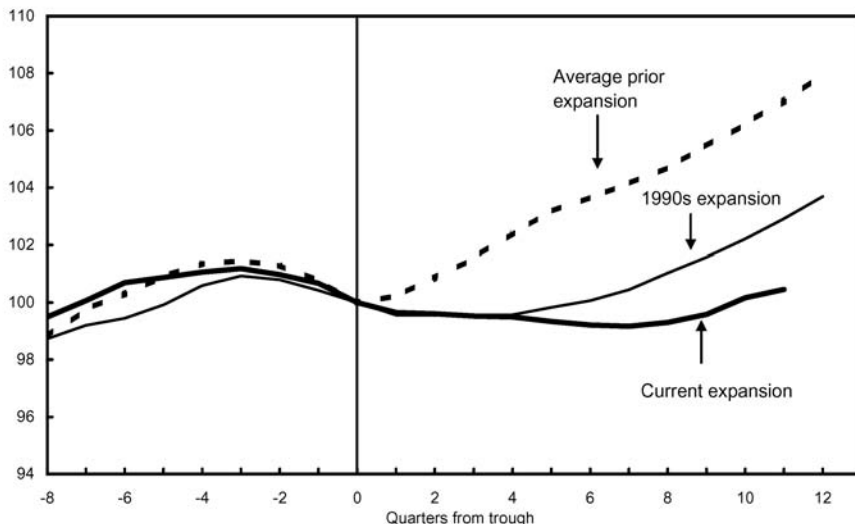
## Labor Market

The behavior of the labor market was unusual in the most recent recession and the last two expansions. Before 1990, on average, payroll employment started to decline about three quarters before a business cycle trough—that is, employment on average has continued to rise in the early part of recessions (Chart 2-6). In an average expansion, employment begins to grow at the start of the expansion and reaches its previous peak three quarters after the trough. In the expansion of the 1990s, however, employment continued to fall for two quarters after the business cycle trough and did not reach its previous peak value until another six quarters had passed. In the most recent expansion, employment continued to fall for seven quarters after the recession had ended and appears to be on track to reach its prerecession level by early 2005. Though both of the

Chart 2-6 **Nonfarm Payroll Employment**

Employment continued to decline after the business cycle trough in the two most recent expansions, and subsequent growth has been more moderate than in prior expansions.

Index, level at business cycle trough = 100



Note: Average based on prior expansions since 1960 excluding 1990s expansion.

Source: Department of Commerce (Bureau of Labor Statistics).

most recent expansions have shown relatively weak employment growth, they were also preceded by smaller declines in employment prior to the trough.

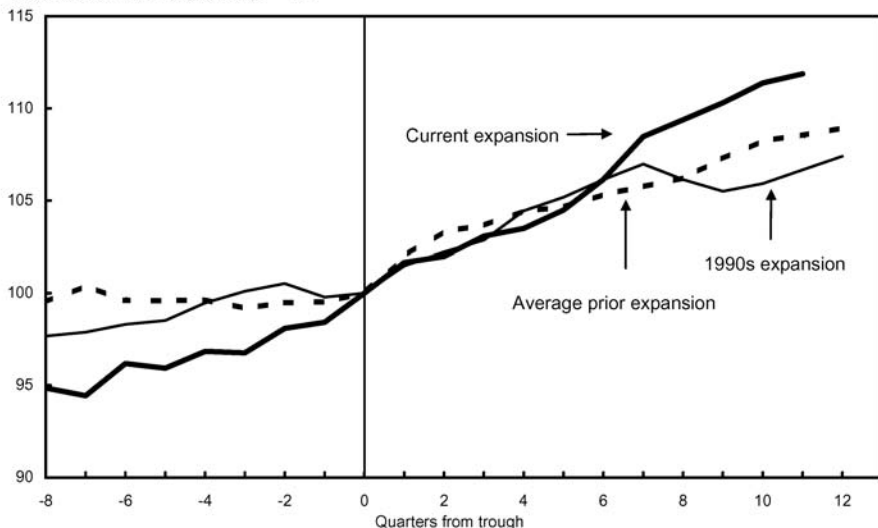
The recent behavior of productivity can account for much of the difference in employment growth (Chart 2-7). Productivity, defined as output per hour worked, had been growing in line with the rates seen in past expansions, but then accelerated four to six quarters after the most recent trough. At 11 quarters after a business cycle trough, productivity is usually about 8.5 percent above its value at the trough; it is currently about 12 percent above its trough value. During the most recent expansion, productivity growth has averaged 4.2 percent per year at an annual rate, up substantially from the 2.5 percent growth rate seen on average from 1995 to 2000. By contrast, though the level of productivity growth was quite high during the 1990s, at an annual growth rate of 2.1 percent, even three years after the 1991 trough the level of productivity was not as high relative to its trough value as had been the case in prior expansions. Hence current productivity growth particularly stands out.

In the short run, greater productivity growth sets the bar higher for employment growth. With increased productivity, a given amount of output can be produced with fewer hours worked, so real GDP must grow more quickly for employment to grow. In the long run, however, higher productivity growth leads to higher income per person, and will thus be expected to

### Chart 2-7 Nonfarm Business Productivity

Nonfarm business productivity has increased at a much greater rate in the current expansion than in previous ones.

Index, level at business cycle trough = 100



Note: Average based on prior expansions since 1960 excluding 1990s expansion.

Source: Department of Commerce (Bureau of Labor Statistics).

be positive for employment growth. This is because part of the increase in output is distributed to workers in the form of higher real wages and benefits and part to owners of capital in the form of profits. The fraction of national income accorded to profits has risen in recent years, with the share going to profits at 10.9 percent in the third quarter of 2004, up from an average of 9.3 percent during the 1980s and 1990s. The fraction accorded to wage payments and benefits has been approximately constant over longer periods of time. A return to the historical pattern would result in rising real wages.

The behavior of unemployment during the recent expansion, though atypical when compared with expansions from the 1960s through the 1980s, roughly matches the behavior of unemployment during the 1990s: a continued rise in unemployment after the beginning of the expansion, followed by a gradual decline about a year later.

## Summary

The beginnings of the last two expansions have been characterized by moderate growth in key macroeconomic variables: real GDP, consumption, investment, employment, and unemployment. The beginning of the most recent expansion has seen slower growth in investment and employment than the last one. The pace of economic expansion picked up, however, in the

middle of 2003. The more moderate rate of employment growth is at least partly explained by unusually robust growth in productivity—which further indicates higher future real wage growth. Unemployment rose by less than in the last recession and expansion. Both of the most recent expansions were preceded by relatively mild recessions: the drop in real GDP was relatively small, and consumption did not drop at all in the most recent recession.

## Symmetry in Recessions and Expansions

The last two expansions, though moderate, were preceded by shallow recessions. Past recessions were deeper and subsequent expansions more rapid. Together, the two sets of observations suggest that the rate of expansion may be related to the rate of contraction. This section evaluates that hypothesis.

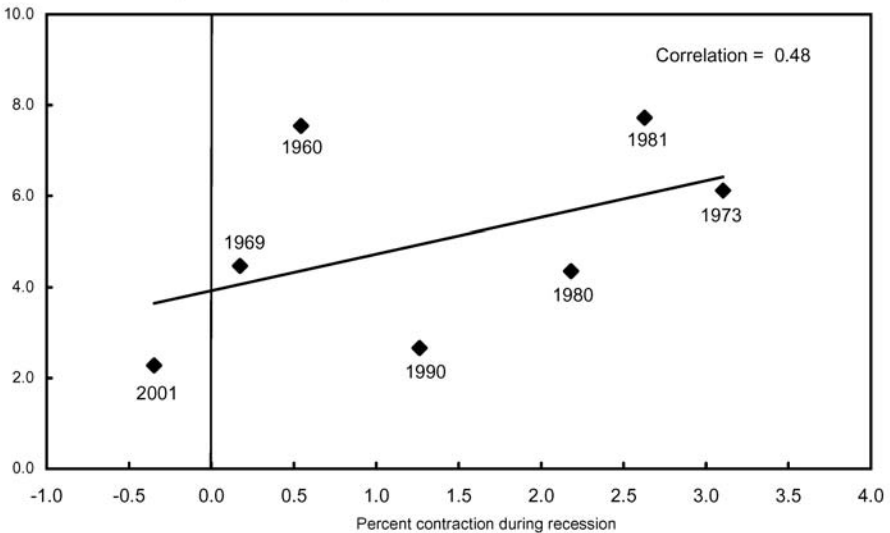
### Real GDP

Chart 2-8 plots the total percent contraction in real GDP during all recessions since 1960 against the percent expansion in real GDP in the four quarters following the trough. The latter time period is chosen to allow a uniform standard of comparison across expansions. Each point is labeled by

**Chart 2-8 Recessions and Expansions: Real GDP**

Real GDP tends to grow rapidly after deep recessions (such as that of 1981) and moderately after mild ones (such as that of 1969).

Percent expansion during four quarters following trough



Sources: Department of Commerce (Bureau of Economic Analysis) and Council of Economic Advisers.



the year corresponding to the start of the recession as dated by the National Bureau of Economic Research. A regression line is drawn through the points; the position of the line is determined by a statistical procedure known as linear regression, which tries to determine the best possible line by minimizing the squares of the sums of the vertical distances between each point and the line. The line provides the best estimate for how much of an increase in real GDP at the beginning of an expansion can be expected for a given decline in real GDP during a recession.

The graph confirms the hypothesis. For example, the 1981 recession and its aftermath saw a sharp drop in real GDP followed by a sharp rise, while the 1990-1991 recession saw a shallow drop in real GDP followed by a shallow rise. The regression line is upward-sloping, providing statistical evidence that shallow recessions were followed by initially shallow expansions and sharp recessions by initially sharp expansions. An inset on the graph indicates a correlation of about 0.5. A correlation measures how closely two variables are related: a value of 1.0 indicates that the variables move together perfectly, 0 indicates that the variables are unrelated, and -1.0 indicates that the variables move in opposite directions. A value of 0.5 indicates a fairly strong relationship.

The most recent recessions and expansions have been fairly moderate. Indeed, real GDP actually rose over the course of the most recent recession; this is true whether the last recession is dated to have started in the fourth quarter of 2000 or the first quarter of 2001.

## Components of Real GDP

Given the symmetry in contractions and expansions of real GDP, one would expect some, if not all, of GDP's components—consumption, investment, government spending (on consumption and investment), and net exports—to show a similar pattern. The behavior of two major parts of overall investment, real investment in equipment and software and inventory investment, most strongly matches that of real GDP.

## The Labor Market

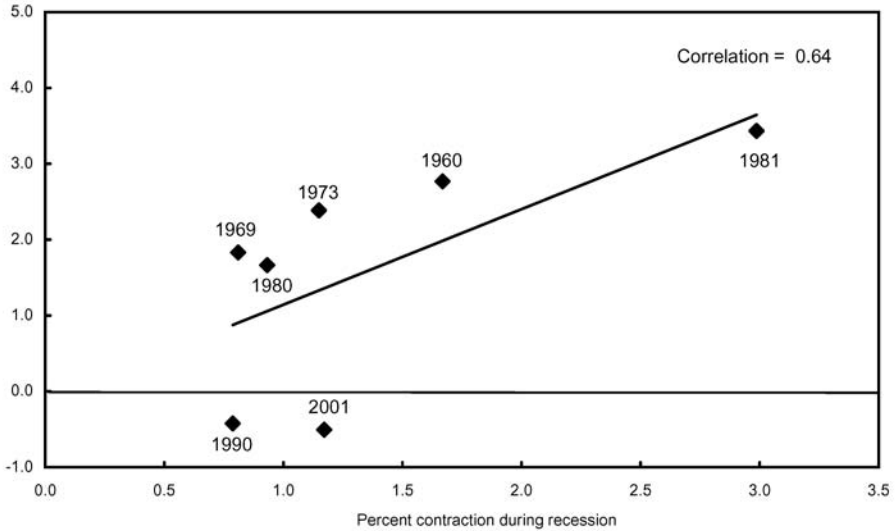
The relationship between the drops in employment during contractions and the initial rises in employment during the subsequent expansions is even stronger than the relationship between GDP declines during recessions and GDP increases during expansions (Chart 2-9).

Drops in employment during contractions and rises during expansions are smaller than many of the other variables we have seen—ranging between a decline of 3 percent and an increase of 3.4 percent. The most recent contractions saw especially small declines in employment—between 0.8 percent and

### Chart 2-9 Recessions and Expansions: Nonfarm Payroll Employment

Employment tends to grow rapidly after deep recessions (such as that of 1981) and moderately after mild ones (such as that of 1969).

Percent expansion during four quarters following trough



Sources: Department of Labor (Bureau of Labor Statistics) and Council of Economic Advisers.

1.2 percent. Employment continued to decline into the beginning of the expansions, though by less than 1 percent in each case. As noted above, given the rises in GDP of over 2 percent during the first year of each expansion, the difference reflects strong productivity growth.

## A Possible Explanation: The Financial Accelerator

The charts above provide evidence that moderate recessions are followed, at least initially, by moderate expansions, and sharp recessions by initially rapid expansions. This is seen most strongly in the behavior of real GDP and employment.

The largest component of GDP to follow the same pattern, investment, suggests a possible explanation for this relationship. Investment is positively correlated with GDP growth, rising when GDP growth is rising and falling when GDP growth is falling. This relationship is known as the “accelerator model” of investment: higher GDP growth leads to more investment, which in turn leads to even faster GDP growth. A shock that leads to a large decline in investment will thus cause an even larger decline in GDP growth. When that shock disappears, and investment rebounds to its previous level, GDP growth will also show a similar rebound.

Research over the past two decades on the role of financial markets in investment has provided an explanation for the relationship between investment and

GDP growth. To buy new capital goods, firms rely on several sources of financing. These include internal funds, such as retained earnings or capital infusions from firm owners, and external funds, such as the proceeds from loans and the sales of stocks and bonds. The amount of internal funds is related to the firm's cash flow. In response to a slowdown in sales, cash flow will likely decline, reducing the amount of internal funds and therefore increasing the amount a firm needs to obtain from external finance. But lenders will be less willing to loan funds to firms with smaller cash flow, and the value of firms' collateral is also likely to have decreased, further reducing their ability to obtain loans. Hence firms might be forced to reduce their investment. This reduction in turn will lead to lower output, lower cash flow, and yet again lower investment—leading to a further deceleration in output. The effect can work in reverse during economic expansions, with rising GDP making it easier for firms to get financing for new investment projects. This theory provides a possible explanation for why changes in the amount of investment can have a multiplier impact on the broader economy.

The “financial accelerator” effect is roughly proportional to the size of the decline in GDP, since the change in cash flow and the value of collateral would be expected to be roughly proportional to the decline in output. There is no consensus, however, about the magnitude of the accelerator effect. One study assessing the response of investment by firms to a monetary policy tightening, both with and without a financial accelerator, showed that the presence of an accelerator can cause the decline in investment to double compared to a situation in which there is no accelerator effect. Another study noted that small firms, which are likely to be more limited in their ability to borrow than large firms, show much larger declines in inventory and sales growth during recessions than do large firms. This finding further suggests an important role for the financial accelerator.

The accelerator theory can also provide a link between asset price bubbles and recessions and expansions. When the prices of equities or real estate rise, the resulting increases in asset values raise the value of collateral, making it easier for firms to obtain financing for investment—thus further raising output growth. Conversely, declines in asset values from the bursting of asset price bubbles can discourage investment.

Although the financial accelerator theory helps explain why on average the depth of the recession corresponds to the initial strength of the expansion, the theory will not explain the behavior of all recessions and expansions. Investment is affected by things other than output growth, and, as will be discussed more fully later in the chapter, economic shocks can affect other components of GDP. In the most recent recession, for example, investment fell more rapidly than in the average recession, but the fall in output was not particularly large. The solid growth in consumption, boosted by expansionary monetary and fiscal policy, helped reduce the fall in output.

## Summary

Moderate recessions are followed by moderate expansions and sharp contractions by rapid recoveries. This may be a consequence of the “financial accelerator” model of investment, in which firms’ ability to borrow is related to the growth rate of output.

Seen in this context, the unusually moderate growth experienced at the beginning of the two most recent expansions seems less unusual, since the preceding recessions were also relatively mild. This observation begs the question of why the most recent recessions were mild. One possibility is that stabilization policy may have been more active and more effective during the last two recessions and subsequent expansions. This hypothesis can be assessed by looking at the two components of fiscal policy—taxes and spending—and at monetary policy.

## Stabilization Policy

Before discussing specific details of stabilization policy, it will be useful to review what is known about the causes of business cycles, the effects of policy on economic activity, and the resulting challenges to the development and implementation of effective policy.

## Business Cycles: Causes

Standard economic models suggest that long-run growth of real GDP is an outcome of technological progress, the accumulation of capital, and growth in the labor force. The models also suggest that either a larger labor force with a fixed capital stock or a larger capital stock with a fixed labor force will produce smaller and smaller additional amounts of output—a phenomenon known as *diminishing returns*. Hence capital accumulation alone and increases in the labor force alone will eventually result in higher levels of output but slower rates of output growth.

In the very long run, output will grow only if technological progress enables the production of more output for a given amount of capital and labor. In the short run, various *shocks*—unexpected events that cause large changes in the demand or supply of goods—can lead to recessions and expansions. The recessions and expansions can be seen as deviations from the long-run growth path.

Economic shocks can be divided into disturbances that affect aggregate demand and those that affect aggregate supply. *Aggregate demand* is the economy-wide demand for goods and services. It consists of consumer spending, investment, government purchases, and net exports (exports less

imports). *Aggregate supply* is the economy-wide supply of goods and services. Equilibrium in the economy occurs when aggregate demand equals aggregate supply.

Shocks that depress aggregate demand tend to lower output, lower employment (that is, raise unemployment), and put downward pressure on prices. For example, a decline in stock prices could lead to lower consumption spending. Shocks that raise aggregate demand have the opposite effect; they raise output, raise employment (lowering unemployment), and put upward pressure on prices. For example, greater optimism by firms about the state of the economy could lead to higher investment spending. Research has found that shocks to aggregate demand tend to affect output first rather than prices, but that these effects are temporary, lasting only a few years. However, such disturbances have long-lasting effects on the levels of prices and wages. That is, an increase in demand will lead to a temporary boost for output but a permanent rise in the price level (though not necessarily the inflation rate).

Shocks to aggregate supply, in contrast, tend to move output and prices in opposite directions. A beneficial shock to aggregate supply, such as a rise in productivity, raises output, lowers unemployment, and puts downward pressure on prices. An adverse shock to aggregate supply, such as an increase in the price of energy, has the opposite effects. To the extent that aggregate supply disturbances influence the determinants of long-run growth—the accumulation of capital, the supply of labor, and technological progress—supply shocks can also have long-lasting, even permanent, effects on the level and growth rate of output.

## Economic Policy

The tools available to policymakers to affect the economy over a short horizon (up to a few years) can be divided into fiscal policy and monetary policy. *Fiscal policy* involves decisions about taxes, transfers (such as unemployment insurance, Social Security, or Medicare payments), and government purchases of goods and services. Changes in all of these affect aggregate demand. In the short run, lower taxes or higher transfer payments can lead to higher disposable incomes and thereby boost consumption spending. Government purchases directly affect spending and support aggregate demand.

The effects of tax cuts may depend on the expected duration of the cut. A prominent theory of consumption, the *life-cycle/permanent-income hypothesis*, argues that people choose their consumption to be in line with their expected lifetime resources. To the extent they are able, people keep their consumption constant over drops in income that are expected to be temporary by borrowing or using their savings. Expected temporary increases in income should be saved rather than consumed. Only sustained changes in income would translate into equal-sized changes in consumption. Under this theory,

permanent cuts should permanently raise consumer spending, as consumers would view disposable income as permanently higher, while temporary tax cuts should only be saved. But even temporary cuts could boost spending, however, if people cannot spend as much as they would like or need to due to constraints on their ability to borrow.

Tax changes can also increase the incentives for investment, boosting the investment part of aggregate demand. Some tax changes can also raise aggregate supply by, for example, boosting incentives for labor supply or permanently increasing the incentives to accumulate capital, or by removing distortions. These changes would be expected to augment the long-run growth rate of the economy.

*Monetary policy* in the United States is conducted by the Federal Reserve Board's Federal Open Market Committee (FOMC). The FOMC targets a short-term interest rate, the *Federal Funds rate*, the rate at which banks make overnight loans to one another. This interest rate in turn influences other short-term and long-term nominal and real (inflation-adjusted) interest rates in the economy. In turn, these interest rates affect interest-sensitive components of aggregate demand, such as investment and consumption of durable goods (goods used for long periods, such as refrigerators and cars). These components of demand are especially affected by changes in interest rates because firms often need to borrow to make investments and consumers need to borrow to purchase durable goods. Low real interest rates raise aggregate demand by boosting consumption and investment; high real rates reduce aggregate demand. The effects of monetary policy on output and other real variables will generally be temporary. In the long run, the output effects of the changes in aggregate demand caused by monetary policy largely disappear, leaving effects only on the level of prices.

Research suggests that price stability—a low and stable rate of inflation—may have important effects on aggregate supply and might therefore be conducive to GDP growth. High and widely-varying rates of inflation create substantial amounts of uncertainty about real rates of return, making it difficult for people to make decisions about investment.

## Policy Design: Challenges

Policymakers use the elements of monetary and fiscal policy to try to reduce the size of economic fluctuations. Making recessions more moderate helps people by decreasing the amount of unemployment and limiting the amount of real income loss. Restraining expansions to sustainable levels reduces the risks of high inflation. Such policy is often called *countercyclical*, since the aim of the policy is to moderate the business cycle.

There is a broad consensus on the mechanisms by which fiscal and monetary policy affect the macroeconomy, but less agreement about the timing and

magnitude of their effects. Fiscal policy changes, especially tax policy changes, can work fairly rapidly. For example, a temporary investment incentive can cause firms to move investment forward and undertake projects now instead of in the future. But enacting such a policy through the legislative and executive branches of the government can take time. Monetary policy can be changed more quickly, as the FOMC has eight scheduled meetings per year and can meet more often if economic conditions warrant. In contrast to fiscal policy, however, it takes time for interest-rate changes to affect spending because investment plans take time to adjust to changing financial conditions.

This uncertainty about the duration and magnitude of policy effects means that policymakers considering changes in fiscal or monetary policy must forecast future aggregate demand and supply disturbances and their impact. For example, a policymaker considering a tax cut must think about the state of the economy in six months and beyond, when the tax cut will have its initial impact. The same is true for monetary policy, in which it can take even more time for policy changes to have an impact. Economic forecasting is inherently difficult. It is not easy to determine the state of the economy even six months out. Economic shocks are by definition unexpected. New kinds of shocks can make predictions even more difficult. For example, the oil-price shocks of the 1970s were likely hard to forecast, since such sharp increases had not been observed in the past.

Successful execution of policy requires not only choices about the type and extent of policy, but also about timing and duration. While these are all difficult decisions to make, there is evidence that there has been improvement over time. Technological improvements and economic research have allowed economists and policymakers to get more and better data more quickly on the state of the economy. Economic models have improved as new ideas are developed and some older ideas fail the test of time. Computers have allowed the simulation of more alternative policy scenarios. Policymakers learn from the past.

The following sections compare the behavior of fiscal and monetary policy across recessions and expansions since 1960 to assess differences in the application and effects of policy over time.

## Fiscal Policy

The two components of short-run fiscal policy, taxes and government spending (consumption and gross investment), show different behavior across economic expansions. The following subsections consider each in turn.

### *Taxes*

The President signed three major tax bills into law between 2001 and 2003: the Economic Growth and Tax Relief Reconciliation Act (EGTRRA) in June 2001, the Job Creation and Worker Assistance Act (JCWAA) in March 2002,

and the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) in May 2003. A fourth bill, the Working Families Tax Relief Act (WFTRA), signed in October 2004, extends some provisions of the previous bills.

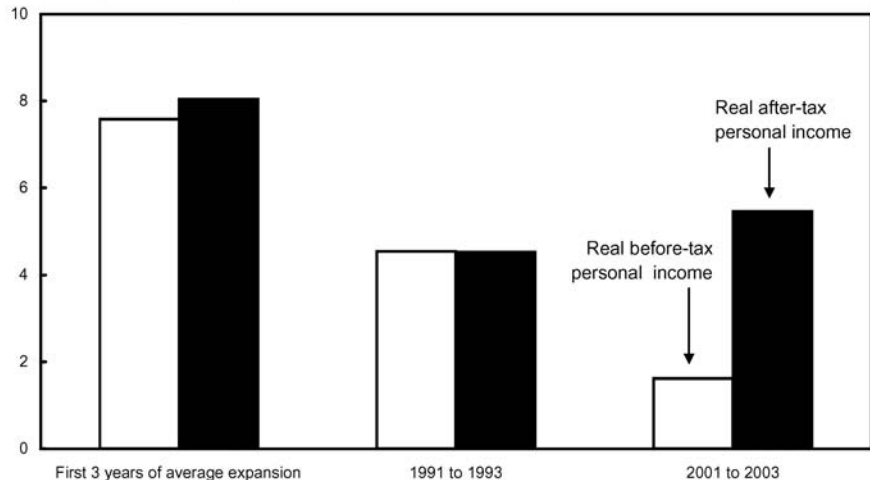
These bills—described in further detail in Chapter 3, *Options for Tax Reform*, and in the 2004 Economic Report of the President—were designed to boost both aggregate demand and aggregate supply. The aggregate demand effects came in several parts. First, tax cuts to individuals raised real disposable income (real income less taxes) and thereby supported consumption. Second, the tax cuts provided incentives for investment, both by lowering tax rates on personal capital income and by increasing the amount of investment allowed to be expensed by businesses. The investment incentives were also designed to have long-term effects on aggregate supply, by increasing the amount of capital accumulation.

The impact of the boost to aggregate demand can be assessed by plotting the growth of real income and real disposable income across expansions (Chart 2-10). During the first three years of an average expansion, disposable income growth is only slightly larger than personal income growth, suggesting that tax policy provides only a small boost. In the 1990s expansion, there was essentially no difference between real income growth and real disposable

**Chart 2-10 Growth in Personal Income During Expansion Years, Before and After Taxes**

Real after-tax income increased much more than before-tax income in the recent expansion compared with growth in previous expansions.

Percent change in annual average



Note: Before-tax personal income deflated by the price index for personal consumption expenditures. Average based on prior expansions since 1960 excluding 1990s expansion.

Sources: Department of Commerce (Bureau of Economic Analysis) and Council of Economic Advisers.



income growth. Tax policy neither stimulated nor contracted demand. In contrast, the difference has been quite large in the most recent expansion. After-tax income has grown at a much faster rate than before-tax income.

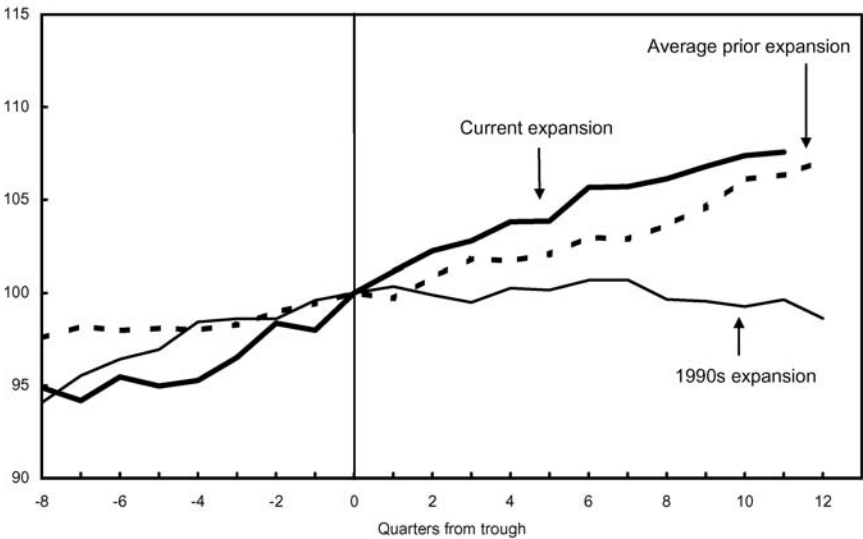
The timing of policy also likely helped stabilize the economy, which was facing multiple contractionary forces in 2000 and 2001. The first tax relief act was passed in the middle of the recession, so households received tax-cut checks at an opportune time. Indeed, the decline in the personal saving rate as a fraction of income indicates that, on average, people were spending, boosting aggregate demand. The incentives for investment also included in the tax relief act were important in light of the particularly sharp drop in investment during the last recession.

### *Government Spending (Consumption and Gross Investment)*

Government spending (consumption and gross investment) (Chart 2-11) on average tends to rise as the economy goes into recession and continues to rise during the beginning of the subsequent expansion. In the 1990s expansion, however, government spending flattened out and began to decline. In the most recent expansion, government spending rose at a faster rate than average, providing a bigger boost to aggregate demand. A significant portion of this additional spending is attributable to increased defense and homeland security spending.

**Chart 2-11 Real Government Spending (Consumption and Gross Investment)**  
 Government spending has increased especially rapidly during the recent expansion.

Index, level at business cycle trough = 100



Note: Average based on prior expansions since 1960 excluding 1990s expansion.  
 Source: Department of Commerce (Bureau of Economic Analysis).

Federal government revenues had been affected by both the recession, which had been under way for some time before the terrorist attacks of 9/11, and the subsequent moderate growth of output during the initial phase of the expansion. About half of the change in the Federal government's fiscal position from a surplus in fiscal year 2001 to a deficit in fiscal year 2004 was attributable to the weaker economy and related factors. Just under a quarter of the decline is attributable to increased spending, principally related to defense and homeland security, and a little more than a quarter of the decline is attributable to the tax cuts.

While it is undesirable to have government deficits, they are sometimes a prudent price to pay for stimulating economic growth. Without aggressive fiscal policy during the most recent recession and recovery, the large number of severe shocks facing the economy might well have caused the recession to have been much longer and deeper than it actually was, possibly further exacerbating the deficit. In contrast, reducing the deficit by reversing the tax cuts would have caused growth to slow even further.

Fiscal policy provided significant stimulus during the most recent recession and recovery through both lower taxes and increased spending. Real government spending increased during the 1990-1991 recession, and then remained at roughly its trough level for the next year before beginning to decline. Hence spending provided only modest stimulus at the beginning of the 1990s expansion.

## Monetary Policy

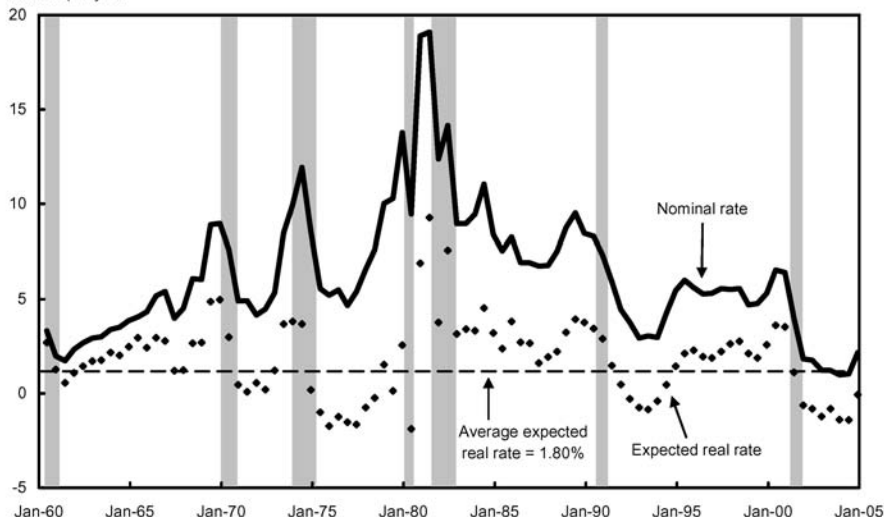
Low real interest rates help stimulate real GDP growth by boosting investment and purchases of consumer durables, thereby raising aggregate demand; high real rates likewise reduce real GDP growth. The Federal Reserve's principal policy tool, the Federal Funds rate, influences other nominal and real interest rates. When the real (inflation-adjusted) Federal Funds rate is low, monetary policy will be stimulative (sometimes referred to as *accommodative* or *loose policy*). When this rate is high, monetary policy will restrain real GDP growth (sometimes referred to as *tight* monetary policy). "Low" and "high" are both relative terms. In principle, it would be best to compare the real Federal Funds rate with whatever interest rate would make policy neither loose nor tight. This rate can be thought of as the long-run equilibrium rate the economy would tend to move toward as the effects of economic shocks wear off. In practice, this equilibrium rate is not observed. But over long periods of time, the economy tends to drift back to its long-run equilibrium; hence the average level of the real Federal Funds rate over a long period of time can provide a useful, though necessarily imperfect, approximation for the equilibrium rate.

In Chart 2-12, the solid line plots the nominal Federal Funds rate; the dots plot the expected real Federal Funds rate, obtained by subtracting a biannual survey measure of inflation expectations (the Livingston survey) from the nominal rate. The chart suggests that the real Federal Funds rate tends to fall during recessions and rise during expansions—exactly what would be expected from countercyclical monetary policy. But the timing of interest-rate changes relative to the recessions and expansions has changed over time. First, declines in the real Federal Funds rate have occurred longer before the beginning of the last two recessions than before the other recessions after 1960. In some prior recessions, real rates began to decline only after the recession began. Since it can take time for real interest rate changes to affect spending, earlier actions by the Federal Reserve can reduce the depth of recessions. Second, real rates have remained low during the last two expansions for longer than during previous expansions. The real Federal Funds rate has been well below its long-run average since the beginning of 2001. This would be expected to have provided additional stimulus at the beginning of the recovery and into the expansion. During the course of 2004, the Federal Reserve raised its target for the nominal Federal Funds rate from 1 percent to 2.25 percent. Although these increases in the nominal rate also meant an increase in the real rate, the real rate still remains well below its long-term average.

**Chart 2-12 The Real and Nominal Federal Funds Rate**

The real effective Federal Funds rate has remained below its long-term average since the beginning of the most recent recession.

Percent per year



Note: Real rate series subtracts year-ahead inflation expectations. Shaded areas indicate recessions.

Sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of Philadelphia, and Council of Economic Advisers.

Fiscal policy played an especially important role in moderating the last recession and in supporting the subsequent economic expansion. During the most recent set of interest-rate cuts, the nominal Federal Funds rate was reduced to 1 percent, possibly leaving the Federal Reserve with reduced ability to provide additional stimulus. The Federal Reserve could have used other means of further easing policy. For example, it could have tried to target a long-term interest rate by buying or selling long-term bonds. Since long-term rates remained well above zero, such a policy would have given the Federal Reserve additional room to carry out further easing. The efficacy of this and other nontraditional policy methods is unproven.

In sum, monetary and fiscal policy together likely explain a significant part of the relative stability of the economy over the last two recessions and expansions (see Box 2-1 for further discussion).

