

**THE ANNUAL REPORT  
OF THE  
COUNCIL OF ECONOMIC ADVISERS**



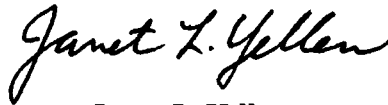
LETTER OF TRANSMITTAL

COUNCIL OF ECONOMIC ADVISERS  
*Washington, D.C., February 4, 1999*

MR. PRESIDENT:

The Council of Economic Advisers herewith submits its 1999 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,



Janet L. Yellen,  
*Chair*



Jeffrey A. Frankel,  
*Member*



Rebecca M. Blank,  
*Member*



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## CHAPTER 1

# Meeting Challenges and Building for the Future

THE ECONOMIC POLICIES of the past 6 years have nurtured and sustained what is now the longest peacetime expansion on record. By December 1998, the 93rd month since the bottom of the last recession, 18.8 million jobs had been created (17.7 million of them since January 1993). More Americans are working than ever before, the unemployment rate is the lowest in a generation, and inflation remains tame. This record of achievement is especially noteworthy in light of the troubles experienced in the international economy in 1998. The United States has not entirely escaped the effects of this turmoil—and calm has not been restored completely abroad. But the fundamental soundness of the U.S. economy prevented it from foundering in 1998's storms.

This Administration laid a strong policy foundation for growth in 1993 when the President put in place an economic strategy grounded in deficit reduction, targeted investments, and opening markets abroad. Since then the Federal budget deficit has come down steadily, and in 1998 the budget was in the black for the first time since 1969. This policy of fiscal discipline, together with an appropriately accommodative monetary policy by the Federal Reserve, produced a favorable climate for business investment and a strong, investment-driven recovery from the recession and slow growth of the early 1990s. Even while reducing Federal spending as a share of gross domestic product (GDP), the Administration has pushed for more spending in critical areas such as education and training, helping families and children, the environment, health care, and research and development. And although international economic conditions have led to a dramatic widening of the trade deficit, the United States has succeeded in expanding exports in real (inflation-adjusted) terms by almost 8 percent per year since 1993.

Clearly, there is much for Americans to be proud of in the economic accomplishments of the past 6 years. But as recent events in the rest of the world have reminded us, our prosperity is threatened when the global economy does not function well. Our immediate challenge on the international front is to help ensure that the global economy rebounds and begins to regain strength. Our longer run challenge as we enter the 21st century will be to continue to build and refine the

international economic arrangements within which countries can embrace opportunities to grow and develop through international trade and investment.

Challenges remain at home as well. The restoration of fiscal discipline is one of the most important accomplishments of the past 6 years. But one very important challenge in the years ahead will be to maintain that discipline and to ensure that fiscal policy contributes to preparing the country for the demographic challenges it faces in the next century. That is why, in his 1998 State of the Union address, the President called for reserving the future budget surpluses until Social Security is reformed. In this year's State of the Union message, the President put forward his framework for saving Social Security while meeting the other pressing challenges of the 21st century.

A second major development of the past 6 years has been the reform of the Nation's welfare system, which, together with the strong economy, has produced a dramatic reduction in welfare case loads. Here the challenge will be to continue to make work pay for all Americans who play by the rules and want to work, while preserving an adequate safety net. Finally, the strength of the American economy over the past 6 years should not blind us to the inevitability of change and the threat of disruption that is always present in a dynamic market economy. For example, difficult agricultural conditions in 1998 put stress on the new, market-oriented farm policy enacted in 1996. Similarly, the ongoing wave of mergers among large companies in the financial, telecommunications, and other industries has raised questions about the disruptions these reorganizations cause for communities and workers—questions that go beyond traditional antitrust concerns. Such questions may be better addressed by broader policies such as maintaining full employment and promoting education and training. The challenge here is to capture the long-run benefits from productivity-enhancing change without ignoring the short-run costs to those hurt by that change.

This chapter provides an overview of these challenges and the Administration's responses. First, however, we provide some background by putting the current economic expansion in its historical context.

## POLICY LESSONS FROM THREE LONG EXPANSIONS

The current economic expansion is only the third that has lasted at least 7 years, according to business-cycle dating procedures that have been applied back to 1854 (Box 1-1). It is useful to review and compare the histories of each of these long expansions in order to understand the role of macroeconomic policy in promoting balanced and noninflationary growth.

### **Box 1-1.—The Dating of Business Cycles**

Although all signs indicate that the current economic expansion has continued into 1999, its precise length will not be known until some time after it has ended. The dating of business cycles is not an official U.S. Government function. Instead, once it has become clear that the economy has reversed direction, the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER) meets to determine the turning point for historical and statistical purposes. For example, the July 1990 business-cycle peak was announced April 25, 1991, and the March 1991 trough was announced December 22, 1992. A popular recession indicator is two consecutive quarters of decline in real GDP, but the NBER does not use this approach. Rather, it defines a recession as a recurring period of decline in total output, income, employment, and sales, usually lasting from 6 months to a year.

The Employment Act of 1946 (which created the Council of Economic Advisers) established a policy framework in which the Federal Government is responsible for trying to stabilize short-run economic fluctuations, promote balanced and noninflationary economic growth, and foster low unemployment. Although the U.S. economy has continued to experience fluctuations in output and employment in the more than half a century since then, it has avoided anything like the prolonged contraction of 1873-79, or the 30 percent contraction in output and 25 percent unemployment rate of the Great Depression. Moreover, the three longest expansions of the past century—including the current one—have all occurred since the Employment Act was passed.

Each of these three long expansions can be interpreted as an experiment in macroeconomic policy. The longest—the expansion of 1961-69, which lasted 106 months—was associated with the first self-consciously Keynesian approach to economic policy. It was also associated with Vietnam War spending. The longest peacetime expansion before the current one was the expansion of 1982-90, which lasted 92 months. Although the economic philosophy underlying the policies of that period is often characterized as anti-Keynesian, this expansion, too, featured a stimulative fiscal policy. The current expansion is the only one of the three in which fiscal policy was *contractionary* rather than expansionary, reflecting the budget situation at the time and the view that fiscal discipline would lower interest rates and spur long-term economic growth.

### **KEYNESIAN ACTIVISM IN THE 1961-69 EXPANSION**

In the early 1960s the Council of Economic Advisers advocated activist macroeconomic policies based on the ideas of the British economist John Maynard Keynes. The Council diagnosed the economy at

that time as suffering from “fiscal drag” arising from a large structural budget *surplus*. (The structural budget balance is the deficit or surplus that would arise from the prevailing fiscal stance if the economy were operating at full capacity.) The marginal tax rates then in effect, which were far higher than today’s, were seen as causing tax revenues to rise rapidly as the economy approached full employment, draining purchasing power and slowing demand before full employment could be achieved. The problem was not the fact that Federal Government receipts and expenditures were sensitive to changes in economic activity—this sensitivity plays an important automatic stabilizing role, particularly when economic activity falters, as reduced tax payments and increased unemployment compensation help preserve consumers’ purchasing power. The problem was that the automatic stabilizers kicked in too strongly on the upside, not only preventing the economy from reaching full employment but also, ironically, preventing the actual budget from balancing. Thus, President John F. Kennedy proposed a tax cut in 1962, which was enacted in 1964, after his death.

This tax cut provided further stimulus to the economic recovery that had begun in 1961. The unemployment rate continued to fall, until early in 1966 it dropped below the 4 percent rate that was considered full employment at the time. Inflation had been edging up as the unemployment rate came down, but it then began to rise sharply (Chart 1-1). Although the changed conditions appeared to call for fiscal restraint, President Lyndon B. Johnson was reluctant to raise taxes or scale back his Great Society spending initiatives. Meanwhile Vietnam War spending continued to provide further stimulus.

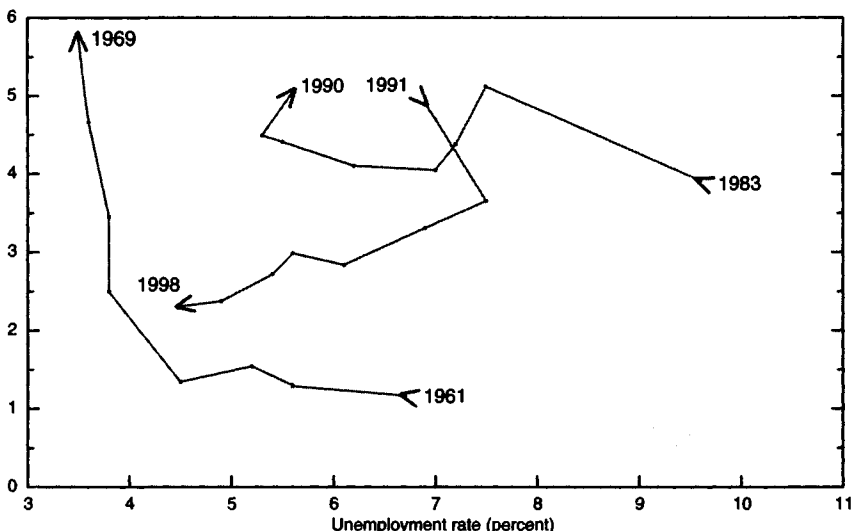
At the time, policymakers believed that the rise in inflation could be unwound simply by moving the economy back to 4 percent unemployment, but when restraint was finally applied it produced a rise in unemployment with little reduction in inflation. This so-called stagflation, together with a slowdown in productivity and a series of oil price shocks in the 1970s, dealt a serious setback to the prevailing view among economists that economic policy could be easily adjusted to achieve the goals of the Employment Act.

## THE SUPPLY-SIDE REVOLUTION AND THE 1982-90 EXPANSION

At the beginning of the Administration of President Ronald Reagan in 1981, the economy was bouncing back from the short 1980 recession, but it was also experiencing very high inflation. President Reagan’s program for economic recovery called for large tax cuts, increased defense spending, and reduced domestic spending. Although advocates of these policies invoked the 1964 tax cut as precedent, the justification offered for this policy was not Keynesian demand stimulus. Rather it was the “supply-side” expectation that substantial cuts in marginal tax rates would call forth so much new work effort and investment that

**Chart 1-1 Core Inflation and Unemployment in Three Long Expansions**  
 Inflation rose late in both the 1960s and 1980s expansions, but inflation has remained low in the current expansion.

Change in consumer price index, all items excluding food and energy (percent)



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

the economy's potential output would grow rapidly, easing inflationary pressure and bringing in sufficient new revenue to keep the budget deficit from increasing. In the short run, however, this expansionary fiscal policy collided with an aggressive anti-inflationary monetary policy on the part of the Federal Reserve. The budget deficit ballooned in the deep recession of 1981-82, and it stayed large even after the Federal Reserve eased and the economy began to recover.

Compared with the 1961-69 expansion, the 1982-90 expansion was marked by higher levels of both inflation and unemployment. But the main distinguishing feature of this expansion was the large Federal budget deficits and their macroeconomic consequences. In the early 1980s the combination of an expansionary fiscal policy and a tight monetary policy produced high real interest rates, an appreciating dollar, and a large current account deficit. (The current account, which includes investment income and unilateral transfers, is a broader measure of a country's international economic activity than the more familiar trade balance.) Although borrowing from abroad offset some of the drain on national saving that the budget deficit represented, and prevented the sharp squeeze on domestic investment that would have taken place in an economy closed to trade and foreign capital flows, the effect of this policy choice was a decline in net national saving and investment after 1984. As in the 1961-69 expansion, inflation began to rise as the economy moved toward high employment. By this time, however, the prevailing view was that inflation could not be reversed

simply by returning to the full-employment unemployment rate (Box 1-2). Instead the economy would have to go through a period of subnormal growth in order to squeeze out inflation.

### **Box 1-2.—Full Employment and the NAIRU**

Maintaining full employment is a major goal of macroeconomic policy, but how exactly is that objective defined? The prevailing view in the 1960s was that lower unemployment rates were associated with higher rates of inflation, and that full employment was defined by the unemployment rate associated with a tolerable inflation rate. At that time, the full-employment unemployment rate was thought to be about 4 percent. The experience of the 1970s helped persuade economists that, once the unemployment rate dropped below a certain level, prices would not just rise but accelerate (that is, the inflation rate would rise). The full-employment unemployment rate came to be defined as the nonaccelerating-inflation rate of unemployment, or NAIRU.

Statistical studies suggest that the NAIRU was higher from the mid-1970s through the 1980s than it was in the 1960s and that it has come down somewhat in the 1990s. This evolution has been attributed to a variety of factors, including changes in the demographics of the labor force. For example, the United States now has a more mature labor force, as a consequence of the aging of the baby-boom generation, and more mature workers tend to experience less unemployment than younger ones. Although the NAIRU is an indicator of the risk of inflation, estimates of the NAIRU have a wide band of uncertainty and should be used carefully in formulating policy. The NAIRU implicit in the Administration's forecast has drifted down in recent years and is now within a range centered on 5.3 percent.

## **DEFICIT REDUCTION AND THE CURRENT EXPANSION**

The economy was out of the 1990-91 recession when President Bill Clinton took office, but the recovery was weak and job growth appeared slow. Budget deficits were very large, partly because of the recession but also because the structural deficit remained large. The President's economic program sought to get the economy moving again while bringing the budget deficit under control. It was based on the idea that reducing the Federal budget deficit would bring down interest rates and stimulate private investment. With a responsible fiscal policy in place, and with favorable developments in inflation and productivity, the decline in the unemployment rate to less than 5 percent did not lead to interest rate hikes that could have choked off the

expansion prematurely. In fact, the economy witnessed a combination of low consumer price inflation and low unemployment that compared favorably with the low "misery index" achieved in the late 1960s. (The misery index is the sum of the inflation and unemployment rates.) This time, however, inflation is tame rather than rising.

Judged by the objectives of stabilization policy (inflation and unemployment), the current economic expansion has been very successful (Table 1-1). Three-quarters of the way through the eighth year of expansion, inflation remains low even though the unemployment rate has been below most estimates of the NAIRU. This situation stands in marked contrast to the sharply rising inflation experienced at the end of

TABLE 1-1.— *Stabilization Policy Indicators in Three Long Expansions*

| Item                                   | First<br>6 years | 7th year | Last<br>12 months |
|--|------------------|----------|-------------------|
| 1961-69                                |                  |          |                   |
| Core inflation rate <sup>1</sup> ..... | 1.8              | 4.4      | 5.9               |
| Unemployment rate <sup>2</sup> .....   | 5.1              | 3.8      | 3.5               |
| 1982-90                                |                  |          |                   |
| Core inflation rate <sup>1</sup> ..... | 4.4              | 4.4      | 5.1               |
| Unemployment rate <sup>2</sup> .....   | 7.2              | 5.3      | 5.3               |
| 1991-present <sup>3</sup>              |                  |          |                   |
| Core inflation rate <sup>1</sup> ..... | 3.1              | 2.3      | 2.5               |
| Unemployment rate <sup>2</sup> .....   | 6.3              | 4.8      | 4.5               |

<sup>1</sup> Average annual percent change in the consumer price index for all items excluding food and energy.

<sup>2</sup> Average rate for the period (percent).

<sup>3</sup> Through December 1998.

Note. Based on seasonally adjusted data.

Sources: Department of Labor (Bureau of Labor Statistics) and National Bureau of Economic Research.

the 1960s expansion and the milder price acceleration seen at the end of the 1980s expansion. To be sure, this good inflation performance has been aided by favorable conditions such as a continuing sharp decline in computer prices, a drop in oil prices, rapid growth of industrial capacity, and downward pressure on prices of traded goods due to weakness in the world economy. And, as discussed in Chapter 2 of this Report, the Administration (as well as the consensus of private forecasts) projects a moderating of growth over the next 2 years. What is significant, however, is that the actions taken over the past 6 years to reduce the budget deficit created conditions in which the Federal Reserve could accommodate steady noninflationary growth. And, of course, the strong economic performance helped improve the budget balance even further.

Growth in GDP has also been solid. With slower growth in the working-age population and slower trend productivity growth since the early 1970s, it is understandable that GDP has grown more slowly

than it did in the 1960s (Table 1-2). Moreover, growth over the 1980s expansion partly reflects how far below potential output the economy was at the start of that expansion, which followed a deep recession, rather than a particularly strong underlying growth trend. Finally, growth in aggregate income matters for some purposes, but productivity growth is what matters for real wages and a rising standard of living over the longer term. And productivity growth has continued relatively strong well into this expansion—it has not exhibited the decline that often occurs late in expansions. Nevertheless, the rate of productivity growth over this expansion remains well below that achieved in the 1960s, before the productivity slowdown.

TABLE 1-2.—*Economic Growth Indicators in Three Long Expansions*  
[Average annual percent change]

| Item                                       | From trough | From previous peak <sup>1</sup> |
|--|-------------|---------------------------------|
| 1961-69                                    |             |                                 |
| Real GDP .....                             | 4.8         | 4.3                             |
| Civilian noninstitutional population ..... | 1.5         | 1.5                             |
| Civilian labor force .....                 | 1.7         | 1.7                             |
| Nonfarm business sector productivity ..... | 3.0         | 2.8                             |
| 1982-90                                    |             |                                 |
| Real GDP .....                             | 3.7         | 2.6                             |
| Civilian noninstitutional population ..... | 1.2         | 1.2                             |
| Civilian labor force .....                 | 1.6         | 1.6                             |
| Nonfarm business sector productivity ..... | 1.3         | 1.0                             |
| 1991-present <sup>2</sup>                  |             |                                 |
| Real GDP .....                             | 3.0         | 2.6                             |
| Civilian noninstitutional population ..... | 1.0         | 1.0                             |
| Civilian labor force .....                 | 1.2         | 1.1                             |
| Nonfarm business sector productivity ..... | 1.5         | 1.4                             |

<sup>1</sup> Peaks of 1960 II, 1980 I, and 1990 III.

<sup>2</sup> Through 1998 III.

Note. Based on seasonally adjusted data, except population.

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

Relatively slow productivity growth continues to prevent the kind of wage and income growth that produced a doubling in living standards between 1948 and 1973. As discussed in Chapter 3, however, the sustained tight labor market that this expansion has created in the past few years has brought benefits to the vast majority of American workers, including groups that had fallen behind over the past two decades or so, such as low-wage workers and minorities. A labor market like that of today has numerous benefits. It increases the confidence of job losers that they will be able to return to work; it lures discouraged workers back into the labor force; it enhances the prospects of those already at work to get ahead; it enables those who want or need to switch jobs to do so without a long period of joblessness; and it lowers

the duration of the typical unemployment spell. It can reduce long-term structural unemployment by providing jobs and experience to younger and less skilled workers, thus increasing their longer run attachment to the labor force. In short, a sustained tight labor market helps the rising tide of economic growth lift all boats.

This expansion has illustrated how the mix of monetary and fiscal policy can affect the composition of output. Unlike the expansion of the 1980s, which saw an expansionary fiscal policy restrained by tight monetary policy, the current expansion has taken place under conditions of fiscal restraint and an accommodative monetary policy. The 1980s policy mix brought with it relatively high real interest rates, declining net national saving and investment, and a large current account deficit, which changed the United States from the world's largest creditor Nation to its largest debtor. Strong performance by the U.S. economy in the 1990s is again associated with a strong dollar and, most recently, a widening trade deficit, as the United States has continued to absorb foreign goods while weakness abroad has reduced demand for U.S. goods. On balance, however, the current account deficits of the 1990s have been the result of generally rising net national investment remaining greater than generally rising net national saving.

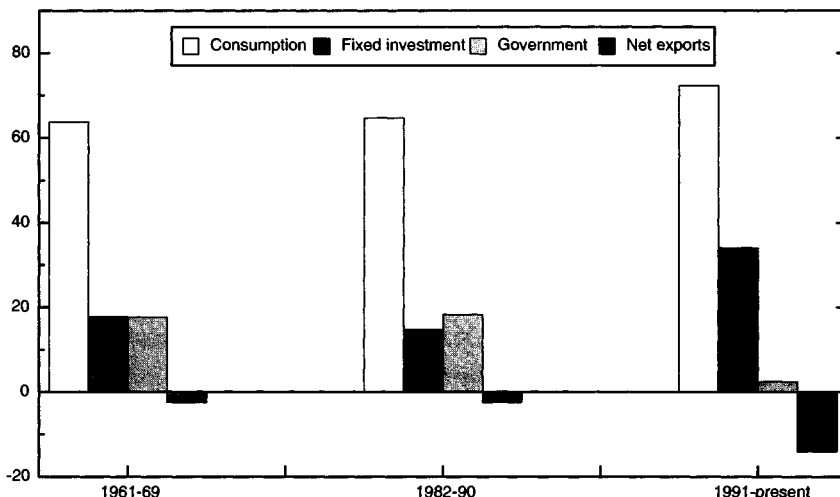
The current account balance depends on the *gap* between saving and investment. But future growth depends on the *levels* of saving and investment. Since 1993, net national saving has increased by about 3 percentage points as a share of GDP, to better than 6½ percent in the first three quarters of 1998. The current expansion has been distinguished by the large contribution of private fixed investment to GDP growth and the negligible contribution of government spending (Chart 1-2). Strong investment has already been associated with strong growth in capacity, which has helped keep inflation in check, and may have contributed to maintaining growth in productivity as the expansion has matured. Chapter 2 discusses this investment boom in greater detail.