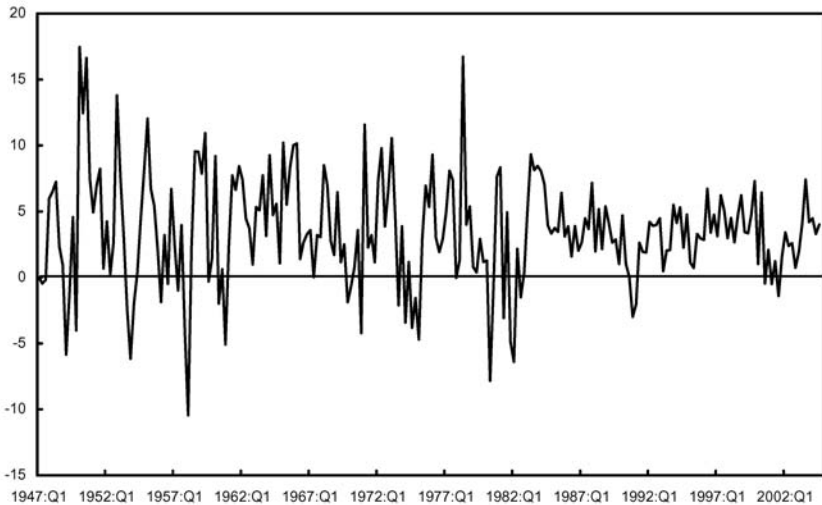
### Box 2-1: Is the Economy More Stable?

The relative moderation of the last two business cycles raises the possibility that the economy may be becoming more stable generally. In the 60 years since World War II, a visible shift in the volatility of the growth rate of real GDP occurred in the early 1980s (Chart 2-13). Does this indicate a change in the nature of the business cycle, and if so, what caused the change?

Chart 2-13 Real GDP Growth

Real GDP growth has become less volatile over the past 20 years.

Percent at an annual rate



Source: Department of Commerce (Bureau of Economic Analysis).

### **Box 2-1** — *continued*

A variety of reasons have been offered to explain this shift. One possibility is that more active, and more effective, stabilization policy had moderated economic fluctuations. Another is that the economy has had a run of good luck; it has not experienced the same kinds of macro-economic disturbances seen in earlier years, such as the oil-price shocks seen in the 1970s and 1980s. Events of the past few years, such as the terrorist attacks of 9/11 and the bursting of the high-tech bubble of the 1990s, however, were significant shocks. The decline in volatility could also be largely attributable to better inventory management. This could be the result of the adoption of “just in time” methods, in which goods are manufactured and supplied on demand. Yet another possibility is that an increasing proportion of the economy is now in the service sector, which has tended to be more stable than the goods-producing sector. It is likely that all of these effects have worked together to reduce volatility.

## Conclusion

Since the late 1980s, recessions and the initial stages of expansions have become more moderate. Some of this change reflects the general positive relationship between the size of recessions and size of expansions, which is caused at least in part by the relationship between firms’ abilities to invest and the state of economic activity (the “financial accelerator”). The recent recessions and expansions have been especially moderate, suggesting the economy has become more stable in general. Part of this stability is likely attributable to more active and timelier stabilization policy.

## Options for Tax Reform

The current Federal tax system is unnecessarily complex and distorts incentives for work, saving, and investment. As a result, it imposes large burdens on taxpayers and on the U.S. economy as a whole in the form of high compliance costs and distortions in economic decisions.

Tax reform could make the tax system simpler and fairer and promote growth of the economy. Various tax reform proposals have been made to replace the current tax system. Most of these proposals are variations on a few basic types of taxes. This chapter discusses these basic prototypes for reform. The President has not endorsed any specific proposal, and this chapter does not advocate the adoption of any particular prototype for reform.

The key points in this chapter are:

- The current tax system imposes high costs on society in addition to the taxes actually collected.
- Income taxes and consumption taxes are the primary alternatives for raising government revenues.
- The main types of consumption taxes are the retail sales tax, the value added tax, the flat tax, and the consumed income tax.
- While the tax system could be completely redesigned, important benefits could also be obtained through simplification and reform of the current tax system.

### Why Do We Need Tax Reform?

People often think of the tax burden in terms of the dollar amounts of taxes paid, but this is only part of the total burden. The tax system also imposes two indirect burdens: the costs (in time and money) of complying with tax rules and the costs (including slower economic growth) of tax-induced distortions of economic activity. Although all tax systems impose direct and indirect costs, such costs are unduly high under the current system.

### The Direct Burden of the Tax System: Taxes Paid

As measured by the revenues collected, the direct burden of Federal taxes is estimated to be \$2.1 trillion, or 16.8 percent of GDP in fiscal year 2005 (Table 3-1). This percentage is less than the average of about 18 percent for the last 50 years because of the effects of the recession and of temporary

TABLE 3-1.— Sources of Federal Revenues, Fiscal Year 2005

Source	Billions of dollars	Percent of total revenues	Percent of GDP
Individual income taxes .....	894	43.5	7.3
Corporation income taxes .....	227	11.0	1.9
Social insurance receipts.....	774	37.7	6.3
Excise taxes.....	74	3.6	.6
Estate and gift taxes .....	24	1.2	.2
Customs duties .....	25	1.2	.2
Miscellaneous receipts.....	36	1.8	.3
Total .....	2,053	100.0	16.8

Note: Detail may not add to totals because of rounding.

Source: Office of Management and Budget, *Budget of the United States Government, Fiscal Year 2006*.

economic stimulus provisions that expired at the end of December 2004, but is projected to return to the historical average under proposed policies. The largest share of revenues (over 92 percent) comes from taxes on income and its components: the individual income tax (43.5 percent), payroll taxes for Social Security and other social insurance programs (nearly 38 percent), and the corporate income tax (11 percent).

Even when state and local taxes are included, the United States relies more on taxes on income than most other developed countries (Table 3-2). Over 70 percent of taxes imposed by all levels of government in the United States are individual income, corporate profit, and payroll taxes, compared to the 62 percent average for all Organization for Economic Cooperation and Development (OECD) countries. The United States relies much less on taxes on consumer goods and services (under 18 percent) than other countries (32 percent average). Much of this difference reflects higher total tax burdens in other OECD countries, which generally impose value added taxes (VATs) on sales of goods and services in addition to income and payroll taxes.

TABLE 3-2.— Comparison of Tax Revenues: United States, G-7, and OECD, 2002  
[Includes subnational governments]

Revenue source	United States	Canada	France	Germany	Italy	Japan	United Kingdom	OECD average
Percent								
Total revenue as percent of GDP .....	26.4	33.9	44.0	36.0	42.6	25.8	35.8	36.3
Revenue by type as percent of total:								
Income and profit.....	44.4	46.2	23.9	28.0	32.5	30.6	37.8	35.3
Social security and payroll.....	26.1	17.2	39.5	40.3	29.4	38.3	17.0	26.3
Property and wealth <sup>1</sup> .....	11.9	9.8	7.5	2.3	5.1	10.8	12.0	5.5
Goods and services .....	17.6	26.3	25.4	29.2	26.9	20.1	32.7	31.9
Other .....	.0	.5	3.6	.0	6.0	.3	.0	.9

<sup>1</sup>Includes taxes on real estate, net worth, estates, inheritances, and gifts.

Note: Detail by type may not add to 100 percent because of rounding.

Source: Organization for Economic Cooperation and Development (OECD), *Revenue Statistics*.

## High Compliance Costs

The complexity of the U.S. income tax is legendary (Box 3-1), and it leads to high compliance costs for taxpayers and the government.

The costs of the Internal Revenue Service (IRS) administering the tax system and monitoring compliance are about 0.5 percent of revenues. But these are just a small part of the compliance costs associated with the tax system, which are estimated to be as much as 10 percent of revenues. The complexity of the current system imposes substantial burdens on taxpayers in time and money spent to prepare and file tax returns, maintain tax-related records, read and understand instructions, engage in tax planning, and, for more than half of individual taxpayers, pay a tax preparer. The IRS estimated that for tax year 2000, individual taxpayers spent 3.2 billion hours on tax compliance, an average of 25.5 hours per return. Assuming a value of \$15 to \$25 per hour for

### **Box 3-1: Complexity of the Current System**

The current tax system includes many provisions that duplicate or conflict with each other and that are unnecessarily complicated. Some examples of complexity affecting large numbers of taxpayers are:

- There are approximately 30 different kinds of special retirement or special purpose savings accounts under the tax system. Each has its own rules, and participation in one of them can affect whether an individual can participate in another.
- Numerous phaseout provisions intended to limit tax benefits to lower-income taxpayers require additional calculations and create high marginal tax rates in the phaseout range. Two such provisions apply to the taxation of Social Security benefits.
- Tax complexity is not just the bane of the wealthy. The Earned Income Tax Credit, which provides a subsidy to the working poor and is a basic element of our national income support system, has 13 pages of instructions and complex eligibility requirements.
- The Alternative Minimum Tax (AMT) requires taxpayers to calculate their income taxes twice—once under regular tax rules and a second time under AMT tax rates and rules. By 2010, more than one in five taxpayers will have to calculate the AMT and pay it if it is higher than their regular tax.
- Over 10 million dependents have to file income tax returns each year. Many of them are teenagers with jobs or young children who have modest amounts of investment income. The so-called Kiddie Tax applies to a much smaller number of dependent filers, but involves complex rules and can result in very high marginal tax rates in certain cases.



taxpayers' time and adding the \$19 billion spent on tax preparers, computer software, and similar expenses results in a total estimated individual compliance cost between \$67 billion and \$99 billion. Burdens vary substantially among taxpayers. For example, taxpayers with self-employment income spent almost 60 hours preparing returns. Other taxpayers spent an average of 13.8 hours, but 10.9 more hours if they filed the Alternative Minimum Tax (AMT) form.

## Effects on Behavior and Excess Burden

The third type of burden imposed by the tax system, called *excess burden*, arises when high tax rates reduce incentives for work, saving, and investment, distort economic decisions, and divert resources from productive activity into tax avoidance. Excess burden means that it costs the economy more than one dollar to raise one dollar in revenue. High excess burden ultimately reduces economic growth and lowers living standards. This section examines the evidence of the effects of high tax rates on economic behavior and how these effects translate into measures of excess burden.

### *Tax Effects on Individual Behavior*

An individual's after-tax return from increased work effort, saving, or investment depends on the individual's *marginal tax rate*, the tax rate that applies to the last dollar of the individual's income. For example, the after-tax return from earning one additional dollar is \$0.75 for a taxpayer in the 25 percent tax bracket. By reducing after-tax returns, high marginal tax rates reduce incentives for additional work effort. The same principle applies to saving and other economic activities.

A variety of statistical studies have found that high income tax rates adversely affect labor supply, particularly for certain segments of the population. The income tax rate reductions in the 1980s significantly increased the labor force participation and hours of work of high-income married women, with a total increase in labor supply of as much as 12-15 percent. The effects were much smaller for men (up to 2-3 percent) and for female heads of households (up to 4 percent). Some economists argue that these studies understate the effects of taxes on labor supply because they do not include tax effects on the intensity of work effort, career choice, and investments in human capital (such as education), which are more difficult to measure.

In addition to reducing the numbers of hours they work, taxpayers respond in many other ways to avoid the effects of high tax rates. For example, taxpayers take their compensation in nontaxable forms such as health insurance and alter their portfolios to focus on tax-favored investments. The total effect of such responses is summarized by the responsiveness of taxable income to changes in marginal tax rates. While the results vary among studies,

a reasonable estimate is that a 10 percent decrease in after-tax returns leads to about a 4 percent decrease in taxable income. Thus, for example, if the marginal tax rate was increased from 25 percent to 28 percent, this would reduce after-tax returns by 4 percent. Taxpayers' behavioral responses would reduce taxable income by 1.6 percent (0.4 times 4 percent), and this would reduce the addition to revenue by nearly 15 percent.

### *Tax Effects on Business Behavior*

Businesses can respond to taxes in various ways, including changing their level of investment and employment, their method of finance, and their organizational form. Current law distorts many business decisions, resulting in inefficient use of resources and reduced economic output.

Some of the largest distortions are associated with the corporate income tax. This tax results in corporate income being taxed once under the corporate income tax and then a second time at the individual level when received as dividends or when reinvested earnings result in taxable capital gains. This double taxation of corporate income favors financing investment with debt instead of equity because interest paid by the corporation on its debt is deductible while dividend payments to shareholders are not.

Double taxation of corporate income also creates a bias in favor of using business forms not subject to the double tax, such as partnerships, sole proprietorships, limited liability companies, and subchapter S corporations. The double tax also discourages paying dividends. As a result, prior to the 2003 reductions in dividend tax rates, dividend payments by corporations had declined since the 1980s (Box 3-2).

Current tax law also distorts decisions about investment in equipment and buildings. Under an income tax, proper measurement of income requires that the cost of investment in new equipment be depreciated by deducting the decreases in economic value over the useful life of the investment, sometimes called *economic depreciation*. Current depreciation rules, however, differ significantly from an ideal measure of economic depreciation, leading to biases among investment choices. For example, if a company chooses offices with plaster walls, it would have to depreciate those walls over 39 years. But because cubicle partitions are considered to be office furniture under IRS rules, they can be depreciated over 7 years. Thus, the tax law favors the purchase of cubicle partitions because the faster tax write-off saves the company money.

Other research has shown the adverse effects of high tax rates on entrepreneurial activity. Several studies examined the response of small businesses to the tax reductions of the 1980s and found that when income tax rates were reduced, entrepreneurial businesses grew faster, were more likely to invest in new equipment and structures, and were more likely to hire additional workers.

### **Box 3-2: The Initial Effects of the 2003 Reductions in Tax Rates on Dividends**

Corporate income is taxed twice, first under the corporate income tax and then a second time under the individual income tax as dividends or capital gains. Consequently, the total Federal tax rate on corporate income can be very high. For example, in 2000, the total Federal tax rate on a dollar of corporate income paid out as a dividend could be as high as 60.75 percent (calculated as the 35 percent corporate rate plus an individual tax rate of up to 39.6 percent on the 65 cents of after-tax corporate income available for dividends). State income taxes add to this total.

Economists are in broad agreement that this system creates serious economic distortions. Indeed, historically the United States was almost alone among advanced countries in failing to provide some form of relief from double taxation of corporate income. A key provision of the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) reduced the double tax by reducing the individual income tax rates for both dividends and capital gains.

Proponents of JGTRRA argued that it would lead to more dividends being paid by corporations. Was this prediction correct? One study reported that in the first three months after the law was passed, corporate boards of directors increased dividends by 9 percent at their first opportunity following enactment. A subsequent study found that the percentage of publicly traded firms paying dividends began to increase precisely when the new law became effective in 2003. This percentage had been declining for more than 20 years. The study found that nearly 150 firms started paying dividends after the tax cut, adding more than \$1.5 billion to total quarterly dividends. The most notable example of a company initiating payments is Microsoft Corporation, which previously had not paid dividends in spite of accumulating large cash reserves. Many firms already paying dividends raised their regular dividend payments, and a smaller number of firms made special one-time dividend payments to shareholders.

Overall, the response has been unprecedented in the recent history of tax changes. Based on statistical analysis of the historical relationships between dividends and tax rates, another study estimated that over time, dividends will increase by 31 percent, about \$111 billion in additional annual dividends at 2002 levels.

## *Excess Burden*

Because taxes distort economic decisions and lead to inefficient use of resources, they cause reductions in economic welfare that exceed the amount of tax collected. These costs above and beyond the revenues collected are called the “excess burden” of the tax system. Higher marginal tax rates lead to more distortion in behavior, and therefore to greater excess burden. In addition, the more responsive taxpayers are to higher marginal tax rates, the greater the excess burden will be. A recent study estimated that the excess burden associated with increasing the individual income tax by one dollar is 30 to 50 cents. In other words, the total burden of collecting \$1.00 in additional income taxes is between \$1.30 and \$1.50, not counting compliance costs.

## Income Taxation Versus Consumption Taxation

The main bases available for Federal taxation are income and consumption. Economists define *income* as the increase in an individual’s ability to consume during a period of time. By this definition, anything that allows a person to consume more is income, including compensation for services, interest, rents, royalties, dividends, alimony, and pensions. This broad measure of income also includes noncash benefits, such as health insurance provided by an employer, and increases in the value of stock and other assets. While the base of an income tax is the increase in *potential* consumption (i.e., income), a consumption tax applies only to the portion of income that individuals *actually* consume.

Tax reform proposals generally follow either the principle of taxing consumption or the principle of reforming the existing system to conform more closely to a pure income tax. In thinking about this distinction, it is important to note that the current system already has many features of a consumption tax: investment income is exempt from tax when it is saved in certain forms, such as IRAs; unrealized capital gains are not taxed; and small businesses can immediately deduct the cost of a certain amount of new investment, as would be the case under a consumption tax. Thus, characterizing the current system as an income tax is something of a misnomer; it is more of a hybrid between an income tax and a consumption tax.

Before turning to the main prototypes in the following section, this section examines the choice between income and consumption taxation from the standpoint of key criteria for evaluating a tax system: fairness, growth, and simplification.

## Fairness

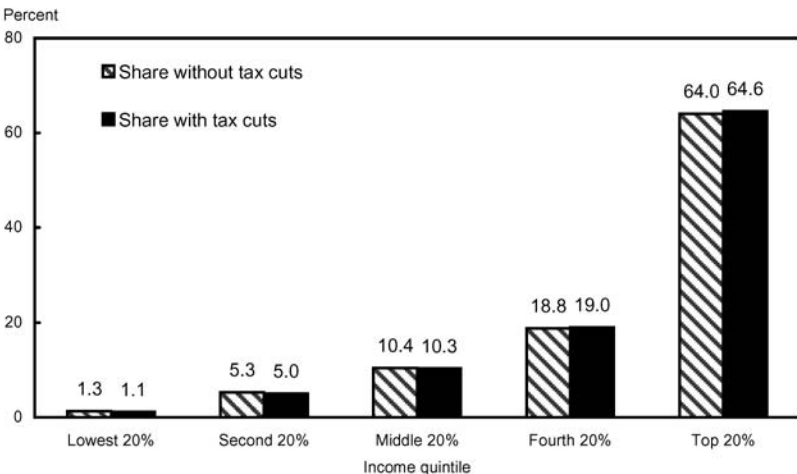
A traditional standard for fairness is that taxes should be levied according to individuals' ability to pay. Thus, proponents of income taxation argue that it is fair because income best reflects the ability to pay taxes. In addition, a common view is that individuals with higher incomes should pay a greater proportion of their income in taxes—the tax system should be progressive. As shown in Box 3-3, the current income tax system is highly progressive.

### Box 3-3: What Is the Current Distribution of the Tax Burden?

A major criterion for judging a tax system is whether it is fair. One way to examine this question is to look at the shares of the tax burden borne by taxpayers in various parts of the income distribution. Nearly two-thirds of the total Federal tax burden is borne by the top 20 percent of taxpayers. This includes individual and corporate income taxes, payroll taxes, and excise taxes, but not the effects of temporary economic stimulus provisions that expired at the end of 2004. As shown in Chart 3-1, the share of taxes of the top 20 percent increased as a result of the tax cuts enacted since 2001.

Chart 3-1 Share of Federal Taxes With and Without Tax Cuts, 2004

The share of taxes of the top 20 percent increased as a result of the tax cuts enacted since 2001.



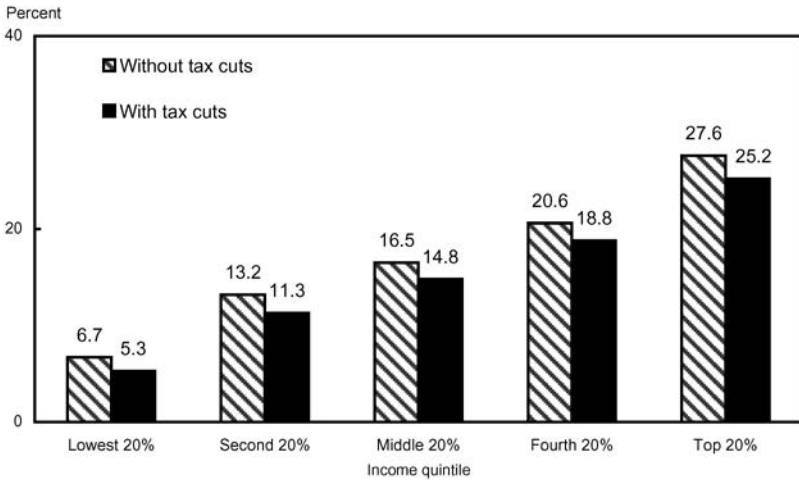
Source: Congressional Budget Office, "Effective Federal Tax Rates Under Current Law, 2001 to 2014," August 2004.

Another way to look at fairness is in terms of taxes as a percent of income. As shown in Chart 3-2, Federal taxes take a larger share of income for higher-income groups, both before and after the tax cuts.

**Box 3-3 — continued**

**Chart 3-2 Effective Federal Tax Rates With and Without Tax Cuts, 2004**

Effective tax rates are higher for higher income groups, both with and without tax cuts.



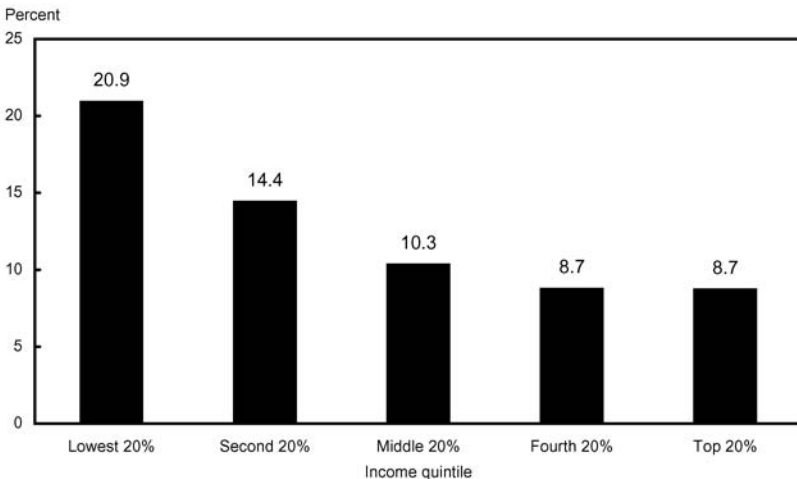
Source: Congressional Budget Office, "Effective Federal Tax Rates Under Current Law, 2001 to 2014," August 2004.

The bottom 40 percent of the population received the largest percentage reductions in total Federal taxes (Chart 3-3). After the tax cuts, the bottom 40 percent of the population paid no income taxes, and, on balance, received money back from the income tax system.

In summary, the tax relief passed during the President's first term increased the overall progressivity of the Federal tax system.

**Chart 3-3 Percent Reductions in Total Federal Taxes, 2004**

The bottom two income quintiles received the largest percent reductions in total federal taxes.



Source: Congressional Budget Office, "Effective Federal Tax Rates Under Current Law, 2001 to 2014," August 2004.

Critics of consumption taxes often argue that they are *regressive*, that is, they represent a higher proportion of the income of lower-income families. Conventional analyses use an annual measure of income as a measure of ability to pay and assume that the burden is borne by consumers. They generally show that a proportional tax on consumption would be highly regressive. Annual incomes, however, often vary substantially from year to year, so one year's income may not be a good indicator of ability to pay. When a lifetime measure of income is used, the regressivity of consumption taxes appears less pronounced.

Some studies question whether income is the most appropriate basis for measuring fairness. One reason for taxing consumption is the belief that it is a better measure of lifetime ability to pay than annual income. If so, progressivity should be measured with respect to consumption rather than income, and an inclusive flat rate consumption tax would be proportional by definition. In addition, as discussed below, there are ways to tax consumption while addressing concerns about distributional fairness. Furthermore, increased economic activity from a more efficient tax system could be sufficient to improve the economic welfare of all income groups.

Finally, when considering the fairness of taxes, it is important to keep in mind that the ultimate burden of a tax is not necessarily borne by the taxpayer who writes the check to the government. In particular, the burden of taxes paid by corporations is ultimately borne by individuals in their roles as stockholders, workers, and consumers. A common view of economists is that in the short run, before there is time for economic adjustments, the burden of increases in corporate income taxes is borne entirely by shareholders. Thus, under this view, most of the corporate income tax burden is borne in the short run by high-income households, because the ownership of corporate stock is highly concentrated in high-income households. Over time, however, at least part of the burden of corporate taxes is likely to be shifted to owners of noncorporate businesses, workers, and consumers. Such shifting of tax burdens can significantly affect perceptions of the fairness of particular taxes. For example, the corporate income tax might be viewed as less fair if the burden is seen as resulting in lower long-run wages for workers rather than being incurred by well-to-do corporate shareholders.

## Effects on Growth of the Economy

Increasing economic efficiency and promoting growth of the economy are important goals for tax reform. A tax system that inflicts fewer distortions on economic decisions would improve the efficiency of the use of resources in the economy and thus improve the general welfare. One source of inefficiency is *tax preferences*, that is, provisions that provide more generous tax treatment of certain types of income and expenditures than would be accorded under a

more uniform or pure version of the tax. Such preferences cause investment funds to flow to tax-favored lines of business at the expense of potentially more productive investment and thus reduce the overall output of the economy.

Consumption tax proponents argue that a consumption tax would be more conducive to growth than an income tax even in the absence of tax preferences. A consumption tax would be more neutral with respect to investment decisions since new investments would be immediately deductible (expensed). As noted above, the current income tax is not neutral among investments, and it is inherently more difficult to achieve neutrality under an income tax. By removing the tax on the returns to saving and investment, a consumption tax would increase saving and investment. Over time, this would increase the stock of capital. With a larger stock of capital, workers would be more productive, and output and wages would rise. Some recent research estimates that changing to a tax on consumption could increase the net national saving rate by 16 to 43 percent after a year and by 12 to 31 percent after 14 years, depending on the type of tax adopted. National output per capita would decrease by 0.5 percent or increase by up to 4.4 percent after a year and increase by 0.5 to 6.3 percent after 14 years. The research suggests that wages would increase by 0.8 to 1.4 percent after 14 years.

Reform of the income tax could also promote economic growth. Income tax reform could lead to a more uniform, broad-based, low-rate income tax that would reduce distortions in economic decisions. The above research suggests that such an income tax reform would increase the saving rate by 10 percent after one year and by 6 percent after 14 years and that national output per capita would increase by 3.8 percent after one year and by 4.4 percent after 14 years.

However, even if there are long-run economic gains from a tax reform proposal, these must be weighed against the costs of transition from the current tax system to the new one. Taxpayers would incur costs adjusting to compliance under a new system and the IRS would incur start-up costs developing rules, forms, and administrative procedures. In addition, major tax reform could result in significant gains or losses for some taxpayers when the prices of assets change. If losers were to be fully compensated for their losses, the potential gains from reform would be reduced. None of the preceding analysis implies that tax reform should not be undertaken. Rather, the key point is that transition issues need to be taken into account when assessing the costs and benefits of the various reform proposals.

Finally, tax reform could impose large transition costs on state and local governments. Some tax reform proposals call for repeal of Federal income taxes. Since most state income taxes rely on the Federal tax as a starting point, states would either have to find another source of revenue or administer their income taxes on their own. Other proposals would impinge on the traditional state reliance on sales taxes by adding a Federal tax on this base.



## Simplification

Proponents of consumption taxes argue that they would be simpler than income taxes. Some consumption tax prototypes, such as a national retail sales tax or a value added tax, would be simpler for individuals because the point of collection would be shifted from individuals to businesses. This feature is not unique to consumption taxes, however, because it would be possible to design a comprehensive income tax that could be collected at the business level. Consumption taxes would also be simpler because allowing immediate deduction for all purchases would eliminate the need to keep track of depreciation deductions over time and to make distinctions among various types of property. In addition, the complexities associated with taxing capital gains would be eliminated, since capital gains are not part of a consumption tax base.

Proponents of income taxes point out that the current income tax system could be greatly simplified, and that starting from scratch, one could design a much simpler system. They also note that it is unfair to compare an idealized consumption tax with the current system. Thus, either a consumption tax or a reformed income tax could be much simpler than current law, but there may be some additional simplification potential under a consumption tax.

## Tax Reform Prototypes

The previous section examined some general issues of tax reform. This section considers the most prominent consumption tax prototypes and potential reforms of the current system. The President has not endorsed any specific proposal, and this chapter does not advocate the adoption of any particular prototype for reform.

### Consumption Tax Prototypes

If tax reform takes the path of taxing consumption rather than income, there are four basic types of consumption taxes to consider: the retail sales tax, the value added tax (VAT), the flat tax, and the consumed income tax. This section begins with a brief description of the four taxes and then discusses each in more detail.

The simplest consumption tax to understand is the *retail sales tax*, which imposes tax liability when an individual purchases goods or services for consumption. Retail sales taxes are levied by most states and many local governments.

The starting point for thinking about *value added taxes* is to note that most goods are produced in stages. For example, a farmer grows wheat and sells it to a miller, who grinds it into flour and sells it to a baker, and so on until a loaf of bread is delivered to a grocery store to be sold to consumers. Instead

of being collected all at once at the final sale to consumers, the value added tax is levied on the value added to the good or service at each stage of its production. At each stage, the tax base is receipts for the sale of goods and services less purchases of goods and services from other firms (Box 3-4).

**Box 3-4: The Equivalence of Sales Taxes and Value Added Taxes**

The retail sales tax and value added tax provide different methods of taxing the consumption of goods and services. Consider a simple example of bread produced and sold to households. A farmer grows wheat and sells it to a miller for \$300. The miller grinds the wheat into flour and sells it to a baker for \$600. The baker transforms the flour into bread and sells it to the grocer for \$800. The grocer sells the bread to consumers for \$1,000.

Business	Purchases	Sales	Value added	20% value added tax	20% sales tax
Farmer.....	\$0	\$300	\$300	\$60	\$0
Miller.....	300	600	300	60	0
Baker.....	600	800	200	40	0
Grocer.....	800	1,000	200	40	200
Total.....	1,700	2,700	1,000	200	200

Now consider a 20 percent tax on consumption. Under the retail sales tax, the grocer would compute the tax as 20 percent of sales and owe \$200 to the government. The farmer, miller, and baker would not pay sales tax because they sold only to other businesses for resale.

A 20 percent value added tax collects the same total revenue one step at a time as value is added to the product at each stage. The miller pays a VAT of \$60, calculated by subtracting purchases of \$300 from \$600 of sales and paying the 20 percent tax rate on the difference of \$300. The other businesses would compute their tax in the same way. The total tax would add up to \$200, the same amount as under the retail sales tax.

A European VAT (called a credit-invoice VAT) is calculated by imposing the tax on the full value and then giving a credit for VAT paid at the previous stages. The grocer would compute the \$40 VAT as 20 percent of sales of \$1,000 (or \$200) less tax credits of \$160 shown on the receipts for purchases of \$800 from the baker. The other businesses would compute their tax in the same way.

Consider what happens if the grocer fails to file and pay the amount of tax that is owed. Under the sales tax, the full amount of tax is lost to evasion. But under the VAT, only the tax on the last stage would be lost. In addition, the invoices at each stage provide a paper trail that helps improve compliance.

Because the sum of value added at each stage equals the value of the final product, taxing value added at each stage gives the same overall result as taxing final products at the retail level. Therefore, the VAT is just another way of taxing the same base as the retail sales tax. From an economic standpoint, they are equivalent.

The *flat tax* consists of a business tax and an individual level tax, both of which use a single flat tax rate. Calculation of the business tax base begins with a computation like that of the VAT, receipts less purchases from other firms. Next, wages are deducted from the business tax base. If wages are then taxed at the same flat rate under the individual tax, the result is the same as the VAT and retail sales tax. Therefore the key difference is that wages are taxed at the individual level rather than being included in the business tax base. This difference allows for building progressivity into the system by providing an exemption of, say, \$40,000 for a family of four.

Under a *consumed income tax*, taxpayers would first calculate their income as they do under the current income tax. Then they would be allowed a deduction for any saving during the year. Since consumption is equal to income minus saving, this too is a consumption tax.

These seemingly quite different taxes are equivalent ways of taxing the same base: consumption. As discussed in the following sections, the choice among them is affected by various administrative and compliance issues as well as the availability of mechanisms for obtaining distributional fairness.

### *National Retail Sales Tax*

Sales taxes are levied by all but five states, and provide nearly 38 percent of state tax revenues. Most state sales taxes are levied at rates between 4 percent and 6 percent. Many states, however, exempt or apply a lower rate to food purchases, prescription drugs, and certain other “necessities” to improve the perceived fairness of the tax and also exempt most services.

Under a retail sales tax, individuals would no longer have to file tax returns because taxes are remitted to the government only by retail businesses. This is an important feature of retail sales taxes and other transactions-based taxes, which shift the burden of complying with the tax system from individuals to businesses. Since there would be many fewer tax filers, proponents argue that total compliance costs would be much lower than under the current system.

Under a retail sales tax, only final sales to consumers should be taxed since the intent is to tax consumption. Taxing business-to-business sales can result in cascading, a situation in which the tax is imposed multiple times before the consumer level. Nevertheless, states currently obtain about 40 percent of their sales tax revenues from business-to-business sales, although many business-to-business sales are exempted. The economic distortions associated with cascading can be severe at higher tax rates, and thus a national retail sales tax

would have to differ from state taxes by not taxing such sales. A related problem is that it is sometimes difficult to distinguish final sales for consumption from sales for use in production. For example, how would a store selling a computer know for certain whether it is being purchased for resale (exempt), for use in another business (exempt), or for home entertainment (taxable)? This issue would arise with many dual-use products and services.

To replace a significant portion of Federal tax revenues, tax rates for a national retail sales tax would have to be much higher than current state and local rates. The exact rate would depend on which Federal taxes were to be replaced and on whether education expenses, prescription drugs, medical expenses, and other necessary goods and services would be taxed. Some recent research suggests that to replace revenues from the individual and corporate income taxes, a national sales tax rate would have to be at least 30 percent if the tax base were that of a “typical state” and business-to-business sales were exempt. Such high rates could create strong incentives for tax evasion and avoidance. Some tax economists believe that sales tax rates over 10 percent could be problematic because of the incentive for evasion and avoidance.

Concerns about the impact of sales taxes on lower-income households could be addressed by exempting certain necessary goods and services or by providing a refundable tax credit sufficient to cover a certain amount of tax. Exemptions and preferential rates to address equity concerns, however, increase the complexity of sales taxes and lead to uneven taxation of consumption. Refundable credits could require the filing of some type of tax return by lower income households. However, this would defeat one of the main goals of the retail sales tax, which is reducing administrative burdens on households. In any case, both solutions would require higher tax rates to achieve a given amount of revenue. Uneven taxation and high tax rates would undermine a principal potential benefit of this type of reform: reducing economic distortions and promoting growth.