## CONCLUSION

Through a combination of sound policy, other favorable conditions, and of course the energetic efforts of millions of American workers and businesses, the current economic expansion has achieved both high employment and low inflation. Longer run trends in productivity and population growth will ultimately determine how fast the economy grows. But the investment that has driven the current expansion should pay off in stronger growth and productivity and higher future standards of living than otherwise would have been the case. With the Federal budget once more under control, large deficits will not constrain future policy choices.

**Chart 1-2 Contributions to Economic Growth in Three Long Expansions**  
 More than a third of the increase in real GDP in the current expansion came from fixed investment.

Share of total increase in GDP (percent)



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

## PRESERVING FISCAL DISCIPLINE

Reducing the Federal budget deficit has been a centerpiece of this Administration's economic policy. Between 1993 and 1997 the deficit came down steadily. Last year, for the first time since 1969, the budget was in the black, with the largest surplus as a share of GDP in over 40 years.

The Administration now projects substantial surpluses in the unified Federal budget well into the future. (The unified budget includes both on-budget and off-budget Federal Government programs.) With no further action, however, the aging of the U.S. population and continued growth in health care spending per person would eventually push the budget back into deficit. The favorable near-term outlook has provided an important opportunity to address these longer term problems. In his 1999 State of the Union address, the President presented his plan to use much of the projected budget surpluses to help save Social Security and strengthen Medicare, while preserving the fiscal discipline that has been so hard won over the past 6 years.

## REACHING SURPLUS

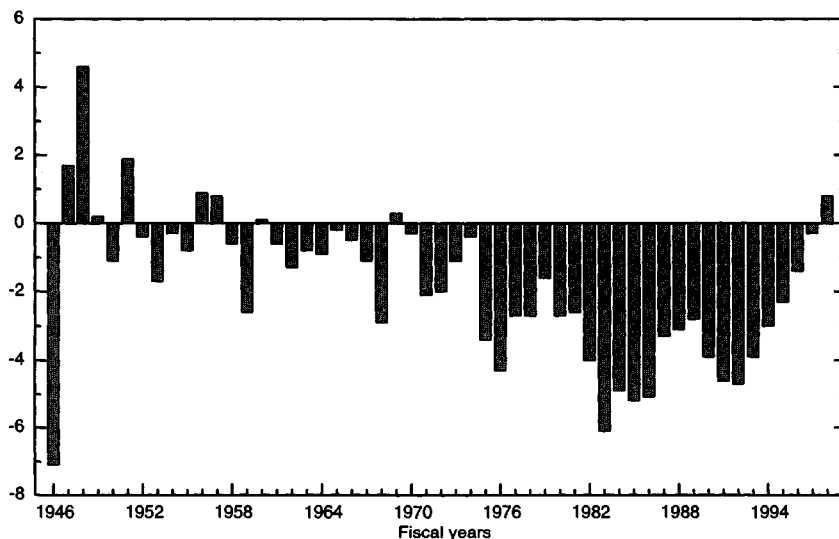
Except during wars and economic downturns, the Federal budget has stayed roughly balanced for most of the Nation's history. Yet the large budget deficits that emerged in the early 1980s persisted

throughout that decade of peace and economic expansion, and then worsened in the 1990-91 recession (Chart 1-3). In 1992 outlays exceeded receipts by \$290 billion, or 4.7 percent of GDP. When the President took office in January 1993, the deficit was projected to reach almost \$400 billion in 1998 and over \$600 billion in 2003, assuming no change in policy. By 1998, however, receipts exceeded outlays by \$69 billion, or 0.8 percent of GDP. (All references to years in this section are fiscal years running from October through September, unless otherwise noted.)

**Chart 1-3 The Federal Budget Balance, 1946-98**

After a period of persistent large deficits in the 1980s, the Federal budget surplus in 1998 was the largest as a share of GDP since 1957.

Percent of GDP



Source: Office of Management and Budget.

Between 1992 and 1998 the Federal budget balance improved by about 5½ percent of GDP. In an accounting sense, this dramatic change is attributable in roughly equal parts to an increase in receipts and a decline in outlays, both as shares of GDP. More fundamentally, three forces have been at work: policy changes, faster-than-anticipated economic growth, and higher-than-expected tax revenues, even after adjusting for faster economic growth.

In 1993 the President and the Congress enacted a deficit reduction package designed to cut over \$500 billion from the deficits expected to accumulate over the following 5 years. The program slowed the growth of entitlements and extended the caps on discretionary spending put in place in 1990. It raised the tax rates of only the 1.2 percent of taxpayers with the highest incomes, while cutting taxes for 15 million working families. Four years later the President and the Congress finished

the job of reaching budget surplus by passing the Balanced Budget Act of 1997, which incorporated additional deficit reduction measures.

Strong economic growth also played an important role in reducing the deficit. Faster-than-expected growth created more income and more tax revenue. In addition, it reduced unemployment insurance benefits and outlays for other means-tested entitlement programs—although the effect of better economic performance is considerably smaller on the spending side than on the revenue side.

Finally, technical factors boosted receipts and depressed outlays over and above what policy changes and macroeconomic conditions can account for. In 1997 and again in 1998, higher-than-anticipated individual income tax collections were by far the largest source of technical differences on the revenue side. These appear to have arisen from higher capital gains realizations and changes in the distribution of income among taxpayers (a shift toward more taxable income in the higher brackets), most likely reflecting strong stock market performance. An important technical factor on the spending side has been lower-than-expected outlays for Federal health programs (primarily Medicare and Medicaid), most likely reflecting slower growth in health care costs economy-wide.

## FISCAL POLICY IN AN ERA OF SURPLUSES

Achieving a surplus in the Federal budget has provided the foundation for tackling longer term problems. Indeed, balancing the budget has been the critical first step in improving the Nation's future fiscal and economic strength. The most important of the longer term problems is posed by the aging of the population, with its implications for future imbalances in Social Security and Medicare.

Before turning to this issue, however, it is worth emphasizing that achieving long-run fiscal discipline does not, and should not, preclude the possibility of running a short-run deficit if needed for stabilization purposes. The automatic stabilizers in the budget will continue to be the most important instrument of fiscal policy for muting short-term fluctuations in economic activity. But as Japan's current problems remind us, an economy can become mired in stagnation to such an extent that discretionary fiscal stimulus may be appropriate. The elimination of large structural budget deficits frees fiscal policy to undertake such a role if needed.

### *The Demographic Challenge and Social Security*

Social Security is an extremely successful social program. For 60 years it has provided Americans with income security in retirement and protection against loss of family income due to disability or death. Social Security retirement benefits are indexed for inflation and provide a lifetime annuity—a package that has been difficult if not impossible to obtain in the financial marketplace. In any case, fewer than half of

all individuals aged 65 and older received any private pension benefits in 1994. Social Security benefits are the largest source of income for two-thirds of those in this age group and the only source for 18 percent of them. Social Security has achieved dramatic success in helping reduce the poverty rate among the elderly from 35 percent in 1959 to 10.5 percent in 1997. But Social Security is more than just a pension plan: it is a family protection plan, and nearly every third beneficiary is not a retiree. For example, one of every six 20-year-olds will die before reaching retirement age. For the average wage earner who dies leaving a spouse and two children, Social Security provides survivors' benefits roughly equivalent in value to a \$300,000 life insurance policy. In addition, three of every ten 20-year-olds will become disabled for some period during their working lives, and for them Social Security provides disability protection.

The most commonly used yardstick to measure the financial soundness of the Social Security system is the 75-year actuarial balance—the difference between expected income and costs over the next 75 years. The Social Security actuaries now project that the current balance in the trust fund, together with projected revenues over the next 75 years, will be insufficient to fund the benefits promised under current law. By 2013 payroll contributions, together with the part of income tax receipts on Social Security benefits that is deposited in the trust fund, are expected to fall short of benefits. By 2021 the shortfall is expected to exceed the trust fund's interest earnings, so that the fund will begin to decline. And by 2032 the trust fund is expected to be depleted, although contributions would still be sufficient to pay about 75 percent of current-law benefits thereafter. Of course, future taxes and benefits will depend on a variety of economic and demographic factors that cannot be predicted perfectly, so the actual problem may be smaller—or larger—than we now believe. Nevertheless, the actuaries' intermediate projections imply that the imbalance in the old age, survivors, and disability insurance program (OASDI, the main component of Social Security) over the next 75 years amounts to around 2¼ percent of taxable payroll (which equals about 1 percent of GDP today).

The key factors contributing to the projected OASDI imbalance are improvements in life expectancy and a reduction in birth rates, which have put the United States on a path of rapid decline in the number of employed workers for every retiree. When the Social Security Act was passed in 1935, the life expectancy of a 65-year-old American was about 13 years. Today, life expectancy for a 65-year-old is 18 years and rising. Meanwhile people are retiring earlier. In 1950 the average age for first receiving Social Security retirement benefits was 68; today it is 63. As a consequence of these changes, the ratio of employed workers to retirees has fallen from about five to one in 1960 to three and a half to one today. In only 30 years' time it will be just two to one and still falling.

In addition to its effects on Social Security retirement and disability benefits, this demographic transition will have important effects on the Medicare and Medicaid programs as well as on the broader economic environment. Medicare is a Federal program that pays for health care for the elderly and certain disabled persons; Medicaid is a joint Federal-State program that provides medical assistance, including nursing home care, to those with low incomes among the elderly, the disabled, pregnant women, children, and members of families with dependent children. Both programs face steeply rising costs over time as the population ages and as the cost of providing medical care likely rises further. Federal spending on Medicaid is financed out of general revenues. Spending on Medicare is financed in two parts: hospital insurance (part A) is funded through the hospital insurance payroll tax, whose proceeds go to a dedicated trust fund, and supplementary medical insurance (part B) is funded through general revenues and monthly premiums paid by beneficiaries. The intermediate projections of the Medicare actuaries imply that the hospital insurance trust fund will be exhausted in 2008.

For the Nation as a whole, the core of the problem is how to provide a high standard of living for both workers and retirees in the next century, even though a smaller share of the population will be in the work force than today. A natural solution is to make workers more productive, by increasing investment in both physical and human capital. Investing in productive capital expands the total economic pie, and that is the prerequisite to meeting the retirement costs of the baby-boom generation without unduly burdening future workers. The key to accomplishing this is to increase national saving. The Federal Government can play its part by maintaining fiscal discipline. Indeed, the President's proposal to use much of the currently projected budget surpluses for Social Security and Medicare reform would add about 2 percent of GDP to the contribution of government saving to national saving over the next 15 years.

### *The Administration's Policy*

In his 1998 State of the Union address, the President proposed to reserve the budget surplus until agreement had been reached on a plan to secure the financial viability of Social Security. To accomplish this task, the President suggested a process of public education and discussion, followed by the forging of a bipartisan agreement. The President later set forth five principles to guide the reform process:

- *Strengthen and protect Social Security for the 21st century.* This is an overriding goal, and it rules out proposals that fail to provide a comprehensive solution to the solvency problem. For example, a plan to divert existing payroll taxes into a new system of individual accounts, without other, offsetting changes, would fail the test to the

extent that it would reduce Social Security's revenues and make the existing imbalance even larger.

- *Maintain universality and fairness.* The current program provides benefits on a progressive basis, and ensuring progressivity is an important standard by which reform proposals should be judged.
- *Provide a benefit that people can count on.* Any proposed reform of Social Security must continue to offer people a secure base for retirement planning.
- *Preserve financial security for low-income and disabled beneficiaries.* The commitment to the disability and survivors' insurance aspects of the OASDI program must be maintained.
- *Maintain fiscal discipline.* Fiscal discipline is essential to ensure that the emerging budget surpluses are not drained before Social Security reform has been addressed, and that fiscal policy plays a helpful role in preparing for the retirement of the baby-boomers.

In his 1999 State of the Union address, the President put forward a comprehensive framework for Social Security reform that satisfies these principles. First, about three-fifths of the projected budget surpluses over the next 15 years would be transferred to the Social Security trust fund. Second, about a fifth of the transferred surpluses would be invested in equities to achieve higher returns, just as private and State and local government pension funds do. The Administration intends to work with the Congress to ensure that these investments are made by the most efficient private sector investment managers, independently and without political interference. These two steps alone would extend the solvency of the Social Security system until 2055. Third, the President called for a bipartisan effort to make further reforms to Social Security that would extend its solvency to at least 2075.

The President repeated his commitment to "save Social Security first." He also stated that—if Social Security reform is secured—the remaining projected surpluses over the next 15 years should be dedicated to three purposes. First, about 15 percent of the projected surpluses would be transferred to the Medicare trust fund. The Administration, the Congress, and the Medicare commission should work to use these funds as part of broader reforms. Even without such reforms, however, the transfers would extend the projected solvency of the Medicare trust fund to 2020. Second, about 12 percent of the projected surpluses would be used to create Universal Savings Accounts, which would help people save more for their retirement needs. The government would provide a flat tax credit for Americans to put into their accounts and additional tax credits to match a portion of each dollar that a person voluntarily puts into his or her account. These accounts would not be part of the Social Security system but would provide additional retirement resources. The remainder of the projected surpluses over the next 15 years would be

reserved to improve military readiness and to meet pressing domestic priorities in such areas as education and research.

Within this framework, the national debt of the United States would decline dramatically. Debt held by the public would fall from about 45 percent of GDP today to less than 10 percent in 2014. That would be the smallest burden of government debt on the economy since the United States entered World War I in 1917.

## MEETING THE INTERNATIONAL CHALLENGE

This Administration has been committed from the start to outward-looking trade and investment policies. And in his 1999 State of the Union address the President called for a new consensus in the Congress to grant him traditional trade-negotiating authority that permits trade agreements negotiated with other nations to be submitted to an up-or-down Congressional vote without amendment. At the same time he proposed the launch of an ambitious new round of global trade negotiations within the World Trade Organization. The general principle behind the Administration's international economic policy is that open domestic markets and an open global trading system are a better way to raise wages and living standards over the longer term than are trade protection and isolationism. Recent strains on the fabric of the international economy have increased the allure of protectionism in some quarters. But the main lesson should be that it is essential to promote growth in the world economy, to help crisis-stricken economies recover, and to reform the international financial system in ways that make future crises less likely without abandoning the benefits that come with increased international trade and investment flows.

During the year and a half that has elapsed since the collapse of the Thai currency in July 1997, Asia's currency crisis has developed into a more widespread crisis affecting many countries around the globe. As the crisis has spread, it has impacted global commodity markets, impaired economic development, and imposed extraordinary hardship in the crisis-afflicted countries, all the while posing risks to growth worldwide, including in the United States and other industrial countries. According to projections by the International Monetary Fund (IMF), global growth is now expected to reach a modest 2.2 percent in 1999, which represents a decline both from the 4.2 percent rate attained in 1997 and from its long-run historical average of 4 percent.

## CONTAINING THE CRISIS AND PROMOTING RECOVERY

Since the crisis began, the United States has led the international community's efforts to promote world economic growth, to stabilize international financial conditions, and to implement reforms to reduce

the vulnerability of the international system to future crises. These initiatives are described in detail in Chapters 6 and 7.

A first prerequisite for restoring strong world economic performance is strong growth in the industrial countries that are the main customers of the crisis-afflicted economies. This need has been clearly recognized and addressed in both words and deeds by the United States and its partners among the Group of Seven (G-7) large industrial nations. In October the G-7 finance ministers and central bank governors issued a joint statement indicating that, in their view, the balance of risks in the world economy had shifted. With inflation low and well controlled, countries should commit themselves to preserving or creating the conditions for sustainable domestic growth. Monetary conditions were subsequently eased in the key industrial countries. In the United States, the Federal Reserve reduced the Federal funds rate three times, helping restore confidence and liquidity. Japan, Canada, and most of the major European countries also lowered interest rates. Japan, a country in deep recession whose recovery is particularly critical to the growth prospects of its crisis-afflicted Asian trade partners, has also taken steps to provide fiscal stimulus and has committed substantial resources to strengthen its financial system. Much remains to be done, however, and many private forecasts are for continuing contraction in Japan. Although it is premature to conclude that the rest of the world economy is out of peril, conditions have improved noticeably since October, when it appeared that the world might be headed into a generalized global credit crunch.

It is important to emphasize that, in serving as an engine of global growth during this period, the United States will inevitably see an increase in its already sizable trade deficit, and some sectors, particularly those heavily exposed to trade, will experience disproportionate impacts. The result may be a rise in calls for protection, and it will therefore be important to find constructive approaches to the disruptions caused by trade. The United States remains committed to outward-looking, internationalist policies and has urged the crisis-impacted countries to keep their own markets open.

Beyond working to ensure growth in the industrial world, the Administration has focused since the onset of the crisis on the need to contain the international contagion of financial disruption and to restore the confidence of market participants. The Administration has supported the IMF in its goal of providing financial assistance to countries in crisis that are willing to implement the reforms needed to restore economic confidence and strengthen the underpinnings of their economies, including their corporate and financial sectors. The emphasis of IMF programs on financial sector reform reflects the growing consensus, discussed in Chapter 6, that structural weaknesses, particularly in the process of financial intermediation, were a key element in initiating the crisis. It appears that many countries in East Asia have

now made considerable progress toward establishing the foundation for recovery. In addition, an IMF stabilization package for Brazil, supplemented by bilateral financing, was arranged in November.

As the crisis spread, the Administration recognized that its contagion threatened even countries that had taken great strides in implementing sound macroeconomic and structural policies and had worked to strengthen the fundamentals of their economies. The President therefore proposed, and the G-7 leaders agreed to establish, an enhanced IMF facility to provide contingent, short-term lines of credit that could be drawn upon by countries pursuing strong, IMF-approved policies, accompanied, as appropriate, by additional bilateral finance. As the scope of the crisis widened, the resources of the IMF became increasingly strained. A key step in expanding them was for the United States to meet its own financial obligations to the organization. The Administration proposed, and in October the Congress approved, \$18 billion in funding, opening the way for about \$90 billion of usable resources to be provided by all IMF members to the liquidity-strapped institution.

To address the suffering inflicted by the crisis on the citizens of the affected countries, the Administration has proposed policies to stimulate economic recovery and alleviate hardship. Another decade of lost growth like that endured during the debt crisis of the 1980s would be intolerable, and the Administration recognizes that the industrial countries must do more than just serve as good customers for the products of crisis-impacted countries. One problem that is delaying recovery in several of the Asian crisis countries is that large numbers of companies and banks, including many that were in good health before the crisis, now face unmanageable debt burdens. Companies and financial institutions in Indonesia, the Republic of Korea, and Thailand, for example, face substantial overhangs of bad debt as a result of high interest rates and currency depreciations. To address this systemic problem, the President proposed the exploration of comprehensive plans to help countries restructure debt and restore the flow of credit needed for firms to operate. The Asian Growth and Recovery Initiative, jointly announced by the United States and Japan in November 1998, is designed to promote this goal. In addition, many crisis-afflicted countries lack effective social safety nets. Therefore the Administration also sought, and agreement was reached, to establish a new World Bank emergency facility to support social safety net spending focused on the most vulnerable citizens of these countries.

## **STRENGTHENING THE INTERNATIONAL FINANCIAL ARCHITECTURE**

The most important issue raised by the recent international crisis is how to make sure the world never again faces another one like it. Unfortunately, there is no silver bullet—no simple solution that would simultaneously guarantee countries access to global capital flows and eliminate the risk of a crisis of confidence once again withdrawing that

access. Even so, international agreement is finally emerging on some steps that can and should be taken to strengthen the architecture of the financial system, to make it less crisis prone. Chapter 7 is devoted to a discussion of potential reforms, including those proposed in recent reports by working groups of central bank governors and finance ministers from a group of industrial and key emerging market countries, informally dubbed the G-22.

The G-22 reports focus on measures to increase transparency and accountability in the financial operations of individual countries, of private financial and corporate institutions, and of international financial institutions such as the IMF and the World Bank. Greater transparency and accountability will enhance the availability, relevance, and reliability of information that investors need to evaluate the risks in lending. The reports also propose a series of reforms to strengthen domestic financial institutions: improvements in prudential supervision and regulation are particularly needed to create stronger incentives for borrowers and lenders to weigh risks and act with appropriate discipline, thereby reducing the odds of a crisis. Finally, the reports identify policies that could improve the coordination of creditors' interests during a future crisis and promote its orderly, cooperative, and equitable resolution.

Again, no magic formula can prevent the recurrence of currency and financial crises. But things can be done to limit their frequency, their impact, and their pernicious tendency to spread from country to country. Therefore, even as the United States works to contain the current crisis and help restore growth in the affected parts of the world, it will also work with the G-7 and through other international forums to implement reforms of the international financial architecture that will help achieve this longer term goal. Such reform is crucial for restoring support in an international economic system based on trade and investment flows that can contribute to rising global living standards in the 21st century. Additional necessary steps are described in Chapter 7.

## EMBRACING CHANGE WHILE PROMOTING FAIRNESS

The tradeoff between efficiency and fairness is a classic problem in formulating economic policy. Policies that confer benefits broadly sometimes confer them unevenly, imposing relatively high costs on a relative few. In well-functioning markets, the broadly distributed gains usually outweigh the concentrated losses—often many times over. But those who are hurt naturally seek relief through the political process, and if government responds by substituting political remedies for market outcomes, it can dissipate the aggregate gains.

Increases in the Nation's standard of living over the longer term require that we embrace change and do not retreat from the constant

succession of new opportunities and challenges of an ever-changing world. However, considerations of fairness require that we ensure that no part of our society bears disproportionate losses for the sake of achieving net gains for the rest. More pragmatically, achieving political consensus to embrace worthwhile change sometimes requires looking out for the interests of those who are visibly harmed, even if that means sacrificing some portion of the potential gains. Three very different areas of current policy concern—agriculture, corporate mergers, and international trade—illustrate these difficult choices.

## AGRICULTURE

For more than a decade, a new, bipartisan farm policy has directed farmers to seek income increasingly from markets rather than from Federal subsidies. The 1994 Crop Insurance Reform Act and the Federal Agriculture Improvement and Reform (FAIR) Act of 1996 sought to replace the farm income safety net, based on government-managed price and income supports, with a system in which farmers manage their own risk through crop diversification, transactions in futures markets, and government-subsidized crop and revenue insurance. However, when the President signed the FAIR act, he expressed his concern that it failed to provide an adequate safety net for family farmers, and he reiterated his commitment to work with the Congress to strengthen that safety net.

Farmers prospered in the first few years under the FAIR act. Net farm income rose to a record \$53.4 billion in 1996 and remained high in 1997, as export demand grew and world commodity prices rose from 1995 levels. In addition, farmers benefited from the transitional payments provided by the 1996 act, which boosted farm income by about \$6 billion in both 1996 and 1997. In 1998, however, farm income fell, as commodity prices dropped sharply and farmers confronted a number of weather-related problems. In response, the Administration insisted on a \$6 billion emergency assistance package to boost farm income. Net farm income in 1998 is estimated to have been about \$48 billion, only slightly less than the 1997 figure of \$50 billion. The President has also pledged to work with the Congress this year to reform the crop insurance program and farm income assistance.

The experience of 1998 reflected the tension inherent in a farm policy that is market oriented yet tries to provide an adequate safety net for family farmers. Current farm policy encourages farmers to make their planting decisions on an economic basis rather than with an eye to government support, while helping them manage risk by subsidizing insurance against both poor harvests and low prices. But to the extent that farmers have a reasonable expectation that the government will step in to provide assistance in the event of an emergency, they are unlikely to take all the appropriate risk management steps themselves. This gives rise to a moral hazard problem that cannot be

eliminated entirely, because the government will always be under strong pressure to address what are perceived to be legitimate disasters.

## MERGERS

The United States is in the midst of its fifth corporate merger wave of the century. The value of all mergers and acquisitions announced in 1997 was almost \$1 trillion, and activity in 1998 was over \$1.6 trillion. By almost any quantitative standard the current boom is substantial. Measured relative to the size of the economy, only the spate of trust formations at the turn of the century comes close to the level of current merger activity. Measured relative to the market value of all U.S. companies, however, the 1980s boom was roughly comparable in size.

Qualitatively, the current merger wave is similar to those before the 1980s in that it is taking place in a strong stock market, with stock rather than cash the preferred funding source. But unlike the pre-1980s transactions, many recent mergers are neither purely horizontal (between firms in the same or similar industries) as in the 1890s and 1920s, nor purely conglomerate (between firms of different industries) as in the 1960s and 1970s. Rather, they represent market extension mergers, in which the merging companies are in the same industry but serve different and noncompeting markets, or synergy-seeking mergers, in which companies in related markets combine to take advantage of economies of scope. In contrast to the 1980s, when many mergers were primarily motivated by financial considerations, today's mergers are primarily motivated by business strategy and the need to respond to fundamental shifts in a rapidly changing economy.

The main reason managers give for undertaking mergers is to increase efficiency. Mergers can encourage greater efficiency by reducing excess capacity, taking advantage of economies of scale and scope, and stimulating technological progress. Over time, such efficiencies translate into lower prices and better products and services for consumers. However, mergers that increase market concentration can raise prices and reduce consumer benefits. In addition, mergers, like other forms of economic change, can disrupt established patterns of economic and social activity.

When the antitrust agencies—the Federal Trade Commission and the Antitrust Division of the Department of Justice—review mergers, they do so with an eye to protecting competition for the benefit of consumers. They pay considerable attention to market definition—over how large a market the merged firm might exert market power, and what competitors it faces in that market—so that the effects of a merger are evaluated in the proper context. Antitrust enforcement has been rigorous in this Administration, and mergers receive careful scrutiny. Most have been found to be procompetitive or competitively neutral. But the minority that would reduce competition and harm consumers have been challenged. The current approach, which is aggressive

without being heavy handed, stands in contrast to both the strong antimerger bias of the 1960s and 1970s and the much more lax enforcement of the 1980s.

Antitrust enforcement does not and probably should not encompass the broader range of possible economic and social effects that may be associated with mergers, such as job loss, change in ownership structure (including reduced diversity of ownership), and localized service disruptions. Such effects result not only from mergers but from many other forces as well, including technological change, deregulation, and international competition. Indeed, mergers may be more a symptom of broad change in the economy than a cause. The policies that are best for dealing with these changes include promoting full employment and macroeconomic stability, developing a skilled and well-trained work force, providing adequate unemployment insurance and other safety net programs, and helping communities adapt to economic change. All of these have been part of the Administration's economic strategy of the last 6 years.

## INTERNATIONAL TRADE

International trade policy has long been a laboratory for addressing the challenge of balancing efficiency and fairness and for providing political safeguards for those who might be hurt by change and would otherwise work to block it. For example, U.S. trade law recognizes that imports can sometimes be associated with labor displacement and other disruptions, and it provides for several kinds of relief in these circumstances. So-called escape clause relief allows temporary measures to be adopted in cases where rising imports are judged to have been a substantial cause of serious injury to an industry. And antidumping duties may be imposed in cases where foreign producers are judged to have dumped their products in U.S. markets (that is, sold them at less than fair value).

Trade adjustment assistance is an alternative way of dealing with disruptions associated with trade. Since 1962 U.S. trade laws have provided for some kind of cash assistance for workers who have lost their jobs as a result of trade. In addition, the North American Free Trade Agreement (NAFTA) provides assistance to workers displaced from companies that have shut down their U.S. plants and moved production to Mexico or Canada, and the Administration has supported extending such assistance to all workers displaced by the movement of work to another country. In theory, trade adjustment assistance provides compensation from the broad class of those who gain from trade (represented by the taxpayers generally) to those who lose from it (workers in trade-impacted industries), without interfering with the efficiency-enhancing effects of freer trade. In practice, of course, things are more complicated if adjustment assistance interferes unduly with workers' incentives to find new jobs—another moral hazard issue.

Nevertheless, adjustment assistance illustrates the general principle that it is desirable to address the disruption caused by positive change rather than block the change itself.

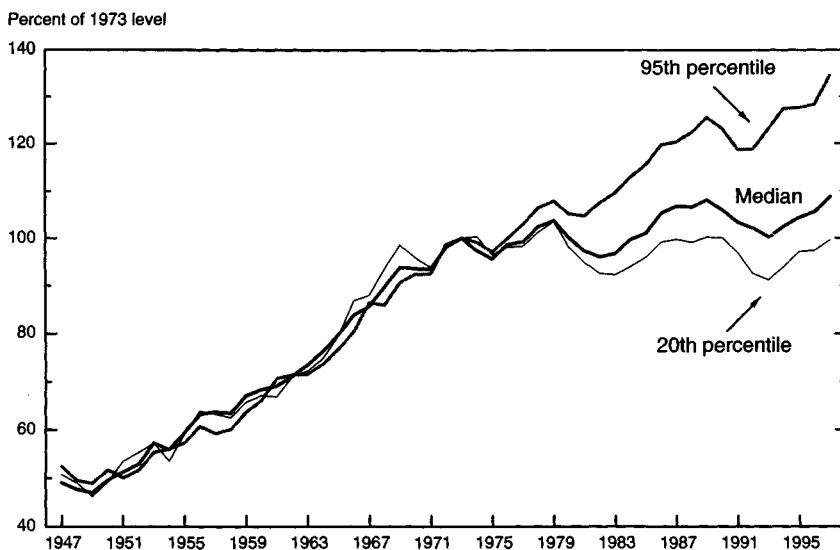
## PROMOTING PROSPERITY FOR ALL AMERICANS

From the end of World War II until the early 1970s, the rising tide of economic growth raised wages and incomes uniformly for American families of all incomes. For example, just as the median family income approximately doubled between 1947 and 1973, so did the incomes of families near the top and the bottom of the income spectrum (Chart 1-4). Since the early 1970s, however, the pace of income growth has slowed and income inequality has increased. Median family income in 1997 was about 10 percent higher than in 1973, but income at the 95th percentile (that is, an income exceeded by that of only 5 percent of American families) was more than a third higher, whereas income at the 20th percentile was virtually unchanged.

This Administration has recognized from the start that the stubborn problems of slow productivity growth and rising income inequality were among the greatest challenges it would face. And there are heartening signs that we may have turned the corner. As mentioned earlier, productivity growth has remained relatively strong in this expansion, whereas in past expansions it has tended to flag as the expansion matures. Moreover, as detailed in Chapter 3, low-wage and minority

Chart 1-4 **Growth in Real Family Income, 1947-97**

Growth in real family income has slowed and inequality has increased since 1973.



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

workers are enjoying some of the best labor market conditions they have seen in decades. The Bureau of the Census reports that the Gini coefficient (a standard measure of income inequality) has recorded no statistically significant increase since 1993, and the poverty rate fell to 13.3 percent by 1997, from 15.1 percent in 1993. These trends are encouraging. However, it is difficult to disentangle the cyclical effects arising from the particular strengths of this expansion from possible improvements in underlying trends.

Maintaining macroeconomic stability is a necessary condition for ensuring that all Americans participate in the country's growing prosperity. But it is also important to continue to develop policies that address the challenges of a changing economy and a changing society, especially in the areas of education and training. Chapter 3 discusses the Administration's initiatives to improve schools, open the doors of college to all Americans, strengthen America's work force development system, and promote lifelong learning.

## CONCLUSION

The U.S. economy remained strong in 1998 despite a serious weakening in the international economy and considerable financial turmoil. The economy's ability to weather these storms is testimony to the soundness of the policies of the past 6 years and to the underlying strength of the current economic expansion. Although there is much for us all to be proud of in this economic success, the Nation still faces important challenges as it prepares for the 21st century. Chapter 2 of this Report reviews domestic macroeconomic developments in 1998 and presents the Administration's forecast for 1999 and beyond. Chapter 3 analyzes the benefits of the strong labor market in this expansion. Chapter 4 provides a context for the national discussion of Social Security reform by analyzing work, retirement, and the economic well-being of the elderly. Chapter 5 examines the role of innovation and regulation as determinants of long-term economic performance, with particular emphasis on antitrust policy, environmental regulation, and restructuring of the electric power industry. Finally, Chapters 6 and 7 analyze recent events in the international economy from the standpoint of increased globalization of capital flows and the evolution and reform of the international financial system.

## CHAPTER 2

# Macroeconomic Policy and Performance

THE U.S. ECONOMY PERFORMED very well in 1998. Real output increased 3.7 percent at an annual rate over the first three quarters of the year, once again exceeding the predictions of most forecasters. Nonagricultural jobs increased by about 2.9 million during the year, and the average unemployment rate for the year dropped to 4.5 percent, its lowest level since 1969 (Chart 2-1). The consumer price index rose by only 1.6 percent, its second smallest increase since 1964 (Chart 2-2), and other measures of inflation were even more muted.

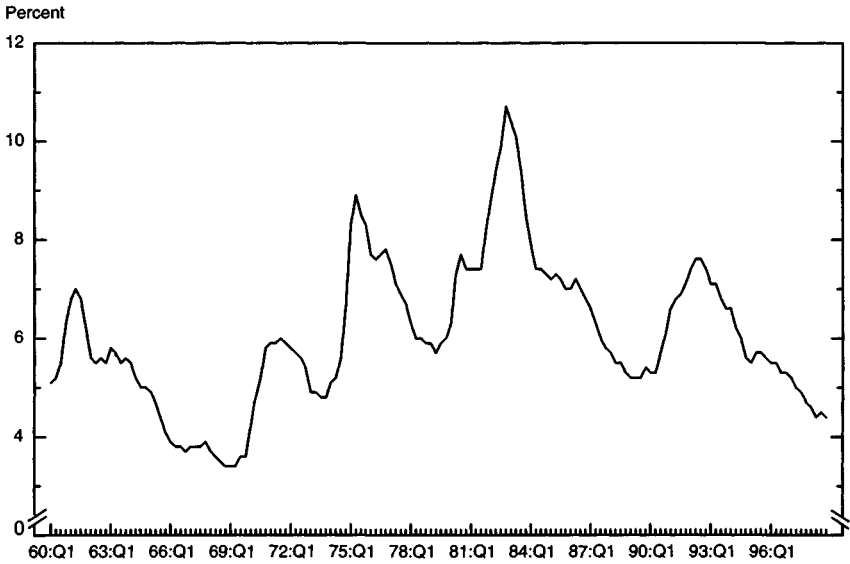
Yet the turmoil in foreign economies that began in the summer of 1997 did not leave the U.S. economy unscathed. Net exports declined sharply during 1998, as a result of slow or negative economic growth in a number of the United States' trading partners and a substantial rise in the foreign exchange value of the dollar since early 1997. Moreover, during the late summer and fall, domestic financial conditions, which had been highly conducive to economic growth for several years, became much less favorable. Investors' sudden flight from risky assets reduced some businesses' access to capital and raised the cost of borrowing for others.

Despite these dampening forces, the economic expansion maintained considerable momentum. A significant factor underlying this strong performance was the continued practice of responsible fiscal policy: 1998 will be remembered as the year the Federal Government recorded its first unified budget surplus since 1969. The surplus contributed to the low level of interest rates during the year, increased the capital available for private investment, and provided a more stable backdrop for private economic decisions. Monetary policy also provided an important boost to the economy. The Federal Reserve held overnight interest rates steady for much of the year, but it reduced rates three times in quick succession when the financial environment deteriorated in the fall. Following the Federal Reserve's actions, financial stresses in the United States abated considerably, with risk premiums in interest rates declining once again and the issuance of corporate debt picking up.

The first section of this chapter reviews the course of the U.S. economy during 1998. The next section focuses on developments in domestic financial markets, which were exceptionally turbulent last year.

**Chart 2-1 Unemployment Rate**

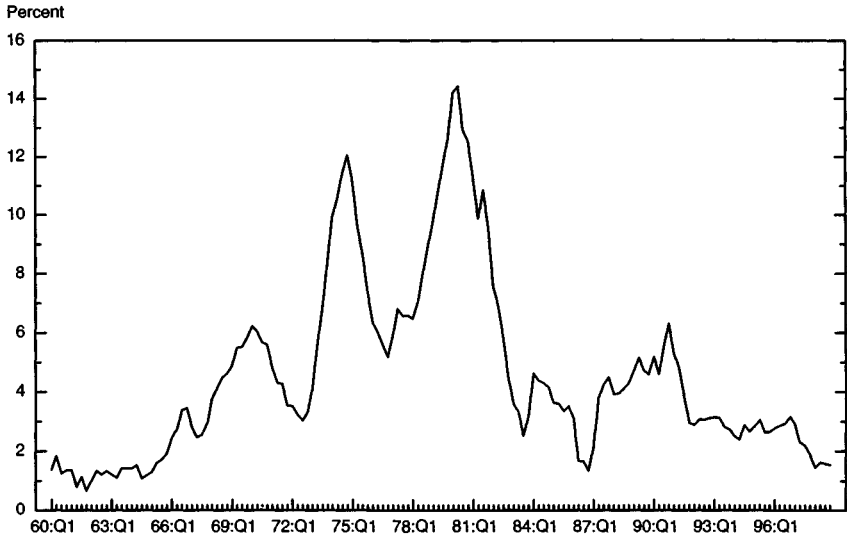
In 1998 the average unemployment rate fell to its lowest level since 1969.



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

**Chart 2-2 Inflation Rate**

Inflation remained low in 1998, with the consumer price index recording its second smallest rise since 1964.



Note: Data are four-quarter percent changes in the CPI.  
Source: Department of Labor (Bureau of Labor Statistics).

Then the chapter explores two other macroeconomic topics that have received a lot of attention recently: the boom in business equipment investment during the past several years, and the “year 2000” problem involving computers. The final section of the chapter analyzes the outlook for the U.S. economy. When the economic expansion continued through December, it became the longest recorded peacetime expansion. The Administration expects the expansion to continue during 1999, albeit at a more moderate pace.

## THE YEAR IN REVIEW

Real gross domestic product (GDP) increased 3.7 percent at an annual rate between the fourth quarter of 1997 and the third quarter of 1998 (the latest period for which data were available when this Report went to press). Preliminary data suggest that GDP growth likely remained in this neighborhood in the fourth quarter, bringing growth for the year as a whole close to that recorded in 1996 and 1997. Once again, business investment in equipment made a substantial contribution to GDP growth, while a larger drag from net exports was offset by a stepup in household spending on goods, services, and housing from its already robust pace of the previous several years.

## THE STANCE OF MACROECONOMIC POLICY

Both fiscal policy and monetary policy made vital contributions to the excellent performance of the U.S. economy during 1998.

### *Fiscal Policy*

The passage of the Omnibus Budget Reconciliation Act of 1993 marked the beginning of a significant shift toward fiscal restraint by the Federal Government. The Balanced Budget Act of 1997 put in place the additional policies needed to bring the budget into sustained balance. In fiscal 1998 (October 1997 through September 1998), the Federal Government capped 6 years of dramatic budget improvement by recording the first budget surplus since 1969. The \$69 billion surplus was the largest as a share of GDP since 1957. The goal of eliminating the budget deficit by 2002 was accomplished 4 years ahead of schedule. Net interest payments—the fiscal burden imposed by the large deficits of the past—remain substantial, however, at 15 percent of total expenditures and 3 percent of GDP in fiscal 1998. Excluding these payments, the “primary” budget balance, the difference between tax revenue and expenditures for current needs, reached a surplus of more than \$300 billion.

Although the attainment of a budget surplus marks a major fiscal milestone, the case for continued fiscal responsibility remains strong. Demographic trends point to an aging of the population that will

significantly increase expenditures on Social Security and government health programs over the next several decades. The emergence of a budget surplus offers the opportunity to prepare for this challenge. Indeed, the unified budget surplus includes the current excess of receipts over benefit payments in the Social Security system, which amounted to \$99 billion in fiscal 1998. (Apart from the Social Security system, the Federal Government had a deficit of \$30 billion in 1998, producing the unified surplus of \$69 billion.) The Administration has stated that none of the unified surplus should be used until the future solvency of Social Security is assured. The President has repeatedly reaffirmed this commitment to “save Social Security first,” and he presented a specific proposal for Social Security reform in his recent State of the Union address.

### *Monetary Policy*

In conducting monetary policy during 1998, the main focus of the Federal Reserve’s concerns shifted from a potential reversal of the favorable trend of inflation to a potential weakening of economic activity. When the year began, the target Federal funds rate—the rate banks charge each other for overnight loans—stood at 5.5 percent, where it had been for the preceding 9 months. However, the surge in economic growth during the first several months of the year heightened the concern of the Federal Open Market Committee (FOMC, the Federal Reserve’s principal monetary policy decisionmaking body) that intensifying use of the economy’s resources might lead to a buildup of inflationary pressures. The FOMC did not adjust the Federal funds rate in response, but it noted in March that a tightening of monetary policy was more likely than an easing in the months ahead.

Despite a slowing of growth in the second quarter, the FOMC believed that the balance of risks still pointed to the possibility of rising inflation over time. It therefore maintained a bias toward future monetary tightening. Indeed, labor costs accelerated during 1998 in a very tight labor market. However, the rapid deterioration in financial conditions in the late summer and fall persuaded the Federal Reserve that a much less restrictive monetary policy was appropriate. The FOMC dropped its bias toward tightening at its August meeting, cut the Federal funds rate by 25 basis points (0.25 percentage point) at its September meeting, did so again in mid-October in an unusual between-meeting move, and lowered the funds rate yet again at its November meeting. In both October and November the Federal Reserve Board also cut the discount rate—the rate it charges banks to borrow from the Fed—by 25 basis points, to maintain the discount rate’s traditional position below the funds rate. The easing of monetary policy was not a reaction to any observed weakness of economic activity but rather a preemptive or forward-looking action intended to sustain the expansion. The cumulative 75-basis-point reduction in the

target Federal funds rate brought that rate to 4.75 percent, its lowest value in 4 years.

## TURMOIL IN FINANCIAL MARKETS

The past year was a tumultuous one in U.S. financial markets. The first half of the year witnessed an extension of the highly favorable conditions that had prevailed over the previous several years. Yields on intermediate- and long-term Treasury securities moved in a fairly narrow band that was centered a little below the levels that had prevailed during the latter part of 1997. Most households and firms enjoyed ample access to credit on good terms. Meanwhile equity prices rose sharply, with most major indexes hitting record highs in July that ranged from 17 to 28 percent above their values at the beginning of the year.