### *Value Added Tax (VAT)*

Value added taxes are used in all European Union countries and in more than 100 countries around the world. European countries, which generally adopted VATs in the 1960s or early 1970s, typically impose a standard rate of 16 to 20 percent and a lower 5 to 10 percent or zero rate on products such as food and drugs. It is important to note that countries adopting VATs have not used them to replace income taxes; they are in addition to individual and corporate income taxes.

VATs avoid the problem of cascading taxes by allowing credit for the VAT paid on purchases. European VATs also create a paper trail that is believed to improve compliance. In spite of these advantages, VATs have not received serious consideration in the United States. Similar to the sales tax, VATs are

viewed as regressive, at least when annual income is used as the measure of ability to pay. Critics of the VAT are not mollified by the fact that it is possible to impose lower VAT rates on commodities such as food. Another concern is that VAT tax rates would tend to increase over time as has occurred in Europe because the VAT is such an efficient and largely hidden tax.

### *The Flat Tax*

Reducing the tax burden for low-income households is cumbersome under the sales tax and VAT because they are collected at the business level. One of the advantages of the flat tax is that it allows for progressivity by providing a personal exemption based on family size.

The exemption leads to a fundamental trade-off in designing a flat tax. A higher exemption level means more families at the bottom of the income scale pay no tax and the distribution of the tax burden is more progressive. But the higher the exemption, the higher the tax rate required to raise any given amount of revenue. A higher rate reduces the anticipated gains in economic efficiency. The Treasury Department estimated in 1996 that a 22.9 percent tax rate would be required to raise as much revenue as the individual and corporate taxes, while keeping the Earned Income Tax Credit and exempting \$40,700 income (at 2003 levels) for a family of four.

The flat tax would be simpler than the current tax system. The individual tax is simple because it applies only to compensation for labor services and tax liability varies only with family size. The business level tax is simpler than the current corporate income tax. For example, since all purchases are deductible immediately, there is no need to keep track of depreciation deductions over a period of years or to distinguish between current expenses and capital costs. The flat tax would also reduce the costs of tax planning. Applying the same tax rate to all types of businesses and to both individual and business income is important because it eliminates many opportunities for avoiding taxes by changing the organizational form of a business or by shifting income to entities subject to lower tax rates and deductions to entities with higher rates. The double tax on corporate income and the associated distortions would also be eliminated.

A pure flat tax would eliminate many popular deductions, including those for home mortgage interest and charitable contributions. Retaining these deductions would require a higher tax rate and more complicated tax forms, and thus lose some of the gains in economic efficiency and simplification. In addition, some critics argue that even with a large exemption, the flat tax is likely to shift tax payments away from the highest income groups and toward lower- and middle-income groups. Finally, there would still be many complexities and opportunities for tax avoidance and evasion. Suppose, for example, that a business owner bought a computer for personal use. If the

owner claimed it was for business, he or she could deduct the entire cost of the computer.

There are many variants of the basic flat tax idea. For example, some proposals would allow for greater progressivity by using multiple tax rates in the individual tax. Other proposals would retain some deductions, such as those for charitable contributions or mortgage interest. Each variation sacrifices some of the efficiency gains and basic simplicity of the flat tax to achieve other goals.

### *Consumed Income Tax*

Under a consumed income tax, taxpayers first compute income as they do under the income tax. Then taxpayers are allowed an unlimited deduction for net saving during the year. A consumed income tax is comparable to a traditional IRA for which contributions are deductible and withdrawals are subject to tax, but would have no limits on contributions or penalties on withdrawals. To prevent taxpayers from simply borrowing money and claiming a deduction for putting the proceeds into a savings account, any borrowing would be added to income and thus be taxable.

The consumed income tax offers more flexibility than the flat tax in allocating the burden among income classes because the individual tax base is broader and most proposals include a progressive rate structure. The primary disadvantage is complexity. It retains the complexity of the current system because taxpayers start by computing income as they would under current law. Then a second procedure to compute saving net of borrowing adds an additional layer of complexity.

## Reform Within the Current System

A change to any of the consumption tax proposals would scrap the current tax system and replace much or all of it with a new one. Businesses and individuals would have to learn how to comply with and best arrange their affairs under the new system. A new administrative apparatus would be required for some proposals. While sales taxes have long been used in this country and VATs in many other countries, these are imposed at lower rates than would be required to replace all Federal revenues and are used along with, rather than as replacements for, income taxes.

Given the costs of transition to an entirely new tax system, some proposals focus on reform within the current structure. Starting from the current system would reduce transition and adjustment costs and considerable benefits could be obtained by simplifying and rationalizing tax provisions that overlap or are otherwise overly complex. Advantages of the prototypes and the tax principles discussed above could guide the direction of reform.

The Administration's tax program has already achieved significant reforms within the current system. Achievements include lowering marginal tax rates, reducing the double tax on corporate income, simplification, and improved fairness for families. This section discusses possible additional reforms that would provide simplification, improve fairness, or promote economic growth.

### *Lower Tax Rates and Broader Base*

The principle behind the Reagan Administration's major tax reform in 1986 was to reduce tax rates and broaden the tax base by eliminating deductions and tax credits. The Tax Reform Act of 1986 was largely successful in this effort. Individual income tax rates were collapsed into two rates, 15 percent and 28 percent, with the top rate falling from 50 percent to 28 percent. The corporate tax rate was reduced, from 46 percent to 34 percent. Lowering rates reduced the distortions of the tax system and is often credited with increasing work effort and entrepreneurial activity and reducing tax avoidance activities. The overall reform was revenue neutral and slightly progressive. Even though the top marginal tax rates were reduced, progressivity was enhanced because high-income taxpayers lost many tax preferences.

While the achievements of the 1986 reform have eroded over time, the basic principles of lower rates and a broader base benefited the economy and could be useful in guiding reform within the current system.

### *Rationalizing Saving Incentives*

Income taxes create a bias against saving because taxpayers who choose to save for later consumption have a larger total lifetime tax burden than those who do not save. To offset this bias, current law includes a variety of provisions that promote saving. Some are targeted at individual saving for retirement, some at employer plans for employee retirement, and some at saving for specific purposes, such as education and medical expenses.

The multitude of special purpose saving options encourages taxpayers to establish small pools of savings that can only be used for one purpose. Taxpayers have less flexibility since saving intended for one purpose cannot be used for another (except by paying a penalty). Taxpayers are likely to be unaware of all the options available, frustrated trying to decide which options are best for them, and confused by the detailed requirements. Since many incentives are available only to certain taxpayers, the multitude of options may add to perceptions that the tax system is unfair because some taxpayers are eligible, but others are not. Moreover, the large number of special accounts may be an impediment for lower-income and less sophisticated taxpayers concerned about making the wrong choices, which can have sizable penalties associated with them.

The current set of saving incentives could be combined into a simpler system with one type of account for individual retirement saving, one for employer-sponsored retirement saving, and one for lifetime saving for anticipated future education, health, home purchases, or other expenses. The President's budgets have included proposals for Retirement Savings Accounts (RSAs), Employer Retirement Savings Accounts (ERSAs), and Lifetime Savings Accounts (LSAs). Under these proposals and after a transition period, the savings incentives of over 90 percent of households would no longer be adversely affected by the tax system.

### *Double Taxation of Corporate Income*

Corporate income is taxed first at the corporate level and then a second time under the individual income tax as dividends or capital gains. The tax relief enacted in 2003 reduced the double tax by lowering individual income tax rates for both dividends and capital gains. The current provisions expire after 2008, however. Thus, tax reform could include a permanent extension of current provisions or go further and completely eliminate double taxation of corporate income.

### *Depreciation Rules*

As discussed above, the logic of an income tax requires that firms be able to deduct the amount by which their physical investments depreciate in value each year. Current law allows deductions for different types of equipment and buildings over nine recovery periods from 3 to 39 years. A 2000 Treasury Department report on depreciation concluded that the current system is based on outdated recovery periods, does not account for new industries and technologies, and favors some assets while penalizing others. As a result, the system distorts investment decisions and results in an inefficient allocation of capital in the economy.

There are several approaches that reform could take. One option is to rationalize the current depreciation system to make it more neutral in its effects on investment decisions. An effort to bring depreciation rules closer to economic depreciation would raise a number of difficult measurement issues, however. Another approach would simplify the current system by reducing the number of recovery periods and grouping investments into broader categories.

A third approach is to increase investment incentives and move part way toward a consumption tax by increasing the generosity of depreciation allowances. For example, a temporary bonus depreciation provision in the 2002 tax bill allowed taxpayers to deduct 30 percent of the cost of an investment in the first year with the remaining 70 percent of the cost to be deducted over the life of the investment. That is, 30 percent of the cost was deducted immediately as under a consumption tax, while 70 percent was



depreciated as under an income tax. First-year bonus depreciation was increased to 50 percent in 2003 and 2004.

These approaches have the potential to improve the allocation of capital and increase incentives for investment. The cost of increased incentives would have to be balanced against other objectives, such as keeping income tax rates low.

### *The Alternative Minimum Tax (AMT)*

The AMT is a separate tax system requiring taxpayers to compute their income tax liability a second time under different rules and then pay the AMT if it is higher than the regular tax. As a result, the AMT adds considerable complexity, and dealing with it must be an important element of any tax reform. The predecessor to the current AMT was enacted in 1969 to ensure that high-income taxpayers with substantial amounts of tax preferences would at least pay a moderate sum in taxes. Unlike many income tax provisions, Congress did not index the AMT for inflation. Later, Congress increased AMT tax rates from 21 percent to 24 percent in 1991 and to 26 percent and 28 percent in 1993. With higher rates and no indexing for inflation, it was only a matter of time before large numbers of taxpayers would be affected. During the last several years, Congress has passed several temporary measures to keep the number of AMT taxpayers from growing too rapidly. However, under current law, the number of taxpayers paying the AMT is expected to grow rapidly from 3 million in 2004 to 38 million by 2010. Most of the newly-affected taxpayers will not be those with the highest incomes. One study projects that under current law, over half of all taxpayers with incomes of \$75,000 to \$100,000 (in \$2003) and 94 percent of married taxpayers with two children in that income range will be subject to the AMT by 2010.

Because taxpayers have to compute their taxes twice to see if they have to pay the AMT, it is a major source of complexity. Further, the lowest rate under the AMT is 26 percent, a higher rate than would otherwise be faced by middle-income families. Finally, while some tax preferences are added back into the tax base, many features of the AMT are inconsistent with sensible tax principles. For example, some costs of earning income are not deductible and personal exemptions are treated as a tax preference under the AMT.

Alternatives for AMT reform include repeal or limiting its effect to high-income taxpayers by increasing exemption levels and lowering AMT tax rates. Significant changes to the AMT would be costly, however, as various estimates suggest that the 10-year cost of full repeal would be nearly \$1 trillion.

### *Simplification*

Many provisions in the current tax system overlap, conflict, or are otherwise overly complex. The Congressional Joint Committee on Taxation and others have produced lists of such provisions. Elimination or simplification of such provisions could substantially reduce compliance burdens and distortions of

the current system. In addition, some would broaden the tax base thus allowing for further reductions in tax rates.

An example of the potential for simplification was provided when Congress recently enacted legislation similar to an Administration proposal for a single definition of a dependent child in determining when taxpayers can claim several widely-used tax benefits. Previously, five different standards for a dependent child applied under different tax provisions, leading to confusion and inadvertent errors. This reform will benefit many lower- and middle-income households by providing a single set of rules and reducing burdensome record-keeping requirements.

While there are many complex provisions, among the prime candidates for simplification are the capital gains rates affecting certain special types of gains, taxes on dependent children with small amounts of investment income, and provisions that phase out certain tax benefits at higher income levels.

## Conclusion

This chapter has examined problems of the current tax system and examined some of the major options for tax reform. The President has not endorsed any specific proposal. Well-designed reforms, however, should be able to simplify the system and enhance both fairness and economic efficiency.

Although tax reform has been discussed for many years, it is a particularly pressing need at the current time. Increasing numbers of taxpayers will be affected by the alternative minimum tax, which will be a major source of frustration and complexity. In addition, the tax reductions enacted since 2001 will expire in a few years unless they are extended or a new, reformed tax system is adopted. If these provisions are allowed to expire, the result will be substantial increases in taxes on taxpayers in all income groups, with the largest percentage increases being imposed on lower- and middle-income households. Taken together, these looming problems provide a natural opportunity to rethink the entire system of taxation.



# Immigration

In recent decades, the United States has experienced a surge in immigration not seen in over a century. Immigration has touched every facet of the U.S. economy and, as the President has said, America is a stronger and better Nation for it. Immigrants today come from countries around the world and work in diverse occupations ranging from construction workers and cooks to computer programmers and medical doctors.

Immigrants have settled in all parts of our Nation and have generally succeeded in finding jobs quickly, helped in large measure by the flexibility of the U.S. labor market. One indicator of this success is that foreign-born workers in the United States have a higher labor force participation rate and lower unemployment rate than foreign workers in most major immigrant-receiving countries.

While flexible institutions may speed the economic integration of the foreign-born, the distribution of the gains from immigration can be uneven. Less-skilled U.S. workers who compete most closely with low-skilled immigrants have experienced downward pressure on their earnings as a result of immigration, although most research suggests these effects are modest. Also, communities contending with a large influx of low-skilled immigrants may experience an increased tax burden as immigrant families utilize publicly provided goods such as education and health care.

U.S. immigration policy faces a complicated set of challenges, perhaps more so now than ever before. Policy should preserve America's traditional hospitality to lawful immigrants and promote their economic contributions. Yet these goals must be balanced with the Nation's many needs, including the imperative for orderly and secure borders. These challenges have only grown in a post-9/11 world. The persistence of undocumented immigration and problems with employment-based immigration suggest that the United States needs to better enforce immigration laws and do more to address the demand for immigrant workers and the need for national security. The President's proposed Temporary Worker Program and increased funding for internal enforcement recognize these problems and would implement necessary reforms.

The key points in this chapter are:

- The flexibility of the U.S. labor market helps immigrants succeed.
- A comprehensive accounting of the benefits and costs of immigration shows that the benefits of immigration exceed the costs.
- Much immigration occurs outside the realm of immigration law; a temporary worker program and better enforcement of current laws would be expected to result in many improvements, including a reduction in the number of undocumented immigrants.

# Immigration and Economic Growth

Immigrants have contributed enormously to U.S. population and employment growth. The foreign-born have grown among all occupations and regions of the country and have spread beyond traditional immigrant centers and into areas where previously few immigrants had lived. Following common practice, this chapter uses the terms *immigrant* and *foreign-born* interchangeably and adopts the Census Bureau's definition of foreign-born to mean any person who is in the United States legally or illegally who was not a U.S. citizen at birth (not born in the United States or of U.S. parents). This usage differs from that of the U.S. Citizenship and Immigration Services, which uses the term *immigrant* to refer to a subset of the foreign-born population, namely *lawful permanent residents* (see below for an explanation of the different immigrant categories).

## Immigrants and Employment Growth

The foreign-born are associated with much of the employment growth in recent years. Between 1996 and 2003, when total employment grew by 11 million, 58 percent of the net increase was among foreign-born workers. That immigrants contributed so much to net employment growth is not surprising; immigrants contributed almost as much to growth in the working-age population (51 percent) as they did to growth in employment. Almost all employment growth among immigrants was among those who arrived in the United States between 1995 and 2003. (Employment growth in this chapter is based on the Current Population Survey or "household" survey because it provides information on place of birth and citizenship status—see Box 1-2 in Chapter 1 of the 2004 *Economic Report of the President* for a discussion of the payroll versus household surveys.)

While employment of the foreign-born grew among all occupations, immigrant contributions to job growth were especially large in the service occupations and precision production, craft, and repair (a category that includes mechanics, repairers, and construction workers) (Table 4-1). In some occupations, natives were leaving even as the foreign-born were entering. For instance, employment of natives as operators, fabricators, and laborers fell by 1.4 million between 1996 and 2002, while employment in such occupations grew by 930,000 among the foreign-born. This should not be taken as evidence that the foreign-born displace native workers; rather, it reflects the fact that immigrants have made up all of the growth in the low-skilled workforce. As education levels rise among younger U.S. workers and older U.S. workers retire, the number of low-skilled natives is declining.

TABLE 4-1.— *Foreign-Born Share of Employment Growth by Occupational Category, 1996 to 2002*

Occupational category	Employment growth (thousands)		Foreign-born as percent of total	Occupation examples
	Total	Foreign-born		
Total .....	9,667	5,575	57.7	(1)
Executive, administrative, and managerial ....	2,801	504	18.0	Managers, administrators
Professional specialty .....	3,158	852	27.0	Doctors, scientists, teachers
Technicians and related support .....	585	181	30.9	Health and science technicians
Sales .....	837	480	57.3	Salespeople, cashiers
Administrative support, including clerical.....	-177	296	(1)	Clerks, secretaries, bookkeepers
Service .....	2,032	1,253	61.7	Janitors, kitchen workers, grounds workers
Precision production, craft, and repair .....	1,044	900	86.2	Mechanics, construction workers
Operators, fabricators, and laborers.....	-518	930	(1)	Machine operators, bus and truck drivers
Farming, forestry, and fishing .....	-97	178	(1)	Farmers, farm workers

<sup>1</sup> Not applicable.

Note: Since data in this table end with 2002, total growth here is less than the 11 million increase mentioned in the text, which is measured from 1996 to 2003. Data relate to persons aged 16 and over.

Source: Department of Labor (Bureau of Labor Statistics).

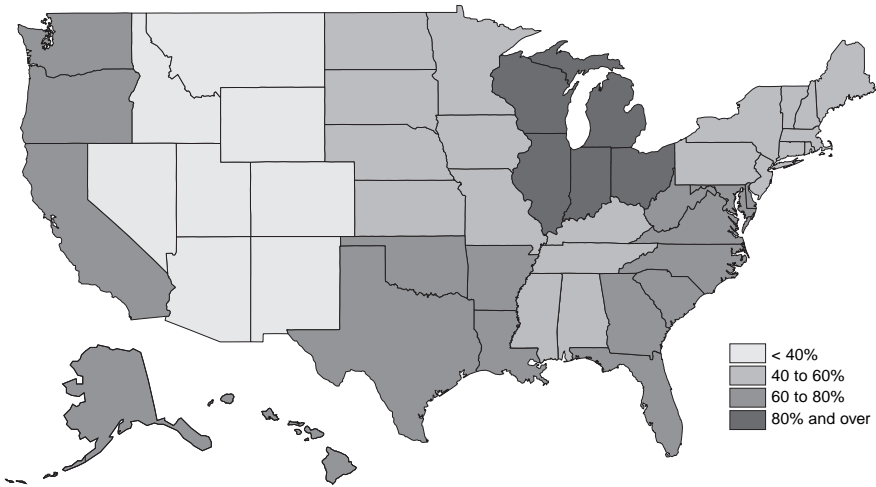
## Immigrants and Regional Growth

Immigrants are not spread evenly across the United States but instead are concentrated within certain states and cities. In 2000, 59 percent of the foreign-born lived in just four states: California, New York, Texas, and Florida, compared with only 29 percent of natives. Fully 21 percent of the immigrant population lived in the metropolitan areas of New York and Los Angeles alone, compared with 5 percent of the native-born. The foreign-born are concentrated in certain areas, not only because of the economic opportunities in these regions, but also because new immigrants often prefer settling in cities in which their fellow countrymen already reside. This enables new immigrants to live among people who share their language and culture, as well as to use ethnic networks to find jobs and learn about life in the United States.

While recent immigrants continue to settle disproportionately in cities and states with large immigrant populations, both recent and earlier waves of immigrants have increasingly pursued economic opportunities in areas where few immigrants had lived previously. From 1996 to 2003, some of the fastest job growth among the foreign-born took place in regions of the country where few immigrants had worked at the beginning of the period (Chart 4-1). In the East North Central region (Indiana, Illinois, Michigan, Ohio, and Wisconsin), for example, immigrants accounted for 84 percent of employment growth between 1996 and 2003, even though the foreign-born were only 5 percent of workers in this region in 1996, compared to 11 percent nationwide. Even in the East South Central states (Alabama, Kentucky, Mississippi, and Tennessee), immigrants were only 2 percent of workers in 1996 but accounted for 47 percent of job growth during this period.

Chart 4-1 **Foreign-Born Share of Employment Growth by Census Division, 1996 to 2003**

The foreign-born contributed 58 percent of growth in employment from 1996 to 2003.



Note: Data relate to persons aged 16 and over.  
Source: Department of Labor (Bureau Labor Statistics).

## How Many Immigrants?

The foreign-born have contributed to population growth almost as much as they have contributed to employment growth. Population growth is the combination of natural growth (births minus deaths) and net immigration (immigrants minus emigrants). Since 1970, immigrants have constituted an increasing share of the rise in population. The U.S. population grew by 21.6 million between 1996 and 2003, with 41 percent of that increase from immigration.

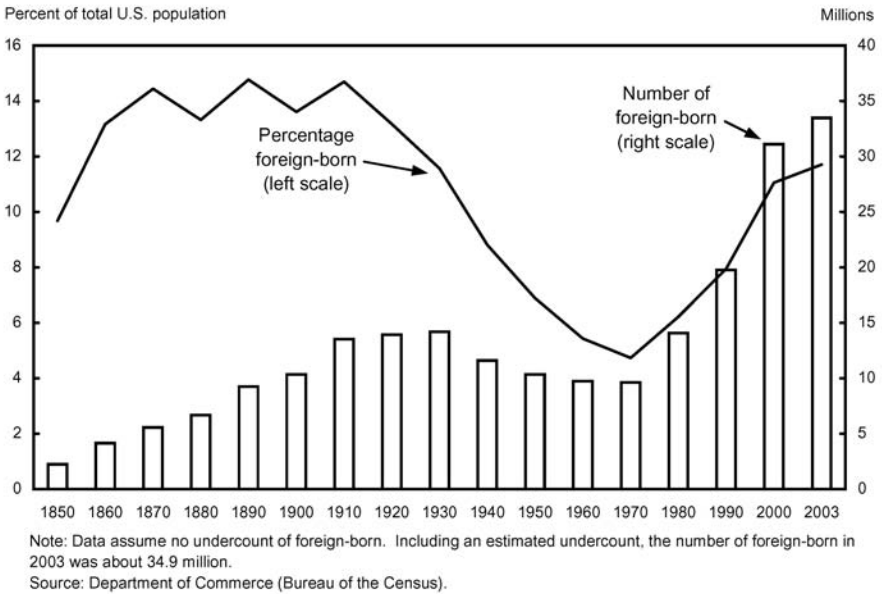
By 2003, 33.5 million residents of the United States had been born in other countries, and the foreign-born share of the population had risen from 5 percent in 1970 to 12 percent in 2003 (Chart 4-2). Nonetheless, as a share of the population, the foreign-born are still less prevalent than at their peak in 1890, when they accounted for 15 percent of U.S. residents.

## Legal and Illegal Immigrants

The 33.5 million immigrants living in the United States can be divided into four groups: *naturalized American citizens*, immigrants who have become citizens by passing a citizenship test and fulfilling other requirements; *permanent residents*, immigrants who have “green cards” and the legal right to reside permanently in the United States but have not become naturalized citizens; *temporary residents*, people admitted to the United States temporarily for a specific purpose, including visitors, students, and temporary workers (referred to as *nonimmigrants* by immigration authorities); and *undocumented*

Chart 4-2 **Number and Share of Foreign-Born in U.S. Population, 1850–2003**

In 2003, the number of immigrants reached a record level, but the foreign-born as a percent of total U.S. population was still below its peak of 15 percent in 1890.



*immigrants* (also called *illegal* or *unauthorized immigrants*), people residing in the United States illegally.

The number of foreign-born in the United States is measured primarily through the decennial Census and, since 2000, updated annually using the American Community Survey. The Census is believed to undercount the number of foreign-born, especially among undocumented immigrants. Taking into consideration the undercount in the undocumented immigrant population and other factors, a 2004 study estimates that the foreign-born population was 34.9 million, or 1.4 million higher than the official 2003 estimate. Chart 4-3 illustrates this study's estimated breakdown of immigrants by their immigration status. Legal non-citizens are about 38 percent of immigrants, with 12.0 million permanent residents and 1.2 million temporary residents. An additional 34 percent are naturalized citizens, and the remaining 28 percent are undocumented immigrants.

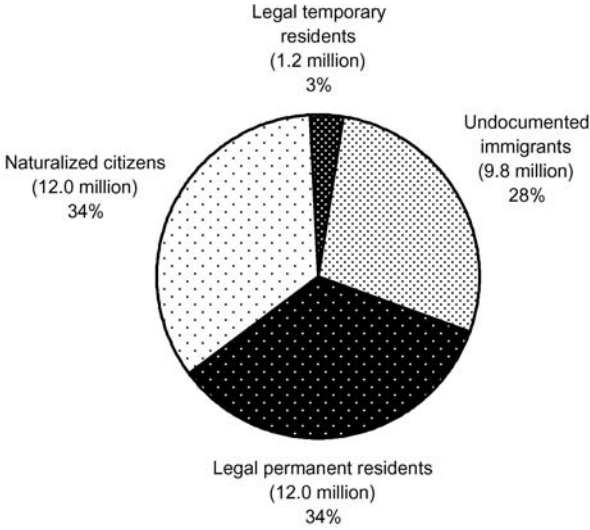
## From Which Tempest-Tossed Shores?

When Emma Lazarus wrote *The New Colossus* in 1883, immigrants were overwhelmingly from Europe. Only a handful of immigrants were from Asia or Latin America. The situation is reversed today. Over half of the foreign-born population was born in Latin America (Chart 4-4). Of those from Latin America, over two-thirds are from Mexico or Central America. The next



**Chart 4-3 Foreign-Born Population by Immigrant Status, 2003**

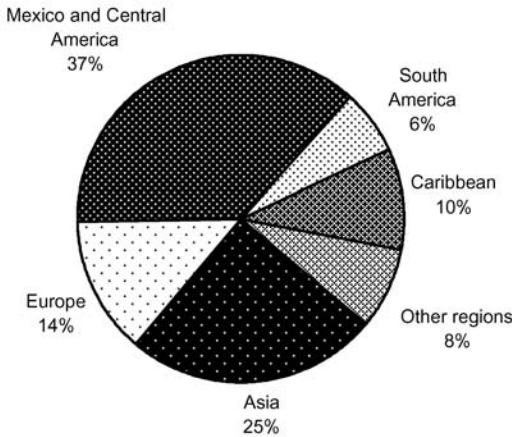
Of the 34.9 million immigrants estimated to be in the United States in 2003, about 72 percent were in the country legally.



Source: Urban Institute.

**Chart 4-4 Foreign-Born Population by World Region of Birth, 2003**

The majority of the foreign-born come from Mexico and Central America and Asia.



Source: Department of Commerce (Bureau of the Census).

largest group of immigrants was born in Asia, with China, the Philippines, and India the most prevalent Asian countries of birth. An additional 14 percent of the foreign-born come from Europe, and the remaining 8 percent were born in other areas of the world (mainly Africa, Oceania, and Canada).

## Immigrant Education and Earnings

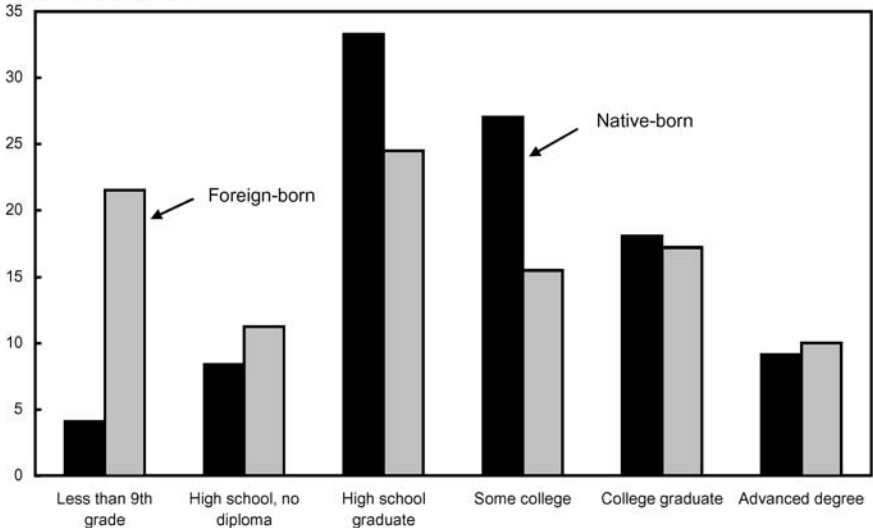
The foreign-born are disproportionately represented among those with little schooling. Over one-fifth of immigrants have less than nine years of education, compared with only 4 percent of the U.S.-born population (Chart 4-5). The foreign-born are also slightly overrepresented among people with an advanced degree (a master's, professional, or doctoral degree): 10 percent of the foreign-born, but only 9 percent of U.S. natives, hold an advanced degree. This difference in advanced degrees is greater for men. Although native- and foreign-born women are equally likely to hold an advanced degree, 12 percent of foreign-born men but only 10 percent of native men have an advanced degree.

Schooling levels are correlated with region of origin. Immigrants from certain world regions tend to be highly educated while those from other world regions tend to have little schooling. For example, 25 percent of Asian-born men in the United States hold advanced degrees, whereas only 10 percent

**Chart 4-5 Educational Attainment, 2003**

The foreign-born are more likely than natives to lack a high school diploma or to hold an advanced degree.

Percent of adult population



Note: Data relate to persons aged 25 and over.

Source: Department of Commerce (Bureau of the Census).

failed to graduate from high school. In contrast, only 2 percent of male immigrants from Mexico or Central America have a master’s degree or higher, while 42 percent completed less than nine years of schooling and an additional 22 percent attended high school but did not graduate.

Partly as a result of lower average education levels, the typical immigrant earns less than the typical native. In 2003, median immigrant earnings were \$511 per week, or 74 percent of the median earnings of natives (Table 4-2). Within education groups, immigrants earn 82 to 94 percent of natives’ wages, with the smallest earnings gap among college graduates. This earnings gap narrows over time as most immigrant cohorts experience faster earnings growth than natives with similar education.

TABLE 4-2.—*Median Weekly Earnings by Educational Attainment, 2003*

Educational attainment	Native-born	Foreign-born	Foreign-born as percent of native-born
All levels .....	\$688	\$511	74
Less than a high school diploma .....	430	369	86
High school graduate, no college.....	569	467	82
Some college, no degree .....	647	576	89
College graduate.....	971	909	94

Note: Data relate to full-time wage and salary workers aged 25 and older.

Source: Department of Labor (Bureau of Labor Statistics).

As a result of lower education levels and earnings and larger families, immigrants are more likely than natives to be poor. In 2003, 16.6 percent of immigrants were poor compared to 11.5 percent of U.S. natives. Despite higher poverty rates, immigrants are more likely to participate in the workforce than natives, with 78 percent of male immigrants with less than a high school education participating in the labor force compared to 47 percent of their native counterparts. Among undocumented male immigrants, 96 percent are estimated to participate in the labor force.

## The Role of Labor Market Institutions

U.S. immigrants are much more likely to work than immigrants in most other industrialized nations, a distinction which may in part be due to labor market institutions. Labor market institutions refer to the constraints that govern the employer-employee relationship, including the policies that influence the firm’s decision to hire and the worker’s decision to work. The demand for workers is influenced by the regulations that determine

employment costs, including wage floors set by unions or the government, non-wage costs such as payroll taxes, and laws that limit turnover such as rules against firing workers. The supply of workers is likely affected by the institutions that provide welfare and unemployment benefits, with more generous programs associated with fewer incentives to work and hence a lower labor supply or more unemployment.

The United States is regarded as having relatively flexible labor markets, which allow individual employers and workers greater discretion in setting working conditions. This contrasts with highly-regulated labor markets in which wage-setting and benefits determinations are often centralized. This section compares the United States with some other Organization for Economic Cooperation and Development (OECD) countries to see whether there is a correlation between the extent of labor market regulations and the unemployment rate of immigrants relative to natives.

## Institutions and Immigrant Unemployment

Labor market regulations influence the level and flexibility of wages and affect new workers' chances of finding employment. In standard economic analysis, unemployment results when total worker compensation—the sum of wages and benefits—exceeds the market rate. This happens either when compensation is fixed and cannot fall in response to increased labor supply, or when wage floors and mandated benefits set worker compensation at a level above the market rate. In both cases, immigrants may be more likely than natives to be unemployed as a result.

If immigrants are less productive than natives, then regulations that increase compensation for entry-level workers would be expected to affect foreign workers more than natives. Immigrants may be less productive on their initial arrival because they may lack the language skills, educational background, or institutional knowledge that natives can draw upon to enhance their job performance. A lower entry-level wage could compensate for these shortcomings and would be expected to be followed by faster wage growth as the immigrant learns new skills and gains experience. Several studies have found that lower initial earnings among immigrants are in fact correlated with higher rates of earnings growth.

Rules against firing workers are common in more-regulated markets and can reduce new hiring, especially of immigrant workers. Immigrants might initially be perceived as more risky hires because employers may not know how to evaluate immigrants' educational backgrounds, for example, or may not be able to gauge their language proficiency. As a result, immigrants may have to search longer for a job than would otherwise similar native workers.

Immigrants may overcome communication, cultural, and other barriers (including discrimination) by starting their own businesses. Entrepreneurship, however, may be out-of-reach for some immigrants in highly-regulated markets, which are often characterized by high business start-up costs and less access to capital. At the same time, generous unemployment insurance in more-regulated economies and welfare programs for refugees and asylum seekers may discourage immigrants from looking for jobs in the first place.

The composition of employment growth is another important difference between the United States and some Western European countries that may influence immigrant unemployment rates. In the United States, the fast-growing U.S. service sector provides greater opportunities to new workers than does the service sector in many other countries. In Germany, where immigrants are disproportionately employed in the service sector, the sector's relatively slow growth may have limited immigrant job opportunities. The lack of growth in low-skill service jobs could simply be another consequence of high-cost and high-tax markets, although some researchers point to cultural or lifestyle differences as limiting the demand for things like fast food.