Financial conditions during the second half of the year were less favorable. In mid-August Russia devalued the ruble and effectively defaulted on its domestic debt, marking a new round of the financial crisis in emerging markets that had begun in Southeast Asia a year earlier. As the international financial turmoil worsened, investors' desire to shift their portfolios away from emerging market economies—a trend that had been apparent over the previous year—intensified, and they began to shy away from all but the safest and most liquid assets in the markets of the industrial countries. (Chapter 6 discusses developments in international financial markets at length.) Among U.S. assets, the shift of investor preferences away from private securities and toward government securities caused the difference, or spread, between private and Treasury yields to spike upward. Yields on higher quality corporate debt were little changed (although the spread between these yields and Treasury yields widened as the latter fell), but businesses with lower credit ratings faced much higher costs of borrowing. Moreover, issuance of corporate debt slowed sharply, banks tightened terms and standards on business loans (although the volume of lending actually increased significantly), and stock prices dropped steeply.

Financial conditions improved markedly after mid-October, partly in response to the Federal Reserve's interest rate reductions. Risk spreads narrowed, debt issuance accelerated, and stock markets rebounded to new highs. Nevertheless, some American businesses apparently faced more limited access to credit and a higher cost of borrowing at the end of 1998 than at the beginning of the year.

## COMPONENTS OF SPENDING

As already noted, real GDP increased at an annual rate of 3.7 percent between the fourth quarter of 1997 and the third quarter of 1998 (Table 2-1), close to the pace of the previous 2 years. Quarterly output

TABLE 2-1.— *Growth of Real GDP and its Components During 1997 and 1998*

| Item   | Growth rate<br>(percent) |      | Contribution to GDP growth<br>(percentage points) |      |
|--|--------------------------|------|---|------|
|  | 1997                     | 1998 | 1997  | 1998 |
| Gross domestic product .....                         | 3.8                      | 3.7  | 3.8   | 3.7  |
| Final sales .....                                    | 3.4                      | 3.9  | 3.3   | 3.9  |
| Consumer expenditures .....                          | 3.7                      | 5.4  | 2.5   | 3.7  |
| Housing .....  | 4.2                      | 13.5 | .2  | .5   |
| Business fixed investment .....                      | 9.8                      | 11.0 | 1.0   | 1.2  |
| Exports of goods and services .....                  | 9.6                      | -4.5 | 1.1   | -5   |
| Imports of goods and services .....                  | 14.0                     | 9.0  | -1.7  | -1.1 |
| Government consumption<br>and gross investment ..... | 1.4                      | 1.1  | .3  | .2   |
| Change in inventories .....                          |                          |      | .5  | -.2  |

Note: Data for 1997 are for fourth quarter to fourth quarter; data for 1998 are for fourth quarter to third quarter at annual rates.

Contributions are approximate.

Detail may not add to totals because of rounding.

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

during 1998 was quite erratic: after surging at a 5.5 percent annual rate in the first quarter, real output growth slowed to 1.8 percent in the second quarter, and then picked up to 3.7 percent in the third quarter. This irregular pattern was strongly influenced by sharp swings in inventory investment (discussed below). Final sales, which increased by about 3½ percent during 1997, rose at a fairly steady 4½ percent annual rate during the first half of 1998, grew at a much slower pace in the third quarter, and apparently accelerated a little at the end of the year. Among the components of final sales, net exports exerted a substantial drag during the first half of the year but less during the third quarter, as their rate of decline eased. Meanwhile private domestic final sales—consumption, housing, and business fixed investment—increased less rapidly in the third quarter than during the first half of the year.

### *Household Spending*

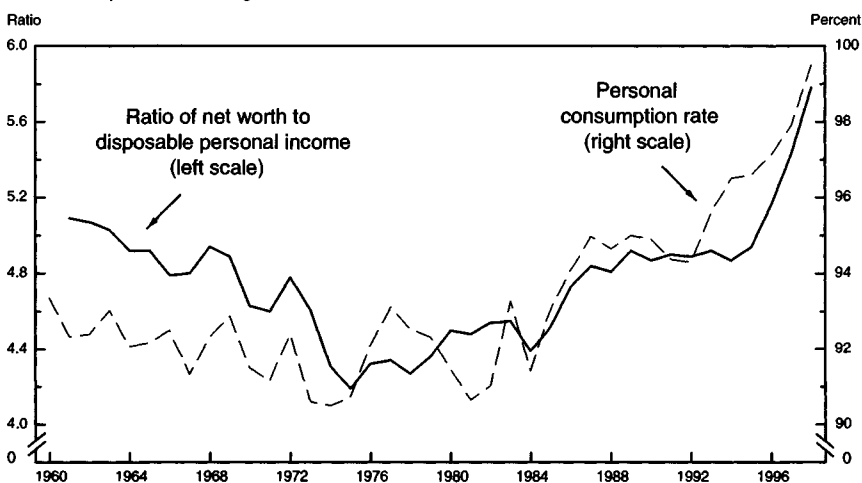
Real personal consumption expenditures (PCE) surged during the first half of 1998, increasing at roughly a 6 percent annual rate. PCE growth downshifted during the third quarter to about a 4 percent pace (which still exceeded its growth rate for the four quarters of 1997) and remained strong in the fourth quarter, according to the partial data available.

Demand for homes was also very strong. Although real residential investment represents less than 5 percent of GDP, its growth during the first three quarters of 1998 accounted for over 10 percent of GDP growth. Single-family housing starts were the highest since 1978, and new and existing single-family home sales reached record levels. The percentage of Americans who own their own home reached an all-time

high of 66.8 percent in the third quarter (the latest period for which data are available). Growth in homeownership was especially fast for groups that have been underrepresented in the past, such as blacks and Hispanics.

This robust growth in household spending during 1998 occurred against a backdrop of extremely favorable fundamentals. First, real disposable income maintained its solid upward trend, rising about 3¼ percent at an annual rate over the first three quarters (based on the PCE chain-weighted price index). Second, household wealth soared to an extraordinary level—almost six times income—as a result of the dramatic runup in stock prices (Chart 2-3). This expansion in household

**Chart 2-3 Net Worth and the Personal Consumption Rate**  
Surging household wealth in 1998 helped increase consumer expenditures and reduce the personal saving rate.



Note: Personal consumption rate is the ratio of personal outlays to disposable personal income. It equals one minus the personal saving rate. Household net worth for each year is constructed as the average of net worth at the beginning and the end of the year. Data for 1998 are approximate.  
Sources: Department of Commerce (Bureau of Economic Analysis), Board of Governors of the Federal Reserve System, and Council of Economic Advisers.

resources permitted spending to grow significantly faster than disposable income. Indeed, the personal saving rate—measured by the difference between disposable income and consumer outlays, as a percentage of disposable income—fell sharply again during 1998. After averaging roughly 4.5 percent between 1992 and 1994, this rate dropped to about 3 percent in 1996, about 2 percent in 1997, and about ½ percent in the first three quarters of last year. (Last summer’s revision of the measured saving rate is discussed later in this chapter.)

Household spending was also spurred by low interest rates and a ready availability of credit. In particular, housing affordability soared, as interest rates on 30-year fixed rate mortgages averaged more than ½ percentage point below their 1997 values. Indeed, mortgage credit

expanded more rapidly during the first three quarters of 1998 (the latest available data) than in any year since 1990. Over the same period, consumer credit grew at a somewhat faster rate than in 1997 but well below the torrid pace of 1994 and 1995. Total household debt appears to have increased faster than disposable income in 1998 for the sixth year in a row. Nevertheless, delinquency rates on consumer loans remained close to their 1997 values, and delinquency rates on mortgages stayed quite low. Personal bankruptcy filings reached a new record high in the third quarter of 1998, but the rate of increase over the preceding year was well below the pace recorded between 1995 and mid-1997.

Last year's *Economic Report of the President* included an extended discussion of the long-term upward trend in the bankruptcy rate. During 1998 the Congress considered various proposals to reform the bankruptcy law, and both the House and the Senate passed reform bills; however, the two houses were unable to agree on a compromise bill that incorporated the Administration's key principles for bankruptcy reform. The Administration supports reform of the bankruptcy law that would require both debtors and creditors to act more responsibly: troubled debtors who can repay a portion of their debts should do so, but creditors should treat debtors fairly, in keeping with the creditors' superior expertise and bargaining power.

Consumer sentiment was buoyant during 1998, probably reflecting both the favorable fundamentals and expectations for continued economic growth. The consumer sentiment index of the Survey Research Center at the University of Michigan posted its highest reading in more than 30 years in early 1998. This optimism waned somewhat in the fall, but the Michigan index finished the year near the top of its historical range.

### *Business Investment*

Real business fixed investment grew extremely rapidly during the first half of 1998, increasing over 15 percent at an annual rate, and then rose at a slower pace, on average, in the second half of the year. Sharp gains in purchases of producers' durable equipment (PDE) accounted for more than the total advance in business fixed investment during the first three quarters. Real PDE investment increased about 16 percent at an annualized rate over that period, exceeding its robust average annual growth rate over the preceding 3 years of 11 percent. Among its components, spending on computers and peripheral equipment surged 75 percent in real terms over the first three quarters of 1998 (annualized), and real spending on communications equipment jumped about 20 percent (annualized). (The causes and consequences of the recent boom in equipment investment are discussed further below.) Real PDE was little changed in the third quarter but apparently increased strongly again in the fourth quarter. Both

the third-quarter deceleration and the fourth-quarter pickup likely reflected fluctuations in motor vehicle sales.

Business investment in structures fell a bit in real terms during the first three quarters of 1998. Office construction was boosted by low and declining vacancy rates, but other commercial construction was sluggish, and industrial construction was held down by ample factory capacity. Spending in this category may also have been dampened by a tightening in available financing during the third quarter, although conditions in the commercial mortgage-backed securities market improved noticeably by the end of the year.

Investment in business inventories varied dramatically across the first three quarters of 1998. Inventories increased \$91 billion in real terms at an annual rate in the first quarter, and the stepup in inventory investment relative to the fourth quarter of 1997 contributed over 1 percentage point to the annualized increase in first-quarter GDP. However, several quarters of strong inventory growth apparently persuaded businesses to reduce their rate of stockpiling in the second quarter; in addition, a strike at the Nation's largest automaker led to a decline in motor vehicle inventories. All told, the sharply lower rate of inventory accumulation in the second quarter subtracted over 2½ percentage points from second-quarter GDP growth. Inventory accumulation ran at a moderate pace during the third quarter.

### *Government*

Federal Government consumption expenditures and gross investment contracted in real terms over the first three quarters of 1998, following a real decline during 1997. This measure of government spending, which is included in GDP, differs from unified budget outlays in a number of ways. Among the most important differences are that the GDP measure includes the depreciation of government capital and does not include transfer payments, interest, or grants to State and local governments. Defense purchases represent about two-thirds of Federal consumption expenditures and gross investment. During the first three quarters of last year, a roughly 2 percent annualized decrease in defense spending more than offset a roughly 1 percent annualized increase in the smaller category of nondefense spending.

Consumption expenditures and gross investment by State and local governments moved up over 2 percent at an annual rate over the same period, just below the average pace of the previous several years. Strong growth of household income boosted income tax collections considerably, and most State governments today appear to be in good financial condition.

### *International Influences*

In 1998 the Federal Reserve Board replaced its traditional index of the foreign exchange value of the dollar with several new ones. New

indexes have been developed for three currency groups: a group of major currencies that are traded heavily outside of their home markets, a group of currencies of other important U.S. trading partners, and the aggregate of these two groups, labeled the "broad index." For each group the Federal Reserve calculates both nominal and price-adjusted indexes; all are defined such that a rise indicates a strengthening of the dollar. Because the indexes are designed primarily to measure U.S. competitiveness in world markets, the weights of the various currencies are based on market shares of U.S. goods in foreign markets and of foreign goods in U.S. and third-country markets, and these weights vary over time. Still, the new nominal index for the major currencies, when calculated retrospectively over the past 20 years, tracks the Federal Reserve's previous index fairly closely.

The foreign exchange value of the dollar continued its advance during 1997 into the third quarter of 1998, but then fell back. All three real indexes peaked in August or September and then declined sharply, ending at or below their values at the end of 1997. The nominal major currency index behaved similarly to the corresponding real index, but the nominal broad index and the nominal index relative to other important trading partners both increased, on net, over the year.

Real net exports (exports minus imports of goods and services) dropped roughly \$100 billion over the first three quarters of 1998, holding down the growth rate of GDP (assuming the other components of GDP were unchanged) by about 1½ percentage points. The negative contribution of this category was considerably smaller in the third quarter than in the first half of the year. The current account balance (which includes international transactions in investment income and transfers, as well as trade in goods and services) deteriorated during 1998 as well, owing to both the drop in net exports and an increase in net payments of investment income to foreigners.

The decline in net exports stemmed from a combination of falling exports and rising imports. Real exports declined by about 4 percent at an annual rate during the first three quarters of 1998, following a 10 percent runup during 1997. This deterioration was attributable to weaker activity in a number of foreign economies, especially in Asia, as well as the higher value of the dollar (which itself was related to the contrast between foreign economic developments and U.S. economic strength). Real imports posted a 9 percent annualized advance during the first three quarters of 1998, below their increase during 1997, despite a sharper decline in import prices.

## THE LABOR MARKET AND INFLATION

American labor markets enjoyed another excellent year in 1998, with both employment and real wages rising at impressive rates. (Chapter 3 includes a more extensive discussion of employment and compensation patterns and trends.) Meanwhile core consumer prices

(that is, excluding food and energy prices) increased at their slowest pace since the 1960s.

### *Employment*

Nonfarm payroll employment expanded by about 2.9 million jobs during 1998. The number of manufacturing jobs slipped a bit, following small increases during 1996 and 1997. Weakness in this sector was probably linked to declining exports of goods. However, jobs in the services sector, which accounts for about 30 percent of nonfarm employment, posted another impressive gain. Nonfarm payrolls rose to 127 million by the end of the year, an increase of nearly 17.7 million jobs since January 1993. (Over this period, the increase in employment reported by firms significantly exceeds that reported by households. Part of this difference can be traced to differences in methodology between the payroll and household surveys, but the explanation for the remaining discrepancy is unclear.) Over 90 percent of the increase in jobs since 1993 has been in the private sector.

The unemployment rate averaged 4.5 percent in 1998, down from 4.9 percent in 1997. After falling for 6 straight years, the unemployment rate now stands about 3 percentage points below its January 1993 level. Indeed, the 4.3 percent rate in April and December of last year was the lowest since February 1970. Another measure of available workers is the sum of those who are looking for work (the official definition of unemployment) and those who would accept a job but have not been looking (so-called marginally attached workers, which include discouraged workers). In 1998 this combined group accounted for only 5.4 percent of the civilian labor force plus marginally attached workers, down from 5.9 percent in 1997 and 7.4 percent in 1994. The labor force participation rate—the percentage of the population over age 16 that is either employed or looking for work—leveled off in 1998 at 67.1 percent, after trending up between 1995 and 1997. The upward trend resulted from a marked increase in labor force participation by adult women and a respite from the previous slide in participation among adult men. In 1998 the participation rate for women was just below 60 percent, and that for men was almost 75 percent. The employment-to-population ratio—the proportion of the civilian population age 16 and older with jobs—averaged a record 64.1 percent last year.

### *Productivity and Compensation*

Labor productivity in the nonfarm business sector increased by about 2.1 percent on an annual basis during the first three quarters of 1998, somewhat above the 1.7 percent gain of 1997. Measured productivity has risen much faster over the past 3 years than it did between the business-cycle peaks of 1973 and 1990, but much of the measured surge may be attributable to methodological changes and to output

growth that was above the economy's long-run potential. (Recent developments in productivity are discussed at greater length below.)

Compensation rose significantly during 1998. The employment cost index (ECI, a measure of wages, salaries, and employer costs for employee benefits) for workers in private industry moved up 3.6 percent (annualized) during the first three quarters of the year (according to the latest available data), continuing its acceleration of the previous several years. Wages and salaries increased 4.1 percent at an annual rate, while benefits climbed 2.4 percent. For the 12-month period ending in September 1998, compensation growth in construction and manufacturing was quite close to that during the previous 12-month period, but compensation growth in the service-producing industries picked up sharply. The acceleration in compensation was especially pronounced in the finance, insurance, and real estate sector, likely reflecting bonuses and commissions associated with higher volumes of stock trading, mortgage refinancing, and other financial sector activity.

Other measures of compensation also showed substantial gains during 1998. For example, average hourly earnings increased 3.8 percent over the year. Unlike the ECI, this series excludes benefits and covers only production and nonsupervisory workers, among other differences.

Because consumer prices increased so little during 1998, these nominal compensation gains translated into appreciable advances in real compensation. The increase in the ECI less the increase in the consumer price index (CPI) was 2.1 percent during the first three quarters of 1998, compared with the solid 1.7 percent gain during 1997. The increase in real average hourly earnings during the year was 2.4 percent, slightly above the 1997 growth rate, which was the fastest in more than two decades.

### *Prices*

Inflation fell again in 1998 from its already subdued 1997 pace. The CPI increased by only 1.6 percent last year, just below its 1.7 percent rise during 1997 and well below its 3.3 percent rise during 1996. The chain-weighted price indexes for GDP and PCE both edged up less than 1 percent on an annualized basis during the first three quarters of 1998, well below their increases during the previous several years. The CPI rose at its slowest rate since 1986 and its second-slowest since 1964; the GDP price index rose at its slowest rate since 1961.

Much of the 1998 decline in inflation can be attributed to a significant slide in crude oil prices. Weak demand for oil in Asia together with plentiful worldwide supply helped push down CPI energy prices by almost 9 percent for the year as a whole. The so-called core CPI, which excludes the volatile food and energy components of the broader index, increased 2.4 percent during 1998, a little above the previous year's mark of 2.2 percent. However, in January 1998 certain methodological adjustments were made to the way the CPI is calculated; otherwise the core CPI

probably would have increased by about 2.6 percent last year, almost  $\frac{1}{2}$  percentage point faster than during 1997. On the other hand, core prices as measured by the chain-weighted price index for PCE excluding food and energy decelerated during 1998; this index increased by only 1.2 percent at an annual rate in the first three quarters of the year, compared with a 1.6 percent rise during 1997. The CPI and PCE price indexes differ in both coverage and methodology (as discussed later in this chapter). But by either measure, core inflation has dropped, on net, over the past several years. Indeed, core inflation has been lower during the past few years than at any time since the mid-1960s.

Several factors have helped to hold down core inflation despite the strong growth of aggregate demand and very tight labor markets. (The forecast section of this chapter further explores the reasons for recent low inflation.) Part of the reason why wage increases have not put more pressure on prices has been rapid productivity growth. In addition, corporate profits stand at roughly their largest share of national income during the past 30 years, and some wage increases have been offset by reduced profit growth of late. Another important contribution to low inflation has been declining prices of nonoil imports, as excess capacity in Asia and depreciating foreign currencies have encouraged foreign producers to reduce the dollar prices of their goods. Beyond their direct impact on the prices paid for imports, these overseas developments have discouraged domestic producers from raising their prices as much as they might have otherwise. Inflation has probably also been restrained by the strong increase in industrial capacity in the United States during this expansion. Although the unemployment rate was at a 29-year low in 1998, the average rate of capacity utilization in industry during the year was about equal to its long-term average.

Low inflation readings in 1998 were reinforced by a continued slide in expected inflation. Actual inflation depends on expectations of inflation, because the wage and price increases sought by workers and firms are influenced by the prices they expect to pay for other goods. According to the University of Michigan's survey of households, the median expectation for annual inflation over the next 5 to 10 years was about 2.8 percent in the fourth quarter of 1998, slightly below the late-1997 figure of 3.1 percent and well below the 3.6 percent reading of 6 years ago. Long-term inflation expectations of professional forecasters are even lower, according to the survey conducted by the Federal Reserve Bank of Philadelphia, but have fallen by a similar amount in recent years.

## FINANCIAL MARKETS

Through much of the current expansion, falling interest rates and rising equity prices have provided important support to real economic activity. Indeed, the disruptions to foreign financial markets and

institutions that began in 1997 initially improved financial conditions in the United States, as shifting portfolio preferences helped to further reduce U.S. interest rates and boost U.S. equity prices. The resulting strength in domestic consumption and investment offset at least some of the dampening effect of the drop in net exports. However, the worsening of international conditions in the summer of 1998 changed the domestic financial situation dramatically. An intensified “flight to quality” by lenders and investors restricted businesses’ access to credit and raised the average cost of their borrowing. But by the end of the year a significant easing of monetary policy and somewhat greater confidence in the international economic outlook had produced a substantial improvement in financial conditions.

## THE EFFECT OF RISK ON INTEREST RATES AND EQUITY PRICES

Many of the developments in financial markets over the past several years have been linked to changing perceptions of risk. Therefore, to understand these developments, one must begin with the basic relationships among risk, interest rates, and equity prices. All ownership of financial assets involves risk, and because people generally want to minimize the uncertainty they face, they will hold riskier assets only if those assets pay higher expected returns. As a result, changes in perceived risk require adjustments in expected returns.

Consider debt securities, such as bonds. All bonds are subject to market risk, or the possibility that current yields, and therefore prices, will change to reflect changes in market conditions. Because bondholders generally receive fixed payments, increases in prevailing interest rates reduce, and decreases raise, the value of outstanding bonds. Most bonds are also subject to credit risk, or the possibility that the issuer will default on the bond’s interest payments or on repayment of the bond’s face value. Commercial paper—short-term debt securities issued by corporations—also has credit risk, but because of its short maturity it faces little market risk. Bank loans often have repayment terms similar to those of bonds, and therefore banks face both market risk and credit risk on their loans.

U.S. Treasury securities have essentially no credit risk, because people believe that the Federal Government will always meet its legal obligations. All private debt securities do have credit risk, and therefore the yields on those securities exceed the “risk-free” yield on Treasury debt. Private credit rating agencies assess the likelihood of default by private borrowers. Higher rated debt is deemed “investment-grade,” whereas lower rated debt is called “speculative,” “high-yield,” or “junk.” Changes in perceived riskiness affect the spreads between yields on these private debt issues and the risk-free Treasury yield.

Equities clearly involve risk as well. A simple model of equity pricing sets the price of a share of stock equal to the present discounted value of future dividends payable on that share. One risk facing equityholders, therefore, is that of changes in a company's dividends, which are often related to sustained changes in its earnings. Decreases in expected earnings growth reduce a stock's price-earnings ratio, or the price of a share as a multiple of the company's current earnings. Another risk for equityholders is that of changes in the discount rate that investors apply to future earnings. One can view the discount rate as the sum of the risk-free interest rate and a risk premium; increases in either component reduce the price of a share and thus the price-earnings ratio.

The average return to owning equity has exceeded the average return to owning debt securities over most long historical periods in the United States. Between 1946 and 1995, for example, the extra return from holding a portfolio of shares that matches the Standard & Poor's (S&P) 500 composite index (an index of share prices of 500 large, publicly traded U.S. firms) instead of a portfolio of Treasury bills averaged almost 7 percent per year. Because equity returns are more variable than bond returns, it is not surprising that equity returns are generally higher. But the difference in returns—the equity premium—has been larger on average than can be explained by stocks' greater riskiness and economists' traditional assumptions about investor behavior. The explanation for its size remains something of a mystery.

## CHANGING RISK PERCEPTIONS AND FINANCIAL MARKET DEVELOPMENTS

The behavior of debt and equity markets during much of the current expansion suggests a substantial fall in the perceived riskiness of U.S. financial assets. Although this apparent trend in risk perceptions abated in the summer of 1997, when financial crises enveloped several East Asian economies, it did not reverse in significant measure until the late summer and fall of 1998, when risk premiums increased at an alarming rate. By the end of the year, risk premiums were declining again but remained much higher than when the year began.

### *Setting the Stage: The Reduction in Perceived Risk Prior to Mid-1997*

In early 1997 both debt and equity markets reflected a significant relaxation in investors' concern about the riskiness of financial assets over the previous several years. Comparing instruments of similar maturity, the spread between the average yield on Baa-rated corporate bonds (Baa is the rating of the median corporate bond in terms of outstanding volume) and the 30-year Treasury yield was little changed between the first half of 1993 and the first half of 1997. However, the spread between the yield on high-yield bonds and the 10-year Treasury yield fell by about 1¾ percentage points between those two periods,

and spreads between bank loan rates and the Federal funds rate dropped as well. Equities also may have benefited from lower risk premiums, as a tremendous bull market raised price-earnings ratios appreciably between late 1994 and early 1997. However, isolating the effect of changes in risk perceptions on equity prices during this period is difficult, because a surge in stock analysts' forecasts of earnings growth probably also contributed to the price rise.

The observed reduction in risk premiums could have been caused by either an increased willingness to bear risk or a reduction in the amount of perceived risk. Because preferences toward risk probably adjust slowly, the latter explanation is much more likely. But why did risk perceptions change in this way? One possibility was growing speculation that the U.S. economy had entered a "new era," in which faster trend growth of real output, lower inflation, and business cycles of smaller amplitude or less frequency would be the norm. Another possibility was a strengthening belief that countries around the world would continue to move toward capitalism. Such a move might reduce the riskiness of certain investments in the United States, by improving access to overseas markets or limiting the danger of international conflict. The spread of capitalism might also raise the expected return to investments in developing countries; indeed, Table 6-1 and Chart 6-1 in Chapter 6 document a substantial increase in the flow of funds to developing countries before 1997.

### *A Flight to Quality*

In the summer of 1997 perceptions of risk began to change. As emerging market economies in East Asia faltered, investors' desired portfolios shifted toward U.S. assets. The actual quantities of domestic and foreign assets in their portfolios adjusted slowly, because many commitments are long term, and in any case, international capital flows must be balanced by trade in goods and services and investment income in any given year. However, asset *prices* adjusted quickly, with yields and exchange rates moving to dampen potential capital flows. Increased demand for U.S. assets, combined with an improving Federal budget outlook and downward revisions to expected inflation, pushed U.S. interest rates down between mid-1997 and mid-1998. In choosing among domestic assets, investors became a little more cautious, but the widening of risk spreads was generally quite limited.

Equity prices were little changed, on balance, during the second half of 1997 but surged again during 1998. The S&P 500 jumped 22 percent between the beginning of 1998 and mid-July, and the NASDAQ composite (an index of over-the-counter stocks, including those of many startup and high-technology companies) rose 28 percent. Many stock valuation measures moved further beyond their historical ranges. For example, the ratio of stock price to lagging four-quarter earnings for the S&P 500 reached almost 29 at the end of the second quarter, the

highest level in at least 40 years and almost double its average value since 1956. Nor did low interest rates on risk-free securities fully explain this phenomenon. The gap between the earnings-price ratio (the inverse of the price-earnings ratio) and the real 10-year Treasury yield—the latter measured by the difference between the nominal 10-year rate and long-term inflation expectations in the Philadelphia Federal Reserve’s survey of professional forecasters—was among the smallest in many years.

The extraordinary valuation of equities may have been partly attributable to stock analysts’ expectations of very fast earnings growth. However, some market observers worried that these expectations were unrealistic: national income had been rising more rapidly than many economists believed was sustainable, and corporate profits already represented a larger share of national income than usual. Indeed, accelerating compensation of workers left profits in the third quarter of 1998 (the latest available data) slightly below their year-earlier level.

### *Stresses in U.S. Financial Markets*

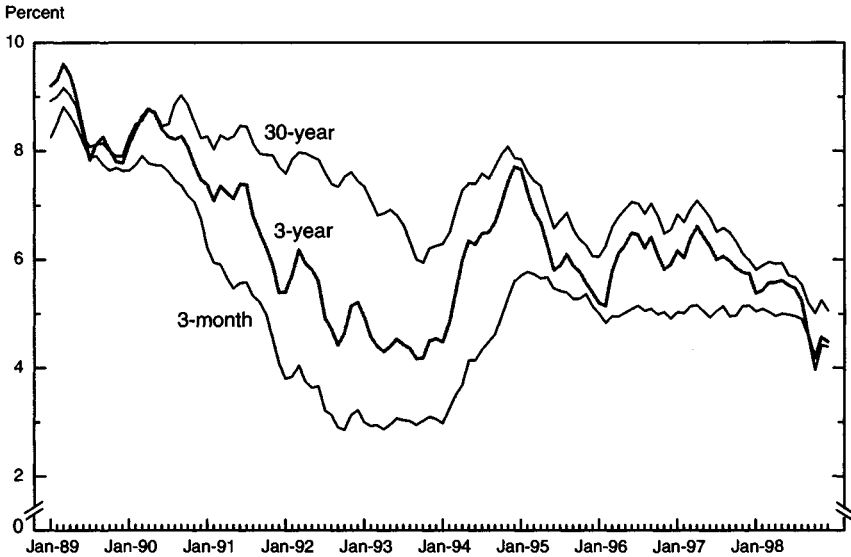
The flight to quality intensified dramatically during the late summer and fall of last year. The effective default on Russian government debt in August made clear that the dangers of financial turmoil—and the limited ability of international efforts to control that turmoil—were not confined to East Asia. In particular, the Russian debacle heightened fears of large-scale capital outflows from Latin America, where some economies were, like Russia, facing large fiscal deficits. The resulting uncertainty about future economic and financial conditions around the world caused a sudden, stunning shift in desired portfolios toward safer assets.

Between the end of July and mid-October, Treasury yields dropped sharply and risk premiums on private debt spiked upward (Charts 2-4 and 2-5). The spread between the yield on Baa-rated bonds and the 30-year Treasury yield rose almost 80 basis points, roughly matching its peak during the 1990-91 recession. The spread between the yield on high-yield bonds and the 10-year Treasury yield nearly doubled, moving from 3.7 percent on July 31 to 6.6 percent on October 14. Wider risk spreads were apparent in the market for short-term debt as well, with the difference between the average 3-month AA-rated nonfinancial commercial paper yield and the 90-day Treasury yield rising from 53 to 118 basis points. The increase in investment-grade bond spreads was more a reflection of falling Treasury yields than rising investment-grade yields (in fact, the latter were little changed on net), but businesses with lower credit ratings faced substantially higher costs of borrowing.

Part of the widening of spreads reflected greater concerns about credit quality in an economy that appeared to be facing an increasing risk of a sharp slowdown. Another part of the widening can probably be

### Chart 2-4 Yields on Treasury Securities

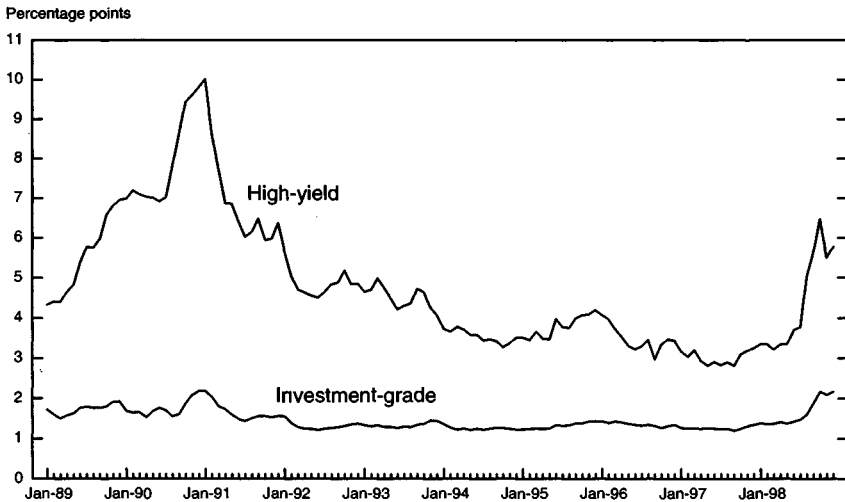
Long- and intermediate-term Treasury yields declined in 1997 and then fell in the summer and fall of 1998. Short-term yields also fell sharply in the second half of 1998.



Source: Department of the Treasury.

### Chart 2-5 Risk Spreads

Yield spreads between private securities and Treasury securities increased dramatically in the summer and fall of 1998.



Note: The investment-grade spread is the average yield on Baa-rated corporate securities less the 30-year Treasury yield. The high-yield spread is the average yield on high-yield bonds less the 10-year Treasury yield.

Sources: Department of the Treasury, Moody's Investors Service, and Merrill Lynch.

attributed to the lesser liquidity of private issues at a time when heightened uncertainty created larger liquidity premiums; we return to this issue shortly. In addition, less risk-averse investors (such as hedge funds, discussed later in this chapter) faced more cautious lenders during this period, which reduced their ability to purchase riskier or less liquid securities.

Market conditions also worsened along several other dimensions. Issuance of new debt dropped precipitously, with public offerings of nonfinancial corporate bonds falling roughly by half between July and September. In the high-yield sector, issuance virtually ceased in August and September. Dealers were reluctant to manage new offerings into the fall, probably because of the heightened uncertainty in financial markets and greater difficulty in placing new securities. Some firms substituted bank loans for financing in the securities market, and business lending by banks boomed. However, banks were not immune to the rising economic uncertainty, and they tightened their business loan standards and terms.

A further worrisome development was the increasing illiquidity of debt markets, especially after mid-September. Bid-ask spreads widened substantially, and dealers were less willing to enter into large transactions at posted rates. The price of liquidity climbed, too. So-called on-the-run Treasury securities are the most recently issued of a given maturity, and they are traded much more actively than off-the-run securities. Because of this greater liquidity, on-the-run issues usually offer yields that are a few basis points below off-the-run yields of similar maturity, but this gap widened considerably for 30-year bonds in late September. In addition, the yield spread between the Treasury's on-the-run conventional debt and its less liquid inflation-indexed debt fell much more sharply during this period than did survey measures of inflation.

Equity prices slumped as well. Between July 17 and August 31, both the S&P 500 and the NASDAQ lost about one-fifth of their value, falling a little below their levels at the beginning of the year. The Russell 2000 index of small-capitalization stocks had lagged behind other major indexes since the spring, and by the end of August it stood nearly 23 percent below its value at the beginning of the year. Equity issuance by nonfinancial corporations declined sharply in late summer as well.

These gyrations in financial markets took a toll on financial institutions. Share prices of money-center banks (which include some of the largest commercial banks) and investment banks fell much more sharply than the broad equity indexes, in the face of rising concern about exposure to emerging markets, the quality of loan portfolios, and possible losses from securities trading activities. Nevertheless, the underlying strength of the commercial banking system—which enjoyed generally high profits, low delinquency and charge-off rates,

and ample capital—may have helped contain the financial market deterioration. However, several hedge funds lost large sums of money, and one very large fund narrowly averted default (as discussed in the next section).

All of these developments raised fears of a credit crunch that could have significantly limited firms' access to external financing and thereby slowed capital investment and GDP growth. (Household borrowing did not appear to be hampered by market conditions, as mortgage rates declined and banks reported no change in terms or standards on consumer loans.) As already noted, the FOMC cut the Federal funds rate by  $\frac{1}{4}$  percentage point at the end of September, but market participants' desire for safety and liquidity showed no sign of diminishing. In response, the FOMC cut the funds rate by a further  $\frac{1}{4}$  point in mid-October, explaining that "growing caution by lenders and unsettled conditions in financial markets more generally are likely to be restraining aggregate demand in the future." The October drop in the funds rate was the first policy change between regularly scheduled FOMC meetings since 1994, suggesting to market participants that the Federal Reserve had taken an aggressive easing posture.

### *Calm Restored*

After this second rate cut, the stresses in financial markets began to abate. Risk and liquidity premiums fell back a little, and debt issuance picked up in both the investment-grade and the high-yield sectors. The FOMC made a third  $\frac{1}{4}$ -point cut in the Federal funds rate at its November meeting, noting that, despite an improving situation in financial markets, "unusual strains" were still present.

Financial market conditions stabilized further during the remainder of the year, and growth in bank loans eased as borrowers returned to the capital markets. Nevertheless, risk spreads remained significantly wider than when the year began, and Treasury yields stayed low. The yield on Baa-rated corporate debt was little changed in 1998, but that on high-yield debt increased by about  $1\frac{1}{2}$  percentage points. Banks reported a further tightening of loan terms and standards in November, but average interest rates on their commercial and industrial loans were lower in late 1998 than in late 1997.

Equity markets were little changed, on net, between the end of August and early October, but from there they climbed rapidly to new highs (Chart 2-6). Between October 8 and year's end, the S&P 500 gained 28 percent and the NASDAQ 55 percent. For the year as a whole the S&P 500 and the NASDAQ were up 27 and 40 percent, respectively, but the Russell 2000 lost 3 percent. The Wilshire 5000, the broadest index of U.S. equity prices, finished 1998 roughly 22 percent above its value at the end of 1997, achieving its fourth consecutive year of double-digit increases.

### Chart 2-6 Equity Prices in 1998

Stock markets rose strongly in the first half of 1998, fell sharply between mid-July and the end of August, and surged again after early October.

Index (12/31/97 = 100)



Sources: National Association of Securities Dealers Automated Quotations and Standard & Poor's.

The striking changes in financial market conditions over the past year and a half had—and will continue to have—important effects on real economic activity in the United States. Before discussing these effects, however, it is worth examining in greater detail one type of financial institution that was hit especially hard by the turmoil of last year.

### NEW CONCERNS ABOUT HEDGE FUNDS

In late September a group of large financial institutions urgently invested \$3.5 billion in Long-Term Capital Management (LTCM), a prominent hedge fund, to prevent its imminent collapse. Representatives of these firms—which were already LTCM's principal creditors—had been encouraged to undertake the rescue by the Federal Reserve Bank of New York, which feared that a sudden failure of the fund could significantly disrupt financial markets. The New York Federal Reserve Bank did not set the terms of the rescue or invest public money. Nevertheless, the episode prompted serious questions about the economic effects of hedge funds and appropriate public policy toward them.

#### *What Are Hedge Funds?*

The label "hedge fund" is usually applied to investment companies that are unregulated because they restrict participation to a relatively small number of wealthy investors. No precise figures are available, but the amount invested in hedge funds as of mid-1998 appears to

have been around \$300 billion. Hedge funds follow a variety of investment strategies, but they often make combinations of transactions with various counterparties designed to focus their risk exposure on certain specific outcomes. (Derivative instruments, such as futures and options, can be an efficient way to structure these transactions, but are not the only way.) For example, if a fund expects the yield spread between mortgage-backed securities and U.S. Treasuries to decline, it can buy the former and sell the latter short (which means selling securities that the fund has borrowed but does not own). Identical movements in the yields of the two types of securities will be a wash for the fund, but a narrowing of the yield spread will make it a profit by increasing the value of the mortgage-backed securities relative to the Treasuries. Of course, this focusing of risk does not eliminate risk, as an unexpected widening of the spread will create a loss for the fund.

Hedge funds can play a useful economic role by bearing risk that would otherwise be borne by more risk-averse businesses and individuals. Hedge funds can also reduce inefficiencies in asset pricing by exploiting discrepancies in prices relative to economic fundamentals or historical norms. Their activity causes these discrepancies to narrow, increasing liquidity by ensuring that other market participants can buy and sell securities at consistent prices.

LTCM had made a variety of investments all over the world, focused primarily on the expectation that various financial market spreads and volatilities would converge to their historical norms. Instead, the flight to quality in 1998 increased volatility and sharply widened risk and liquidity spreads in many markets simultaneously, causing many of LTCM's bets to lose money. Compounding these bad outcomes was the huge amount of borrowing that LTCM had used to finance its transactions; through this heavy leveraging of its equity capital, the fund had raised its return when its investment decisions were correct, but had also reduced its margin for error. Before its final crisis, LTCM had only \$4 billion or so of equity capital, but over \$100 billion in assets and sizable positions in futures contracts, forward contracts, options, and swaps.

If LTCM had defaulted, its creditors and counterparties could and probably would have tried to cover their losses by selling the collateral LTCM had pledged to them. The counterparties would also have tried to re hedge newly exposed positions, which would have put additional strains on markets at a time when risk and liquidity premiums were already rising sharply. Because many of LTCM's investment positions were quite specialized, or were large relative to the markets in which they traded, rapid liquidation and rehedging by counterparties would probably have caused big swings in some market prices. The New York Federal Reserve Bank was especially concerned *not* about the direct losses that creditors and counterparties would have incurred, but

about the potential impact of large price movements on other investments by these firms and on the investments of the many individuals and institutions not associated with LTCM.

By investing several billion dollars of new capital in LTCM, its principal creditors and counterparties prevented the firm's immediate default. These firms probably saved money as a result, because unwinding LTCM's portfolio gradually was expected to be much less disruptive to markets and prices than a sudden liquidation.

### *Regulation of Hedge Funds*

The near collapse of LTCM raised questions about the proper regulatory stance toward hedge funds and other institutions that actively trade securities and derivative instruments. Currently, hedge funds face far less regulatory scrutiny than do many other financial institutions. No government agency is charged with their direct supervision. For example, hedge funds are exempt from the Investment Company Act of 1940 (which provides for regulation of mutual funds) because of their restrictions on participation. However, hedge funds' creditors and counterparties provide some degree of "market regulation" by evaluating the funds' collateral, investment positions, and equity capital before doing business with them. The care exercised by these creditors and counterparties is, in turn, monitored to some extent by the government regulators of those institutions. These regulators include the Federal Reserve Board and the Office of the Comptroller of the Currency (OCC) for banks, the Securities and Exchange Commission (SEC) for broker-dealers, and the Commodity Futures Trading Commission (CFTC) for futures commission merchants.

Of course, lending institutions' techniques for managing their credit risks are not perfect, and market regulation cannot prevent all problems arising from hedge funds. Moreover, some financial firms that are likewise largely unregulated, such as certain broker-dealer affiliates, also engage in leveraged trading strategies. Following the near collapse of LTCM, the Secretary of the Treasury called on the President's Working Group on Financial Markets, which he chairs, to study the implications of the operations of firms such as LTCM and their relationships with their creditors. (This working group was established by executive order in 1988. Its members are the Secretary of the Treasury, the Chairman of the Board of Governors of the Federal Reserve System, the Chairman of the SEC, and the Chairperson of the CFTC. Additional participants are the Federal Deposit Insurance Corporation, the Office of Thrift Supervision, the New York Federal Reserve Bank, the OCC, the National Economic Council, and the Council of Economic Advisers.)