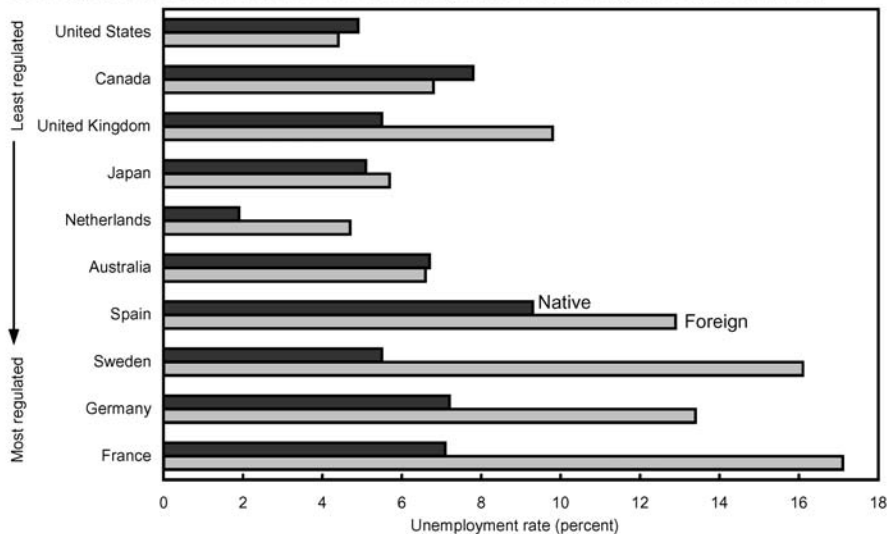
Immigrants in countries with highly-regulated labor markets tend to have higher unemployment rates relative to natives than immigrants in countries with flexible labor markets, such as the United States. Chart 4-6 shows the average unemployment rates of native versus foreign males in major immigrant-receiving OECD nations during 2000-2001. The countries are ranked according to the competitiveness of their labor markets, with less-regulated countries at the top of the chart and more-regulated countries at the bottom. Immigrant unemployment rates are generally lower and more similar to native unemployment rates in less-regulated labor markets, such as in the United States, than in highly-regulated labor markets such as those in Spain, Sweden, Germany, and France. Male immigrants in France, for example, had a 17 percent unemployment rate in 2000-2001, 10 percentage points higher than natives. Male immigrants in the United States, meanwhile, had a 4.4 percent unemployment rate, 0.5 percentage points lower than U.S. natives.

### *Unemployment Rates Among Immigrant Youth*

Labor market inexperience may exacerbate the negative consequences of rigid labor market institutions, perhaps more so for immigrants than natives. Chart 4-7 compares unemployment rates among foreign and native youth (aged 15 to 24) for a subset of the countries above. Relative unemployment rates among immigrant youth (both men and women) are higher in heavily regulated labor markets. In Sweden, immigrant youth have more than twice the unemployment rate of native youth. In France, foreigners aged 15-24 have a 30 percent unemployment rate, compared to 18 percent for similarly aged natives.

Chart 4-6 **Male Unemployment Rate by Nativity, 2000–2001**

Less-regulated countries tend to have lower unemployment rates for immigrants relative to natives.

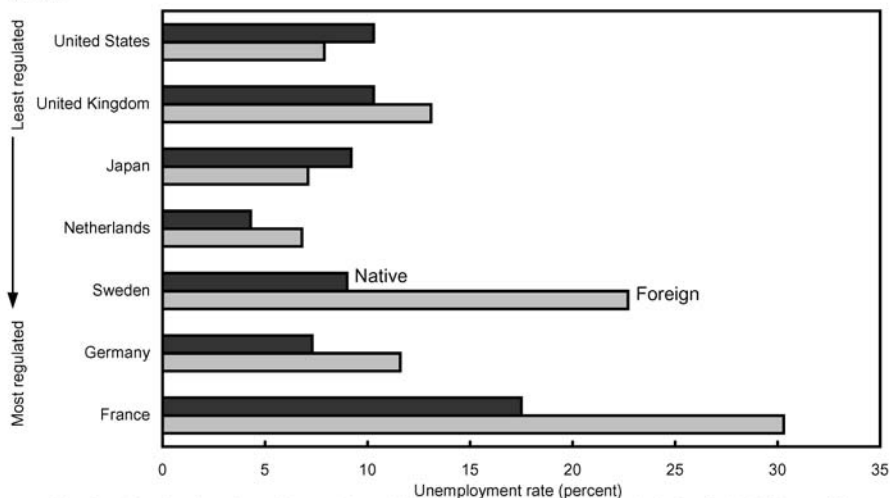


Note: Countries ordered according to labor regulation rankings in *IMD World Competitiveness Yearbook*. Data for Australia, Canada, and United States are for foreign-born versus native-born; all other countries are for foreigner versus national. Data are for males aged 15–64 (15 and over for Australia, Canada, and Japan). Data for Canada are for 2001; for Japan, 2000.

Sources: Organization for Economic Cooperation and Development and Japan Ministry of Internal Affairs and Communications.

Chart 4-7 **Youth Unemployment Rate by Nativity, 2000**

Less-regulated countries tend to have lower unemployment rates for immigrant youths relative to native youths.



Note: Countries ordered according to labor regulation rankings in *IMD World Competitiveness Yearbook*. Data for United States are for foreign-born versus native-born; all other countries are for foreigner versus national. Data are for persons aged 15–24 (16–24 for United States).

Sources: Department of Commerce (Bureau of the Census), Organization for Economic Cooperation and Development, and Japan Ministry of Internal Affairs and Communications.

## *Caveats to Consider*

Many other factors that vary across countries affect these statistics. While in the United States, “foreign” implies that the person was born abroad, that is not the case in Europe or Japan where “foreigner” refers only to those who are not citizens. Either group can be bigger depending on how much countries restrict access to citizenship; in some countries even second- and third-generation immigrants are not citizens. In Germany and Japan, for example, relatively few immigrants become citizens while much larger shares of immigrants naturalize in the Netherlands and Sweden. As a result of these differences and holding all else equal, foreigners in Germany would be more comparable to natives in Germany, shrinking the difference in the unemployment rates as compared with foreigners in the Netherlands and Sweden who would tend to be made up of relatively new immigrants.

Differences in immigration policies across countries also affect the comparison of immigrants’ labor market outcomes. Australia, for example, admits the majority of its immigrants based on employment skills; its immigrants would be expected to be better prepared for the job market than would immigrants in countries which prioritize foreigners who are refugees or asylum seekers, or family members of natives and prior immigrants, as in the United States. Indeed, Australian immigrants have similar unemployment rates as Australian natives (Chart 4-6). U.S. immigrants also have low unemployment rates, however, even though U.S. immigration policy is principally based on family ties. The last section of this chapter describes U.S. immigration policy in more detail.

## Benefits and Costs of Immigration

The gains from immigration are analogous to the gains from trade (see Chapter 8, *Modern International Trade*, for a discussion explaining how countries gain from trade). In classical trade theory, countries benefit from trading when they differ in some way. Similarly, the more different immigrants are from natives, regardless of whether they have fewer or more skills, the bigger are the economic gains from immigration. The skill composition of immigrants comes into play in other ways, however. First, it determines which native workers gain by immigration and which lose. Second, it determines whether immigration positively or negatively affects government revenues and expenditures.

## Labor Market Impact of Immigration

Standard economic theory suggests that an increase in the supply of labor, such as an influx of immigrant workers, would be associated with lower wages, other things being the same. Empirical estimates of how much native

wages fall in response to immigration, however, are typically small. The magnitude of the wage impact is mitigated by two factors: how substitutable immigrant workers are for natives and the response of existing factors of production such as capital and labor to the influx of immigrants.

If foreign workers are not substitutable for natives, then immigration would be expected to have little impact on the wages of natives. For example, an immigrant with unique skills, such as a highly specialized scientist, or an immigrant who speaks little or no English, is unlikely to compete directly with most U.S. workers. Instead, recent immigrants may be the most adversely affected by the inflow of more immigrants. A new immigrant with limited English skills, for example, will likely compete closely with other recent immigrants with poor English ability and in jobs that do not require institutional, technical, or advanced language skills, such as janitorial services or child care. If immigrants become concentrated in certain states or cities, natives might also respond by moving to locations with relatively less competition from immigrants. Although research findings suggest so-called *native flight* may have occurred in the 1980s, the experience of the 1990s suggests the opposite—that immigrants and natives were drawn together by economic growth.

The supply of capital might also change with immigration. An increase in the supply of labor means that each unit of capital becomes more productive and thus more valuable. As a result, capital may flow into areas where there has been immigration even while output in those areas shifts toward production of goods and services that are relatively more labor intensive. This increased investment and production shift may in turn raise the demand for labor and push wages partially back up.

Several economic studies have attempted to measure the wage impact of immigration on natives and previous immigrants—a challenging task because it is necessary to take into account all other factors that might plausibly affect wages, such as the responses by capital and labor outlined above. Such studies also have to take into account that immigration itself is driven by favorable economic conditions such as high or rising wages. With those caveats in mind, a typical finding is that, on average, immigration has little effect on native wages. Box 4-1 reviews one of these studies in more detail. Generally, estimates suggest that a 10 percent increase in the share of foreign-born workers reduces native wages by less than one percent. Recent studies that look at wage effects by skill levels typically find larger negative effects on less-skilled than medium- or high-skilled native workers. Adverse wage effects on previous immigrants have been found to be on the order of 2 to 4 percent. It should be noted that these studies typically identify the effect of immigration on natives by comparing labor market outcomes of natives in response to differences in immigration across regions and over time. Analysis done at the national level relies primarily on variation in immigration over time and finds larger adverse effects.



### **Box 4-1: Wage Impacts of Immigration**

The labor market effects of immigration can be identified by using real-world events in which immigration occurs suddenly and is not driven by economic factors. One such study measures native wages in Miami before and after the Mariel Boatlift in which approximately 125,000 Cubans arrived between May and September of 1980. This influx added 45,000 workers, or 7 percent, to Miami’s labor force in just a few months. Despite the fact that a relatively high fraction of the new immigrants were low-skilled, these immigrants had virtually no effect on the wages or unemployment rates of less-skilled workers in Miami.

This result could have been driven by labor and capital responses. For example, natives and other immigrants who would otherwise have moved to Miami to fill low-skill jobs may have decided not to do so because of the rapid influx of Cuban immigrants over this period. In addition, textile and apparel firms, industries that are well-suited to utilize low-skilled labor, expanded in Miami, thereby cushioning the adverse wage impact on Miami workers.

## **Fiscal Impact of Immigration**

Immigrants—like all natives—affect the *public finances*, the revenues and expenditures of local, state, and Federal governments. Immigrants contribute money to public coffers by paying sales and property taxes (the latter are implicit in apartment rents). Immigrants working “on the books” further contribute through income and payroll taxes. Immigrants consume publicly provided goods and services such as roads, police and fire protection, and public schools. If they are eligible, some legal immigrants, such as naturalized citizens and lawful permanent residents who have lived in the United States for five years or more, may also receive assistance from programs such as food stamps, Temporary Assistance to Needy Families (TANF), and Medicaid. Supplemental Security Income (SSI) is generally restricted to citizens and to lawful permanent residents who have worked in the United States for at least 10 years. The fiscal impact of immigration is the difference between how much immigrants pay in to the government and the value of the public services they consume.

Some studies have calculated the fiscal impact of immigrants on an annual basis and looked at whether the cost of providing public goods and services to immigrant households increases the tax burden on native households in a given year. Such studies have found that, while immigrants do not impose a net higher tax burden at the Federal level, natives in states with a heavy concentration of

immigrants from Latin America do realize an increased overall tax burden. Another approach in estimating the fiscal impact of immigration is to compute the expected lifetime fiscal impact of immigrants who come to stay permanently and their children, grandchildren, and future descendants. A 1997 study found that the net present value of immigrants' estimated future tax payments exceeded the cost of services they were expected to use by \$80,000 for the average immigrant and his or her descendants. Accounting for the 1996 welfare reform, which restricted eligibility and imposed time limits, this figure increased to \$88,000. The value of services slightly exceeded taxes paid by the original immigrant, but the contributions of the immigrant's descendants more than made up the difference.

The average impact masks two facts. First, immigrants typically do not impose a net cost at the Federal level where most of the proceeds from payroll taxes accrue, but rather at the state and local level through their use of public schools and health care. Second, the average fiscal impact also masks the fact that the fiscal effect of immigrants (like that of natives) varies by education level. How much immigrants pay in and how many services they utilize depend largely on whether they are families headed by skilled or unskilled workers. Immigrants with a high school degree or better and their descendants contribute more in taxes than they use in public services, which produces the overall positive impact mentioned above. But the average net present value of the fiscal impact of an immigrant with less than a high school education is negative \$13,000. The impact of the original immigrant with no high school diploma is negative \$89,000, which is largely offset by the positive \$76,000 in contributions by the immigrant's descendants.

Fiscal contributions and receipts are also a function of an immigrant's legal status and the same net present value would not apply to an undocumented immigrant or someone residing in the United States temporarily. More than half of undocumented immigrants are believed to be working "on the books," so they contribute to the tax rolls but are ineligible for almost all Federal public assistance programs and most major joint Federal-state programs. Over time, however, if low-income immigrants attain legal status, they may become eligible for more welfare programs. The U.S.-born children of an immigrant, legal or illegal, are automatically citizens and eligible for government programs.

## Immigrants and Public Assistance

Immigrant households, despite the restrictions on their eligibility, are more likely than native households to participate in public assistance programs. In 2003, 16.7 percent of native households used a major welfare program, compared with 25.5 percent of households with a foreign-born household head. Major welfare programs in this case include TANF, SSI, food stamps, public housing, and Medicaid. Immigrant families, which includes families

with U.S.-born children, are more likely to use welfare as a result of their higher poverty rates and lower rates of health insurance coverage. Medicaid alone accounts for almost all the difference in the rates of public assistance for these two groups. This is partly due to the fact that immigrants are more likely to work in jobs without health insurance. Only 45 percent of immigrants have employment-based coverage, compared to 62 percent of natives.

## Immigrants and Social Security

While the number of immigrants with relatively low education levels tends to put a strain on government budgets, several other immigrant characteristics have the opposite effect. First, compared to native workers, immigrants are relatively young when they arrive. Green card recipients are overrepresented in the age groups between 10 and 39. Immigrants also have higher fertility rates than natives. The influx of younger people and higher birth rates expand the labor force and slow the ongoing decline in the ratio of workers per retirees. This, in turn, contributes to the financing of pay-as-you-go entitlement programs, such as Social Security and Medicare.

Many of these workers who have contributed to the Social Security system return to their home countries and never file for benefits. In the case of Mexico, millions of Mexicans have worked in the United States and returned home, but only 37,000 non-U.S. citizens residing in Mexico received Social Security benefits in 2004. Undocumented immigrants without a valid Social Security number cannot receive Social Security benefits, but as long as the employer reports their earnings to the Social Security Administration (SSA), their earnings are subject to withholding of Social Security taxes. The SSA cannot identify undocumented workers, but keeps track of the earnings of all workers who have mismatched or invalid Social Security numbers in the so-called Earnings Suspense File (ESF). The ESF was valued at \$463 billion in 2002.

*Totalization* agreements are another way that foreign workers can affect Social Security. Totalization agreements are binational treaties where U.S. workers' earnings abroad count toward their Social Security contributions and similarly for foreign workers employed in the United States. Totalization agreements exist with 20 countries.

## Additional Benefits to Immigration

Calculations of the net benefits of immigration are typically made from the natives' point of view, hence the focus on fiscal and labor market impacts. But immigration also benefits the immigrant and his or her family, who enjoy increased income and improvements in their quality of life. Some of the increased income may be sent home in the form of remittances, benefiting family members who remain behind in the immigrant's country of origin. In

addition, as migrants leave the country-of-origin, economic opportunities may arise for others who stay put. If there is enough emigration, as in the case of Mexico, the decrease in the supply of labor could even be enough to raise wages.

Migrant remittances can have important economic benefits in the origin country. In 2003, remittances from the United States to Latin America exceeded \$30 billion. Remittances raise income, reduce poverty, and lower income volatility in the recipient country, an important consideration in countries where economic crises are more common. Studies of Mexican migrants have found that remittances are used for both day-to-day consumption, such as food and housing, as well as for investments in human and physical capital, such as starting a business, buying land, or building a home. The United States has led efforts to facilitate remittances. At the G-8 Sea Island summit in Georgia in June 2004, the President secured support for a plan to help developing countries by improving data on remittance flows and by reducing the costs of international money transfers.

In the long run, international migration can also lead to institutional change in the origin country. The fact that people are mobile means that countries facing high emigration may try to retain or lure their citizens back. For example, according to news reports, Mexico launched a crackdown on corrupt customs agents who preyed on migrants as they returned home. As part of the crackdown, Mexico appointed a border czar in 2001 and strengthened the Paisano Program, which helps Mexicans return home for the holidays without being harassed or extorted. The U.S. and Mexican governments also established Partnership for Prosperity, a large-scale binational public-private economic development initiative. Meanwhile, Federal and state government officials in Mexico launched programs such as *Dos por Uno* and *Tres por Uno* to match remittance money going to infrastructure projects, such as paving roads in migrant communities.

## Immigration Policy

In a typical year, about two-thirds of new lawful permanent residents are admitted into the United States or adjust immigration status based on their family relationship with a U.S. citizen or permanent resident. (*Adjustment of status* refers to foreigners inside the United States who apply for green cards so they can stay here permanently.) While family-based immigration is prioritized in U.S. immigration policy, employment-based immigration has grown in importance in recent years largely through an increase in the number of skilled temporary workers. Nonetheless, existing employment-based programs suffer from many problems, including outdated processes for labor certification and inflexible numerical caps. Immigration systems are also strained by the need

for security measures, such as more extensive background checks on applicants. At the same time, immigration continues to occur outside official channels in the form of undocumented immigration.

According to the most recent estimates, there are about 10 million undocumented immigrants in the United States, the majority of whom are low-wage workers. More than one-half of undocumented immigrants are from Mexico. One of the most pervasive features of undocumented immigration is that it is overwhelmingly driven by supply and demand: immigrants want to work in the United States, and many American employers want to hire them. Such a simple fact, however, has complex economic, humanitarian, and security-related implications.

Many undocumented immigrants endure a perilous journey to make it to the United States. To obtain work, some undocumented immigrants resort to using false documents, such as fake Social Security cards or green cards. They live in fear of deportation and may hesitate to contact law enforcement if they become victims of crime or abuse. Once workers are here, additional undocumented immigration may take place as family members and friends join the workers. As families grow, the children born in the United States to undocumented immigrants are U.S. citizens. Network-based migration and the natural rate of population increase have created hundreds of thousands of “mixed status” families, in which children, siblings, and parents have a different immigration status.

## Current U.S. Immigration Policy

Throughout the nineteenth and into the early twentieth century, the United States had a generally “open door” policy toward immigration. Most newcomers were admitted with the exception of those barred by the Chinese Exclusion Act of 1882, prohibitions against prostitutes and felons, and a few other exclusions. World War I, however, ushered in an era of restricted immigration—a policy that has persisted to the present day. The National Origins Act of 1924 allowed immigration under country quotas that heavily favored northern Europeans. The Immigration Act of 1965, which provides the framework for current policy, abolished national-origins quotas and based immigration policy largely on “family reunification.” While the Immigration Act of 1990 increased the cap on employment-based green cards, such green cards make up fewer than 15 percent of the total number of green cards issued in a typical year.

Current immigration law provides for five major bases for obtaining permanent residency in the United States—immediate relatives of citizens, other family members, employment immigrants, “diversity” immigrants, and refugees and persons granted political asylum. Immediate relatives include the parents, spouses, and minor children of citizens; other family members

include siblings and adult children of citizens, as well as spouses and children of permanent residents; employment immigrants are workers brought in to work for U.S. employers; diversity immigrants come into the United States or adjust status through the “green card” lottery where priority is given to persons from certain underrepresented countries, such as many African nations; and refugees and persons granted asylum (also called *asylees*) qualify for permanent residence because they face persecution in their home countries. Refugees and asylees differ only in their location: refugees apply for admission to the United States from abroad, while asylees apply for asylum from within the United States.

All major permanent residence categories except immediate relatives of citizens are subject to numerical limits: approximately 226,000 for other family members, 140,000 employment immigrants, 55,000 diversity immigrants, and 10,000 asylees. Uncapped immediate relatives of citizens averaged 402,000 per year in 2000–2003. While there is no explicit limit on the number of green cards allotted for refugees, the number of refugees who can adjust status is limited by caps on refugee admissions that are set each year by the President in consultation with Congress. The cap on refugee admissions is 70,000 in fiscal year 2005.

Despite the overwhelming demand for permanent residence in all these categories, thousands of allotted green cards are not being issued. Processing backlogs are keeping green card issuances below their numerical caps and contributed to a 34 percent decline in the number of new lawful permanent residents in 2003. At the end of fiscal year 2003, there were 1.2 million adjustment of status cases pending a decision.

As a result of numerical limits and backlogs, green card applicants filing as “other family members” can expect to wait from 4 years (for unmarried adult children of citizens) to over 12 years (for siblings of citizens). Waits are longer for family-sponsored immigrants from certain overrepresented countries, such as India, Mexico, and the Philippines, because family-sponsored green card issuances to any single country cannot comprise more than 7 percent of the total. In February 2005, Filipinos who immigrated as siblings of U.S. citizens had waited 22 years for their green cards.

## Employment-Based Immigration

Foreign workers come to the United States through employment-based green cards, as described above, or with temporary worker visas. For these purposes, there are at least 140,000 employment-based slots for permanent residency available each year (the actual cap varies with the number of green cards issued in the family program) and a variable number of temporary worker visas. Employment-based green cards typically require the worker to have at least a college degree or special skills; only 10,000 green cards are

reserved for less-skilled workers. The allotment for employment-based green cards includes the principal worker and any family members. Nevertheless, for many years, the number of green cards issued fell far short of the 140,000 cap. During the height of the economic boom in the late 1990s, average annual employment-based green cards numbered only about 80,000, consisting of about 36,000 workers and 45,000 spouses and minor children.

The current situation is similar in that employment-based green card issuances are below their caps again, although this time not for a lack of demand. As of January 2005, there were 271,000 employment-based applications for adjustment of status pending, with about 191,000 of these backlogged by the Department of Homeland Security (DHS).

A multitude of factors contribute to difficulties within the employment-based green card program. Background checks and the sheer volume of pending applications limit processing speed, as do cumbersome requirements regarding the labor certification process. Labor certification for permanent employment requires a firm to undergo an extensive, government-supervised search for U.S. workers before the petition to hire a foreign-born worker can be approved. Once the Department of Labor (DOL) certifies that no qualified U.S. worker is available for the position and the wages and working conditions of existing workers will not be harmed by bringing in an additional foreign worker, then DHS and the Department of State can proceed with processing the green card application. In addition to the DHS backlogs mentioned above, there is a backlog of over 300,000 applications for labor certification at DOL. The labor certification process typically takes several years to complete and has been criticized as being time-consuming, costly, and complicated.

The problems with labor certification have resulted in calls for reforms and action by the Administration. In 2002, the Administration proposed to move to a streamlined application process under which the employer would recruit domestic workers *before* petitioning to hire a foreign worker. The final rule regarding the new labor certification system was published in the Federal Register on December 27, 2004. Under the new system, firms attest to appropriate recruitment procedures and DOL has the authority to audit all applications. DOL can order supervised recruitment for employers found to have abused the program. DOL expects that this simplification of the recruitment process and other changes, such as electronic filing and automated processing, will greatly reduce the time needed to process labor certification applications.

The waits and costs associated with traditional processing for employment-based permanent residency have likely prompted employers to make greater use of temporary worker visas. The number of visas issued to temporary workers has more than doubled in the last decade, rising from 251,000 in 1992 to 593,000 in 2003. In contrast, the number of employment-based green cards issued in 2003 was actually below the number issued in 1992,

despite the tremendous growth in the labor force during this time. Temporary worker programs include the H-1B program for skilled workers, H-2A for agricultural workers, and H-2B for other less-skilled workers. Skilled temporary workers can also be admitted as intra-company transferees (L-1 visas) and, from Canada and Mexico, as North American Free Trade Agreement (or NAFTA) workers (TN visas).

There are many reasons for all parties—employer, employee, and the government—to prefer temporary worker visas. Temporary work visas are issued for a limited period of time and are typically restricted to one employer, so both employee and employer make a short-term commitment. The application process is simpler and thus generally less costly and timelier. In contrast to permanent residents, who can apply to be naturalized after five years' residence in the United States, temporary work visa holders are not eligible to apply for citizenship. They are also ineligible for most forms of public assistance. Temporary workers can apply for a green card, however, if they qualify and their employer agrees to support their application.

The unprecedented number of pending applications for employment-based green cards is believed to stem from the high number of temporary workers that came in under the H-1B program for skilled personnel in the late 1990s. In fiscal year 2004, the cap on H-1B workers in the private sector reverted from a temporary cap of 195,000 to the permanent cap of 65,000 workers per year. This quantity has proven insufficient to meet demand. In 2004, the government ran out of H-1B visas in February, seven months before the end of the fiscal year. In fiscal year 2005, the cap of 65,000 H-1Bs was reached in one day. In light of the shortage of H-1B visas, legislation was passed as part of the November 2004 Omnibus spending bill to provide an additional 20,000 H-1B visas per year to foreign students graduating from U.S. universities.

## Undocumented Immigration

The influx of low-wage workers, many of whom come illegally, is partly a result of an immigration policy which, while having several employment-based immigration programs to address the need for skilled workers, has relatively few slots for low-skilled workers. The supply of green cards and temporary worker visas typically allows fewer than 100,000 low-skilled workers to come in each year. The sum is made up of 10,000 green cards and 66,000 H-2B visas for other low-skilled workers. In addition, about 14,000 agricultural workers were admitted with H-2A visas in 2003. In contrast, according to the Current Population Survey, the number of low-skilled foreign workers—workers who lack a high school degree—increased by about 225,000 per year between 1996 and 2003. Moreover, while H-2B visas for less-skilled workers have run out in both fiscal years 2004 and 2005, no increase or exemptions to the H-2B cap have been passed.



The demand for foreign labor is not new. When the railroads were being built in the nineteenth century, Mexican workers were recruited to expand the workforce in the Southwest and Chinese workers immigrated to work in the West. During World War II, labor shortages arose as U.S. men left their jobs to join the armed forces. In 1942, the U.S. and Mexican governments initiated the Bracero Program, which allowed Mexican workers to come in and fill seasonal jobs in agriculture. The need for workers did not end with the war, however, and the Bracero Program was kept in place until 1964, bringing in an average of about 200,000 workers per year. European countries, such as France and Germany, faced similar increases in labor demand following the war and instituted guest-worker programs around that time.

The end of the Bracero Program in 1964 and the imposition of quotas on legal immigration from the Western Hemisphere in 1977 eliminated many of the legal avenues by which to enter the United States from Latin America. The ensuing flow of undocumented immigration continues to this day. The Immigration Reform and Control Act (IRCA) of 1986 was an attempt to deal with this problem by providing for legalization of undocumented immigrants, increasing funding for the Border Patrol, and making it illegal to hire undocumented workers. To allow for additional worker inflows, IRCA also established the H-2A visa program for temporary agricultural workers. However, H-2A visas require employers to undergo a burdensome labor certification process and follow extensive rules and, as a result, the program is little used.

The passage of IRCA failed to stop illegal immigration. Undocumented immigration surged with U.S. growth in the early to mid-1990s. Contributing factors were likely the forces of network migration, which may have intensified following IRCA, and the 1994–1995 Mexican economic crisis. In response to the resurgence of undocumented immigrant inflows, border enforcement along the U.S.–Mexico border was dramatically increased starting in 1993.

The President's proposed Temporary Worker Program (TWP), announced on January 7, 2004, seeks to address the economic and security issues surrounding the flow of undocumented workers into the United States, as well as the associated humanitarian concerns. The TWP would give temporary visas to foreign workers who fill jobs for which employers can show they are unable to hire Americans. This would create an additional legal avenue to match workers, including low-skilled workers, with U.S. employers. The visas would last three years and, as long as the worker is employed, could be renewed at least once. The program would also offer incentives for workers to return home by setting up tax-preferred savings accounts where money could be withdrawn for use in the home country. The U.S. government would also work toward developing agreements with foreign nations to ensure TWP workers' U.S. earnings would be recognized by the public retirement programs in their respective countries.

The TWP would allow new foreign workers to come in each year in accordance with labor market demand. In addition, TWP eligibility would be extended to undocumented workers who were present and working in the United States on January 7, 2004, when the President made his announcement. The President also stated that there would continue to be increases in border security and, under TWP, tough penalties would be imposed on employers who continued to hire undocumented workers.

The President has proposed to more than double the funding dedicated to worksite investigations. In this multi-pronged approach, TWP has many advantages. It recognizes that an orderly and legal flow of workers will likely increase national security and brings employers and undocumented workers into compliance with the law. Employers will be able to legally hire the workers they need once they demonstrate that no willing and able American worker is available. Workers will be less likely to lie about their immigration status, rely on false documentation, or work under assumed names. Workers who abide by the rules of the program will not have to fear deportation. They will be able to return home for visits to their families and have their U.S. earnings count toward their future retirement benefits.

The challenges for a program such as this are twofold: to ensure that undocumented immigration does not continue—either in its current form or as temporary workers overstay—once the temporary worker program is implemented, and to minimize administrative burdens on employers who participate. If the goals of the program are achieved, there should be reduced demand for undocumented workers, leading to less illegal immigration.

## Conclusion

Immigrant workers range from the seasonal agricultural laborer to the Nobel prize-winning scientist. They are the doctors and nurses who serve inner cities and rural areas, the professors who teach in our universities, and the taxi drivers and hotel workers that travelers rely upon. Immigrants also fill jobs that simply allow Americans to go to work every day, such as housekeeping and child care.

From an economic standpoint, one important lesson to take away from how the Nation has dealt with the unprecedented surge in immigration over the last decade is the role of U.S. labor market institutions. Flexible labor markets are important in generating job opportunities for workers, and immigrants are no exception. The work ethic of U.S. immigrants bolsters their economic contributions. Summing up the economic benefits and costs of immigration shows that over time, the benefits of immigration exceed the costs. Adjustment of the economy and native workers to immigration takes time, however, and the adjustment period can present challenges.

The lessons learned from recent decades can guide immigration reform and make laws more consistent with economic realities and American values. Under the President's proposed Temporary Worker Program, employers who show they cannot find an American worker to fill a job opening will be able to legally hire a foreign worker. This simple guiding principle, combined with better enforcement of immigration laws, has the potential to reduce undocumented immigration, bolster national security, and improve on the myriad employment-based immigration programs in effect.

## Expanding Individual Choice and Control

A farmer prepares the soil, plants seeds, and tends her crops. Her wheat will not be ripe for months. How does she know she will reap the fruits of her hard work? A businessman buys a factory, hires engineers, and purchases steel, rubber, and glass, with the intention of manufacturing cars. How does he know he will enjoy the benefits of his effort and investment? A pharmaceutical firm invests millions now to develop a new drug that may, much later, help to cure cancer. How does it know it will receive a return on its research expenditures?

Property rights provide the crucial link between people's effort and their reward. They are the instrument society uses to establish people's control over things. In practice, these go by many names, such as deeds, titles, permits, vouchers, allowances, or accounts. Patents and copyrights are also property rights, establishing control over inventions, books, songs, and other creative concepts. The essential idea is the same in each case: the owner of the property right controls how something valuable is used.

Property rights have a profound effect on the choices people make. In addition to giving them the incentive to maintain and invest in things, people will use resources more prudently if they own them. Property rights are essential for markets to function. The lack of a clear title might prevent a car purchase. A home buyer is unlikely to sign on the dotted line if she is not sure that the seller actually owns the house. Without property rights, would-be entrepreneurs cannot secure loans they might need to help their businesses grow.

The key points of this chapter are:

- Property rights are essential to the efficient operation of markets, which in turn allocate resources to their most highly valued use. Clearly defined rights are important in avoiding overuse of resources and in encouraging the improvement of resources.
- The thoughtful application of property rights has already brought about a number of policy improvements, such as reducing air pollution in a low-cost way, protecting fisheries from overexploitation, and facilitating greater school choice.
- Providing people with ownership and individual choice and control of assets could help address several current concerns, including Social Security reform and the encouragement of international development.

# The Meaning of Property Rights

When used in economics, the term *resource* refers not just to natural resources, such as land or clean air, but to anything of value, such as skills. A *property right* refers broadly to the arrangements society uses to assign people control over resources. Property rights give a homeowner control over his house, a farmer control over her land, and an inventor control over his ideas.

That control is defined using a bundle of specific rights. The bundle is commonly thought to consist of three main elements: the right to exclusive use of the resource, the right to income derived from the resource, and the ability to transfer those rights. Property rights can include a range of those elements, from weak rights (which might only include the right to use the resource) to strong rights in all three elements. For example, someone living on a river might acquire the right to use the water flowing past her property, but not the right to divert it and sell it to others. A car owner, on the other hand, acquires the right to use the car, to sell the car, and to realize any gain from the sale.

Even an *exclusive* right to control and use a resource, however, does not mean an *unrestricted* right to use it. A car buyer gets the keys and the title, but does not acquire the right to drive it at any speed or park it anywhere he wishes; the car must be driven within the limits of the law. Property rights typically come with restrictions on the use of the resource in question.

## The Economic Effects of Property Rights

Property rights have a host of economic effects. Three especially important effects are illustrated here. The first is the effect of property rights on the use of a resource at one point in time. The second is the effect of property rights on incentives to maintain and improve a resource over time. The third is the effect that property rights have as a prerequisite for exchange.

The classic illustration of the effect of property rights at one point in time involves numerous cows grazing on limited pastureland. If access to the pasture is open to any and all cattle ranchers, then the pasture is an *open access resource*, a resource no person or group of people has an exclusive right to use. Individual property rights to the pasture are not established, and all ranchers compete to use it. In this case, each rancher might be expected to allow his cows to graze without limit, because each rancher bears only a fraction of the cost of additional grazing. That added grazing, however, is costly to other ranchers because less grass is available for their cows. Any individual rancher does not directly bear the full cost imposed on other ranchers, and will not take this cost into account when deciding how much to let his cows graze. The common grazing pasture thus becomes overused.

This phenomenon, known as the “tragedy of the commons,” is likely to occur for scarce resources for which access is open. A motorist entering a crowded freeway does not take into account the effect her car has on the space available for other cars, so freeways become overused at peak times.

The commons problem would be solved if someone owned the pasture or had control over grazing. If the owner allowed only his cows to graze, then he would have an incentive to consider the effect of one cow’s overgrazing on his other cows. He would voluntarily restrict their grazing. The owner could also limit access to the pastureland and charge other ranchers for grazing their cows, according to the amount of grass their cows ate. Because it was costly to them, each rancher would then reduce the amount of time his cows grazed. In either case, ranchers conserve on the scarce resource of pastureland because someone owns the land. Assigning property rights to the owner of the pasture not only encourages conservation of the resource, but also resolves the conflict among ranchers over the use of scarce land.

A second key effect of property rights is that they provide incentives to invest in, maintain, and improve resources over time. To appreciate this effect, think of a farmer using land that is not owned, but who nonetheless improves it by weeding, reducing erosion, and controlling pests. She then plants wheat and cultivates it. Without property rights, she has no legal right to prevent someone else from harvesting her wheat crop when it ripens. If she knows in advance that this might happen, she is unlikely to improve the land in the first place, and is unlikely to work it in the future. Alternatively, if she has property rights to the land, she knows she will reap the benefit of her efforts, and will invest in the land. Property rights provide an incentive to invest in resources over time, and society will be better off as a result. Homeownership provides another example, as discussed in Box 5-1.