Should there be more government regulation of hedge funds and other highly leveraged financial institutions? One justification for regulating financial institutions generally is to reduce systemic risk—the

chance of a general breakdown in the functioning of financial markets. This risk arises largely from the asymmetry of information that is intrinsic to capital markets. Because market participants have difficulty judging the financial health of institutions, they cannot fully understand the risk of their investments. Moreover, bad news about one firm can have a contagion effect on others, reducing their access to capital as well. This spillover effect may have been exacerbated by financial innovation, which has linked the fortunes of financial institutions in ever more complex and subtle ways. Further, when financial institutions fail, asset prices in illiquid markets may overshoot their long-run values.

But even if market participants had better information and more fully understood the risks of their investments, they might take more risk than is socially desirable. Of course, every firm has an incentive to restrain its risk taking in order to protect its capital, and firm managers have an incentive to protect their own investments in the firm. However, no firm has an incentive to limit its risk taking in order to reduce the danger of contagion for other firms. In addition, some firms take more risk because of deposit insurance, which makes it easier for banks to attract depositors without having to demonstrate financial soundness. Some very large firms may take additional risk because they believe that the government views them as "too big to fail" and would step in to prevent their collapse.

The collapse of LTCM might have posed a larger systemic risk than the collapse of almost any other hedge fund at almost any other time. Few institutions are as large or as leveraged as LTCM was, and the market strains that its default would have provoked would have been especially severe during the extreme worldwide flight to quality and liquidity that occurred last fall. One can argue that the risk management practices of both hedge funds themselves and the firms with which they deal should give more weight to the likelihood of such unusual events, and indeed the experience of 1998 may have chastened financial institutions in this regard.

Despite the risks just described, determining the appropriateness of government regulation of hedge funds and other leveraged institutions is not straightforward. The study by the President's working group, expected to be completed early this year, will address a number of possible regulatory issues, including disclosure and leverage. With respect to disclosure, it appears that LTCM's creditors lent to the fund on the basis of insufficient information, or failed to analyze adequately the information they had. Market participants now appear to be demanding more disclosure from hedge funds, which is a positive development. The working group is exploring whether the government should require additional disclosure to counterparties, creditors, investors, regulators, or the public.

With respect to leverage, the degree of LTCM's leverage caused the risks in its portfolio to be transmitted more rapidly to other market participants. Creditors to hedge funds now appear to be reducing the amount of leverage they are willing to provide, which is another positive development. In addition, bank regulators can employ their existing regulatory tools to induce banks to make more prudent decisions. The working group is evaluating whether the government should do more to discourage excessive leverage, and if so, what specific steps might be appropriate.

## FINANCIAL MARKET INFLUENCES ON SPENDING

The financial market developments described in this section have had a significant impact on household and business spending. This impact has been felt through several channels, including wealth effects, effects on interest rates, and effects on the availability of credit to businesses.

### *Wealth and Consumption*

An increase in a person's net worth raises the amount that he or she can consume, either today or in the future. Statistical evidence suggests that consumer spending has tended to rise or fall by roughly 2 to 4 cents per year for every dollar that stock market wealth rises or falls. This wealth effect usually occurs over several years, but much of the adjustment is seen within 1 year. The effect might be larger today than in the past because more Americans own stocks: the Survey of Consumer Finances shows that 41 percent of U.S. families owned stocks directly or indirectly in 1995, compared with 32 percent in 1989. However, there is little direct evidence on this point.

The dramatic increase in stock prices over the past few years has provided a significant impetus to consumer spending. Applying the historical relationship cited above to the change in total household wealth (which includes other assets and liabilities as well as stocks), one could conclude that rising wealth boosted consumption growth by nearly a percentage point during 1998, after a similar increase during 1997. Robust spending has, in turn, led to a dramatic decline in households' saving out of income from current production, with the personal saving rate falling to a historical low of 0.2 percent in the third quarter of last year. (Net private saving, which combines personal saving and undistributed corporate profits, has also declined as a share of national income during the past few years, but less sharply than has personal saving.)

The sharp decline in household saving in recent years became more apparent after the annual revision of the national income and product accounts in July 1998. Prior to the revision, capital gains distributions by mutual funds had been included in personal income (just as interest payments are), which bolstered measured personal saving. But

these distributions do not represent income from current production, and the revised data correctly exclude them from income. The revision lowered the measured personal saving rate, and by a greater amount in more recent years because capital gains distributions by mutual funds were greater. However, the revision had no effect on private saving, because the markdown of personal saving was automatically offset by an increase in the measured undistributed profits of the mutual fund industry.

### *Interest Rates and Consumption*

Changes in interest rates affect household spending through various channels. Consider a decline in rates. This tends to boost the value of stocks and bonds, which has a wealth effect on consumption as discussed above. In addition, lower rates encourage spending on houses, automobiles, and other durable goods often bought on credit, while reducing the return on new saving. Moreover, a decline in interest rates augments homeowners' cash flow by reducing payments on adjustable rate mortgages and spurring mortgage refinancing. At the same time, however, lower interest rates work to reduce spending in several ways. Household cash flow is diminished by a drop in interest income, and people who are saving to reach a target level of wealth need to save more to reach that target. On balance, lower rates probably stimulate household spending, and higher rates probably dampen it, but the magnitude of these effects is unclear.

Nominal interest rates on Treasury securities reached unusually low levels last year. For example, for the year as a whole, the average 10-year Treasury yield was the lowest since 1967, and at the peak of the financial market stress in early October the 10-year yield touched its lowest value since 1964. Real Treasury yields (as measured by the difference between nominal yields and survey measures of inflation expectations) were also low, although less exceptionally so. Interest rates facing household borrowers did not fall as sharply as did Treasury rates last year; for example, interest rates on consumer loans from commercial banks were only slightly lower in 1998 than in 1997, and credit card rates were roughly unchanged. But rates on fixed rate mortgages averaged more than  $\frac{1}{2}$  percentage point lower in 1998 than in 1997.

### *Financial Conditions and Business Investment*

For several years through mid-1998, businesses enjoyed ready access to external funding on favorable terms. This circumstance was one of the factors encouraging the brisk pace of capital investment, as reported in the following section. Last year's sudden flight to quality changed this situation abruptly, raising borrowing costs for some businesses and limiting others' ability to borrow. However, one should not overstate the impact of these developments on economic activity. As

noted earlier, investment-grade borrowers faced essentially the same cost of long-term debt capital at the end of 1998 as at the beginning, although riskier borrowers saw their borrowing costs rise. Financial markets and institutions continued to funnel substantial funds to businesses. Moreover, most businesses do not face an overwhelming burden of servicing existing debt. The aggregate debt-service burden for nonfinancial corporations—measured as the ratio of net interest payments to cash flow—fell roughly by half between 1990 and 1996 and then slipped a little further in the following 2 years.

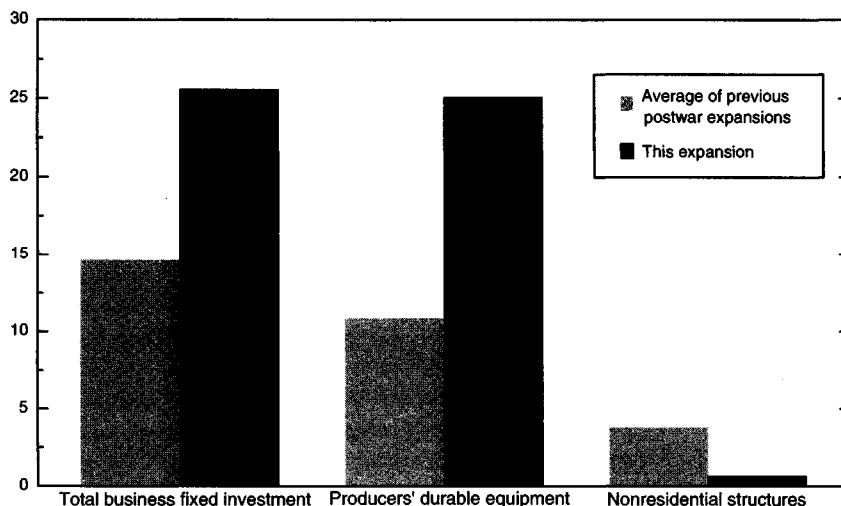
## THE INVESTMENT BOOM

Business investment in plant and equipment has grown remarkably rapidly during the 1990s. Chart 2-7 shows that real business fixed investment has contributed about one-quarter of real GDP growth during this expansion, compared with an average of roughly 15 percent during previous expansions since World War II. Outlays for producers’

**Chart 2-7 Contribution of Investment to Overall GDP Growth**

Total business fixed investment has accounted for a much larger share of real GDP growth in this expansion than in previous ones, due entirely to equipment investment.

Percent of real GDP change



Sources: Department of Commerce (Bureau of Economic Analysis) and National Bureau of Economic Research.

durable equipment have been especially strong, increasing at an average annual rate of more than 10 percent in real terms and contributing more than twice as large a share of GDP growth as during previous expansions. In contrast, real investment in nonresidential structures has barely changed, on net, contributing almost nothing to output growth during this period.

## CAUSES OF THE BOOM

The pace of investment depends on decisions made by myriad individual firms, each reacting to a variety of forces. Still, one can identify at least four general factors that have contributed to the recent surge in investment.

### *Rapid Output Growth*

One key factor is the rapid growth of output during the past several years. In a simple model, a firm's desired capital stock depends on its expected sales, as well as on the cost of capital and other factors. An increase in expected sales induces an increase in desired capital, which requires investment. The level of investment thus depends on the *change* in sales; if one views sales as the rate at which firms are distributing their products, the change in sales is an acceleration of that rate, and this sort of model is therefore called an "accelerator model."

A pure accelerator model expresses aggregate investment only as a function of output growth, typically with several lags built in to capture both a gradual adjustment of sales expectations and a gradual adjustment of the capital stock to its desired level. The capital stock adjusts gradually because firms often choose to install new capital slowly, in order to reduce the cost of installation. Research using more elaborate accelerator models shows that they can explain a large share of the variation in equipment investment over the past several decades, and a smaller share of the variation in building of nonresidential structures. Of course, the observed correlation between output growth and investment reflects not only the influence of the former on the latter but also the reverse: strong investment also boosts output. Nevertheless, strong demand outside of the investment sector in recent years has clearly helped to boost investment demand through this accelerator effect.

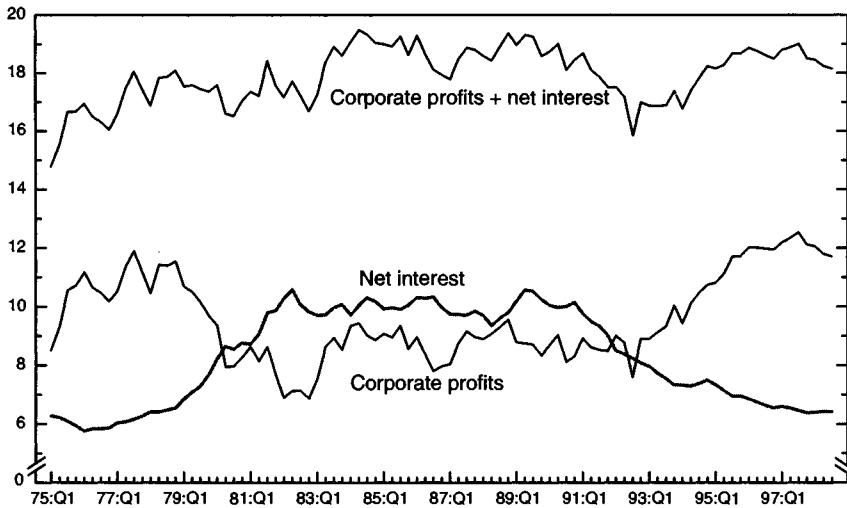
### *Robust Profits*

A second factor underlying strong investment has been robust corporate profits. Although profit growth waned in 1998, economic profits (defined as book profits adjusted for changes in inventory valuation and for capital consumption) represented almost 12 percent of national income in the first three quarters of 1998, well above the 1980s peak of about 9 percent. (Profits peaked at over 14 percent of national income in the 1960s.) The increasing share of profits in national income over the past 5 years is mirrored by a declining share of net interest payments (Chart 2-8); the sum of these components now represents roughly the same portion of national income as during the 1980s. Thus, much of the runup in profits has been simply a shift in capital income from debtholders to equityholders. After-tax profits—which represent the funds available for payments to stockholders and

### Chart 2-8 Corporate Profits and Net Interest Payments

The corporate profit share of national income has risen recently while the net interest share has fallen. The sum of these pieces of capital income has varied less.

Percent of national income



Note: Corporate profits includes inventory valuation and capital consumption adjustments.

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

for investment—have also made up an unusually large share of national income in recent years.

Profits can affect investment in two ways. First, high returns to existing capital may help persuade firms that the return to new capital investment will be high as well. Second, high profits allow firms to purchase capital using internally generated funds, which are generally less expensive to the firm than external funds (the proceeds of borrowing or the sale of shares). This difference in cost arises because lenders know less about a firm's investment projects and financial condition than the firm itself does. Their informational disadvantage creates so-called agency problems, which include both moral hazard (firms may alter their behavior in ways that raise their lenders' risk without the lenders' knowledge or acquiescence) and adverse selection (firms that seek external funds will tend to be those with riskier projects). Thus, the information asymmetry between firms and potential lenders raises the cost—and sometimes restricts the quantity—of funds raised in financial markets.

### *Plentiful External Capital*

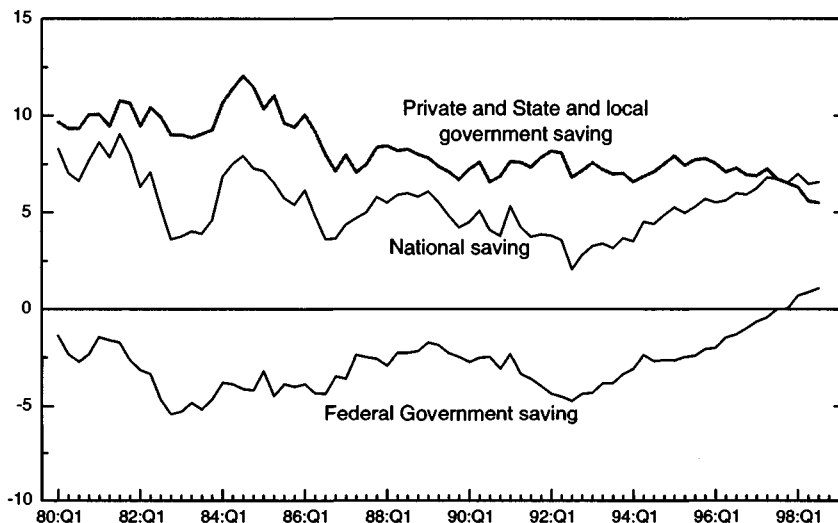
A third reason for the impressive recent pace of investment has been the ready availability of external funding. In particular, the dramatic reduction in Federal Government borrowing has left more resources available for private use. The domestic source of new loanable funds in the economy is national saving, which equals saving by the Federal

Government plus saving by households, businesses (in the form of undistributed after-tax profits), and State and local governments. Since 1992, net private and State and local government saving has declined slightly as a share of GDP, but the surge in Federal receipts relative to expenditures has more than offset that dip (Chart 2-9). Over this period, net national saving has more than doubled as a share of GDP, rising from 3 percent to 6½ percent—its highest level since 1984. (Net saving equals gross saving less the consumption of fixed capital.)

**Chart 2-9 Net National Saving and Its Components**

Net national saving has increased substantially since 1992, owing entirely to an increase in saving by the Federal Government.

Percent of GDP



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

An alternative approach to evaluating the availability of external funding is to focus on the price or cost of those funds—the interest rate—rather than the quantity. Both price and quantity depend on business investment decisions. A high level of desired investment creates strong demand for loanable funds, pushing up their cost and perhaps increasing the quantity of funds supplied by savers. Therefore, if saving and desired investment for any given interest rate both increase, the equilibrium interest rate can either rise or fall. This ambiguity makes movements in the cost of borrowed funds an unreliable indicator of shifts in the supply of funds. As already noted, however, the increase in the supply of loanable funds during the past several years came entirely from a reduction in government dissaving, which is largely independent of investment demand. (It is not entirely independent because part of the improvement in government finances

is attributable to the strong economy, which in turn is due partly to strong investment.)

In addition to national saving, another source of funds for investment is capital inflows from abroad. In the national income and product accounts, domestic investment equals national saving (plus a statistical discrepancy) less net foreign investment, which is the amount that domestic residents are lending abroad less the amount that foreigners are lending to us. Net foreign investment has been significantly negative on average during this decade (that is, foreigners have been investing more capital in the U.S. economy than Americans have been investing abroad), as it was during the 1980s, providing additional resources for domestic investment. As with private domestic saving, however, the net capital inflow depends partly on the demand for investment funds, so it cannot be considered an independent cause of strong investment.

### *Falling Computer Prices*

A fourth factor spurring investment during the past several years has been a remarkable drop in the price of computers. (Prices have also fallen for some other capital goods, although less dramatically.) Continued technological advances pushed down the chain-weighted price index for business computers and peripheral equipment by about 30 percent at an annual rate during the first three quarters of 1998, following declines of around 25 percent during both 1996 and 1997. The combination of falling prices, new products, more innovative applications of existing technology, and concerns about the year 2000 problem (discussed later in this chapter) has sharply boosted outlays in this area. Between the end of 1995 and the third quarter of 1998, nominal computer spending increased roughly 30 percent, and real computer spending tripled. Nominal computer spending is now roughly twice what it was at the end of the 1980s, and real computer spending is about 12 times as large. This exceptional advance in real computer spending has comprised a significant part of growth in real equipment investment.

## IMPLICATIONS OF THE INVESTMENT BOOM

The 1990s boom in business fixed investment has generated a significant increase in the Nation's stock of business capital. The larger capital stock has benefited the economy in two important ways: it has helped restrain inflation by increasing industrial capacity, and it has helped raise productivity.

### *Capacity Utilization and Inflation*

When demand for resources in the economy exceeds supply, inflation usually results. The simplest measure of the utilization of labor resources is the unemployment rate. Inflation often rises when labor

markets are tight, because competition for workers among firms puts upward pressure on wages; if these wage increases are not matched by increases in productivity, firms face higher costs of production and raise their prices as a result. Consequently, the unemployment rate is useful in predicting inflation, although of course the relationship is far from perfect.

The simplest measure of the utilization of capital resources is the capacity utilization rate. Inflation often rises when capacity utilization is high because the marginal cost of production is higher in those situations, and higher marginal costs can lead to higher prices. The capacity utilization rate reported by the Federal Reserve Board is the ratio of the actual level of output to a sustainable maximum level of output (or capacity), based on a realistic work schedule and normal downtime. The Federal Reserve produces these numbers for the industrial sector (manufacturing, mining, and utilities) only, using data from the Survey of Plant Capacity collected by the Census Bureau. The correlation between the capacity utilization rate and acceleration of the core CPI is positive and fairly high, even though capacity utilization data apply to only a portion of the economy. (Because final demand for services is more stable over the business cycle than final demand for goods, the focus of capacity utilization on the goods-producing sector may not represent a significant obstacle to predicting cyclical pressures for inflation.) In time-series models, capacity utilization is often an important predictor of inflation, and several studies have found that the nonaccelerating-inflation rate of capacity utilization (analogous to the nonaccelerating-inflation rate of unemployment, or NAIRU) is close to the mean value of that series.

Despite the historical relationship between the unemployment rate and inflation, the very low unemployment rate of the past several years has not produced an increase in inflation. Indeed, core inflation has dropped, on net, during this period. One factor that may have helped hold down inflation is the rapid pace of investment, which has caused total industrial capacity to grow faster in each of the past 4 years than in any other year since 1967, when the series began. As a result, capacity utilization has stayed fairly close to its long-run average since 1996 in spite of substantial output growth and rising utilization of labor resources.

### *Productivity*

The accumulation of capital boosts the productivity of labor through capital deepening, or increases in the quantity or quality of capital per worker. New capital can also embody technological advances or innovative ways of organizing work that raise the productivity of both labor and capital, known as multifactor productivity or total factor productivity.

The Bureau of Labor Statistics breaks down growth in potential output into changes in the quantity of labor and changes in labor

productivity; the latter is in turn broken down into changes in labor quality, changes in the quantity and quality of capital, and changes in multifactor productivity. Between 1990 and 1996 (the last year for which the breakdown is officially tabulated), labor productivity in private business increased at an average rate of 1.1 percentage points per year. Improvements in labor quality accounted for 0.4 percentage point, and capital deepening contributed about 0.4 percentage point. (In comparison, capital deepening contributed 0.7 percentage point to multifactor productivity growth between 1979 and 1990. Although gross business fixed investment has increased significantly as a share of GDP during the past 6 years, it represented a smaller share of GDP on average between 1990 and 1996 than between 1979 and 1990. Net business fixed investment, which determines the change in the business capital stock, was also a smaller share of GDP on average during the later period.) Gains in multifactor productivity represented the remaining 0.3 percentage point of labor productivity growth, part of which may be related to capital investment, although such an effect is difficult to quantify.

Some observers are surprised that the torrid pace of computer investment has not had a more apparent effect on productivity growth. As noted earlier, much of the acceleration in measured labor productivity during the past 3 years may owe to methodological changes and cyclical dynamics rather than fundamental advances such as the increasing use of computers. One factor limiting the impact of the information technology revolution on productivity is the relatively small share of this type of capital: computers and peripheral equipment still represent less than 5 percent of the total net stock of equipment and less than 2 percent of net nonresidential fixed capital. And the small base of computer capital means that many years of brisk investment would be needed before computers could represent an appreciable part of the capital stock.

Even so, computers could have a large effect on productivity if the rate of return to computer capital were especially high. In conventional growth accounting, such as the calculations made by the Bureau of Labor Statistics, unusually high returns to computers would appear as higher multifactor productivity. However, measured multifactor productivity has not increased especially rapidly during the 1990s. Measurement error could play a role here, as a substantial part of the output of computers is intangible and may not be captured in the national income accounts. Yet mismeasurement of output has been a perennial problem for national income accounting, and whether this problem is worse in the computer age is not clear.

More fundamentally, the full benefits of the dramatic advance of computer technology may still lie ahead of us. Economic historian Paul David has compared the computer revolution to the transition to electric power in the late 19th and early 20th centuries. He noted that

the productivity gains from the electrification of manufacturing were not large at first but became quite substantial several decades after the opening of the first central power station. Box 2-1 examines the hypothesis that rising productivity follows major technical innovations with a considerable lag, and considers whether productivity patterns in the information age are likely to mirror those that followed the widespread adoption of electrical power.

## MACROECONOMIC IMPLICATIONS OF THE Y2K PROBLEM

It is now less than a year until the widely anticipated arrival of the year 2000 problem, called Y2K for short (or, more colorfully, the “millennium bug” or “millennium bomb”). Many older computer programs, including those running on microprocessors embedded in other electronic products, encode the current year using only the last two digits. Thus, when January 1, 2000, arrives, they may fail to recognize “00” as

### **Box 2-1.—The Electrical Revolution, the Computer Revolution, and Productivity**

Although the electric dynamo was invented well before the turn of the century, it did not seem to fuel large gains in productivity until many years later. One economic historian reports that U.S. productivity grew more slowly between 1890 and 1913 than previously, but it increased rapidly between 1919 and 1929, and he attributes half of the acceleration in manufacturing productivity relative to the preceding decade to growth in electric motor capacity. Drawing a parallel between this episode and the spread of computing technology in our own time, he argues that an extended process of technological diffusion may now be under way, which may yield large productivity gains in the future. Others have noted similar lagged productivity effects following the introduction of steam power and the development of the automobile.

The slow diffusion of electric power may be explained primarily by the need to build new factories and redesign manufacturing processes in order to take full advantage of the new technology. Many manufacturers would have gained little from simply replacing a large steam power unit with a large electric power unit in the same factory. Substantial cost savings *were* available over time from building new factories: electric-powered factories could be single-story and less sturdy, machinery could be reconfigured more easily, and the flexibility of wiring meant that portions of plants could be shut down individually. However, new construction was generally unprofitable until existing plants had

the year 2000, mistaking it instead for 1900. The result could be incorrect output or total system failure. Although it sounds to many at first like a trivial matter, of interest only to computer engineers and programmers, in fact the Y2K problem is potentially extremely serious, given the central role that computer technology has taken in our lives. Problems caused by the Y2K bug in one company, industry, or sector may have widespread consequences in others.

There are many conceivable Y2K disaster scenarios. Most involve disruptions to some critical infrastructure that links the rest of the economy together, such as transportation systems, power distribution grids, or telecommunications or financial networks. Such disruptions would likely have effects that are more than proportionate to the size of the sector directly affected. Some observers warn that in January 2000 planes may stop flying, telephone traffic may be disconnected, financial transactions may not go through, power grids may shut down, and so on. Others have worried that Social Security recipients might not receive their checks (although, as Box 2-2 notes, the Social

**Box 2-1.—continued**

depreciated. In addition, a relatively loose industrial labor market at the turn of the century kept the price of labor low and discouraged manufacturers from substituting capital for labor. Real wages in the United States did not rise enough to motivate significant expansion of the capital stock until immigration from Europe was curtailed during World War I. Lastly, implementing the new processes throughout the economy required a considerable supply of specialized talent—electrical engineers and factory architects experienced in the new designs—which developed only slowly.

Whether productivity in the information age will follow the path of productivity in the electric age remains to be seen. The introduction of computer technology is similar in many ways to the transition to electric power. Integrating computers into the work environment is not a straightforward matter: firms are clearly still adapting the organization of work to take maximum advantage of the new technology. At the same time, the diffusion of computers differs from the spread of electricity in important ways. For example, computers have already spread through the economy much faster than electric power did, at least in part because of their plunging prices. The historical analogy is intriguing and has appealing implications, but even its main proponent warns against taking it too literally. It is simply too soon to know whether the computer revolution will generate a surge in productivity growth ahead.

### **Box 2-2.—Preparing Federal Systems for the Year 2000**

The Federal Government is a sufficiently large player in the economy that a failure of its own operations due to the Y2K problem would cause great inconvenience and hardship to many Americans, even if it did not impact the macroeconomy. The Federal Government operates some of the largest, most complex computer systems in the world, which provide services to millions of Americans. At the Social Security Administration (SSA) alone, information systems track annual earnings for more than 125 million workers, take 6 million applications for benefits each year, and make monthly benefit payments to 48 million Americans. The Federal Government also exchanges vast amounts of information with the States, which administer key Federal programs such as the food stamp program, Medicaid, and unemployment insurance.

Preparing Federal systems for the year 2000 is an enormous challenge, and agencies have mounted aggressive efforts to ensure that their critical services will not be disrupted. SSA was the first agency to begin work on the Y2K problem, as long ago as 1989. By 1995 several agencies had Y2K projects under way and were sharing information with each other about their efforts. In 1995 the Office of Management and Budget (OMB) formed an interagency committee, which it asked the SSA to chair, to coordinate the various Federal efforts. In 1996 the Chief Information Officers Council was assigned the responsibility of building on and overseeing the committee's work.

Since early 1997 the OMB has produced quarterly reports on agencies' progress in assessing, remediating, testing, and implementing critical systems. The Administration has established a goal of having all critical systems compliant by March 1999. As of November 15, 1998, 61 percent were already compliant, up from 27 percent a year earlier. A small percentage of critical systems

Security Administration is already Y2K-compliant) and even that hospital life-support systems might shut down.

Huge efforts to address the Y2K problem have been under way for some time, especially in large corporations and financial markets and in the U.S. Government (see Box 2-2 on Federal Y2K efforts; see also Box 5-3 in Chapter 5, on the Administration's initiative to encourage Y2K information sharing among companies). The American economy is large, diverse, and resilient, and people will find ways around those disruptions that, despite everyone's best efforts, will inevitably occur. But it is essential to guard against complacency. Some, in particular some smaller companies and some State and local governments, have not yet gotten the message.

**Box 2-2.—continued**

are not expected to meet the March goal, and their agencies have been instructed to produce specific benchmarks showing how they will complete work on these systems before January 1, 2000, and to create contingency plans where necessary.

Federal payment systems are of particular concern to the public and the economy. Social Security and veterans' benefits systems are already compliant, and the Internal Revenue Service appears well on its way to being able to collect and process tax returns and issue refunds in a timely manner. For Medicare, which continues to face major system challenges, the Health Care Financing Administration is developing contingency plans to ensure that health care funding is not disrupted. State-run systems for administering Federal benefit programs play a critical role in distributing a wide range of benefits, and a few States are receiving increased attention from Federal agencies.

The OMB also works with agencies to ensure that they have adequate financial resources to address the problem. In the fall of 1998 the Congress provided a \$3.35 billion emergency fund to ensure that unanticipated Y2K funding needs are met and that no system will fail for lack of financial resources.

In February 1998 the President's Council on Year 2000 Conversion was created to coordinate the Federal Government's Y2K efforts. The council works with the OMB to ensure that agencies are making the most effective use of their financial and human resources to prepare their systems. The council is also concerned with reaching out beyond the Federal Government to promote action on the problem and to offer support to Y2K efforts in the private sector, by State, local, and tribal governments, and by international entities.

Some foreign countries have only recently gotten the message as well. Thus concern has shifted recently to the international dimension. Y2K problems can be transmitted not just from one company to another, but also from one country to another. Australia and Canada are classed with the United States among those countries relatively far along in their remedial efforts. But some European countries have been diverted by another large information processing task, namely, that of converting their information systems to deal with the new European currency, the euro, which came into existence in January 1999. In many countries, preparations are not as far along as they should be. The reassuring notion that developing countries are not yet as dependent on computers as are many industrial countries is

outweighed by the fact that their equipment is likely to be older and therefore may contain more of the old two-digit coding.

Those companies and countries that only began to address the Y2K problem in 1998 now find themselves in a race against time. And any that have still not begun to deal with the problem will probably find their efforts have come too late. In such cases, business continuity planning to minimize probable disruptions is particularly necessary.

A few Wall Street forecasters have assigned high odds to the likelihood that the Y2K problem will lead to a serious global recession. Such forecasts seem excessively dire. Even if disruptions turn out to be more serious than most analysts expect, they will most likely show up primarily as inconveniences and losses in certain sectors. It is less likely that they would manifest themselves as the sort of economy-wide macroeconomic disturbances that can lead to a recession. In other words, aggregate economic statistics such as GDP and employment will probably not reflect Y2K effects to any noticeable extent. However, it would be unwise to state categorically that a Y2K recession is not in the cards. Computer technology is so pervasive in our lives that it is difficult to predict all the possible sources of danger.

Some effects on the demand side of the economy can reasonably be predicted—indeed, they are already upon us. First, the need to address the Y2K problem is already boosting demand for computer hardware and software, both to retrofit older machines and programs and to purchase new equipment that is Y2K-compliant. From a review of quarterly 10-K reports filed by Fortune 500 firms, the Federal Reserve Board has estimated that these large companies will spend a total of \$50 billion on Y2K fixes. Indeed, this spending probably helps explain why real investment in computers and peripheral equipment in late 1998 was running more than 60 percent above its level a year earlier. Sometime later in 1999, it is likely that a tendency for firms to freeze their systems, so as not to be caught in midstream when January 1, 2000, arrives, will work to moderate Y2K spending. Thereafter a second burst of pent-up computer spending may occur, especially if new Y2K-related problems are revealed.

The Y2K problem is also increasing demand for the services of computer programmers. This effect should reverse after 2000, if all goes well, but it is likely to persist for some time after January 1. Not only may unanticipated glitches be discovered and need to be fixed, but companies are also likely to face a backlog of upgrade tasks that they had postponed in order to divert programming resources to Y2K issues. Economists at the Federal Reserve Board have pointed out that the increased demand for computer goods and services may not be showing up in GDP, to the extent that it takes the form of firms reallocating their own computer support services to work on the problem. To the contrary, they point to a negative effect on productivity resulting from the diversion of resources from what would otherwise be investment in

new productive capacity, and they estimate a loss to U.S. productivity due to such diversion of 0.1 to 0.2 percent per year in 1998 and 1999.

Uncertainty over the performance of information and delivery systems might lead firms to stockpile inventories in the runup to January 2000. Uncertainty has a positive effect on the demand for inventories at every stage of production, from raw materials such as oil and other mineral and agricultural products to retailers' inventories of consumer goods. The Y2K inventory effect should provide a clear boost to GDP in the fourth quarter of 1999, offset by a corresponding negative effect in early 2000. But this possibility implies no particular distortion of economic activity and calls for no particular policy response. Given the intrinsic uncertainty created by Y2K, it is rational and sensible, even optimal, for companies to take the precaution of adding a bit to inventories ahead of time. There is no reason to presume that this tendency to stockpile will be greater, or that it will be less, than what is appropriate.

Disturbances in the financial sector are also possible. The demand for cash balances, like the demand for inventories, is affected by uncertainty. Risk-averse people may withdraw more than the usual amount of money from automatic teller machines on the way to their New Year's Eve parties this year. As any macroeconomic textbook shows, an increase in the demand for cash without an increase in its supply can have a contractionary effect on the economy. Unlike the other factors, however, this one is easily accommodated. The Federal Reserve has already made arrangements to ensure that banks have the currency they need to satisfy a surge in demand. Thus, an increased demand for cash is one part of the macroeconomic equation that need not be a source of concern.

Effects on the supply side—notably in the infrastructure sectors mentioned above—are the source of the more alarming scenarios and are much harder to predict. It is here that the greatest risks lie. There is no way to evaluate, for example, whether the prospect of Y2K glitches in the financial sector will stoke irrational end-of-millennium unease to the point of provoking self-confirming volatility in securities markets. Banks have reported that Y2K compliance is already an important factor in their decisions to extend credit in certain foreign countries, particularly in Asia and Eastern Europe, where countries are thought to be among the least well prepared for the Y2K problem. A tightening of bank lending in these regions could accentuate the capital scarcity arising from the recent flight to quality.

There is no way of knowing the odds that the Y2K problem will lead to a recession. Even those who issue pessimistic forecasts admit freely that they are purely subjective judgments. This is not the sort of problem that lends itself to formal modeling; macroeconomic models simply are not built to address one-time scenarios such as a Y2K debacle. Moreover, if one knew enough about all the potential problems to

construct an accurate forecasting model, one would also know enough to go out and fix them. But as always, the unpredictable problems are the hardest to predict.

One can look to historical precedent—past disruptions of transportation or power systems due to strikes, weather events, or technological failures, for example—to see if anything can be learned about the macroeconomic spillover effects. Such an analysis is encouraging. Table 2-2 reports over 20 major disasters that occurred in the United States between 1971 and 1995, most of them weather-related, together with estimates of their monetary damages. The adverse impacts on buildings and property, even leaving aside the tremendous human toll, were often large: over 1 percent of GDP each in the cases of Hurricane Andrew in 1992 and the Northridge, California, earthquake in 1994. In economic terms these damages represent a loss in future consumption; resources must be diverted to replace or repair the capital stock that

TABLE 2-2.—*Disaster Damage: National Income and Product Accounts Estimates of Value of Structures and Equipment Destroyed*

| Disaster                            | Area affected                               | Impact on NIPAs |   |
|-------------------------------------|---|-----------------|---|
|                                     |   | Period          | Value destroyed (billions of 1992 dollars at annual rates) <sup>1</sup> |
| Earthquake .....                    | California                                  | 1971: I         | 1.7   |
| Hurricane Agnes.....                | Middle Atlantic                             | 1972: II        | 20.2  |
| Flood .....                         | Mississippi                                 | 1973: II        | 6.3   |
| Tornadoes.....                      | Alabama, Indiana, Kentucky, Ohio, Tennessee | 1974: II        | 1.9   |
| Flood, dam collapse .....           | Idaho                                       | 1976: II        | 1.4   |
| Windstorms, flood .....             | Kentucky, Virginia, West Virginia           | 1977: II        | 2.8   |
| Floods .....                        | Alabama, Mississippi, North Dakota          | 1979: II        | } 3.0   |
| Tornadoes.....                      | Arkansas, Texas                             | 1979: II        |   |
| Hurricanes David and Frederick..... | Alabama, Mississippi                        | 1979: III       | 4.6   |
| Mudslides .....                     | California                                  | 1980: I         | 1.5   |
| Riots .....                         | Miami (Florida)                             | 1980: II        | } 1.9   |
| Mount St. Helens eruption .....     | Oregon, Washington                          | 1980: II        |   |
| Hurricane Iwa .....                 | Hawaii                                      | 1982: IV        | } 4.7   |
| Floods .....                        | Arkansas, Missouri                          | 1982: IV        |   |
| Hurricane Alicia.....               | Texas                                       | 1983: III       | 5.7   |
| Hurricanes Elena and Gloria .....   | Atlantic and Gulf Coasts                    | 1985: III       | 4.3   |
| Tropical Storm Juan .....           | Gulf Coast                                  | 1985: IV        | } 4.2   |
| Hurricane Kate .....                | Atlantic Coast                              | 1985: IV        |   |
| Floods .....                        | Atlantic Coast                              | 1985: IV        |   |
| Hurricane Hugo .....                | North and South Carolina                    | 1989: III       | 17.8  |
| Earthquake.....                     | Loma Prieta (California)                    | 1989: IV        | 15.8  |
| Fire .....                          | Oakland (California)                        | 1991: IV        | 6.1   |
| Hurricane Andrew.....               | Florida and Louisiana                       | 1992: III       | 63.9  |
| Hurricane Iniki .....               | Hawaii                                      | 1992: III       | 7.9   |
| Winter Storm .....                  | 24 Eastern States                           | 1993: I         | 7.9   |
| Floods .....                        | 9 Midwestern States                         | 1993: III       | 8.2   |
| Earthquake.....                     | Northridge (California)                     | 1994: I         | 74.8  |
| Hurricane Opal .....                | Florida plus 9 Southern States              | 1995: IV        | 8.6   |

<sup>1</sup> Reflected as additions to consumption of fixed capital.

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

has been lost or damaged. Yet in most cases the reduction in the capital stock had only a limited impact on current sales and production, so that the disruption did not show up in the national statistics on output, income, or employment for the year. The same is true of strikes, even those that affect the communications or transportation infrastructure. The 1997 strike against the Nation's leading private package delivery service, for example, in the end had little discernible impact on GDP, in part because firms and individuals found other ways to ship their packages. Americans are, after all, very adaptable. Also, output that is lost in one month is often made up the next.

To be sure, it could be dangerous to generalize from these precedents. A disruption that affected the entire country, or that lasted more than a few weeks, would offer less scope for substitution. But even when a failure of major power cables cut power to the central business district of New Zealand's largest city for 2 months last year, the estimated effect on the year's GDP growth was small in the end.

To summarize, even if Y2K disruptions turn out to be on the serious side, they will most likely show up primarily as inconveniences and losses in some sectors, and not in noticeable macroeconomic terms. A survey of 33 professional forecasters reported an average expectation that the Y2K problem and efforts to address it would add 0.1 percent to economic growth in 1999 and subtract 0.3 percent in 2000. Given typical yearly fluctuations in GDP, it would be hard to identify effects of this magnitude after the fact. The huge efforts now under way, both in the government and in the corporate sector, should make a truly serious disruption, let alone a recession, less likely. Again, however, it is important to avoid complacency. We should all redouble our preventive efforts, to keep from having to put the adaptability of the economy to the test.

## NEAR-TERM OUTLOOK AND LONG-RUN FORECAST

### THE ADMINISTRATION FORECAST

The Administration projects GDP growth over the long term at roughly 2.4 percent per year—a figure consistent with the experience so far during this business cycle as well as with reasonable growth rates of the economy's supply-side components. One method for estimating the economy's potential growth is an empirical regularity known as Okun's law, which can be illustrated by a scatter diagram (Chart 2-10). The diagram plots the four-quarter change in the unemployment rate against the four-quarter growth rate for 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 rate. The rate of GDP growth consistent with a stable unemployment rate is interpreted as the rate of potential growth and

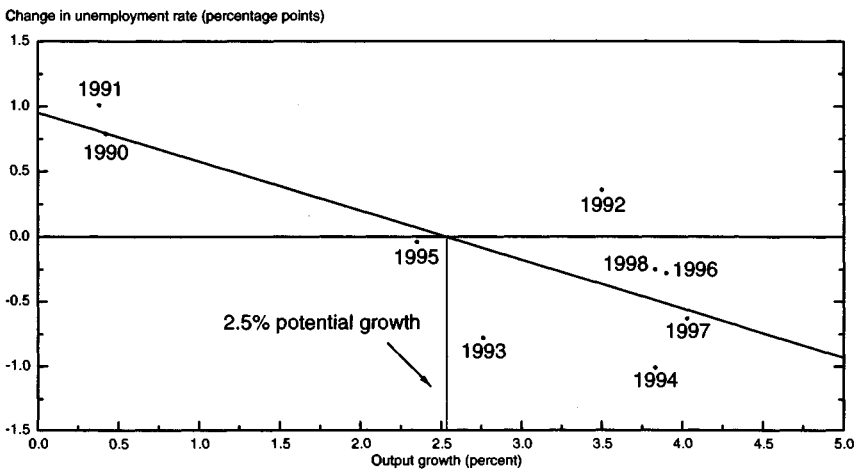
is estimated as the location where the fitted line in Chart 2-10 crosses the horizontal axis—in this case around 2.5 percent.

## COMPONENTS OF LONG-TERM GROWTH

### *Labor Force*

In the long term, the growth rate of the economy is determined primarily by the growth of its main supply-side components: population, labor force participation, the workweek, and labor productivity (Table 2-3). Of these, the most easily understood is the civilian working-

**Chart 2-10 Estimation of Potential GDP Growth by Okun's Law**  
Real GDP growth in excess of its potential rate lowers the unemployment rate. Potential growth is estimated to be around 2.5 percent.



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 GDP. Pre-1995 growth rates have been adjusted for methodological changes. GDP growth in 1998 is estimated. Sources: Department of Commerce (Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), and Council of Economic Advisers.

age population (the number of Americans aged 16 and over), which has grown at a 1.0 percent annual rate over the past 8 years. Official projections by the Bureau of the Census point to a growth rate of 1.0 percent per year through 2008 for this segment of the population.