### **Box 5-1: The Benefits of Homeownership**

Homeownership provides one illustration of how property rights promote investment that benefits society. Researchers have shown that homeownership has many benefits beyond the economic advantages of owning a home. For example, the children of parents who are homeowners are less likely than children of renters to drop out of high school, or to have children as teenagers. Both of those effects are largest for children of low-income households. Children living in homes that are owned by the resident attain math and reading achievement that is measurably higher. Additionally, homeowners are more likely to be involved in their communities. Homeowners are more likely to know the identity of the head of their local school board, to vote in local elections, and to work to solve local problems. In short, homeowners are

**Box 5-1** — *continued*

more likely to invest in their communities. The national homeownership rate set a record of 69.0 percent in 2004, up 0.7 percentage point from 2003. The minority homeownership rate was also at a record high of 51.0 percent, up 1.5 percentage points from 2003.

The President's policies have focused on dismantling barriers to homeownership, especially among low-income and minority homeowners. On December 16, 2003, the President signed into law the American Dream Downpayment Act of 2003, which helps low-income families with their downpayment and closing costs. His housing agenda includes increasing the supply of affordable homes through the Single-Family Affordable Housing Tax Credit, increasing support for self-help homeownership programs like Habitat for Humanity, simplifying the home-buying process, and increasing home-buying education. These initiatives will further help to achieve the President's goal of increasing the number of minority homeowners by at least 5.5 million before the end of the decade.

A third effect of property rights stems from their transferability. Transferable property rights (along with the enforcement of contracts) underpin market exchange. Clearly defined property rights give people certainty about what they can trade and keep. A market exists when valuable items are exchanged, or when money is given in exchange for an item. Without clearly defined, transferable property rights, markets will operate either poorly or not at all.

Well-functioning markets are socially beneficial for several reasons. Markets ensure that transactions benefit both parties. People will voluntarily give up their right to a resource only when they receive something of greater benefit in return. Markets ensure that resources are allocated to those who value them the most.

Because markets generate prices, they also play a central role in coordinating the behavior of buyers and sellers. Prices provide information about the strength of demand for a good or service and the cost of producing it. They also create incentives to act on that information. If the price of a good rises, suppliers know to, and have an incentive to, shift scarce resources into

producing more of that good. Similarly, demanders know to cut back on consumption of the good, and have an incentive to do so. This process ensures that there is no enduring shortage or surplus of the good; the correct amount is produced and consumed. This socially beneficial situation is based on a well-functioning system of private property rights.

The historical record over the last several centuries indicates the importance of strong property rights. The countries that are rich today are those that had sufficiently strong property rights in place to encourage industrialization. Evidence suggests that societies that have protected property rights over time are more prosperous.

The different experiences of North and South Korea provide an example. Prior to the division of the Korean peninsula in 1948, the North and the South were similar to one another economically, geographically, ethnically, and culturally. Following the Korean War, the North abolished private property in land and capital, while the South maintained a system of private property.

South Korea enjoyed one of the fastest surges of economic growth in history, and is considered an Asian “miracle” economy. South Korean gross domestic product grew from \$85 billion in 1983 to \$605 billion in 2003, an increase of more than sevenfold in only two decades. By 2004, South Korea’s GDP per capita was estimated to be over 13 times greater than North Korea’s. Although a number of factors contributed to South Korea’s superior growth, its stronger protection of property rights is recognized as a key factor. As the next section illustrates, even countries with relatively strong property rights systems benefit by extending them into new domains.

## The Success of Property Rights in Addressing Policy Issues

The property rights concept has been creatively expanded and applied to help solve vexing policy issues. The use of property rights in practice illustrates the economic effects discussed earlier. Although there are many examples of how property rights help solve policy problems, three are offered here: pollution permits to help reduce air pollution in an efficient manner, individual transferable quotas that help conserve fisheries, and school voucher programs to help improve school performance. Each case is an example of assigning property rights to people with the best information and incentives to use the resources in question.



## Addressing Air Pollution Through Tradable Permits

Clean air is another example of an open access resource; overuse manifests itself as air pollution. In the absence of government regulation, firms do not pay for the air they pollute. This problem can be addressed by defining property rights.

Title IV of the 1990 Clean Air Act Amendments introduced a property rights regime for air quality by establishing a national *cap-and-trade* system for sulfur dioxide (SO<sub>2</sub>) emissions. SO<sub>2</sub> is a pollutant produced when a fuel containing sulfur, such as coal or oil, is burned, as is done to create electricity, for example. These emissions are not only associated with a wide array of health concerns, but are also a key component of acid rain. Title IV's cap-and-trade program works by capping the total amount of allowable SO<sub>2</sub> emissions from power plants nationwide and requiring that an emitting facility own a permit for each unit of pollution emitted. The cap sets the total level of allowable emissions of SO<sub>2</sub> from the power sector. The government also creates a system of rigorous emissions measurement and enforcement.

Under the Title IV program, SO<sub>2</sub> permits can be bought and sold by emitting facilities and by third parties. Trading allows firms with a high cost of reducing pollution to purchase credits from firms whose emissions can be reduced at lower cost, giving the industry an incentive to consider cleanup cost differences both across and within firms. The air cleanup will be accomplished at a lower cost than if all plants were directly required to meet an emissions standard that leads to the same overall level of pollution reduction. Using permits or allowances, the government does not need to tell firms how to lower pollution—it simply decides how much pollution needs to be reduced in the aggregate, and leaves it to the firms to decide how best to achieve that goal.

This example illustrates an additional benefit of pollution permits: they not only create valuable incentives, but also give control over decisions to the party that has the *best information* on how to clean up at the lowest cost. Individual firms are likely to have much better information than regulators about the idiosyncrasies of each plant. Pollution permits decentralize decision making, give control to the party with the best information, and provide incentives to act on that information.

The SO<sub>2</sub> trading program has been successful both at reducing emissions and at achieving those reductions at a lower cost than direct plant-level emissions standards. Emissions were initially reduced almost 30 percent more than the required level, compliance has been over 99.9 percent, and the annual cost savings from this approach has been estimated at hundreds of millions of dollars per year. A similar program exists in the eastern United States to control nitrogen oxide emissions, which contribute to regional ozone and smog problems.

In 2002, the President proposed “Clear Skies” air quality legislation that would expand the use of this approach to achieve additional control of SO<sub>2</sub> and nitrogen oxides and to control mercury emissions. The mandatory program would establish caps on power plant emissions of sulfur dioxide, nitrogen oxides, and mercury in 2018 that are roughly 70 percent below 2000 levels.

Consistent with this legislative approach, in December 2003, the EPA proposed the Clean Air Interstate Rule for states in the eastern half of the United States whose sulfur dioxide and nitrogen oxide emissions contribute to fine particle and ozone pollution in downwind states. The proposal would require states to regulate power plant emissions and provides states with a model cap-and-trade system similar to the regional nitrogen oxide program described above. The rule would reduce emissions of sulfur dioxide from power plants in those states by approximately 70 percent, and nitrogen oxide to approximately 65 percent below 2002 levels. Additionally, under the Clean Air Mercury Rule, the EPA proposed the first-ever regulatory action to reduce mercury emissions from coal-fired power plants, and proposed a cap-and-trade approach as a way of achieving these reductions. The program would cut mercury emissions by nearly 70 percent when fully implemented. Both the Clean Air Interstate Rule and the Clean Air Mercury Rule are based on an approach of establishing tradable emissions allowances in order to reduce pollution in an effective and cost-efficient manner.

## Addressing Overfishing Through Property Rights

Another industry that benefits from the creation of well-defined property rights is commercial fishing. In the absence of regulation, fisheries are an open access resource. Because fishermen do not own the stock of fish in the sea, the fish they leave in the water may be caught by others, and there is no guarantee that they will be there to catch in the future. Even though many fishermen desire healthy fish populations for future use, individual conservation efforts are less effective due to this tragedy of the commons. Consequently, some fish stocks have declined worldwide, and fishermen must expend more effort and resources to catch the remaining fish. Today, an estimated 70 percent of the world’s fish species are either fully exploited or depleted. In the North Atlantic region, populations of cod, hake, haddock, and flounder have fallen by as much as 95 percent.

Overfishing leads to an array of economic problems. Because fish are less able to reach maturity and reproduce, fish that are caught tend to be of lower value. Fish become harder to catch as their stocks are depleted, and intense competition for the remaining fish creates additional waste. In 1993, the United Nations estimated that \$124 billion was spent attempting to harvest \$70 billion worth of fish. When a fishery collapses, many fishermen lose their jobs and their communities suffer. The collapse of the Atlantic cod stocks in

the mid-1990s left more than 40,000 people unemployed in the Canadian Maritime Provinces.

Governments have traditionally regulated fisheries with *command-and-control* approaches, which mandate many aspects of fishing by law. The requirements govern various aspects of the fishing industry, such as the technology used, the length of fishing seasons, and fishing locations. These approaches are not only difficult to enforce but they do not provide incentives for fishermen to curb their fishing efforts. Command-and-control approaches also require constant government intervention in order to set new specifications for technological innovations, while fishermen are prevented from shifting to lower-cost fishing methods by taking advantage of these innovations.

A property rights approach to fisheries management can effectively prevent overfishing while increasing the profits of fishermen. One such system is to issue *individual transferable quotas* (ITQs) to fishermen, which grant them exclusive rights to harvest fixed percentages of the total allowable catch. (While ITQs may be considered to create property rights, they are not “property interests” for purposes of the takings clause of the Fifth Amendment of the Constitution.) Like pollution permits, ITQs are transferable, ensuring that the fish will be caught by the most efficient and least wasteful boats, while all owners of a fishery can reap the benefits of a healthy and profitable fish stock.

Unlike command-and-control approaches, ITQ programs end the incentive for fishermen to “race to fish.” This observation is well demonstrated by Alaska’s sablefish and halibut fisheries where, prior to the introduction of property rights, the fishing season was progressively shortened to prevent the annual catch from exceeding its cap. Fishermen responded to the shortened season by increasing the number of vessels in their fleets and using more gear in an all-out effort to catch as much as possible before the overall cap was reached. These “frantic derbies” led fishermen to take undue risks by heading out in dangerous weather, and led to a glut of fresh fish on the market during the few short weeks of harvest and scarcity the rest of the year. Alaska’s halibut and sablefish ITQ programs, implemented in 1995, ended the race for fish and increased season length from less than 5 days per year to 245 days per year. Commercial fishermen have since enjoyed increased profits, decreased costs of gear and fishing crews, and a safer and more stable industry. The availability of high-quality halibut year-round has benefited consumers, and environmental benefits have been realized in connection with decreased halibut mortality.

ITQs have also been adopted in New Zealand, Iceland, Australia, Canada, and Papua New Guinea, among other countries. They have improved fish stocks while also increasing the profitability of many fisheries. New Zealand’s extensive system of ITQs was introduced in 1986 and, as of 1996, it accounted for more than 85 percent of that country’s total commercial catch. New Zealand fish stocks are now healthy, and increases in quota prices

provide evidence of increased profitability. There is evidence that New Zealand's ITQs have also encouraged investment in scientific research. Testimony to the ability of ITQs to mitigate overfishing and change the fishers' approach came when a New Zealand Ministry of Agriculture official commented, "It's the first group of fishers I've ever encountered who turned down the chance to take more fish."

One challenge in designing an ITQ program is determining the initial allocation of shares. To make the system politically viable, some areas have provided shares to the current users of the fishery in proportion to their recent catch levels. An alternative is to auction off the initial shares, which would raise money for the public and ensure that, from the start, the shares go to fishermen who value them the most.

Despite practical issues in designing ITQ programs, they hold tremendous promise for managing our Nation's fisheries in a manner that allows for increased efficiency in fishing, fewer economic and safety risks for fishermen, and fresher and higher quality seafood for consumers. The President supports the further adoption of ITQ systems to manage our Nation's fisheries, and the Administration has called for new national guidelines to facilitate the implementation of these programs while maintaining regional flexibility and ensuring fair and equitable quota allocations.

## School Voucher Programs

The creation of property rights can be used to encourage better use of resources even when there is no "tragedy of the commons" problem. School voucher programs illustrate such benefits. Under many voucher systems, eligible families receive money from their state or school district to pay for their children's education at a participating private school. Typically, low-income families are eligible to receive vouchers.

When vouchers are not available, choosing a different school may come at the high cost of paying the full tuition for a private school or physically moving to a new district, if the district does not already offer a public school choice program. By lowering the cost of private sources of education, vouchers produce two main benefits. Most directly, families eligible for the vouchers are better off because they have greater ability to select the school they prefer most. Second, a well-designed voucher program can make all students in a school district better off. If the availability of vouchers increases competition, then the school has an incentive to provide a better education so that fewer students leave. To the extent that schools then provide a higher quality education in a more cost-effective manner, all the students who remain in the school are better off, even those who are not eligible for a voucher.

The degree to which a voucher system benefits all the students in a school system depends on the share of students who are eligible for a voucher, the

size of the voucher, and the extent to which schools' resources depend on the number of students who use a voucher. The number of eligible students and the amount of the voucher determine how many students will consider switching schools. When more students are eligible and when schools are competing for them, the gains from competition will be realized more quickly. Few students actually need to switch schools to motivate schools to improve. Instead, schools are motivated by the potential for competition, which depends on the number of students who are seriously *considering* switching, rather than the number who actually switch. The incentives involved and the potential for competition also depend on how much money is attached to the voucher.

Evidence indicates that voucher systems do indeed benefit both the students who use them and those who do not. A study of the voucher program in Milwaukee found that, after several years, the performance of students who used vouchers had risen 11 percentile points in math and 6 percentile points in reading relative to where they would have been if they had remained in their local public schools. A gain of 6 percentile points means that the students performed better than an additional 6 percent of the overall population of test takers.

The students who remain in the public schools also benefit significantly. As an example, consider the case of the Milwaukee voucher program. The program has been in place since 1990 and was expanded in 1998 to allow up to 15 percent of students to use a voucher. For the 2002–2003 school year, students from low-income families received a voucher for up to \$5,783 (over 50 percent of city per-pupil spending). Since the voucher amount is sufficient to cover the cost of private elementary schools, but not most secondary schools, more than 90 percent of all voucher users since the 1998–1999 school year have been in grades one through seven. Consequently, studies of the Milwaukee program have focused on elementary school students. After the introduction of vouchers, test scores of fourth graders at schools where the largest proportion of students were eligible for vouchers improved by 8.1, 13.8, and 8.0 percentile points in math, science, and English, respectively, over the students at comparison schools that were largely unaffected by vouchers.

This improved performance was not simply due to increases in school spending. The key measure of a school's efficiency—student achievement divided by per-pupil spending—increased significantly in the schools where the highest fraction of students were eligible for vouchers. In these schools, student performance rose by between 0.9 and 1.7 percentile points per thousand dollars in per-pupil spending. By making public schools more efficient, vouchers can help to close the efficiency gap between public and private schools. The private schools that accept voucher recipients usually have the same achievement levels as the public schools they draw students from, but spend significantly less per student on average. Based on their lower costs, voucher-accepting private

schools are four times as efficient as the local public schools from which they receive students. Drawing from five studies of voucher programs, one researcher notes that, while public schools spent an average of \$9,662 per student, voucher-accepting private schools spent only \$2,427.

While students on average are better off under a well-designed voucher program, one might still be concerned that many students are worse off. A common worry with vouchers is that the most-motivated students will use them, leaving the remaining students with a lower-quality peer group. One researcher of the Milwaukee system concludes that, even if a student's peer group dropped from the 90th percentile of the district to the 10th percentile, the student remaining in the school would still be at least as well off under the voucher program because the effect of the increased school performance would overwhelm this adverse change in the peer group. The decline in a student's peer group is merely hypothetical, since studies of the Milwaukee system have found little evidence that the best students leave. In fact, instead of being the best students at a school, future voucher users performed moderately below average in math and reading before they switched schools.

Vouchers are only one form of school choice. Additional forms include charter schools and plans that allow students to attend other public schools. When these programs are well designed, they too can produce efficiency gains by causing schools to compete with one another for students.

Vouchers are consistent with expanding property rights because they provide families with additional control over resources—financial resources in this case. The available evidence indicates that this change in property rights has produced positive outcomes for school systems that use well-designed voucher programs.

## The Application of Property Rights to Current Policy Issues

Areas of current concern in which property rights could be usefully applied or extended include personal retirement accounts, health savings accounts, and Millennium Challenge Accounts.

### Personal Retirement Accounts

Social Security is currently funded on a pay-as-you-go basis in which the present generation of workers funds current retirees' benefits. Social Security's financial viability is thus linked to the Nation's demographics. Increased life expectancies and lower birthrates have gradually reduced the worker-to-beneficiary ratio from 16-to-1 in 1950 to 3.3-to-1 today, with projections of 2-to-1 by 2040. Projecting future tax revenues and payouts, Social Security will begin running

deficits instead of surpluses by 2018, and Social Security assets and reserves will be depleted by 2042.

Social Security is no longer a bargain for younger workers. A single male worker with average earnings who was born in 2000 will receive a real return of only 0.86 percent annually after Social Security pays what it is able to pay him. For workers earning the maximum amount taxed (\$90,000 in 2005), the real annual return is *minus* 0.72 percent on the benefits Social Security can actually pay.

The Social Security system can be less advantageous for divorced individuals who do not share in the benefits of a previous spouse. To qualify for spousal benefits under the current system, a marriage must last ten years. Fully one-third of all marriages end prior to the ten-year eligibility requirement.

The President believes that personal retirement accounts must be part of a comprehensive solution to strengthen Social Security. He has proposed that younger workers be given the option to set aside part of their payroll taxes in a personal retirement account. A personal retirement account provides ownership and control, and offers younger workers the opportunity to build a “nest egg” for retirement that the government cannot take away. At retirement, the money in an account would be available to the retiree to supplement traditional benefits under a reformed Social Security system. Procedures would be established to govern how account balances would be withdrawn at retirement. This would involve some combination of annuities to ensure a stream of monthly income, phased withdrawals indexed to life expectancy, and the ability to withdraw as a lump sum any funds above a poverty-protection threshold. At death, any balance in the account could be passed on to loved ones, including widows, children, and grandchildren. The ability to inherit personal accounts would enhance the financial security of many surviving spouses and children.

Personal retirement accounts give younger workers the opportunity to receive a higher rate of return than they receive under the current system. Workers would have the flexibility to choose from several different low-cost, broad-based investment funds and would be able to adjust investment allocations periodically. Account options and management would be similar to that of the Federal employee retirement program, known as the Thrift Savings Plan (TSP). Money in personal retirement accounts would be invested in a mix of broadly diversified bond and stock funds. Workers could also choose a “life cycle portfolio” that would automatically adjust the level of risk as the individual aged by gradually shifting the allocation of investment funds to weight the portfolio more heavily toward bonds. To guard against sudden market swings on the eve of an individual’s retirement, investment in a life cycle portfolio would be automatic when a worker reaches age 47, unless the worker and his or her spouse specifically opt out. Personal retirement accounts would have

low administrative costs, estimated by the Social Security Administration actuaries as roughly 30 basis points, or 0.3 percentage point. These costs are much lower than the average costs associated with investments in stock or bond mutual funds. Most of these fees would be for record keeping rather than investment management.

By giving citizens greater control over their retirement assets, property rights can make an important contribution to improving the U.S. retirement system.

## Health Savings Accounts

Many employees currently have access to flexible spending accounts through their employers. Using these accounts, employees can use before-tax dollars to pay for doctor co-payments, medications, dependent care costs, or insurance deductibles that they otherwise would pay for with after-tax dollars. With flexible spending accounts, the employee must select a certain amount of money to put into the account before the start of the year, during the enrollment period. The employer, usually through a regular payroll deduction, then deposits that amount into the account.

Flexible spending accounts are good for workers. Like employer contributions to health insurance coverage, flexible spending account contributions are excluded from taxable income, allowing workers to use pre-tax dollars to pay for uncovered medical costs. They also give employees added choice in obtaining and paying for health-related services that are not typically covered by insurance. They have a disadvantage, however: if workers overestimate their health care needs, and funds are not used before the end of the plan year, the remaining money is lost. Most companies operate on a calendar year, so the money typically must be used by December 31. This can create a year-end rush to spend any remaining funds, even if the purchases are of marginal value. Those who underestimate their spending will face a shortage of pre-tax funds if there is no money in the account.

The use-it-or-lose-it feature weakens employee property rights in flexible spending accounts. In December 2003, the President signed health savings accounts (HSAs) into law. HSAs are actual savings accounts, owned by employees. Money in the account can accumulate tax-free and can be invested, similar to an individual retirement account. Unlike flexible spending accounts, HSAs do not expire at the end of the year. Because the account belongs to workers, HSAs do not tie the tax-advantaged treatment of health care spending to a specific employer. They are portable. Workers own the accounts and can take them from job to job or into retirement. HSAs also can be passed on to heirs. These features, which extend from enhanced property rights, are important advantages of HSAs.



Participants in HSAs must be covered by a high-deductible health insurance plan (a minimum annual deductible of \$1,000 for individuals and \$2,000 for families). Contributions can be made each year up to the amount of the policy's annual deductible. The maximum contribution is the lesser of the deductible amount under the high-deductible health insurance plan or (for 2005) \$2,650 for individuals or \$5,250 for family coverage. These dollar limits will be adjusted for inflation each year. Individuals over age 55 can make extra contributions with the same tax advantages. Participants can withdraw funds as needed for deductibles and co-payments, as well as for over-the-counter drugs, long-term care insurance, and health insurance premiums when unemployed. Amounts withdrawn for any other purpose are subject to taxation plus a 10 percent penalty. Once employees reach age 65, they can take money out without penalty for any reason.

HSAs have major potential benefits. They can reduce health care spending because, for amounts up to the deductible, people will choose to consume the level of care that best suits their needs, rather than consuming the amount of care provided by their health coverage. HSAs also are likely to increase the number of insured because, using HSAs, premiums are paid with pre-tax dollars. This effectively makes high-deductible health care plans less expensive for the individual purchasing them.

The benefits of HSAs can be extended in a number of ways. More than half of the uninsured are small-business employees and their families. The President has proposed giving small-business owners a refundable tax credit for contributions made to their employees' HSAs. He also has proposed extending the benefits of HSAs to low-income Americans by providing a \$1,000 direct government contribution to their HSAs, combined with a refundable tax credit up to \$2,000 to help purchase a high-deductible health plan.

## Millennium Challenge Accounts

Strengthening property rights systems creates a variety of benefits in the context of international development, some of which are described in Box 5-2, which discusses land titles in developing countries. To encourage economic growth and poverty reduction in the developing world, the President established the Millennium Challenge Account (MCA). The MCA represents a significant change in the provision of economic development assistance to developing nations. The MCA is based on the insight that development assistance is most effective when funds flow to countries that have policies and institutions that promote growth. Only those countries that have taken concrete steps to improve their own economies and governance structures, and thus ensure that aid will be effective, are eligible for MCA assistance.

To receive grant assistance, a country must abide by three key principles: economic freedom, just governing, and investment in people. Those principles

## **Box 5-2: The Benefits of Land Titles**

Well-defined land titles exist in the United States and other industrialized countries, but they are lacking in many other countries. In Haiti, for example, 68 percent of urban residents and 97 percent of rural residents live in housing to which no one has clear title. By one calculation, the total value of real estate occupied, but not owned, in the developing world and former communist countries is at least \$9.3 trillion. Many countries are trying to close this gap. The Peruvian government, for instance, awarded over 1.2 million land titles to families in the 1990s.

When titles are clear and secure they can be transferred, investment can be rewarded, and houses can be rented or used as collateral. Both rural and urban property is worth more when ownership is well defined. After rural land was titled in Brazil, Indonesia, the Philippines, and Thailand, its value rose between 43 and 81 percent. When urban land was titled in the Philippines, its value rose by 14 percent in Manila and by 58 percent in Davao. In both Guayaquil, Ecuador, and Lima, Peru, urban land values rose by about 25 percent.

Secure land titles have profound effects on families. Adults can work at jobs outside the home because they no longer need to spend time physically guarding their informal claims. In Vietnam, families with secure titles worked away from their farms nine weeks more, on average, than those without secure titles. In Peru, adults in households with land titles worked outside the home 20 hours more per week than those without titles.

Because adults were working more, Peruvian children did not need to work as much. Land titling in Peru resulted in about a 28 percent reduction in the probability of child labor. Argentine children living in titled parcels enjoyed better weight-to-height scores (a measure of health status), lower teenage-pregnancy rates, and less repetition of school grades than children living in untitled parcels.

Families invest more in their homes and land when they have secure titles. A titling program in Argentina caused new property owners to improve the quality of their residences by 25 percent. Argentine families holding clear titles had significantly better roofs, walls, and garden areas than those without clear titles. In Lima, Peru, almost half of families holding titles invested in improvements to their land, compared with 13 percent of those without titles.

Business people also invest more when they have titles. In Romania, Russia, Poland, Slovakia, and Ukraine, entrepreneurs who believe their property rights are secure reinvest between 14 and 40 percent more of their profits back in their businesses. Farmers in Thailand holding titles invested so much more in their land that their output was 14 to 25 percent higher than those without titled land.

**Box 5-2 — *continued***

Secure land titles also facilitate borrowing because the land can then be used as collateral for a loan. Farmers in Thailand borrowed between 50 percent and five times more if they had title to their land. Farmers in Costa Rica, Ecuador, Honduras, and Jamaica received larger loans on better terms if they held secure land titles. Residents of Lima, Peru used secure land titles to obtain loans to purchase microbuses, construct small factories, and invest in other small businesses.

Finally, secure land titles facilitate the renting and leasing of property. Owners without a title may be reluctant to rent or lease their land for fear the tenant will assert an ownership claim. They may prefer to leave it vacant or rent it to family members only. The landless poor thus have better access to land when it is titled. When secure titles were created in the Dominican Republic, the number of plots leased out increased by 21 percent. Leasing also increased the access poor families had to land, as 17 percent more households gained access. The percentage of poor who are tenants increased by 40 percent, and the area rented to them grew by 67 percent.

are in turn measured by a set of 16 quantitative indicators, including a measure of a country's civil and political liberties, rule of law, regulatory burden on businesses, control of corruption, and the number of days needed to complete any legal requirements to start a business. Such indicators are closely related to the strength of a country's property rights enforcement. Although the MCA has many goals, it encourages and rewards property rights enforcement through focus on both governing justly and economic freedom.

The MCA is also consistent with a property rights approach to development assistance because it allows countries greater ownership (that is, more control) over how they use the resources they receive. Countries receiving MCA assistance must be active partners in the development programs funded by the MCA. Each country that qualifies to receive aid constructs a detailed proposal of how the aid will be used, and then negotiates and signs a compact with the Millennium Challenge Corporation (MCC), which administers the MCA on behalf of the U.S. government. Not surprisingly, some countries are including property rights programs in compact proposals, citing how important property rights are to sustained economic growth. The compact must specify a limited number of clear, quantifiable goals, with concrete benchmarks, as well as the time needed to achieve those goals. Funding for all or part of a particular MCA compact may be scaled back or ended for failure to meet specific benchmarks. The MCA program does not impose a

development plan designed by others, but instead recognizes that recipient countries themselves are in the best position to evaluate their own needs.

The MCA has the added advantage of encouraging countries to adopt growth-promoting policies and institutions in order to qualify for this type of aid. The MCC announced the selection of 17 countries eligible for fiscal year 2004 and 2005 funding, including Armenia, Benin, Bolivia, Cape Verde, Georgia, Ghana, Honduras, Lesotho, Madagascar, Mali, Mongolia, Morocco, Mozambique, Nicaragua, Senegal, Sri Lanka, and Yemen. Although the first compacts for development assistance are still in process, the competitive process for selection has already prompted efforts by several countries to improve their institutions. For example, one country has publicly stated that it passed anti-corruption legislation to help it qualify for MCA funding.

## Conclusion

In a society governed by the rule of law, ownership of resources is determined by the assignment of property rights. The term property rights refers to a bundle of rights that include the right to use a resource, to capture the income from the resource, and to transfer those rights. The assignment of property rights determines who has control over resources. That is, property rights determine who has the power to do what with which resources.

Using property rights to address policy problems is consistent with the principles of a free society because it assigns decision-making authority to individual decision-makers, rather than to central authorities. By giving firms, individuals, and families the authority to make decisions about the use of their own resources, property rights give control to those entities that have both the best information and the strongest incentives to use those resources efficiently.

Property rights solve the “tragedy of the commons” problem by encouraging owners to reduce the intensity of resource use. If an open access resource, such as fisheries or the air, is overused, assigning property rights to that resource will encourage its conservation. Ownership of a resource also encourages owners to invest in and improve the resource.

Property rights have important economic effects because they underpin market operation. Markets are socially beneficial because they allocate resources to their highest valued use and because they provide valuable price signals to both buyers and sellers. Without well-defined and enforced property rights, markets will work poorly or will not work at all.

Property rights analysis can illuminate similarities in policy solutions that may at first seem very different. There are numerous examples of the success of property rights in addressing policy problems, including air pollution,

overfishing, and poorly performing public schools. Property rights have facilitated cleanup of the air at low cost, have allowed fish stocks to recover, and have improved the performance of schools in those areas where they have been used effectively. Property rights can be used to help address other policy issues.

# Innovation and the Information Economy

**I**nnovation is a primary engine of economic growth. Many commonplace features of modern life, such as personal computers, the Internet, e-mail, and e-commerce, have developed and diffused throughout the economy within a short span of years. Our Nation's growing prosperity depends on fostering an environment in which innovation will flourish.

The innovative process involves the invention, commercialization, and diffusion of new ideas. At each of these stages, people are spurred to action by the prospect of reaping rewards from their investment. In a free market, innovators vie to lower the cost of goods and services, to improve their quality and usefulness, and—most importantly—to develop new goods and services that promise benefits to customers. An innovation will succeed if it passes the market test by profitably delivering greater value to customers. Successful innovations blossom, attracting capital and diffusing rapidly through the market, while unsuccessful innovations can wither just as quickly. In this way, markets allow capital to flow to its highest-valued uses.

This engine of growth can falter, however, if government policies distort the market signals that guide innovative activity. Well-meaning policies to promote the diffusion of a service or foster entry into new markets can have unintended consequences. A policy to subsidize an existing service so that more people will consume it can deter development of innovative new services that people might otherwise prefer. In addition, pioneering investors forced to share the fruits of their investment with new entrants would find it less profitable to invest in the first place, and a new market may never be developed. When government regulation, instead of a competitive process, “picks the winners,” people tend to lose.

This chapter provides an overview of recent developments in one especially innovative sector of the economy: information technology. The main points in this chapter are:

- Information technology is a key contributor to economic growth and productivity, and its importance to the economy is growing.
- Competition drives the broad diffusion of innovative low-cost, high-quality information services. This has held true in markets for mobile wireless telephones, satellite television, and dial-up and broadband Internet services.
- As circumstances change and industries evolve, existing government regulations may need rethinking. In particular, economic regulations

aimed at correcting an absence of competition may lose their rationale when competition from new technologies emerges.

- People are motivated to invest by the prospect of earning returns on their investment. Government thus has an important role to play in defining and protecting property rights in intellectual and physical capital so that entrepreneurs will be spurred to innovate.

## Growth of the Information Economy

Information technology (IT) has made enormous contributions to recent economic growth. IT comprises four categories of industry: (1) hardware (such as semiconductors and computers), (2) software/services (such as prepackaged software and data processing), (3) communications equipment (such as household audio and video equipment), and (4) communications services (such as telephone services and cable and other pay television services).

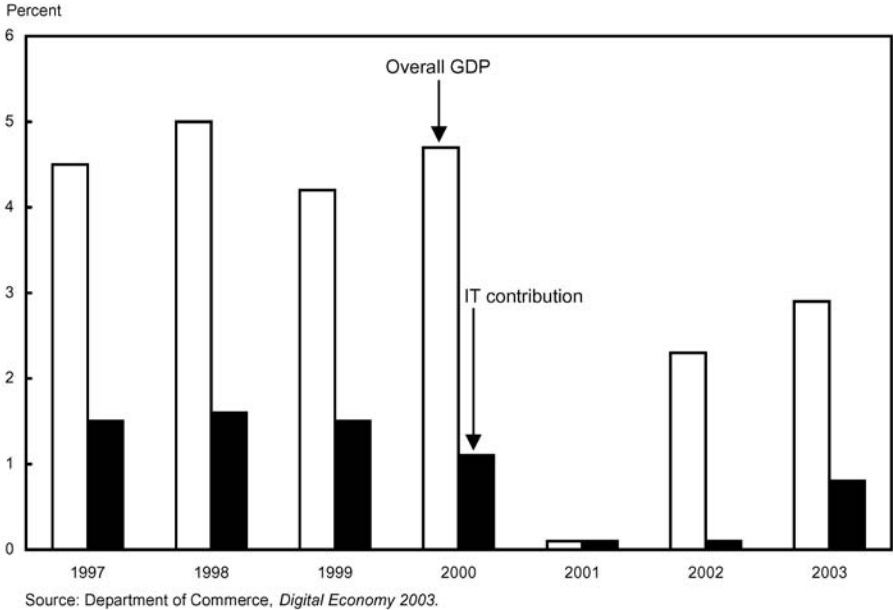
IT has made many workplace tasks easier, boosting people's productivity. One recent study finds that labor productivity in the nonfarm business sector grew at an annual rate of 2.4 percent from 1996 through 2001, and attributes nearly three-quarters of this growth to the accumulation of IT capital together with improvements in how people use this capital. IT has likewise contributed significantly to growth in our prosperity. Real gross domestic product (GDP) grew 2.9 percent in 2003, of which 0.8 percentage point was attributable to IT (Chart 6-1).

## Growth in Computer and Internet Use

A key part of the growing information economy is that more people are using computers and communicating over the Internet. At the time of an October 1997 survey, 37 percent of households owned a computer. The corresponding figure for an October 2003 survey was 62 percent. Internet use from home nearly tripled over these six years from 19 percent of households in 1997 to 55 percent in 2003. In the workplace, recent growth in Internet and e-mail usage has also been dramatic. A survey found that in August 2000, 26 percent of employed persons aged 25 and over used the Internet and e-mail at work, while an October 2003 survey found the figure to reach 45 percent.

Explosive growth in Internet use has been a nationwide phenomenon. In 2001, only one state had more than 70 percent of its population using the Internet from any location. In 2003, five more states had reached the 70 percent level, and only one state fell below the 50 percent mark. At 57.2 percent, Internet use in 2003 among people living in rural areas was virtually on a par with the national average of 58.7 percent. Demographically, Internet use increases with both income and educational attainment.

**Chart 6-1 Growth in Gross Domestic Product Due to the Information Technology Sector**  
Information technology contributes substantially to overall economic growth.



E-mail is the most common online activity, with more than 87 percent of Internet users aged 15 and over sending and receiving e-mail in 2003. The next most popular online activity, at more than 76 percent of Internet users in 2003, is searching for information about products and services. Two-thirds of Internet users obtained news, weather, and sports information online, and more than half made purchases online in 2003.

### *E-Commerce Tops \$1 Trillion*

Transactions conducted online—e-commerce—exceeded \$1.1 trillion in 2002. Business-to-consumer e-commerce, reckoned as the sum of transactions in retail trade and in selected service industries (such as publishing, broadcasting, and telecommunications), reached \$85 billion in 2002 (Chart 6-2). Retail trade e-commerce alone amounted to \$44 billion in 2002, with nonstore retailers—those selling primarily through “clicks” rather than “bricks”—accounting for nearly three-quarters of this total. Online retail sales have continued to grow rapidly. In the third quarter of 2004, retail trade e-commerce was more than 21 percent higher than in the third quarter of 2003.

Consumers have gained from shopping online in at least two ways. First, comparison shopping has become quicker and easier online. A consumer can visit a succession of retail Web sites at virtually zero cost. Collecting a similar amount of information by visiting brick-and-mortar retail stores would be far



more time-consuming and costly. A consumer need not even canvass retail Web sites individually; “shopbot” sites can gather such information on the consumer’s behalf. As the cost of comparison shopping has fallen, price competition has intensified, both among Internet retailers and between Internet retailers and brick-and-mortar stores.

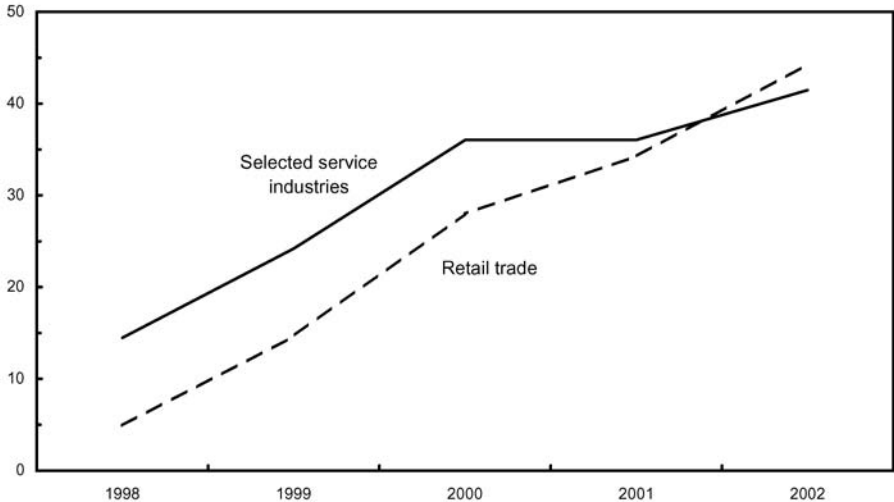
A number of recent studies have attempted to gauge the consumer benefits from such intensified competition. Studies of the markets for books, automobiles, and life insurance have generally found that comparison shopping online helps consumers obtain significantly lower prices, resulting in savings estimated to be in the many hundreds of millions of dollars per year. Intensified competition between online retailers and brick-and-mortar retailers means that even consumers who do not shop online may be reaping rewards from the spread of e-commerce.

A second way in which consumers have benefited from e-commerce is in the greater variety of goods available online. For example, the number of book titles available at one major online bookseller is 23 times greater than the number of titles stocked in a major chain retail superstore. Greater variety means that consumers can match purchases more closely to their individual tastes. A recent study of book sales suggests that the consumer gains from greater variety online are even larger than the gains from intensified price competition.

Chart 6-2 **Business-to-Consumer E-Commerce**

Online commerce by consumers is growing rapidly.

Billions of dollars



Note: Selected service industries include travel arrangement and reservation services, publishing, securities and commodity contract intermediation and brokerage, computer systems design and related services, and others.

Source: Department of Commerce (Bureau of the Census).

Changed circumstances, such as new retailing methods, can pose challenges to existing regulatory frameworks, or even undermine the original rationale for regulation. As the Internet changes how we live and work, government should be attuned to these changes and adapt. The Internet is having an impact on regulation given the growth of e-commerce, as illustrated in Box 6-1, and the growth of broadband voice and data services, as discussed in a later section.

Although business-to-consumer online sales have captured much popular attention, these are dwarfed by business-to-business e-commerce, which in 2002 accounted for more than 90 percent of all online transaction volume. Manufacturing shipments transacted online were \$752 billion in 2002, a 3.8 percent increase over 2001 (Chart 6-3). Online merchant wholesale trade increased by 11.7 percent from the 2001 level, to reach \$320 billion in 2002.

### **Box 6-1: Airline Computer Reservation Systems**

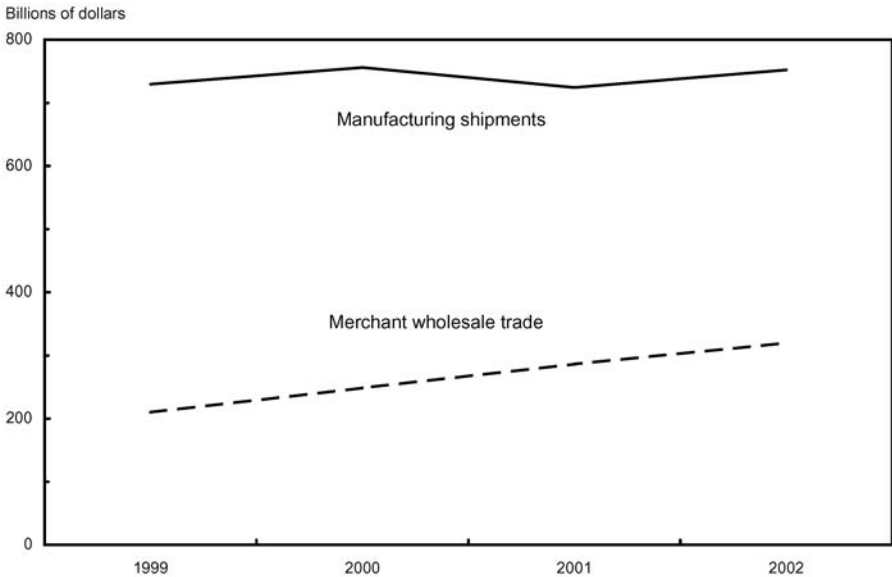
In the first half of 2004, the Administration deregulated airline computer reservation systems (CRS), which travel agents have used to book airline flights for travelers. Regulatory restrictions imposed in the 1980s became obsolete as people gained new information sources over the Internet. CRS centralize flight information across carriers and provide easy booking capabilities to travel agents. Following airline deregulation in the late 1970s, travel agents came to depend on CRS for the latest schedule and fare information. At the time, CRS were largely owned by individual airlines. This ownership raised concerns that CRS-owning airlines might put rival airlines at a disadvantage in the system so that travel agents would book a greater share of flights with the CRS-owning airline. CRS suppliers might also lock travel agents in by requiring long-term contracts and by structuring the programs to raise switching costs. To address these issues, the Civil Aeronautics Board instituted a series of regulations in 1984, which prevented a CRS-owning airline from setting up its systems in a way that disadvantaged other airlines or other CRS.

While the CRS rules may have been beneficial two decades ago, subsequent industry changes have made the regulations largely anachronistic through ownership changes and the development of travel search engines on the Internet. The airlines have completely divested the CRS, so concerns about discrimination against unaffiliated airlines are no longer warranted. Equally important, the advent of the Internet has provided carriers with an alternative avenue for disseminating their fare and schedule information to consumers. The growth of the travel search engines has also enabled consumers to quickly compare rates across airlines. The development of these direct-to-consumer channels has reduced the need for travel agencies and has

**Box 6-1 — continued**

reduced travel agencies' need for CRS, because they too can use the Internet. These changes work to place greater competitive pressure on the CRS vendors, which reduces the concern about their market power. In light of these changes, the Administration acted to deregulate the CRS market in the first half of 2004. Deregulation already appears to be having a positive effect—industry news reports indicate that CRS prices have fallen and are expected to continue to fall as old contracts expire and new ones are negotiated.

**Chart 6-3 Business-to-Business E-Commerce**  
Online commerce between businesses exceeds \$1 trillion.



Source: Department of Commerce (Bureau of the Census).

In 2002 online transactions among businesses were larger than business-to-consumer e-commerce not only in absolute terms, but also as a fraction of total value. Only 1.4 percent of retail trade revenues were transacted online in 2002. By contrast, 11.7 percent of all merchant wholesale trade and nearly one-fifth of all manufacturing shipments were transacted online in 2002.

## Illegal Acts on the Internet

The Internet provides tremendous opportunities to improve the way we communicate, learn, entertain ourselves, and buy and sell goods and services. Unfortunately, theft, vandalism, and fraud are also moving online. From an economic perspective, these activities are costly because they violate the property rights of people, reducing their incentives to create new goods and diverting resources from productive uses as people spend time trying to undo the damage caused by computer viruses and Internet worms. More fundamentally, the growth in such activity could threaten public confidence in using the Internet for productive purposes. As in the offline world, where locks and inventory control tags deter property right violations, private sector responses can make cybercrime more difficult. Government must also act to protect property rights and ensure that the Internet and other new technologies are safe venues for commerce.

### *Cybersecurity*

The growing reliance on the Internet means that computer users are exposed to new threats. Viruses and Internet worms impair computers and prevent authorized users from gaining timely, reliable access to data or a system. Attacks in cyberspace can maliciously modify, alter, or destroy data or a computer system. Attackers access computers without authorization to view or copy proprietary or private information, such as a credit card numbers or trade secrets. At a deeper level, concerns have grown about how unauthorized control over large numbers of systems by those with malicious intent can pose threats to the security of sensitive information or to the functioning of critical infrastructures. In terms of prevention, the private sector is best equipped to take steps against evolving cyber threats. The private sector owns most of the computer systems and networks and can, in many cases, capture the benefits from investments in improved security. Private sector surveys suggest that organizations are spending increasing amounts on IT security. The President's *National Strategy to Secure Cyberspace* also makes clear the Federal government's important role in promoting cybersecurity.

### *Fraudulent Spam and Spyware*

Scams to defraud people are another type of property rights violation. The Federal Trade Commission (FTC) has found that *spam* (unwanted, typically commercial e-mail), in addition to being a nuisance, is mostly deceptive and fraudulent. Of 1,000 pieces of spam examined by the Commission, 84.5 percent were deceptive on their face or advertised an illegitimate product or service. As in the offline world, consumer awareness online is the first line of defense in combating fraud. The anonymity and scope of the Internet can make

it difficult for law enforcement agencies to track down sources of fraudulent spam and *spyware* (which collects information from the victim's computer). Such activity is growing quickly and posing significant costs to victims and companies. The President signed into law the Controlling the Assault of Non-Solicited Pornography and Marketing Act of 2003 (CAN-SPAM Act), which establishes a framework of administrative, civil, and criminal tools to help America's consumers, businesses, and families combat unsolicited commercial e-mail. The problems associated with spam cannot be solved by Federal legislation alone, but will require market responses in the development and adoption of new technologies. The Federal government has also stepped up the pursuit of purveyors of fraudulent spam and spyware. For example, in a joint law enforcement initiative, the FTC and the Department of Justice (DOJ) have brought actions to shut down operations that hijacked logos from online businesses to con hundreds of consumers into providing credit card and bank account numbers. December 2004 saw the formation of a new public-private consortium that includes financial services firms, Internet service providers, IT vendors, and law enforcement to fight Internet-based fraud.

### *Copyright Infringement*

Copyrights encourage the development of goods such as books, songs, and videos that are much costlier to produce initially than to replicate. Digital technologies and the Internet have made possible high-quality reproduction of music and video at nearly zero cost, and facilitated extensive unauthorized use through mechanisms such as file-sharing networks. Industry is exploring technological remedies to combat theft, but the Federal government is also playing a role. The Attorney General has made enforcement of intellectual property laws a high priority of the DOJ. The DOJ has expanded its Computer Crime and Intellectual Property Section and created the Cyber Division of the Federal Bureau of Investigation. In 2004, the DOJ launched Operation Digital Gridlock, the first Federal enforcement action ever taken against criminal copyright theft on *peer-to-peer networks* (that allow groups of computer users with the same networking program to interconnect and directly access files from one another's hard drives).

## Competition Versus Economic Regulation

An overly high price or low quality by a supplier opens the door to profit opportunities for the supplier's rivals. Rivals can expand their sales by undercutting price or offering superior quality or service. In this way, competition drives suppliers to provide customers the greatest possible value consistent with covering costs. Pursuit of profit opportunities also draws firms to enter

or develop new markets, which can lead to quantum leaps in consumer welfare. A pioneering firm that develops a new service, for example, may for a time reap high returns on its investment. But the high returns tend to draw other firms to enter and thus intensify competition in the new market. As competition drives down the innovative service's price, the service will become more broadly adopted by consumers. This pattern has unfolded time and again in diverse sectors of the economy.

The promise of competition might not be fulfilled, however, if scale economies in an industry are so great that only a single firm can supply the market cost-effectively. A firm operates under *economies of scale* when its average cost of supplying a good falls as the firm expands its scale of operations. Economies of scale can arise, for example, if the up-front costs of setting up a business are large. Once the groundwork of the business has been laid, the incremental cost of the good—the cost of supplying each additional unit—may be low. Examples of industries in which suppliers compete in the midst of scale economies include automobiles, software, and pharmaceuticals. Prices in such markets can fall over time, as firms enter the market and competition drives prices down toward the good's incremental cost. But a firm will only enter a market if it expects to earn enough of a margin above its incremental cost on enough sales to cover its ongoing overhead costs and recover its up-front costs of entry. In rare cases, up-front costs may be so large, and competition after entry so intense, that no entrant could profitably challenge the incumbent supplier's monopoly. Such industries are called *natural monopolies*.

Natural monopolies are a rare exception to the competition that to a greater or lesser degree characterizes most markets. Industries commonly given the natural monopoly label have tended to have a highly capital-intensive infrastructure, such as the telephone system, cable television, railroads, and the electricity distribution grid. A rationale for the economic regulation of these industries has been that competition and its benefits would not naturally arise. A monopolist has an incentive to restrict output and raise price above the competitive level. In the absence of competition, regulation may offer the prospect of a substitute, although a poor one, for the competitive process. Ideally, the aim of economic regulation would be an industry outcome of low prices and high quality that approaches what competition would have accomplished, had competition been possible.

However, natural monopoly does not necessarily mean economic regulation is needed to protect consumers from monopoly prices. While natural monopoly means that competition *in the field* is unlikely to arise, there could still be vigorous competition *for the field*—that is, competition among firms to attain the position of monopolist. Municipalities can and do exploit competition for the field, for example, by auctioning a monopoly franchise, to extract concessions from the winning monopoly provider.

## *Traditional, Rate-of-Return Regulation*

Under traditional, rate-of-return regulation, the regulator estimates the firm's capital base and incremental cost. This approach allows the firm to charge prices just high enough to yield a rate of return that would have attracted capital to the industry, had the industry been open to competitive entry.

The traditional approach to regulation presents several difficulties. First, measuring a firm's capital base and incremental cost involves substantial auditing effort and uncertainty for the regulator. Judging the appropriate rate of return is also difficult, as it involves gauging the riskiness of capital investments in the industry. An especially problematic aspect of traditional regulation, though, is its effect on incentives. A firm in a competitive industry, and even an unregulated monopolist, has an incentive to trim its costs to a minimum so that it can capture the highest possible profit. A firm subject to rate-of-return regulation has no comparable incentive to keep costs down. The higher the firm's incremental costs, the higher the prices the regulator will generally allow the firm to charge to cover those costs. A key problem is that the firm has an incentive to choose overly capital-intensive technologies, because this increases the capital base to which the regulator applies the firm's allowable rate of return.

## *Price-Cap Regulation*

Many Federal and state regulators have turned from traditional regulation to price-cap regulation of industries considered to be natural monopolies. Prior to 1984, all states regulated telephone service on a rate-of-return basis. By September 2004, 37 states had switched to some form of price-cap regulation. Under *price-cap regulation*, the regulator sets an initial price or basket of prices that the firm can charge for its goods. The price caps are then updated over time, by a positive factor to account for inflation and a negative offset to account for the firm's perceived ability to trim its costs through productivity improvements. If the regulated firm succeeds in trimming costs by more than the productivity offset in the price cap, its profits will increase. The hope is that price-cap regulation may avoid some of the perverse incentive effects of traditional regulation, by de-linking the regulated firm's returns from its costs. Several recent studies have found that, in comparison with rate-of-return regulation, price-cap regulation is associated with improvements in the technical efficiency of telecommunications providers, as well as greater investment in modernizing switches and deploying fiber-optic cable.

Price-cap regulation is far from ideal, however, and in fact faces problems similar to those of traditional regulation. In setting the initial price cap, the regulator must measure the firm's capital base and incremental costs, as well as determine a rate of return that the capped prices should yield. This is identical to the process in traditional rate-of-return regulation. In setting an

inflation factor for the price cap's growth, the regulator must assess both the rate at which the firm's input costs are likely to grow and the rate of productivity growth the firm is capable of achieving. Given difficulties in gauging these rates, the regulator must make periodic adjustments to the price-cap mechanism in light of industry outcomes. But if the regulated firm underperforms, is it because the regulator miscalculated, or because the firm failed to pursue productivity improvements diligently?

Both rate-of-return and price-cap regulation suffer to some degree from information problems. A regulator cannot know with precision all of the economic factors relevant to setting prices. In practice, these types of regulation can lead to shortages, high costs, slowed innovation, or a combination of all of these shortcomings. Where vigorous competition is feasible, market forces can guide firms to deploy their resources in ways that benefit customers far more effectively than could a price-setting regulator.

Advancing technology is providing competitive inroads to a number of industries once considered natural monopolies. Satellite television offers a competitive alternative to cable television service (Box 6-2), and wireless telecommunications are competing with wireline telephone services. Such technology-induced competition can be expected to increase as cable companies begin to offer voice communications and telephone companies roll out video services.

### **Box 6-2: Satellite Television**

Virtually all cable system operators hold franchise monopolies over cable television service within their local service territories. Only a few communities have issued multiple franchises, allowing for "overbuild" competition between cable system operators in the local market. A number of studies have found that cable rates in the 1980s were roughly 20 percent lower in markets with cable overbuild competition than in comparable markets served by cable franchise monopolists.

The rise of satellite TV services since the mid-1990s has also put competitive pressure on cable system operators. A study of thousands of cable systems across the United States finds that, controlling for a variety of other factors, a cable system's penetration rate (cable subscribers as a ratio of homes passed by cable) tends to be lower in areas where satellite reception is better. This is consistent with satellite TV providing more competition to cable TV where a larger fraction of households has access to satellite reception. While satellite TV has taken market share away from cable TV, the overall penetration of pay TV services among U.S. households has grown as satellite TV services have grown. As of June 1998, 78 percent of households with televisions subscribed to pay TV service.



**Box 6-2** — *continued*

By June 2003, this had grown to 88 percent. A recent study indicates that the introduction of satellite TV led to substantial gains for consumers. However, ongoing antitrust oversight of the pay TV industry remains important. In 2002, both the FCC and the DOJ acted to block the merger of the two primary satellite TV providers to prevent a loss of competition in pay TV services.

## Telephone Service: A Natural Monopoly?

Natural monopoly arguments have traditionally offered a rationale for economic regulation of telephone service. It can be costly for entrants to reproduce the incumbent local networks of copper wires or “loops” that connect nearly every U.S. household to telephone service. Over the past two decades, however, the wireline (land line) telephone monopoly has yielded to encroaching competition from the entry of alternative suppliers of long-distance service in the 1980s, the explosive growth in mobile wireless telephone service over the past decade, and the recent introduction of voice communications over the Internet. Such proliferating competition has posed challenges to the economic regulation of telephone services.

### Long-Distance Services

Prior to 1984, both local and long-distance telephone service in the United States was supplied primarily by a single firm, AT&T. As part of a 1982 antitrust settlement with the DOJ, AT&T was broken up in 1984 into a number of regional exchanges providing local service and one long-distance provider that retained the AT&T name. The breakup separated local telephone service, which remained rate-regulated because of its natural monopoly characteristics or for jurisdictional reasons, from long-distance service and equipment manufacturing—businesses viewed as potentially competitive. Thereafter, competition in long-distance service progressed with the entry and expansion of alternative providers.

Between 1984 and 2002, per-minute long-distance prices fell by more than 80 percent after adjusting for inflation. This resulted in part from the FCC lowering per-minute access charges on long-distance calls, savings that were passed through to long-distance customers as a result of the emerging competition among long-distance providers. At the same time, the proportion of

U.S. households connecting to local telephone service grew from 91.4 percent in 1984 to 93.3 percent in 1990. A study of telephone demand over this period found that much of this increased penetration in telephone service could be explained by the drop in long-distance prices. This reflects the fact that consumers value connecting to the local telephone network for the ability to place long-distance calls as well as local calls.

Goods tend to be supplied efficiently when prices reflect costs. If a price is higher than the true cost of supplying an additional unit of a good, too little of the good will be consumed relative to what would yield the greatest net benefits to consumers and producers. Telephone charges pegged to the volume of call traffic tend to discourage call volume. This can lead to less than efficient utilization of the telephone network, if price exceeds the network costs of putting through an additional call or minute of calling. By the same token, price reductions toward unit cost encourage more efficient utilization of the network and increase the value consumers derive from connecting to the network.

## Mobile Wireless Telephone Services

Whatever the prospects for competition in telephone service may have been in decades past, substantial competition has emerged in recent years, and more is on the way. Mobile wireless telephone service has grown by nearly 26 percent annually, from 16 million subscribers in the United States in 1993 to more than 158 million in 2003 (Chart 6-4). Nationwide, 54 percent of the population subscribed to wireless service at the close of 2003. In contrast, nationwide wireline telephone penetration was nearly 95 percent in 2003, but the number of wireline telephone lines peaked in 2000, at 192.5 million lines, and fell by about 5 million lines over the next two years. Some of this decline likely reflects consumers choosing to switch from wireline to mobile wireless telephone service.

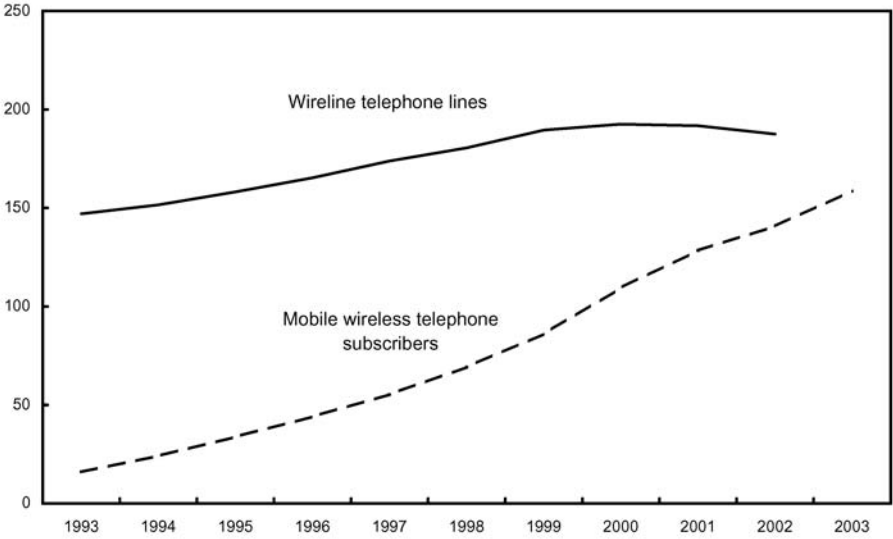
Compared to wireline service, wireless service offers the convenience of mobility and accessibility. Growing wireless penetration has been driven by a rapid drop in wireless prices. The average price per minute of mobile wireless telephone service fell from 47 cents in 1994 to about 11 cents in 2002 (Chart 6-5). Sharpening competition has helped drive the falling average price per minute of mobile wireless telephone service over the past decade.

Wireless telephone services are carried over radio spectrum. *Spectrum* generally refers to a broad range of frequencies of electromagnetic radiation, which encompasses visible light. Frequencies higher than those of visible light include ultraviolet light and x-rays, while lower frequencies include first infrared light and then, as wavelengths grow longer, radio waves. *Radio spectrum* refers to the lower range of frequencies, which carry broadcasting and mobile communications services. If two transmitters at the same geographic location were to use the same frequency at the same time, they would *interfere* with each other,

**Chart 6-4 U.S. Wireline and Mobile Wireless Telephone Service**

As wireless telephone service has grown rapidly, the number of traditional telephone lines has begun to decline.

Number (millions)

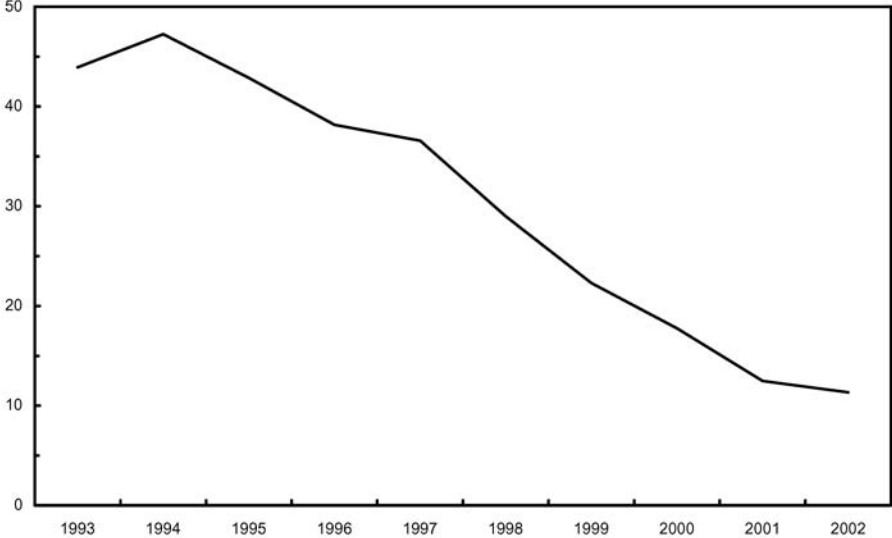


Source: Federal Communications Commission.

**Chart 6-5 Average Price Per Minute of Mobile Wireless Telephone Service**

The price of wireless service has fallen rapidly.

Cents per minute



Sources: Federal Communications Commission and Council of Economic Advisers.

garbling their transmissions. To limit such interference problems, the Federal government licenses rights to use specified bands of spectrum at specified locations. Federal government users of spectrum are licensed through the National Telecommunications and Information Administration (NTIA). All other spectrum users are licensed through the FCC.

In the early 1990s, government-issued spectrum licenses for wireless telephone service were limited to just two cellular providers in each cellular market area. A series of FCC-run auctions beginning in 1995 provided additional spectrum for digital personal communications services (PCS), enough to support as many as eight wireless providers. By the end of 1999, 88 percent of the Nation's population could choose from three or more wireless providers and 35 percent could choose from at least six. By the end of 2003, these figures were up to 97 percent and 76 percent, respectively.

## Talking on the Internet: Voice over Internet Protocol

Local exchange telephone networks are facing growing competition from Internet-based telephone services. Unlike traditional circuit-switched telephone calls, communications using Voice over Internet Protocol (VoIP) break the call stream into data packets sent over the Internet, turning your computer into an alternative to traditional telephone service. Much of the current volume of VoIP calls originates and terminates on public switched telephone networks, by callers using digital subscriber line (DSL) broadband services. But VoIP services are spreading to other network facilities, such as those of cable television systems. According to news reports, several of the country's largest cable system operators plan to roll out VoIP services within their service territories, which would make them available to millions of households. News reports indicate that Wireless Fidelity (Wi-Fi) broadband service providers are also exploring VoIP services. Looking ahead, electric utilities that develop broadband over power lines service could also provide VoIP services. All of these recent developments, together with the rapid growth in mobile wireless telephone service, suggest that the monopoly access to household voice communications that local telephone exchanges have had for nearly a century is yielding to intensifying competition.

The prospect of growing VoIP traffic has raised concerns in some quarters that this emerging competition may undermine the current structure of regulating telephone services. A basic rationale for the economic regulation of telephone service has been the natural monopoly argument, that is, that competition for telephone service was unlikely to arise. Economic regulation then offered the prospect of an alternative way, although a problematic one, of achieving some of the benefits of competition that customers have enjoyed in most other markets. But with competition now emerging, the natural

monopoly rationale for the economic regulation of telephone service is beginning to fall away. Squelching competition as a threat to the existing regulatory framework would turn matters on their head. Regulation should adapt to changing market realities in ways that allow innovation to flourish and consumers to choose among alternatives, while ensuring national security, homeland security, law enforcement and public safety.

## Realizing the Promise of Broadband

Broadband services offer download speeds much faster than dial-up Internet access, enabling innovative features such as streaming video and VoIP. For example, fiber-optic cable to the home can provide speeds of more than 100 megabits per second. Broadband services have quickly been embraced by the public, growing from 2.8 million *high-speed lines* (defined as connection speeds over 200 kilobits per second in at least one direction) in December 1999 to more than 32.4 million lines in June 2004. This represents an annual growth rate of 72 percent. In the first few years after inception, broadband penetration among U.S. households has outpaced the earlier diffusion of dial-up Internet, mobile wireless telephones, personal computers, videocassette recorders, and color television.

### Universal, Affordable Access to Broadband

Last March, the President announced a national goal of universal, affordable access to broadband services by 2007. The Administration's ongoing efforts to achieve this goal reflect a belief in the powers of competition and private sector innovation to bring the benefits of broadband to consumers. As experience in the telephone industry has shown, competition offers the most robust and reliable means of broadly diffusing important technologies. The Administration has taken steps to unleash the power of free markets to deliver broadband services by removing disincentives to invest, strengthening property rights, and allowing consumers rather than the government to choose the technologies that best meet their needs.

#### *Removing Disincentives to Invest*

Competition in broadband service is growing. Already, many communities have two providers of broadband service. In 1999, 33.7 percent of the zip codes in the United States had at least two high-speed Internet access providers. By the middle of 2004, the fraction had risen to 80.5 percent. So far, competition in broadband has primarily been between DSL services provided by telephone companies and cable modem services provided by cable television system operators. Cable's share in high-speed lines has grown

from 51.3 percent in December 1999 to 57.3 percent in June 2004. One avenue by which telephone companies could compete more effectively in broadband service is through investment in fiber-optic cable, which offers faster connection speeds than can generally be achieved over the copper wires of the traditional telephone network. According to news reports, fiber-optics will allow telephone companies to offer television in addition to very high-speed broadband services, similar to the current offerings of many cable television operators.

While fiber-optic high-speed lines have more than doubled between December 1999 and June 2004, other forms of broadband delivery have grown at an even faster pace, so that fiber's share in high-speed lines has fallen. Part of the reason may be that regulatory uncertainty has impeded fiber-optic investment. The Telecommunications Act of 1996 requires telephone companies to provide portions of their network facilities for sale or lease at regulated rates to competing local exchange companies. This process is known as "unbundling" network elements. Until recently, it remained unclear whether the Act's unbundling requirements would extend beyond copper loops to also cover fiber-optic cable. People are motivated to invest by the prospect of reaping returns. In residential neighborhoods, an unbundling requirement that would force investors to share the fruits of their investment in fiber-optic cable with competitors could blunt incentives to invest in fiber-optics. The result might not be more competition, but rather less innovation. The Administration supported the FCC's decisions in 2003 and 2004 to exempt fiber-optic loops from unbundling requirements when this technology is deployed to residential neighborhoods, including fiber-to-the-home, fiber-to-the-curb, and fiber-to-multi-dwelling-units. According to news reports in the wake of these rulings, a number of major telephone companies have announced plans to invest several billion dollars in deploying fiber-optic cable to reach more than 20 million households within three years.

### *Setting Interference Standards*

The Administration has also helped to lower barriers to the development of new competition in broadband service. Broadband over power lines (BPL) holds the promise of adding a "third wire" into the home to compete with cable modem and DSL services. However, BPL generates radio waves that can interfere with the operation of wireless systems. The Administration has helped the FCC develop policies to address BPL interference issues. Beginning in 2003, the Commerce Department's NTIA undertook a detailed technical examination of interference risks posed by BPL, by conducting millions of measurements on test equipment. The NTIA submitted a report and set of specifications to the FCC, which adopted final rules on BPL technical requirements in October 2004. Setting appropriate interference

standards prevents those who deploy BPL technology from significantly infringing on the spectrum rights of others, while allowing the technology to enhance the broadband service options available to homes and businesses.

### *Strengthening Spectrum Rights*

Another potential source of competition in the provision of broadband service is third generation, or “3G,” wireless technologies. Wireless technology may revolutionize broadband competition by eliminating reliance on wires and cables. The technology may hold particular value for areas with sparse customers, where wire- and cable-based communications networks may be particularly expensive to deploy.

The rising demand for wireless services may at some point strain the limits of available spectrum. Aspects of the Federal government’s system of allocating spectrum licenses can make it difficult for promising new technologies to displace lower-valued uses of spectrum. In May 2003, the President established the *Spectrum Policy Initiative* to reform spectrum management for the twenty-first century. In June 2004, the Department of Commerce provided two reports including policy recommendations to the President, and in November the President directed Federal agencies to implement the reports’ recommendations. In particular, the President directed the Secretary of Commerce, in coordination with other Federal agencies, to develop a plan within one year for identifying and implementing incentives to promote more efficient and effective use of spectrum, while protecting national and homeland security, critical infrastructure, and government services.

One of many issues is the extent to which spectrum currently in government hands could be released for commercial use. In July 2002, the Department of Commerce produced a plan in concert with the FCC and Department of Defense to release for commercial use a broad swath of radio spectrum, while accommodating critically important spectrum requirements for national security. In December 2004, the President signed into law a piece of legislation to establish a spectrum relocation fund that will compensate government agencies for putting spectrum they have used up for auction. This will facilitate making Federal spectrum available when there are higher-valued private sector uses and provide a better mechanism for relocating Federal spectrum-dependent systems, with less uncertainty for both Federal users and industry.

Making more spectrum available for private use is not the only way to promote the development of promising new wireless technologies that provide high-speed Internet and other services. Spectrum policy could also enable spectrum used by the private sector to become available for higher-valued uses without making incumbent users worse off. As discussed in Chapter 5, *Expanding Individual Choice and Control*, assigning tradable property rights allows providers of the higher-valued uses to compensate incumbent holders

for their property rights. The Administration has encouraged the FCC to allow greater use of secondary markets, through which licensees could sublease their spectrum. The FCC adopted spectrum leasing rules in October 2003.

### *Simplifying Federal Rules*

To promote widespread deployment of broadband networks, the Administration has worked to ensure that broadband providers have timely and cost-effective access to *rights-of-way*—the legal right to pass through property controlled by another—including access to conduits, corridors, trenches, tower sites, and undersea routes. Such passageways often cross large areas of land owned or controlled by the Federal government. The Administration has established a Federal Right-of-Way Working Group under the Department of Commerce to explore ways to simplify the tangle of Federal agency regulations broadband providers must navigate in seeking rights-of-way over Federal lands. The Working Group issued a report with a set of recommendations. In April 2004, the President instructed Federal government agencies to implement these recommendations.

## Conclusion

The information technology sector has been a vibrant part of our economy and there is every indication that it will continue to be. The continued strength of this sector depends on fostering an environment in which innovation will flourish. In a free market, innovators compete to lower the cost of goods, improve their quality and usefulness, and develop entirely new goods that promise quantum leaps in consumer welfare. People are motivated to invest in developing new ideas and the infrastructure to enter new markets by the prospect of earning returns on their investment. Government thus has an important role to play in defining property rights in intellectual and physical capital so that people will be spurred to invest and innovate, as well as ensuring the development of an environment in which public safety and national security are protected. Government efforts to hasten the spread of innovative technologies should focus on lowering regulatory barriers that impede market provision. But government should avoid “picking winners” among emerging services. Doing so could entrench services that may become outdated as the marketplace evolves and hinder people from choosing the services they truly prefer. At this time, it is hard to predict the range of technologies that will emerge to deliver high-speed data services, or even what the scope of these services will be. As people vote with their dollars, the market winners that emerge will be those technologies and services that deliver customers the greatest value.





# The Global HIV/AIDS Epidemic

Societies worldwide face the challenge of curbing the acquired immunodeficiency syndrome (AIDS) epidemic. The disease has already killed over 25 million people, and currently over 40 million people are living with the human immunodeficiency virus (HIV), the virus that causes AIDS. The impact of HIV/AIDS varies across the world, both in terms of the scale of the epidemic and the ability to treat infected individuals. Less-developed countries are particularly hard-hit on both accounts. Almost two-thirds of all people with HIV live in sub-Saharan Africa, a region that makes up only one-tenth of the world's population. At the same time, few infected individuals in the region receive adequate treatment for the disease. In addition to the devastation from the immense loss of life, the disease also has economic consequences that intensify the humanitarian crisis.

President Bush has made fighting the worldwide AIDS epidemic a priority of U.S. foreign policy, and he has taken bold action against the crisis through his Emergency Plan for AIDS Relief. Understanding the unique challenges presented by this epidemic is essential to designing policies to prevent the spread of the disease and to treat those who are already infected. This chapter discusses the nature of the crisis, its consequences, and what governments can do to create affordable access to existing treatments while encouraging research toward the development of new medical therapies to combat this disease. The key points of this chapter are:

- AIDS is a global problem with far-reaching consequences. While the disease's impacts on human health and mortality are widely recognized, the AIDS epidemic also has devastating economic consequences that exacerbate the humanitarian crisis.
- A comprehensive and integrated approach of prevention, treatment, and care is essential to quelling the epidemic. In poor countries, treatment affordability and the lack of health care infrastructure are major concerns. Compassionate pricing policies and aid from developed nations can play an important role in expanding access to treatment.
- To continue the development of better treatments and to work toward eradication of HIV/AIDS, drug companies need to maintain the highest possible quality of research. Intellectual property laws are important to ensuring appropriate incentives for innovation to create the next generation of therapies and to develop a safe and effective vaccine.

## A Global Crisis

The scale of HIV/AIDS is far worse than forecasts initially indicated over a decade ago. In 2003, there were more new cases of HIV/AIDS than in any other single year since the disease emerged, with almost 5 million people becoming infected around the globe. Roughly 2.9 million people died of the disease in 2003 alone.

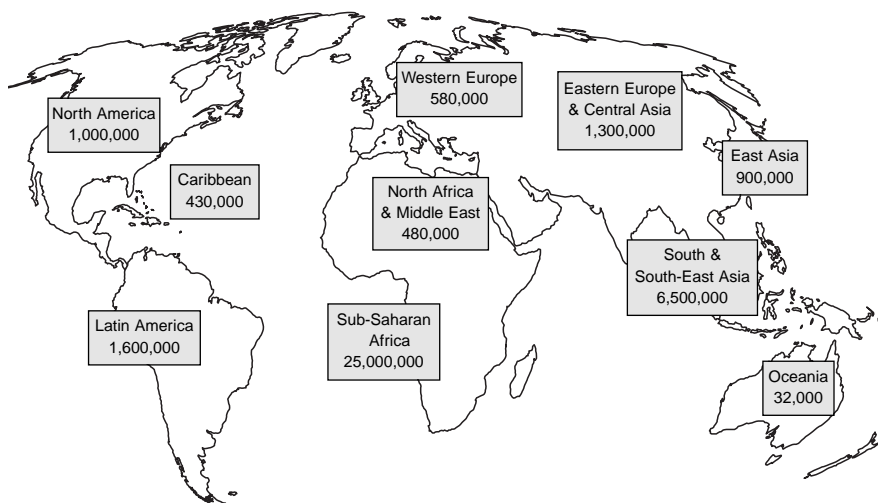
In the United States, AIDS is the fifth-leading cause of death in people 25–44 years of age. The U.S. Department of Health and Human Services (HHS) estimated that over 400,000 people in the United States were living with AIDS in 2003, and approximately 850,000–950,000 people were living with HIV. The number of AIDS cases continues to increase among minority populations, and African Americans accounted for 50 percent of new HIV/AIDS diagnoses in 2003. One of the most disturbing statistics surrounding the disease is that approximately 180,000–280,000 people in the United States are living with an undiagnosed HIV infection. Patients who are unaware of their infection are less likely to take precautions to prevent the spread of the disease and are unable to begin effective treatment. Furthermore, of the estimated 670,000 people who are diagnosed with HIV/AIDS, roughly one-third may not be receiving treatment. Taken together, the estimates of those untreated and untested suggest that close to half a million people in the United States are living with HIV without treatment.

HIV/AIDS infection levels in some parts of the world greatly exceed those in the United States. The Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates that 4.8 million people worldwide were newly infected with HIV in 2003, which is the highest number of new infections in any single year since the beginning of the epidemic in 1981. Approximately 2.9 million people died of AIDS in 2003, and UNAIDS estimates that over 20 million people have died from complications of AIDS since the first case was identified. Estimates suggest that 8,000 people die and 14,000 are newly infected with the virus each day. Because of aggressive prevention, treatment, and care efforts, there has been a decline in the number of deaths among AIDS patients in the United States, while the number of people living with HIV/AIDS continues to increase in the United States and globally.

While the epidemic affects virtually every country in the world, the prevalence of HIV/AIDS varies markedly across regions (Chart 7-1). Close to two-thirds of those infected are Africans, for whom HIV/AIDS is the leading cause of death. In seven countries in southern Africa, at least one out of every five adults is living with HIV. In Swaziland, the HIV prevalence has reached nearly 40 percent among pregnant women; in South Africa, one in four women between the ages of 20 and 29 is infected. HIV/AIDS is predominantly a disease of young people; the majority of people who contract the disease

Chart 7-1 **Estimated HIV Infection Levels, 2003**

The HIV/AIDS epidemic affects virtually every country in the world, and the disease's prevalence varies markedly across regions.



Source: UNAIDS, 2004.

become infected by the age of 25. As a result of its lethality and the relative youth of its victims, HIV/AIDS has reduced life expectancy by more than 20 years in many African countries. Life expectancy in some countries is projected to fall to roughly 30 years within the next decade, whereas in the absence of HIV/AIDS some were expected to approach or exceed 70 years. Chart 7-2 shows this dramatic effect in some of the hardest-hit countries in Africa.

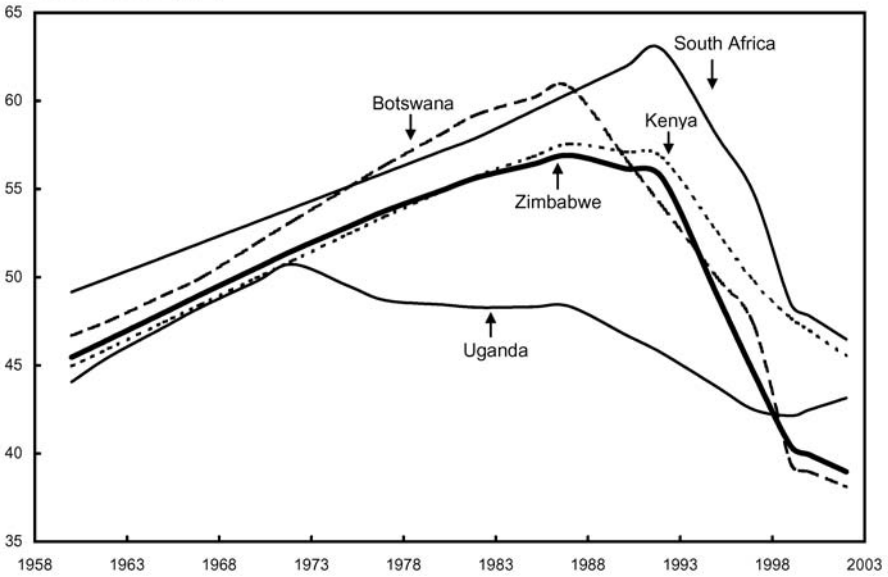
## Disease Characteristics and Treatments

The *human immunodeficiency virus (HIV)* is an infectious agent that damages the body's immune system. As the viral infection progresses, individuals lose their ability to fight secondary infections and certain cancers. The term *acquired immunodeficiency syndrome (AIDS)* describes the advanced stages of HIV infection. The virus primarily infects an important part of the immune system known as the *CD-4* or "*helper*" T-cells, which lead the body's attack against infections. When these cells multiply to fight an infection, they themselves become more susceptible to HIV infection. The HHS definition of a diagnosis of AIDS, established by the Centers for Disease Control and Prevention, includes all HIV-infected people who have fewer than 200 CD-4 positive T-cells per cubic millimeter of blood (as compared to 1,000 or more

Chart 7-2 Changes in Life Expectancy, 1960 to 2002

Life expectancy has fallen dramatically in these selected hard-hit African countries.

Life expectancy at birth (years)



Source: World Bank, *World Development Indicators*, 2004.

in healthy adults). HIV-infected individuals with higher CD-4 counts can also be diagnosed with AIDS if they develop one of several types of opportunistic infections or cancers associated with severely compromised immune systems.

The symptoms and signs of opportunistic infections common in people with AIDS can be highly debilitating. Many individuals who have progressed to an AIDS diagnosis find it difficult to work or perform basic household chores, and as the immune system continues to deteriorate, these effects generally worsen. Studies in Western countries have found that the median time it takes for an untreated HIV infection to progress to AIDS is about 10–12 years, though the amount of time varies widely across patients. If left untreated, the majority of patients will die within one year of the progression from HIV infection to full-blown AIDS.

Because no vaccine is available, the primary way to prevent HIV is through the avoidance of behaviors that put a person at risk of contracting the infection. HIV is not spread through casual contact. The virus is most commonly spread through unprotected sex with an infected partner, but it can also be spread through contact with infected blood. Mothers can transmit HIV to their babies during pregnancy, birth, or through breast milk while nursing. In the case of mother-to-child transmission at birth, the administration of certain drugs during labor can greatly reduce the likelihood of infecting the newborn.

There is no cure for HIV/AIDS, though the past decade has witnessed great strides in the treatment of AIDS. Multiple categories of drugs are now available for combating the disease, but the administration of individual drugs alone can render the treatment progressively less effective as the disease develops resistance to the medication. To minimize resistance and maximize effectiveness, health care providers use treatments comprised of a combination of several drugs to suppress the virus. Even though the side effects can be quite severe, this type of therapy is credited with dramatically improving the health and life expectancy of HIV-infected individuals.

Advances in treatments have reduced the number of deaths caused by HIV/AIDS, but despite price reductions by manufacturers and large-scale international assistance, the price of these treatments has so far exceeded what most residents of the developing world can afford. UNAIDS states that, in low- and middle-income countries, death rates for HIV-infected 15–49 year olds are up to 20 times greater than those of people living with HIV in industrialized countries, and differences in access to antiretroviral therapy can largely account for this trend. Limited health care infrastructure and a lack of trained health care professionals in poor countries, coupled with difficulties in accessing even basic care, further increase the suffering of those that cannot afford treatment.

## The Economic Impact of HIV/AIDS

The vast scale of human suffering that AIDS causes and the sheer number of lives lost to the disease make the epidemic a global emergency. Its scope extends beyond the immediate humanitarian crisis as the epidemic affects many aspects of economic and social development. Roughly 90 percent of worldwide HIV/AIDS cases occur in Africa, Latin America, the Caribbean, and Asia, where much of the affected population is already living in poverty. AIDS deepens poverty, intensifies food shortages, and, in some cases, erases decades of economic progress.

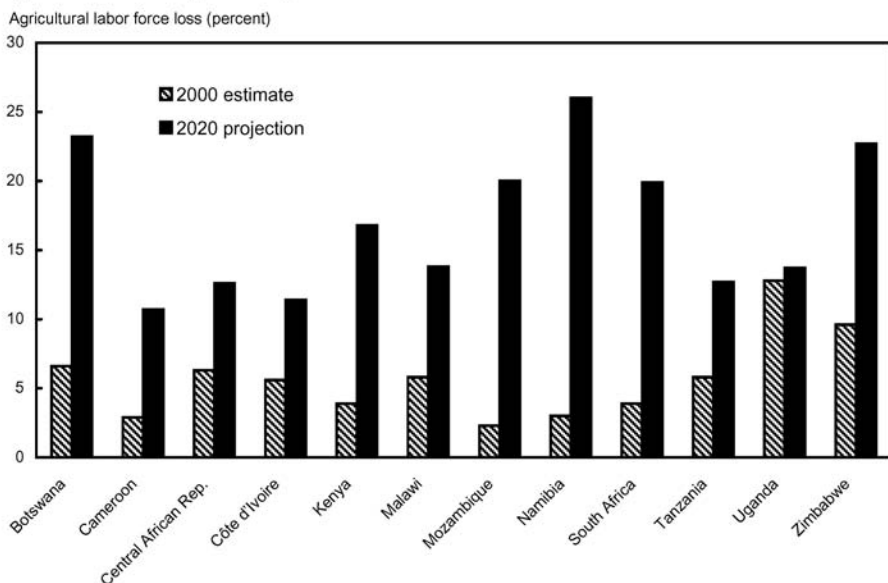
### Direct Economic Impacts on Households

There are several mechanisms by which the disease hinders economic development, particularly in less-developed countries. First, HIV/AIDS-related illnesses directly decrease the income of an affected household. Even if an infected family member is able to work, a sick worker is likely to be less productive than a healthy one. Many people with AIDS are unable to work at all. The disease's eventual lethality and loss of income-earning family members exacerbates this reduction in a family's income. One study estimates that in South Africa and Zambia, for example, income in affected households

typically fell by 66 to 80 percent due to AIDS-related illnesses. Furthermore, 15–24 year olds contract half of all new HIV infections worldwide, so a large percentage of the current and future workforce in the hardest-hit countries is dying. By predominantly affecting the working age population, the disease leaves too few people to support the aging and young populations, both within an individual family and within a society. One heavily impacted sector is agriculture, and failure to produce food can have particularly devastating effects on households and communities. The Food and Agriculture Organization of the United Nations estimated that 7 million agricultural workers died from AIDS between 1985 and 2000, and they projected that 16 million more will likely die by 2020. In some countries, this could mean a loss of over 20 percent of the agricultural workforce (Chart 7-3).

At the same time that AIDS erodes a patient’s productive capacities, it can impose debilitating costs on other members of a household. Medical expenses rise with a patient’s health care needs, while other family members may need to miss work or school to care for a patient. According to the 2004 Report by UNAIDS, AIDS-care-related expenses on average can absorb one-third of an affected household’s income. Many of these households are already poor and face adversities such as chronic food shortages. Coupled with the fact that AIDS patients need more calories than healthy individuals, the AIDS-induced deepening of poverty and the decrease in agricultural workers are intensifying these food shortages.

**Chart 7-3 Agricultural Labor Force Loss Due to HIV/AIDS, 2000 and 2020**  
 The HIV/AIDS pandemic is estimated and projected to have a sizable impact on the agricultural labor force, particularly in some of the hardest-hit African countries.



Source: International Labor Organization, 2004.

AIDS is more damaging to a household's income than other fatal diseases. Several studies have found that adults with AIDS use more health care than those with other illnesses. One study conducted in Thailand showed that the loss of income from an AIDS death is, on average, more than 20 percent greater than if the family member had died of another cause.

## Indirect Economic Impacts on Households

In addition to the direct effect on poverty caused by the decrease in family earnings and increase in family expenditures, HIV/AIDS can have consequences that indirectly affect households' well-being. For example, the disease can change the way that affected families make long-term decisions. Subsistence households may alter their planning horizons because they do not expect family members to live as long and because their needs become more immediate due to pressing health concerns.

When families face the increasing costs described above, children may be pulled out of school in order to supplement the declining family income, resulting in a loss in the children's future earning potential. Moreover, a household might have less incentive to invest in education because of the dramatic decrease in any one child's life expectancy. Private-sector firms, which also invest in human capital through education and training, have similarly diminished investment incentives when human capital is short-lived. Training and education can be expensive, but increased skills lead to long-term financial rewards, which cannot be fully realized when life expectancy declines. All of these factors can combine to create a vicious cycle of increased poverty in the short run and an inability of households to improve their condition in the long run. Shorter planning horizons can potentially lead to a variety of other indirect effects, such as quicker depletion of natural resources and accelerated environmental degradation.

A high prevalence of HIV/AIDS in a community can also place extraordinary stress on social networks. These networks are important because they frequently provide an informal kind of insurance in rural areas of developing countries, where populations lack access to formal insurance markets. These informal markets work by pooling risk across diverse households, so those experiencing good times can help those experiencing bad ones. For example, a household that loses a crop because of flooding can turn to friends in unaffected areas for help. These traditional means of dealing with hardship break down in the case of HIV/AIDS because the disease is so widespread that it can be difficult to turn to friends and family for help, since the disease is likely to be directly affecting them as well. Households also can be burdened indirectly by impacts on local labor markets, such as when labor shortages during planting and harvesting seasons affect agricultural yields, thereby threatening the availability of food for HIV-infected and noninfected households alike.



Academic research has found evidence of these effects and has documented still other effects of HIV/AIDS on individual families. One study finds that in Uganda, HIV/AIDS increases the proportion of female-headed households who are living in poverty. Another study finds that, in parts of Kenya, children in affected families sometimes have no caregivers in their households and “manage their own household activities without the supervision of an adult.” Research conducted in South Africa shows that affected households allocate more resources to food, health, and rent and less to education and clothing than nonaffected households, providing evidence that HIV/AIDS is placing constraints on an entire generation’s capacity to pursue education and higher income in the long run.

## Macroeconomic Impacts

The aggregated effects of HIV/AIDS on individual households can create serious macroeconomic consequences. Because decreased mortality and increased education are two of the most significant factors in determining economic growth, the HIV/AIDS epidemic has the potential to threaten the economic well-being of entire societies. As discussed in the previous section, the disease can decrease the overall level of skills in the workforce through a number of mechanisms, because skilled workers die of AIDS, children drop out of school, and firms and individuals invest less in human capital. This loss of worker skills and capacity reduces economic growth. The disease can also decrease productivity and distort labor market decisions, further slowing economic development.

Although there is still a dearth of data documenting these effects, several economic models estimate reductions in economic growth rates for African countries. Recent studies tend to find more significant impacts than previous estimates, most likely because the macroeconomic impacts become increasingly measurable as the disease affects a larger proportion of households, workers, and employers. A report published in 2004 estimates that, over the period from 1992 to 2002, HIV/AIDS, on average, reduced the rate of economic growth in 33 African countries by 1.1 percent per year. This study reports that by 2020, Africa alone could incur a loss of US \$144 billion.

## Getting Prevention, Treatment, and Care to the Field

Combating the HIV/AIDS pandemic requires both a reduction in new infections and adequate treatment and care for those already infected. Interventions in countries such as Kenya, the Dominican Republic, Thailand, Cambodia, and, most notably, Uganda, that have promoted risk avoidance

and risk reduction have helped reduce the number of new infections and helped reduce the spread of HIV. For example, the Abstinence, Be Faithful, and correct and consistent Condom use, or “ABC” approach, employs population-specific interventions that emphasize abstinence for youth and other unmarried persons, including delay of sexual debut; mutual faithfulness and partner reduction for sexually active adults; and correct and consistent use of condoms by those whose behavior places them at risk for transmitting or becoming infected with HIV.

Another important step toward quelling the AIDS epidemic is the widespread dissemination of currently available treatments and care. Recent developments in drug therapy and other HIV-related disease care can substantially prolong survival and improve the quality of a patient’s life. Indeed, evidence from a recent study suggests that the death rate from AIDS in some developed countries has fallen by about 80 percent since more advanced drug therapies became available in the mid-1990s. Unfortunately, in the world’s poorest countries, where most HIV/AIDS patients live, access to these treatments is shockingly low. As stated by the President in January 2003:

*There are whole countries in Africa where more than one-third of the adult population carries the infection. More than 4 million require immediate drug treatment. Yet across that continent, only 50,000 AIDS victims—only 50,000—are receiving the medicine they need.*

Since the President’s speech, the United States and international partners have made major investments to make safe and effective, low-cost antiretroviral (ARV) treatment more widely available throughout the developing world. Many people are now on life-saving therapy in 15 focus countries as a result of the President’s Emergency Plan, and the Global Fund (one-third of whose resources come from the United States) has also made great strides in placing patients on ARVs through a portfolio of grants to public-private consortia throughout the world.

While as recently as two years ago, many analysts believed the sole problem with access to ARV treatment was that drug prices were too high for most patients to afford, price cuts by brand-name manufacturers and the wider availability of generic versions of ARVs have helped to improve access to these treatments. Nevertheless, drug prices are still too high for most patients to afford and health care infrastructures in developing countries have too few resources for the effective distribution of treatment, even when drugs are available.

Two of the keys to expanding access to treatment in poor countries are low prices and generous international aid. Without low prices, large-scale distribution is probably not possible even with generous amounts of aid. And even at low prices, many of the poorest AIDS sufferers will not be able to afford adequate treatment, since they face still more basic needs such as adequate food and clean water. Thus low prices and generous aid must go together for large-scale treatment dissemination to be possible.

## A Role for Differential Pricing

Charging different prices to different buyers of the same product can be an important way to help poor populations access medical treatment. This practice is pervasive throughout the economy, and ranges from senior citizen discounts on movie tickets to cheaper college tuition for low-income families. Competition in a market and the ability to resell a good make it difficult for firms to charge different prices because of the opportunity for *arbitrage*, the ability to make a profit by purchasing the product at the lower price and reselling it at a higher price. This demand for the product at the lower price and supply of the product at the higher price will cause prices to equalize, a phenomenon that economists refer to as *the law of one price*. However, if a good cannot easily be resold, as with movie tickets and college tuition, differential pricing is possible. It is often in the interest of a profit-maximizing firm to charge high prices to some customers while not relinquishing the ability to sell to other customers who can afford the product only at lower prices. This disparity might seem unfair since buyers of the same product are being treated differently.

Drug companies have the ability to practice differential pricing because they can possess intellectual property rights. When a firm is the first to develop a new treatment or vaccine, it is awarded a patent that allows the company to be the sole seller of the product for 20 years from the date a patent is filed. (This generally works out to be approximately 10–14 years from the time the drug is first available on the market.) Because the development of new drugs requires costly research and development, patent rights provide important incentives for firms to take on the upfront costs of development; the reward for undertaking these risky activities is the promise of high profits should their efforts to develop a new drug succeed. (Patent rights and the ensuing incentives for innovation are discussed at greater length in the next section.)

The market for AIDS drugs is a case in which differential pricing possibly helps to create societal benefits beyond the profits enjoyed by firms with *market power*, by allowing people in poor countries to pay less for their drugs. This is already a common practice for pharmaceuticals, and some manufacturers of antiretroviral treatments have offered the drugs to developing countries at lower prices than those that apply in the U.S. and Europe. The AIDS drug PLC, for example, sells for \$18 per day in the United States, but sells for half that price (\$9 per day) in Uganda. The drug companies can make incremental sales at lower prices without incurring a loss, but if PLC were sold everywhere for only \$9, the companies would not recover their investment in research and the drug would not be available to consumers in either country.

Consumers paying the higher price for a drug may believe that everyone should have access to the drug at the lower price. However, if forced to sell at

only one price, the drug companies will generally need to set the price somewhere between the highest and the lowest prices under differential pricing, thus creating less access to the drug. Patients who could only afford the drug at the lowest price would be unable to purchase it at the standardized price. Therefore, offering drugs at lower prices in impoverished countries can play a vital role in increasing the availability of AIDS drugs in less-developed countries.

## Humanitarian Aid

Even with drugs available in developing countries at prices far below those charged in the United States and other advanced economies, severe poverty levels will continue to prevent many AIDS patients from receiving adequate treatment. Effective new treatments can be produced at an incremental cost of \$600 per year, but most individuals in sub-Saharan Africa live on less than \$730 per year. Furthermore, the actual distribution of treatment requires more than just an affordable supply of drugs; it requires a health care infrastructure that can adequately implement safe treatment programs. This is a particular challenge for people living in remote rural areas.

The Bush Administration has laid out the President's Emergency Plan for AIDS Relief (the Emergency Plan), a five-year, \$15 billion commitment to fight the disease globally. The President's Emergency Plan works in over 100 countries around the world while focusing on 15 of the countries most affected by HIV/AIDS, with the goal of treating 2 million HIV-positive individuals, preventing 7 million new infections, and caring for 10 million infected or affected by the disease, including orphans. It prioritizes treatment, care, and prevention activities as the interventions most likely to mitigate the disease's consequences and reduce HIV infection. By prolonging life and restoring health, treatment and care interventions can increase the productive capacities of individuals, reduce the direct and indirect costs of care, and allow those infected and affected by HIV/AIDS to focus on priorities such as work and school, thereby securing the future of families and nations. The Emergency Plan's health care approach also sets out to work within host-country strategies to strengthen and develop health care networks that will increase access to prevention, care, and treatment services, since the President recognizes that all are crucial to winning the fight against HIV/AIDS.

The President's plan also works with international partners to intensify the worldwide response to the epidemic and to develop sustained collaborative efforts. The Emergency Plan devotes \$10 billion over five years to 15 of the most afflicted countries in the world. It also commits \$4 billion to HIV/AIDS programs in an additional 85 countries, including international research in support of new tools for combating HIV/AIDS, and it increases the United States' pledge to the Global Fund to Fight AIDS, Tuberculosis, and Malaria by \$1 billion over five years. The President made the inaugural pledge to the

Global Fund in May of 2001, and at the end of 2004 the United States remained the Global Fund's largest donor, responsible for over 37 percent of its pledges and 33 percent of its contributions. One success upon which these efforts can build is the intervention strategies in Uganda, which successfully turned around the HIV/AIDS crisis in that country. (Box 7-1).

### **Box 7-1: Uganda's Success Story**

A broad-based national effort and firm political commitment to fighting the HIV/AIDS epidemic yields results, and no case illustrates this point better than Uganda's experience. Uganda was one of the first nations to suffer the disease's impacts, and now it has become one of the earliest and greatest success stories. As elsewhere in sub-Saharan Africa, AIDS has caused immense suffering in Uganda, reducing its population's life expectancy and thwarting its development. However, the country has experienced substantial declines in infection rates during the past decade, even as the rate of new infections continues to increase in most other countries in the region. The percent of Ugandans infected with HIV peaked at around 15 percent in 1991, and by 2001 it had fallen to 5 percent. Prevalence among pregnant women, which is used as a key indicator of the epidemic's progress, has fallen by more than half in some areas since 1993, and infection rates among men have dropped by more than a third.

Under the leadership of President Yoweri Museveni, Uganda's government brought together groups and leaders from all sectors of society to address the need to prevent further spread of the disease and to provide treatment and care for those affected. In 1986, President Museveni directly addressed the epidemic with a commitment to prevention, and asserted that fighting AIDS was a patriotic duty of Ugandan citizens. Calling for openness and communication, he was joined by religious and traditional leaders, community groups, and nongovernmental organizations (NGOs). In 1992, the President created the multi-sectoral Uganda AIDS Commission to oversee the national HIV/AIDS strategy.

Interventions in Uganda began with an aggressive public media campaign to change risky behaviors and the establishment of a surveillance system to track the epidemic. The campaigns have been aimed at both the general population and key target groups, particularly older men and youth, while aggressively fighting stigmatizing and discriminating against people living with the disease. Sex education programs in schools and on the radio have encouraged youth to delay the age at which they first have sex, have encouraged monogamy, and have

### **Box 7-1** — *continued*

focused on the need for safe sex. Since 1990, a USAID-funded program has contributed to increases in condom use from 7 percent nationwide to more than 50 percent in rural areas and over 85 percent in urban areas. In addition, Uganda's HIV/AIDS surveillance system has trained thousands of community-based AIDS counselors, health educators, and other specialists. Further testimony to the government's commitment are the many innovations that have been pioneered in Uganda, such as HIV/AIDS testing with same-day results and accompanying counseling services.

The open networks throughout Ugandan society for acquiring information about HIV/AIDS have resulted in behavioral changes in its population. The decline in the number of sexual partners of the average Ugandan is perhaps the most important determinant of the nation's success in curbing the epidemic, and some have dubbed this experience a "social vaccine." The country's success suggests that high-level political commitment coupled with diverse, multi-sectoral participation can turn the tide in the global fight against HIV/AIDS.

## Development of New Treatments and Vaccines

While affordable treatments and their effective dissemination are immediate needs, pharmaceutical companies need to continue to work toward the development of newer and better treatments as well as vaccines. This is important not only to improve patients' lives but also to strive toward the eventual eradication of the disease. In the United States, the principal reason that the number of AIDS cases began to decline in the mid-1990s was the introduction of new drugs for treating HIV. Researchers must continue to innovate in order to make even better treatments available and develop safe and effective vaccines. The development of resistance to existing medication, rendering treatment less effective over time, underscores this importance.

### Incentives for Innovation

Research and development of new drugs is a costly endeavor, and once developed, new products must go through extensive testing and marketing. On average, a new drug takes 12 years to develop and costs \$800 million to introduce to the market. For each new drug, the bulk of these costs are generally paid before production begins. Since their magnitude does not depend on how much of the drug is produced, they are known as *fixed costs*.

Once companies have incurred the fixed costs and a drug is available in the marketplace, it is often inexpensive to produce the drug; that is, the *marginal cost*, the additional cost of producing one more unit of the drug, is low. It is similarly low-cost for other companies to copy and produce the drug, thus avoiding the high fixed investment in research altogether while reaping the benefits from a lucrative market with low marginal costs of production. In the absence of intellectual property rights, no company would want to bear the enormous fixed costs of research and development if they could simply profit from other firms' inventions. But without any company investing in these fixed costs, innovation would be thwarted.

Patent rights provide an important means of giving firms the incentive to bear the expensive costs of innovation. A *patent* grants a company the right to be the sole producer and seller of a product it develops for a limited period of time (20 years in the case of pharmaceuticals); thus, a patent protects the innovator from direct competition so that it can recoup the money it has spent in developing the new product. This intellectual property right makes it possible for the pharmaceutical company to sell the new drug at a price above its marginal cost of production, thereby generating a high enough profit on its sales to recover its initial investment.

Diseases prevalent in poor geographical areas might not have lucrative enough markets to provide incentives for private-sector companies to develop treatments. For example, tropical diseases such as malaria, which generally occur only in low-income countries, can have a drug market in which patients are unable to pay enough for their treatments for firms to recover the high costs of drug development. The degree to which private companies invest in research and development could therefore fail to be commensurate with the social and economic costs of these diseases, including HIV/AIDS. There are, however, alternative ways to provide incentives for innovation. Prizes for successful drug invention, patent buyouts, and advance commitments to purchase the drugs are a few alternatives that are particularly promising because they encourage research without disallowing competition once a drug is developed (Box 7-2).

### **Box 7-2: Creative Ways to Encourage Innovation**

Patent rights and direct government funding are currently the two primary means by which the United States government spurs research. To drive development for an AIDS vaccine, the Bush Administration endorsed the Global HIV Vaccine Enterprise this past June at the G-8 summit. This initiative will accelerate HIV vaccine development by

## **Box 7-2 — *continued***

enhancing coordination, information sharing, and collaboration globally. There is also a critical role for the private sector to play in promoting innovation, especially in the development of a commercially viable product such as a vaccine.

When a disease predominantly affects a poor population, the private return to investment in vaccine research is likely to be quite low, even under well-established patent laws, and even if the social value of developing a vaccine is high. In other words, society as a whole may place great value on the lives saved by a new vaccine, but the ability to pay for vaccines by poor patients will not adequately represent this social value and will be insufficient for firms to recover their research expenditures. Patent rights alone can therefore, in some contexts, provide insufficient incentives for innovation. They can also create strong incentives to imitate existing successful inventions rather than to take on new problems, because competitors can slightly alter a patented approach in order to develop a competing product. While this “free-riding” off initial research investment creates competition and drives down prices, it also prevents the original developer from recouping its research expenditure. Furthermore, imitation of existing drugs may not be the socially optimal use of scientific research, since the benefits of saving additional lives with novel products may very well outweigh the benefits of lowering the prices of existing drugs.

Direct government funding of basic research can have an important role but is inefficient when the motivation of the research is a commercially viable product. It is difficult to know the best projects to fund and pharmaceutical firms have an advantage over government officials when it comes to evaluating the potential of vaccines. Moreover, organized interests can influence the allocation of government funding resources, and academics may be more interested in novel scientific discoveries than in the technical challenges of commercial development.

Advocates of exploring alternate systems for encouraging pharmaceutical innovation argue that patents and government funding alone have had difficulties stimulating sufficient research to develop vaccines for diseases such as malaria, tuberculosis, and HIV/AIDS. Most research on HIV/AIDS drugs is currently focused on treatments that will likely be sold in rich countries, instead of on vaccines, which would likely be less expensive and could be disseminated widely in poor countries. Indeed, the research that is currently being conducted toward an AIDS vaccine focuses predominantly on strains of the disease prevalent in rich countries rather than the strains most common in Africa, even though two-thirds of all new infections occur there.



**Box 7-2 — *continued***

Several mechanisms have been suggested by economists as promising ways to further encourage new research and development in pharmaceuticals. For example, foundations can offer monetary prizes for vaccine development in order to encourage innovation without restricting competition in the market once the product is developed. However, a prize alone would not ensure access to the vaccine by those who need it. Alternatively, a foundation could “buy out” a patent (that is, it could essentially compensate a firm for letting its patent expire early). Like a prize, the patent buyout would provide incentives for innovation that are not tied to the market for purchasing the drug, thereby promoting research and development even in markets of poor patients. However, the buy-out may similarly fail to ensure large-scale access to the vaccine since there is no guarantee that competition in the vaccine’s market will be attractive to other producers. Particularly if the vaccine is technically difficult to produce and if safety regulations are burdensome, firms may not wish to enter the market for a new vaccine.

Some scholars have also suggested that another approach to encouraging vaccine research would be for a foundation or group of foundations to make an advance commitment to purchase a vaccine at a pre-specified price and quantity. Pharmaceutical firms then would have a secure financial incentive for researching vaccines and treatments, even if a disease affects predominantly poor populations, and, once developed, widespread production of the vaccines could be ensured.

Despite years of both private and government-sponsored research, an HIV vaccine remains elusive. Although the disease’s many strains and their ability to evolve rapidly over time present scientific obstacles, there is also reason to be optimistic that a vaccine will one day be possible. Some candidate HIV vaccines have already been shown to protect monkeys against infection and could induce immune responses in humans. To enhance coordination of research efforts, the President, with other G-8 leaders, endorsed the establishment of the Global HIV Vaccine Enterprise and announced plans to establish a second HIV Vaccine Research and Development Center in the United States. The Administration has also urged fellow G-8 leaders to similarly expand their commitment to vaccine development.

# Conclusion

The United States and countries around the world must continue to fight the spread of HIV/AIDS, aid those who are suffering as result of the epidemic, and work toward eventual eradication of the deadly disease. Interventions are particularly critical because the far-reaching economic consequences of HIV/AIDS threaten the well-being of entire societies. The President has developed a generous aid package with the Emergency Plan and with donations to the Global Fund, and the Administration supports the protection of intellectual property rights. Many other members of the international community have taken action against the HIV/AIDS crisis, and the United Nations General Assembly Special Session on HIV/AIDS in 2001 has affirmed the international community's commitment to make progress in the struggle against HIV/AIDS. Governments, donors, and private enterprise around the world must continue to build upon the successes of these actions to win the global fight against AIDS.

## Modern International Trade

Open markets and free trade raise living standards both at home and abroad. The President's policy of opening markets around the world is based on this solid foundation. Yet, as international trade has grown in both volume and scope, so too have concerns that old ideas about trade policies no longer apply to today's trade environment.

The key points in this chapter are:

- Free trade allows countries to mutually benefit from specializing in producing products at which they are adept and then exchanging those products. This rationale remains the same, even with advances in technology and new types of trade.
- Foreign direct investment is playing an increasingly important role in world trade, as companies invest across borders to gain skills, technology, resources, and market access.
- The Administration has advanced multilateral, regional, and bilateral trade agreements in order to open global markets. Lower trade barriers benefit consumers worldwide and expand markets for America's manufactured goods, farm products, and services.

### Free Trade: Beyond the Basics

The Administration's pursuit of trade liberalization is based upon a long history of intellectual support for free trade. Modern trade theory begins with the nineteenth century's David Ricardo. Ricardo's central insight—his elegant model of comparative advantage—is the starting point from which to explain the gains from trade.

Ricardo's model of comparative advantage addressed the question of how a home country could compete with a foreign trading partner that is better at producing everything. Ricardo showed that even if a foreign country could produce each of two goods for less than the home country could (that is, the foreign country has an *absolute advantage* in the production of the goods), there could still be mutual gains from trading the two goods. The key to the argument is that it is relative costs of production (*comparative advantage*) that matter, not absolute advantage.

As an example of Ricardo's theory of trade, consider a situation in which one country requires two hours to produce a unit of each of two goods, while in a second country it takes five hours to make Good One and ten hours to make

Good Two. In Ricardo's simple model, the price of each good in the first country before trade is one unit of the other good, because the two goods take the same resources to produce. In the second country, Good Two would be expected to cost twice as much as Good One, because it takes twice as much labor to produce it. The first country has an absolute advantage in both goods, but comparative advantage still provides a basis for trade. In this case, the second country would gain from importing Good Two, which costs only half as much in the other country (only one unit of Good One). The second country would pay for these imports of Good Two by exporting Good One. Similarly, the first country would import Good One, which in its trading partner costs only one-half a unit of Good Two. It would pay for its imports by exporting Good Two. In the end, world production rises as a result of trade, and each country can consume more of both goods. This stylized example illustrates that comparative advantage allows countries to gain when they specialize in producing items in which they are relatively the most productive.

Critics do not usually argue that Ricardo's theory of comparative advantage is incorrect, but instead that it omits key aspects of trade that may undermine the theory's results and alter the consequent policy prescriptions. In basic trade theory, for example, capital and labor do not move across borders seeking the highest return. At least for capital, such movements are now routine. Economic models that take into account both capital and labor (Ricardo's theory discussed only labor) show that countries as a whole still gain from free trade. There are, however, differing impacts of trade on different parts of the economy and the labor force. Policies aimed at supporting individuals affected by trade are thus vital to ensuring that its gains are widely shared. These policies are discussed later in the chapter.

## Globalization and the Terms of Trade

Theoretical arguments showing the gains from trade compare a situation in which a country is open to trade with one in which it is closed. The differences in production technology between a trading partner and the home country mean that different prices prevail in the two countries before they open their borders to trade. It is this difference in prices that allows both countries to benefit from trade. With the advent of trade, a new price for exchanging products will be reached, somewhere between the countries' original prices. This new price is known as the *terms of trade*. Each country gains from opening when the terms of trade differs from the pre-trade price.

Over time, events in either country could change the terms of trade. Other things equal, each country would prefer the price it receives for its export good to increase, just as any merchant would wish to receive more for the product he sells.

After trade is opened, it is possible that changes in the world economy could move the terms of trade in directions that benefit one country but not the other. In this case, both countries would still be better off than they were prior to trade, but one country would see its gains diminished. Such subsequent price changes could come from changes to the countries' technologies or from the discovery of natural resources, such as oil, that lead to changes in production and trade patterns.

The possibility that a country could lose from global price changes is at the heart of some recent critiques of globalization. One critique noted, for example, that as China develops and becomes more similar to the United States, the United States could be made worse off. There are two problems with this critique. The typical view of globalization is that it is a phenomenon marked by increased international economic integration. The critique above, however, is of a situation in which development in China leads to less trade, not more. If China and the United States have differences that allow for gains from trade (for example, differences in technologies and productive capabilities), removing those differences may reduce the amount of trade and thus reduce the gains from that trade. The worst-case scenario in this situation would be a complete elimination of trade. This is the opposite of the typical concern that globalization involves an overly rapid pace of international economic integration.

The second problem with the critique is that it ignores the ways in which modern trade differs from Ricardo's simple model. The advanced nations of the world have substantially similar technology and factors of production, and seemingly similar products such as automobiles and electronics are produced in many countries, with substantial trade back and forth. This is at odds with the simplest prediction of the Ricardian model, under which trade should disappear once each country is able to make similar products at comparable prices. Instead, the world has observed substantially increased trade since the end of World War II. This reflects the fact that there are gains to *intra-industry* trade, in which broadly similar products are traded in both directions between nations (the United States both imports and exports computer components, for example). Intra-industry trade reflects the advantages garnered by consumers and firms from the increased number of varieties of similar products made available by trade, as well as the increased competition and higher productivity spurred by trade. Given the historical experience that trade flows have continued to increase between advanced economies even as production technologies have become more similar, one would expect the potential for mutually advantageous trade to remain even if China were to develop so rapidly as to have similar technologies and prices as the United States.

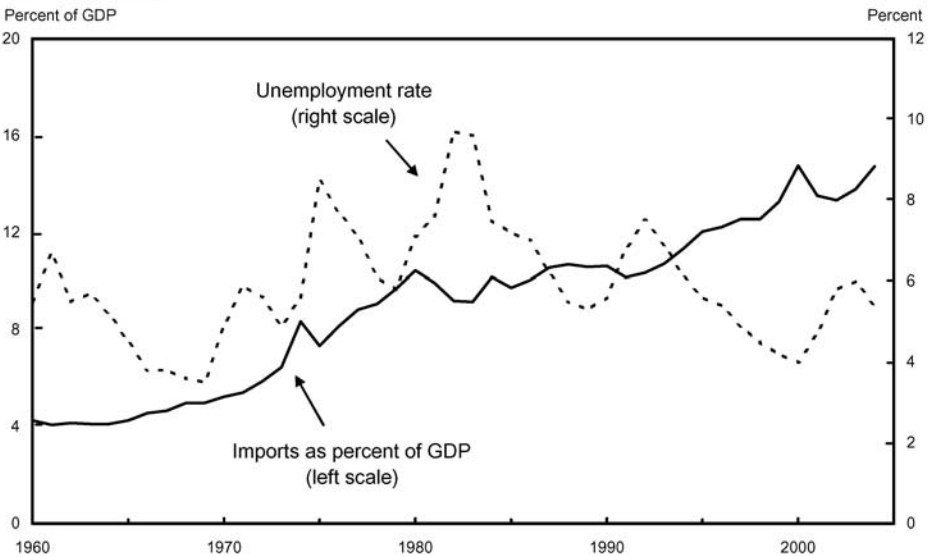
# The Impact of Trade on Labor Markets

According to standard economic theory, the degree to which an economy is open to trade affects the mix of jobs within an economy and can cause dislocation in certain areas or industries, but has little impact on the *overall* level of employment. The main influences on total employment are factors such as the available workforce and the levels of interest rates, taxes, and regulations that govern the labor market. Trade tends to lead a country to specialize in producing goods and services at which it excels. Trade affects the mix of jobs because workers and capital would be expected to shift away from sectors in which they are less productive relative to foreign producers and toward existing and new sectors. This would be expected to lead to higher productivity and thus higher wages for workers.

The conclusion that free trade has little effect on the *overall* number of jobs is borne out in data on the U.S. economy. If trade were a major determinant of the Nation's ability to maintain full employment, measures of the amount of trade and the unemployment rate would move in tandem, but in fact, they usually do not. The increase in imports as a percentage of gross domestic product (GDP) over the past several decades has not led to any significant trend in the overall unemployment rate (Chart 8-1). Indeed, over the past decade, the U.S. economy has experienced historically low unemployment, while exports and imports have grown considerably.

Chart 8-1 Imports and the Unemployment Rate, 1960-2004

Over the long run, there is no connection between increased imports of goods and services and the strength of the labor market.



Note: GDP and imports for 2004 are annualized using data for the first three quarters.

Sources: Department of Commerce (Bureau of Economic Analysis) and Department of Labor (Bureau of Labor Statistics).

Similar conclusions arise from examination of data on the trade or “current account” balance (the broadest measure of the difference between exports and imports of goods, services, and income flows). From 1960 to the third quarter of 2004, the current account balance moved from a surplus of 0.5 percent of GDP to a deficit of roughly 5.6 percent of GDP. Yet the average unemployment rate in 2004 was 5.5 percent, the same as the average unemployment rate in 1960. Over this period, the U.S. economy gained more than 75 million jobs—an increase of roughly 140 percent. Increased trade has neither inhibited overall job creation nor contributed to an increase in the overall rate of unemployment.

That factors other than trade are the most important influences on the labor market is of no consolation to a worker who loses a job because of competition stemming from international trade. To assist people facing such dislocation, the Administration has built upon and developed programs to help workers acquire the skills needed to prosper in new jobs.

The Administration has proposed a reform of the overall workforce training system to help Americans obtain marketable skills needed to compete for jobs in emerging and innovative fields. The Administration recognizes that effective workforce training requires the cooperation of the private sector and community colleges and has worked to nurture these partnerships through the High Growth Job Training Initiative at the Department of Labor and through the recently-enacted Community-based Job Training Grants.

In addition, the Administration has proposed the establishment of Personal Reemployment Accounts, an innovative approach to worker retraining. With these accounts, qualifying individuals who lose their jobs would receive an account with funds that can be used for training and other services that best fit their needs. Individuals who find new employment relatively quickly would be eligible to keep the balance of their accounts as a cash reemployment bonus. The accounts would thus provide both support to unemployed workers and an incentive to find new employment.

The Administration has also worked to enhance the long-standing Trade Adjustment Assistance program, which provides training and income support to workers directly hurt by import competition. As part of the Trade Act of 2002, eligibility was extended to workers indirectly affected by trade, such as workers employed by firms that supply goods and services to industries directly affected by trade competition. Benefits were enhanced to include a health insurance tax credit and a wage supplement for older workers who found new jobs that did not pay as well as their previous jobs. This assistance, which will total \$12 billion over 10 years, will ease the adjustment for displaced workers and help them move into jobs for which their skills are most in demand.

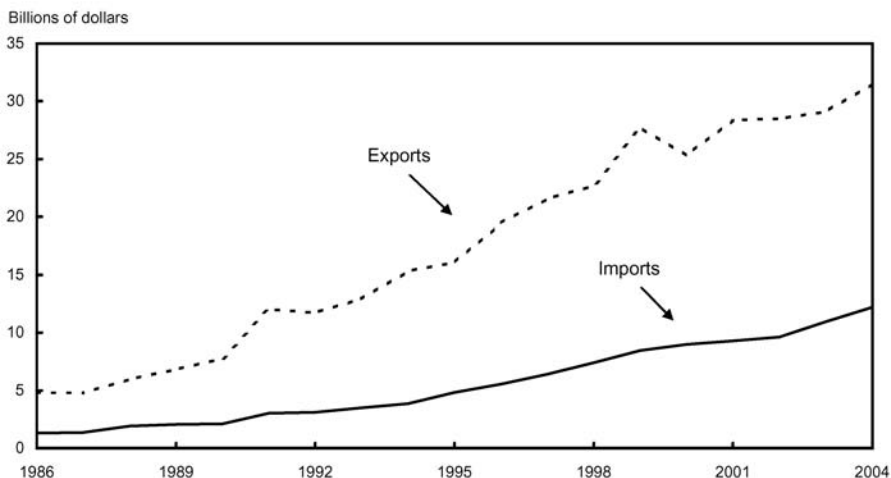
## The U.S. Advantage in Services Trade

This section considers the burgeoning trade in services. The performance of U.S. service workers and firms has been particularly strong. The United States exports more services than it imports, and this surplus has been growing in recent years. Moreover, U.S. services exports tend to involve relatively highly-skilled and highly-paid occupations, such as engineering, financial services, or architectural services. While services trade may not have been envisioned in the time of Ricardo, the principle of comparative advantage holds. Any move toward economic isolationism would thus threaten the competitive gains made by U.S. exporters while harming U.S. consumers and firms that benefit from imports.

One prominent type of services trade is measured in the “business, professional, and technical services” category. This statistical category encompasses advertising, telecommunications, computer and data processing services, and accounting and legal services. The United States exports services when a U.S. firm provides engineering or architectural services to partners in other countries. Annual U.S. exports in this category have grown by almost \$25 billion since 1989, compared to a \$10 billion increase in imports over this period (Chart 8-2). The growing trade surplus in this category is particularly striking in light of the widening of the overall current account deficit. The existence of a trade surplus suggests that the United States has a comparative advantage in the international provision of tradable services.

**Chart 8-2 Trade in Business, Professional, and Technical Services**

Over the last two decades, the trade surplus (the difference between exports and imports) has been growing in the category that includes services such as advertising, telecommunications, computer and data processing services, and accounting and legal services.



Note: Exports and imports for 2004 are annualized using data for the first three quarters.

Source: Department of Commerce (Bureau of Economic Analysis).



Ricardo's theory that countries mutually gain from trade if they each specialize in producing those items they could make relatively efficiently was inspired by trade in goods. Given the difficulties of communication and transportation in the nineteenth century, there would have been little point in theorizing about trade in services.

In the modern global economy, however, services trade plays an important role in international commerce and an especially positive one for the United States. Advances in communication have made possible the increased trade in services. These developments pose a challenge to industries that did not previously face foreign competition, though.

As noted above, the United States is good at the provision of services. Expanded access to the broader international marketplace would be expected only to further strengthen the U.S. advantage. The U.S. advantages in services have fueled job gains both directly in firms that export services and indirectly in firms that hire more workers in the United States as a result of the efficiencies they gain through trade. One study of the effect of services trade in the information technology sector found that it created over 90,000 net new jobs in the United States in 2003 and is expected to create 317,000 net new jobs by 2008. These new hires tend to be in positions requiring relatively high levels of skills or creativity, such as software development.

## Foreign Direct Investment: An Increasingly Important Part of Trade

While the intellectual foundations behind free trade are unchanged, the means by which goods are exchanged between countries have changed greatly since the time of Ricardo. Goods are no longer simply produced in one place using only that country's resources and then sent off on ships to be unloaded at a foreign port. Instead, many of the goods Americans enjoy today—whether produced in the United States or abroad—are made with components from a variety of sources.

Production of goods in this fashion is facilitated by *foreign direct investment* (FDI). FDI occurs when an individual or firm buys a foreign company or takes control of a sufficiently large portion of a foreign company (typically 10 percent or more of the target firm's stock) that it can influence management decisions. *Greenfield FDI* occurs when a company builds a plant abroad from scratch (i.e., turns a "green field" into a factory), though this type of investment is less common. FDI in turn gives rise to increased trade.

U.S. firms investing or setting up enterprises abroad can increase opportunities for exporting their goods. Moreover, there is a good deal of evidence suggesting that increased employment at the foreign subsidiaries of

U.S. firms is associated with a corresponding increase in employment in the U.S. parent company. Similarly, recent research shows that one dollar of spending on capital investments abroad by U.S. firms is associated with an additional 3.5 dollars of spending on capital investment at home. The available evidence thus suggests that, on the whole, overseas investment by U.S. firms goes hand in hand with expansion at home.

Subsidiaries of foreign firms operating in the United States make important positive contributions to the U.S. economy as well. These firms bring over technology, techniques, and skills that in turn lead U.S. industries to be more efficient. U.S. subsidiaries of foreign companies employed 5.4 million U.S. workers in 2002, nearly 5 percent of total private-sector employment. This is up from 3.9 million workers in 1992 (4.3 percent of total private employment at that time).

## The Global Supply Chain and FDI

The production of goods today can involve many firms in different countries performing a variety of distinct functions to bring products to market. A car made by an American company could include parts made by firms in the United States, Japan, Canada, and other countries, and it might be assembled in Canada or in Mexico. Producing this car could involve one firm extracting and molding the steel for the chassis, another firm designing and assembling interior components such as the seats and steering wheel, and a third firm transporting cars to the showroom. Within these steps, the production process could further involve a mix of domestic and imported components. Likewise, a car produced by a foreign company could be made in the United States and include a large share of components made here as well.

Firms invest in other countries for many reasons. One is that by investing abroad, firms may be able to take advantage of resources that are unique to the country in which the foreign business is located. Examples could be as straightforward as the development of a mining project, which by necessity must be undertaken where the natural resource is located, or the construction of an aluminum smelter in a country with abundant deposits of bauxite, the ore from which aluminum can be economically retrieved.

Firms might undertake foreign investment because it can be more cost-effective to own a supplier rather than be one of the suppliers' many customers. Once the goods are produced, the domestic firm can use its distribution networks, infrastructure, and knowledge about foreign tastes to export into new markets as well as increase sales in existing markets. Firms might also invest in retailing operations in other countries in order to exercise control over the sale of their products. Moreover, some firms invest abroad to avoid the trade barriers and transportation costs they might face if they produced in only one country for export to the whole world.

FDI spurs increased trade as firms move goods between parent companies and their foreign affiliates. Foreign affiliates use the goods from the parent company as both inputs to production and final goods to be sold through their distribution networks. In 2002, 35 percent of total U.S. trade in goods was accounted for by trade within components of firms with operations in two or more countries. This includes the flow in both directions, between U.S. companies and their majority-owned subsidiaries abroad, and between majority-owned U.S. subsidiaries and their foreign parent companies.

## How Inward FDI Strengthens Domestic Firms

Foreign direct investment into the United States by foreign firms can increase the competitiveness of U.S. domestic firms. Studies suggest, for example, that American auto firms were driven to produce higher-quality and more fuel-efficient cars in the late 1970s and 1980s when foreign car manufacturers began producing and selling cars in the United States.

Evidence also shows that foreign direct investment into the United States is associated with the adoption of new technology, techniques, and skills by locally-owned companies. The transfer of expertise can include skills in areas such as operations, marketing, management, and organization; it can be especially important in sectors such as biotechnology in which research and development activities play a prominent role. Such technology can “spill over” to domestic customers and suppliers through a number of channels. Examples would include when workers at a foreign subsidiary leave and find employment with local firms, when domestic customers incorporate the products of these foreign firms into their supply chains, and when foreign firms provide their U.S. suppliers with access to information or technology in order to improve their own products’ quality and reliability. For example, one foreign auto manufacturer in the United States recently shared with its U.S. steel suppliers its innovations for producing stronger, rust-resistant steel. One study estimates that such “spillovers” accounted for about 14 percent of the productivity growth in U.S. manufacturing firms between 1987 and 1996.

## Encouraging FDI

Many factors lead foreign firms to consider the United States when deciding to invest abroad. These include a large pool of talented workers, access to deep capital markets, a culture that supports innovation and risk-taking, and a stable legal, political, and economic environment. Evidence shows that countries prone to corruption, political instability, and having private firms or industries taken over by the government are less likely to receive foreign direct investment than countries that protect investor and intellectual property rights. A recent study found that the United States was

ranked the second-best country out of 145 in terms of ease of doing business, just after New Zealand. In comparison, China was ranked the 42nd-best place and India the 120th.

At home, the United States maintains an open and nondiscriminatory policy toward investments made by foreign firms. With limited exceptions, such as for national security reasons, the United States permits foreign investment in all sectors. The United States does not screen investments on size or the companies' country of origin, does not restrict FDI to involve establishing only new facilities, and, with limited exceptions, does not have performance requirements such as local content requirements or export quotas.

## Achievements in Trade Negotiations

The Administration has pushed aggressively to open global markets to trade. This has been done through multilateral talks under the auspices of the World Trade Organization (WTO) and through agreements to liberalize trade between the United States and various partners. The Administration has worked to ensure that the benefits promised under the agreements are realized for U.S. consumers, workers, manufacturers, farmers, and service providers. At the same time, lower trade barriers benefit people in U.S. trading partner countries. When U.S. trading partners do not fulfill their obligations, the Administration has sought their compliance through a practical, problem-solving approach. When that fails, however, the Administration has utilized formal dispute-settlement mechanisms.

This section addresses the progress made in fostering global trade, which provides mutual advantages to the United States and to all nations. The section also discusses efforts to make sure that all nations live up to the agreements they have signed. Because China has grown in importance as a U.S. trading partner, this section begins with a discussion of U.S. trade with this emerging economy. It then describes efforts to ensure the protection of intellectual property rights. It concludes with a description of progress in the negotiation of bilateral and multilateral trade agreements.

### Trade with China

Prior to China's accession to the WTO, exports from the People's Republic of China were granted access to the U.S. market on substantially similar terms as exports from members of the WTO. This access, however, depended on an annual Congressional vote to grant China "Normal Trading Relations" status (also known as "Most Favored Nation" status). There were some exceptions to China's equal access, most notably in textiles and apparel. Because China was not a member of the WTO, it was not subject to the sort of reciprocal

obligations to lower trade barriers that WTO members undertook in decades of trade negotiations.

The Administration's efforts to bring China into the WTO culminated in China's December 2001 accession. WTO membership offered China the stability of Permanent Normal Trade Relations and access to the WTO's rules-based dispute-settlement mechanisms, but demanded of China extensive, far-reaching, and often complex commitments to change its trade regime, at all levels of government, and open its market to greater competition. China committed to lower trade barriers in virtually every sector of the economy, provide national treatment (treat imports on an equal basis with domestically-produced goods), improve market access to goods and services imported from the United States and other WTO members, and protect intellectual property rights (IPR). In light of the state's large role in the Chinese economy, China also agreed to special rules regarding subsidies and the operation of state-owned enterprises. In accepting China as a fellow WTO member, the United States also secured a number of significant commitments from China that protect U.S. interests during the period in which China implements its WTO obligations. The United States in turn agreed to accord China the same treatment it accords the other 146 members of the WTO.

That treatment includes a gradual liberalization of the market for textiles and clothing. This is a sector that has been gradually transformed by advances in technology and transportation, as well as by the opening of this sector through trade agreements. Much of the world textile and apparel market had been governed for decades by a global agreement that set bilateral quotas. Those countries that were founding members of the WTO in the mid-1990s agreed to liberalize textiles and apparel trade over the ensuing 10 years, a process that culminated with the elimination of quotas on January 1, 2005.

Since China's WTO accession, the Administration has worked to secure access to China's market for U.S. companies and their workers, farmers, and service providers, as promised by China's WTO membership, and to protect U.S. rights within Chinese markets. Where possible, the Administration has tried to resolve differences through negotiation. This approach has shown concrete results; in April 2004, for example, meetings of the Joint Commission on Commerce and Trade resolved seven potential WTO disputes involving high-technology products, agriculture, and intellectual property protection. When successful, this negotiated approach can deliver more-immediate results than those available through the sometimes-protracted legal procedures of a formal WTO dispute. When this pragmatic approach has not produced prompt and effective results, however, the Administration has also pursued dispute resolution under WTO procedures. It filed the first-ever WTO case against China to address discriminatory tax treatment of U.S. semiconductors in China. Within four months of the filing,

the Chinese government agreed to eliminate the problematic tax program to address U.S. concerns, resolving the dispute without lengthy litigation.

A central point of discussion with the Chinese has been about the benefits of moving to a flexible, market-based exchange rate. The U.S. government and organizations such as the International Monetary Fund (IMF) have argued that the exchange rate should have greater flexibility. Greater flexibility in China's exchange rate would allow for smooth adjustments in international accounts and would help protect China from the "boom-bust" economic cycles of the past. Such a change poses a number of economic challenges. The Department of the Treasury has been actively engaged with the Chinese in working toward such a transition and has established a technical cooperation program to address areas the Chinese view as impediments to greater flexibility, leading to three missions in 2004 that covered currency risk management, banking system best practices, and developing an exchange rate futures market in China.

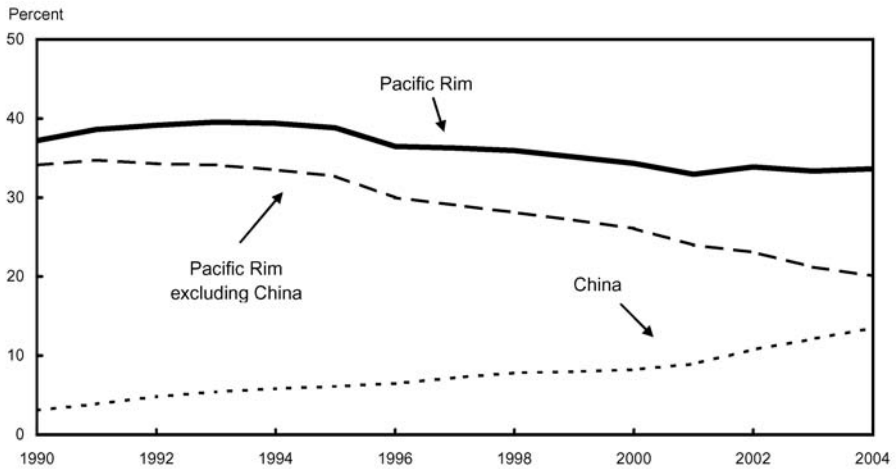
Amidst these changes in policy, trade between the United States and China has been growing rapidly. For goods trade through November 2004, China ranked as the third-largest trading partner of the United States. For most of the period since China's WTO accession, U.S. exports to China have been growing at a rate faster than its imports from China (from 2002 to 2003, for example, U.S. goods exports to China grew by 28 percent while imports from China grew by 22 percent), but this export growth is occurring from a much smaller base and so the bilateral trade deficit has grown. The growing bilateral deficit has led to concerns in some circles about China's rising prominence in world trade. In fact, the data suggest that the increased imports from China are largely coming at the expense of imports from other countries in the Pacific Rim (Chart 8-3). This change is due in large part to China's role as a final assembly platform for exports for Asian manufacturing firms. The total share of imports from the Pacific Rim has fallen from its recent high in the mid-1990s. This helps to demonstrate why bilateral trade deficits have little economic significance and why they are not a useful measure of the benefits of a trading relationship; these bilateral measures can be driven by a reallocation of trade among partners of the sort that is common in a world of hundreds of trading nations.

## Intellectual Property Rights

In 2004, the Administration launched a major initiative to protect intellectual property rights. This initiative is called STOP! (for Strategy Targeting Organized Piracy) and is the most comprehensive initiative ever advanced to combat trade in pirated and counterfeit goods. The initiative is a government-wide effort to empower American businesses to secure and enforce their intellectual property

Chart 8-3 U.S. Imports of Goods

While the share of U.S. imports of goods from China has been increasing, the share of imports from the rest of the Pacific Rim has been falling.



Note: Pacific Rim countries include: Australia, Brunei, China, Hong Kong, Indonesia, Japan, Korea, Macao, Malaysia, New Zealand, Papua New Guinea, Philippines, Singapore, and Taiwan. Imports for 2004 are annualized using monthly data through November.

Source: Department of Commerce (Bureau of the Census).

rights in overseas markets, stop fakes at our borders, expose international pirates and counterfeiters, keep global supply chains free of infringing goods, dismantle criminal enterprises that steal America’s intellectual property, and reach out to like-minded trading partners and build an international coalition to stop piracy and counterfeiting worldwide. This initiative builds on the Administration’s strong existing record of global enforcement and negotiation.

Such efforts are particularly important to the United States, which is a major producer of innovative goods. Recordings, films, books, and software are among the most successful U.S. exports. Property rights in general are vital to the functioning of a market economy (see Chapter 5, *Expanding Individual Choice and Control*). The enforcement of intellectual property rights ensures that creators of innovative products capture the returns to their efforts. This enforcement is vital as well to provide incentives to encourage future innovation (see Chapter 7, *The Global HIV/AIDS Epidemic*). Empirical studies have shown that improvements in a nation’s intellectual property protection can lead to increased trade. These studies found the effect to be particularly strong in goods that were easy to imitate, providing evidence that theft of intellectual property displaces legitimate imports. One study found that strengthened patent protection in large developing countries could increase their imports by almost 10 percent.

## Trade Liberalization

Tariffs and other barriers to trade in developing countries are still much higher than those in the United States, so there remains considerable scope for lowering barriers both to benefit our trading partners and expand market access for U.S. firms. Imposing barriers to trade means higher prices for consumers and firms and a lower standard of living.

To dismantle these barriers and make the benefits of free trade available to U.S. exporters, producers, and consumers, the Administration has pursued trade agreements on several fronts. After intense diplomacy at meetings in Geneva in July of last year, the United States achieved international agreement on a framework for moving forward on the Doha Development Agenda of WTO trade negotiations. These talks, which were launched in 2001 in Doha, Qatar, have focused on measures that will especially benefit developing nations, including the elimination of agricultural export subsidies. The Administration has also pursued free trade agreements (FTAs) that set modern rules for commerce, meet high standards of market access for goods, and break new ground in areas such as services, e-commerce, intellectual property protection, transparency and the effective enforcement of environmental and labor laws. Agreements were concluded in 2004 with Australia, Morocco, Bahrain, and with the participants in the Central American Free Trade Agreement (CAFTA), including Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic. At the same time, the United States continued negotiations with the five nations of the Southern African Customs Union (Botswana, Lesotho, Namibia, South Africa, and Swaziland) while launching new negotiations with Thailand, Panama, and the Andean nations Colombia, Ecuador, and Peru. The President has also announced to Congress his intention to begin FTA negotiations with the United Arab Emirates and Oman.

Tariff reduction commitments negotiated in our bilateral FTAs in 2004 will save foreign consumers and businesses from paying higher prices for imports and would be expected to spur increased productivity and thus higher incomes in liberalizing countries. When combined with agreements already negotiated by the Administration, partner countries accounting for almost \$50 billion in 2003 trade have committed to eventually eliminate tariffs on almost all U.S. exports. Tariffs that averaged as high as 19.6 percent for U.S. exports will be reduced to zero as a result of these agreements.

Opening markets expands opportunities for U.S. farmers, businesses, and workers. An example of the benefits of open markets can be seen in the impact of the recent trade agreement with Chile. Caterpillar Corporation manufactures mining trucks in Decatur, Illinois, that it sells around the world. The Escondida copper mine in Northern Chile—the largest copper mine in the



world—uses mining vehicles to move more than 350 million tons of material per year. Before the free trade agreement with Chile went into effect in January, Caterpillar's mining trucks were subject to tariffs of \$60,000 or more. These mining trucks now enter Chile duty-free, and have become Illinois' biggest export. In 2004, Caterpillar tripled its sales to Chile and added nearly 2,700 people to its U.S. payrolls.

The increase in market access for U.S. exports gained through trade diplomacy is especially noteworthy because the United States enters these negotiations with trade barriers that are very low. Central American nations, for example, already had extensive access to the U.S. market through the Caribbean Basin Initiative. Under the terms of the CAFTA, those countries are now making reciprocal commitments to allow in U.S. goods and services.

Bilateral FTAs can also strengthen opportunities for progress in regional and WTO negotiations. In his first term, the President made multilateral trade negotiations a priority. In the second term, concluding multilateral trade negotiations held under the auspices of the WTO will be a top priority for the Administration. Under the President's leadership, the United States successfully led the effort to ensure that 2004 was not a "lost year" for the Doha Development Agenda negotiations. Early in 2004, the United States mounted an intensive effort to get the Doha negotiations on a practical track toward success. U.S. negotiators pressed trading partners to narrow differences, establish key frameworks for detailed negotiations, and push forward to reach an agreement that would foster increased economic growth, development, and opportunity. The diplomatic effort focused on the key market access areas of agriculture, industrial goods, and services; the effort in 2004 developed frameworks that will be built upon in moving forward with the wider WTO agenda. At the end of July 2004, negotiations were successfully put back on track. WTO ministers are scheduled to meet in Hong Kong, China, at the end of 2005, to chart the final course for the negotiations.

To ensure continued U.S. global leadership on trade, two legislative steps are necessary. First, Congress needs to reaffirm the United States' commitment to the WTO in its regular review. Second, Trade Promotion Authority (TPA) must be renewed. TPA leaves the power to regulate international commerce in the hands of the Congress. Under TPA, Congress agrees to accept or reject an accord negotiated by the President without modification. If TPA is not renewed, it will likely be difficult—if not impossible—to achieve the kind of comprehensive benefits the Administration has already negotiated in its free trade agreements to date. At stake are the substantial gains that would come from a successful conclusion to the Doha talks. These gains would accrue both to the United States and to all participants in the global trading system.

# Conclusion

The United States is the world's leader in many ways and remains the leading advocate for pro-growth policies around the world. Connecting the world's economies through trade provides economic benefits at home while offering opportunities to other nations that are embracing economic reforms. Peace and prosperity go hand in hand, each reinforcing the other. The President's policies are designed to foster rising living standards at home, while encouraging other nations to follow our lead.