The labor force participation rate—the percentage of the working-age population that is working or seeking work—was little changed in 1998, after notable increases in the 2 previous years. Although no readily apparent explanation emerges for the year-to-year pattern, the resurgence of strong GDP growth in 1996 (following a slower year), the expansion of the earned income tax credit, and the welfare reform law passed in the summer of 1996 probably all contributed to the increase in participation that year and in 1997. Welfare reform required States to move more of their public assistance caseload into work or work-related

activities. Most likely, the boost to participation from these efforts will be spread over the years between 1996 and 2002. Evidence for this effect is the rapid rise in the participation rate for women who maintain families. The increase in the participation rate for this group, which makes up only 6 percent of the labor force, accounts for half of the increase in the total participation rate over the past 3 years. These labor market issues are discussed further in Chapter 3.

On average, the total participation rate has been little changed since the last business-cycle peak. Looking ahead, the Administration expects the participation rate to increase by almost 0.2 percent per year during the phase-in period of welfare reform (that is, through 2002) and then to slow to 0.1 percent per year thereafter.

### Productivity

The official measure of productivity in the nonfarm business sector has grown at about a 2 percent annual rate over the past 3 years, substantially faster than the 1.1 percent average annual growth rate between the business-cycle peaks of 1973 and 1990. To assess whether

TABLE 2-3.—*Accounting for Growth in Real GDP, 1960-2007*  
[Average annual percent change]

| Item   | 1960 II<br>to<br>1973 IV | 1973 IV<br>to<br>1990 III | 1990 III<br>to<br>1998 III | 1998 III<br>to<br>2007 IV           |
|--|--------------------------|---------------------------|----------------------------|-------------------------------------|
| 1) Civilian noninstitutional population aged 16 and over .....                                 | 1.8                      | 1.5                       | 1.0                        | 1.0                                 |
| 2) PLUS: Civilian labor force participation rate <sup>1</sup> .....                            | .2                       | .5                        | .0                         | .1                                  |
| 3) EQUALS: Civilian labor force <sup>1</sup> .....   | 2.0                      | 2.0                       | 1.0                        | 1.1                                 |
| 4) PLUS: Civilian employment rate <sup>1</sup> .....   | .0                       | -.1                       | .2                         | -.1                                 |
| 5) EQUALS: Civilian employment <sup>1</sup> .....  | 2.0                      | 1.9                       | 1.2                        | 1.1                                 |
| 6) PLUS: Nonfarm business employment as<br>a share of civilian employment <sup>1 2</sup> ..... | .1                       | .1                        | .4                         | .1                                  |
| 7) EQUALS: Nonfarm business employment .....   | 2.1                      | 2.0                       | 1.6                        | 1.2                                 |
| 8) PLUS: Average weekly hours (nonfarm business) .....   | -.5                      | -.4                       | .0                         | .0                                  |
| 9) EQUALS: Hours of all persons (nonfarm business) .....                                       | 1.6                      | 1.7                       | 1.7                        | 1.2                                 |
| 10) PLUS: Output per hour (productivity, nonfarm business) .....                               | 2.9                      | 1.1                       | 1.4                        | <sup>3</sup> (1.6)                  |
| 11) EQUALS: Nonfarm business output .....  | 4.5                      | 2.8                       | 3.1                        | <sup>3</sup> (3.3)                  |
| 12) PLUS: Ratio of real GDP to nonfarm business output <sup>4</sup> .....                      | -.3                      | -.1                       | -.4                        | <sup>3</sup> (-.5)                  |
| 13) EQUALS: Real GDP .....   | 4.2                      | 2.7                       | 2.6                        | <sup>3</sup> (2.8) <sup>5</sup> 2.3 |

<sup>1</sup> Adjusted for 1994 revision of the Current Population Survey.

<sup>2</sup> Line 6 translates the civilian employment growth rate into the nonfarm business employment growth rate.

<sup>3</sup> Income-side definition.

<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.

<sup>5</sup> GDP growth is projected to fall below its underlying trend for this period (about 2.4 percent) as the employment rate is projected to fall 0.1 percent per year over this period.

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

The periods 1960 II, 1973 IV, and 1990 III are business-cycle peaks.

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

the recent surge in productivity represents an increase in long-term trend growth, several measurement issues must be addressed, as well as the cyclical behavior of productivity. One such issue concerns the decision to switch to geometric price indexes for some components of consumption. This decision, announced by the Bureau of Labor Statistics for the CPI starting in 1999, was first implemented by the Department of Commerce with last year's annual revisions to the national income and product accounts. (The Department of Commerce used the experimental CPI series that the Bureau of Labor Statistics began releasing in 1997.) The new methodology raised the measured annual growth rates of real nonfarm output and productivity by roughly 0.2 percentage point per year for 1995 and subsequent years. The change did not apply to earlier years, because last year's annual revision did not reach back that far. If the same methods were applied to earlier years, as they probably will be with the next benchmark revision, the average annual rate of productivity growth since 1973 might be 1.3 percent rather than the 1.1 percent officially reported.

A second measurement issue concerns whether real output is best measured on the product side (the official method) or on the income side of the national accounts, or by a mixture of the two. Since 1993, the average annual growth rates of the income-side measures of output and productivity have been 0.5 percentage point higher than the official product-side measures. Because both sides of the accounts contain useful information, the Administration's (unofficial) estimate includes the information from both these series by averaging them—as has been done in Chart 2-11.

Other, more fundamental measurement issues exist as well. Box 2-3 discusses attempts to include environmental benefits in measures of national income, as would be required for a truly comprehensive measure of economic welfare.

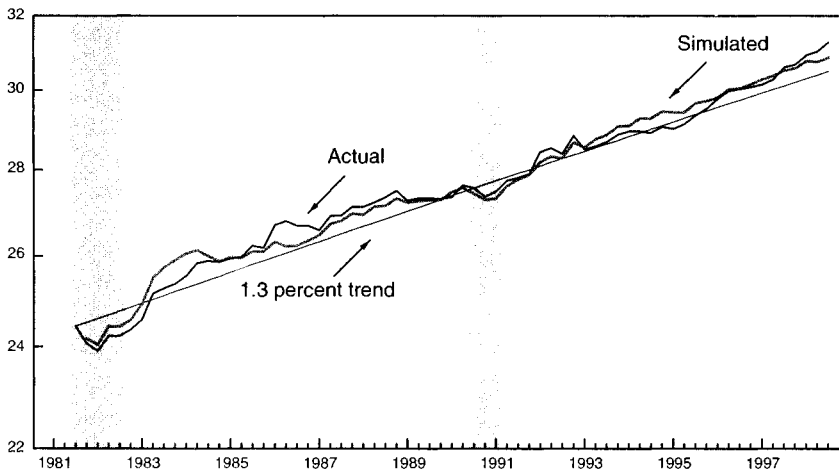
In the long term, productivity increases with training, technological innovation, and capital accumulation. But productivity growth also shows considerable variation over the business cycle, typically falling below its trend during recessions, then growing faster than trend during the middle of an expansion, and finally falling again in advance of the business-cycle peak, as it did between the peaks of 1980 and 1990. This cyclical behavior can be captured by a model in which firms only partially adjust toward their desired level of employment in any quarter, because hiring and firing are costly. As shown in Chart 2-11, a simulation from this model shows that the above-trend growth of productivity in recent years is consistent with strong output growth and an underlying trend rate of 1.3 percent.

The most straightforward conclusion is that the trend growth of labor productivity has not changed much during the post-1973 period and that recent productivity growth reflects primarily cyclical factors. Since 1994, on the other hand, labor productivity has grown faster

### Chart 2-11 Actual Versus Simulated Productivity Growth

The recent behavior of productivity is consistent with strong output growth and a 1.3 percent trend.

Chained 1992 dollars per hour (ratio scale)



Note: Productivity has been adjusted for methodological changes and is defined as the average of the income- and product-side measures.

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

than under the simulation, and it remains possible that the growth rate of trend labor productivity has risen recently. Weighing these possibilities, the Administration has projected long-term annual growth of labor productivity at 1.3 percent, but will closely monitor productivity data over the next year for further evidence of a stronger growth rate.

#### **Box 2-3.—Accounting for the Environment**

Economists have long realized that GDP is a measure of market output, not of national welfare. By design, changes in GDP primarily reflect the value of goods and services as measured in the marketplace, excluding changes in leisure time, health status, environmental quality, and other aspects of well-being. Recently, concerns over sustainable development have sparked interest in expanding the system of national income accounts to include measures of environmental quality and the stock of natural resources. Some people worry that economic development may entail a deterioration of environmental quality and a depletion of natural resources, causing national well-being to fall even as measured GDP rises. Proposals for a “green GDP” attempt to address this desire for a more comprehensive scorecard on well-being and environmental sustainability.

Incorporating environmental and natural resource assets into a unified system of national income accounts is exceedingly difficult,

**Box 2-3.—*continued***

however. Important aspects of environmental quality must first be measured in physical units, which then must somehow be translated into a common economic measure (dollars). There is little agreement about how to value many aspects of environmental quality, or even on methods for establishing such values. For example, setting a dollar value on the health and aesthetic benefits of lowering air pollution raises a host of difficult philosophical and technical issues.

These problems have led most countries to abandon the quest to incorporate the environment formally into GDP. An alternative favored by Eurostat, the statistical office of the European Union, is to report only physical measures of different aspects of environmental quality. This approach makes no attempt to aggregate these various estimates into a common unit of measure, and no attempt to estimate green GDP. Rather, separate accounts track various measures of environmental quality individually.

An intermediate approach, used by the United Nations System of Environmental and Economic Accounting and in prototype accounts developed by the United States, is a system of satellite accounts to account for certain important aspects of environmental quality. These accounts, although developed to be consistent with the system of national income accounts, are not restricted to the same definitions and methods. This flexibility allows them to focus on issues of particular interest and to be tailored to available information. As information and methods of valuation improve, the system of satellite accounts would move closer to a unified set of economic and environmental accounts.

The satellite accounts approach allows the system of national income accounts to address two fundamentally different needs. There will always be a need for a frequently updated measure of market-based goods and services for both government and the private sector, which GDP fulfills. A broader measure of well-being is also needed, even though it is likely to be less precise and available less frequently, and this the satellite accounts can provide. Fortunately there is no need to choose between them.

**INFLATION: FLAT OR FALLING?**

The key to the longevity of this expansion has been low inflation. Direct measures of the strain on productive capacity, such as the unemployment rate and the capacity utilization rate, play a role in determining whether the economy has reached the limits of its capacity.

But in the last analysis, it is the direction of inflation that signals whether or not the capacity limit has been breached. Over the past 2 years, low and stable inflation has allowed decisionmakers, both in business and in government, to focus primarily on growth rather than on bottlenecks.

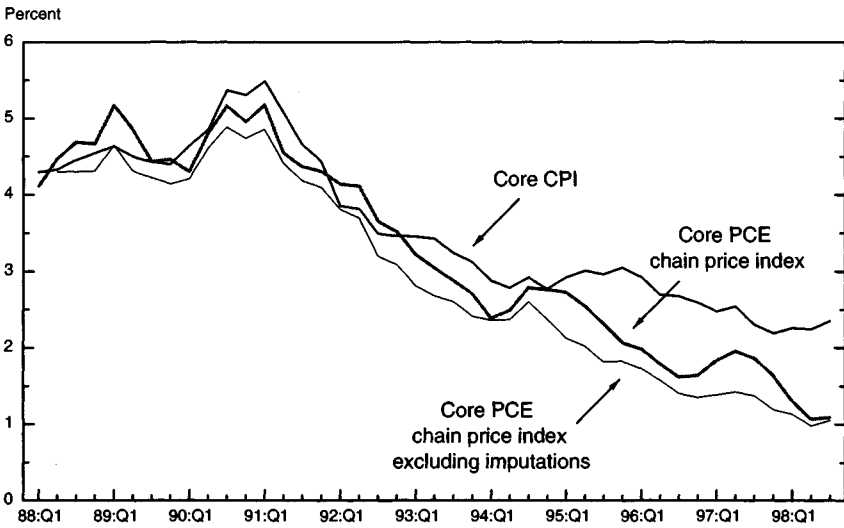
In addition to its importance for policy decisions, the level and direction of inflation are important variables in long-term economic and budget projections. In this context it is important to note the gap that has developed between inflation as measured by the CPI and the measures of inflation included in the national income accounts. The broadest measure of inflation for goods and services produced in the United States is the chain-weighted price index for GDP, which increased only 1.0 percent over the four quarters ending in the third quarter of 1998, almost a percentage point below its year-earlier pace. In contrast, the CPI posted a larger increase—and less of a deceleration—over the past year, despite a much larger weight for petroleum prices, which fell during the year. The difference becomes striking when one focuses on the contrast between two price measures that appear to have the same coverage: the price index from the national income accounts for personal consumption expenditures excluding food and energy (the core PCE), and the CPI excluding food and energy (the core CPI). As Chart 2-12 shows, the core CPI inflation rate has been roughly flat for the past year at about 2.4 percent, whereas that of the core PCE has slowed to 1.1 percent for the four quarters ending in the third quarter of 1998, from a 1.9 percent increase during the year-earlier period. Furthermore, the difference that has opened up between these two series has no historical precedent. What could cause such a divergence?

More than half of the deceleration in the core PCE over the past year is accounted for by price imputations. National income accountants impute prices for components of the consumer market basket for which there is no nationally collected price measure. These items include lotteries, insurance, and financial intermediation. One of these imputed prices (that for “free” checking accounts) slowed sharply over the past year. Because these imputations tell us little about the course of inflation, it is more useful to focus on an index that excludes imputations (Chart 2-12).

Excluding imputations, the index for the core PCE still shows lower inflation than does the core CPI, and a gap between the series has opened up over the past few years. The major sources of the difference are in the treatment of medical care and housing. The price index for medical care in the PCE, which was formerly an aggregation of mostly CPI components, has now shifted toward an aggregation of components from the producer price index. Over the four quarters ending in the third quarter of 1998, medical prices in the PCE index have increased much less (2.2 percent) than the CPI measure of the same

**Chart 2-12 Three Measures of Core Inflation**

Inflation as measured by the core CPI was flat in 1998. In contrast, the core PCE measure fell, although less so excluding imputations.



Note: Inflation is measured as the four-quarter percent change in the three measures.

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

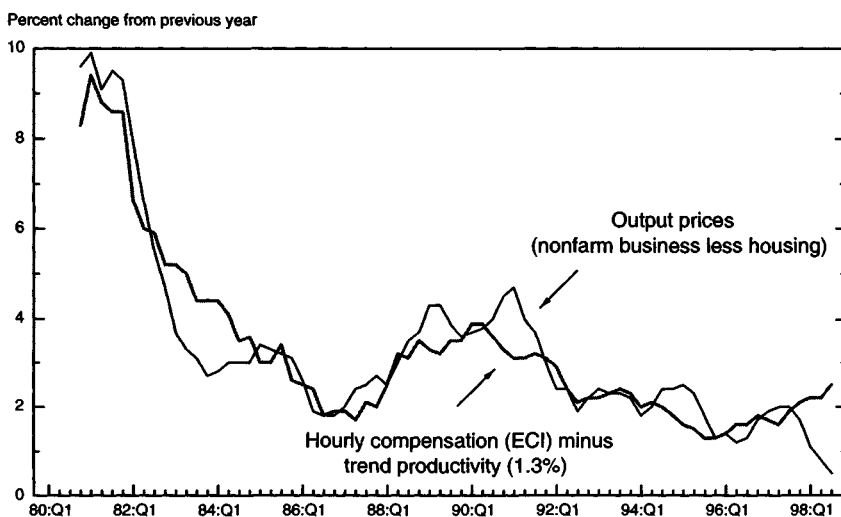
concept (3.5 percent). Although the increase in housing prices is similar in both indexes (because the PCE housing index uses CPI sources), housing is twice as important in the CPI as in the PCE price index. This difference in weight, together with an increase in the price of housing relative to the overall index, means that housing has also been a source of the difference between the CPI and PCE inflation measures. At this time, with no compelling reason to prefer one index to the other, it is best to keep an eye on both.

In addition to the price index of the core PCE, other price indexes from the national income accounts are increasing at or below an annual rate of 1 percent per year. One of these, the price index for nonfarm business output (which is aggregated from consumption prices as well as prices of other spending components) increased at only a 0.5 percent annual rate in the past four quarters. Can this low rate persist?

Whatever the rate of inflation today, in the long run the inflation of business prices will likely gravitate toward the rate of increase in trend unit labor costs—that is, the increase in hourly compensation less the rate of trend productivity growth. Until recently, one measure of trend unit labor costs (namely, the ECI measure of hourly compensation, described earlier in the chapter, less the trend in productivity) has closely matched the rate of price increases in the nonfarm business sector (Chart 2-13). However, a large gap has opened up recently, with the ECI-based measure of trend unit labor costs increasing at a rate of 2.5 percent over the past four quarters (a 3.8 percent increase in

hourly compensation less 1.3 percent trend productivity growth), in contrast with an increase of 0.5 percent in prices in the nonfarm business sector. The historical pattern suggests that this gap will close, and it could do so through either higher price inflation, lower wage inflation, or higher trend productivity growth. The eventual outcome may involve some combination of all three, but the inertia in wages and trend productivity growth suggests that most of the correction will come from a higher rate of inflation of nonfarm business prices, at least as measured in the national income accounts. If this price measure gravitates upward, it will close not only the gap between prices and trend unit labor costs, but also the gap between the price measures from the national income accounts and the CPI. Accordingly, the Administration projects that inflation as measured by the GDP price index will rise to 2.1 percent by 2000. At the same time, the CPI is projected to rise at a 2.3 percent annual rate—about the current rate of increase of the core CPI.

**Chart 2-13 Inflation and Trend Unit Labor Costs**  
Output price inflation has followed trend unit labor costs until recently.



Note: Output prices have been adjusted for methodological changes.  
Sources: Department of Commerce (Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), and Council of Economic Advisers.

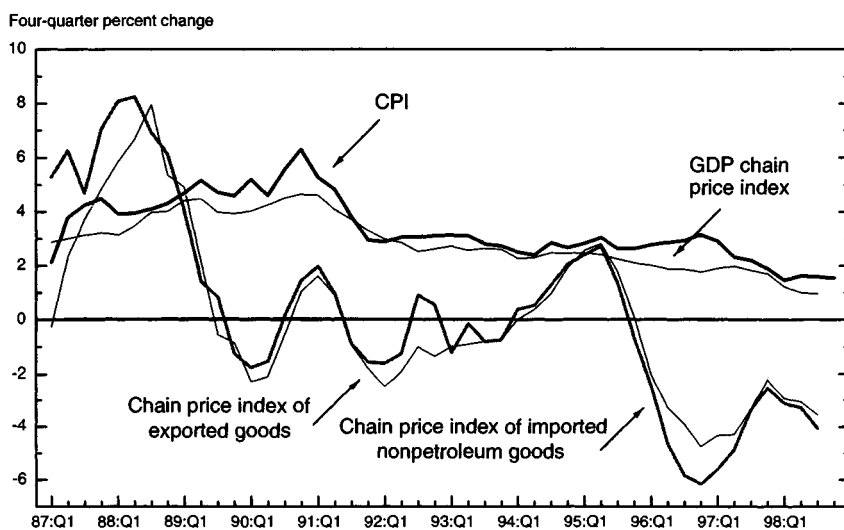
## WHAT HAS HELD INFLATION IN CHECK?

Inflation has been steady or falling despite an unemployment rate that has been below 5 percent since July 1997. A model of inflation that included only the unemployment rate and inflation expectations would have predicted a pickup of inflation during this period. Three factors that have held measured inflation down over this period have been pressure from the international environment (including low oil prices),

a level of capacity utilization that is low relative to the unemployment rate, and certain methodological changes in the official measure of inflation. But even taking these factors into account, the unemployment rate associated with stable inflation (the nonaccelerating-inflation rate of unemployment, or NAIRU) has probably edged lower.

Conditions in the international environment have restrained inflation. The foreign exchange value of the dollar has risen substantially over most of the past 3 years, both oil and nonoil import prices have been falling, and exporters of U.S. goods face stiff competition. On the import side, prices of nonpetroleum goods have fallen at about a 4 percent annual rate, on average, during the past 3 years (Chart 2-14).

**Chart 2-14 Export and Import Prices Versus the CPI and GDP Price Index**  
Export and import price declines have held down inflation.



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

With the share of nonpetroleum imports at about 15 percent of consumption, these imports account for about 0.6 percentage point of the reduction in consumer price inflation. Meanwhile exporters of U.S. goods have cut prices by about 3½ percent per year over the past 3 years, presumably to match stiff competition abroad. With goods exports at about 8 percent of GDP, export prices have subtracted about 0.3 percentage point from the inflation rate as measured by the GDP price index. In recent months the dollar has retraced some of its appreciation of the 1995-98 period, and so the damping effect on inflation may not be as forceful over the medium term.

Capacity in manufacturing, mining, and utilities has grown at a 5¼ percent annual rate over the past 3 years, outpacing growth in

production at 4¾ percent. Consequently, the capacity utilization rate has dropped to a level that is now 1 index point below its long-term average of 82.1 percent of capacity. This slack in capacity is the legacy of a sustained high level of industrial investment and stands in sharp contrast to the tightness in labor markets. Over most of the postwar era, slack in capacity has moved with the unemployment rate, and so these two measures usually tell much the same story. However, in current circumstances the excess industrial capacity offsets some of the tightness in labor markets.

A final reason for the slowing of reported price indexes has been methodological changes to both the CPI and the indexes used in the national income accounts (Box 2-4). In general, these changes have reduced the measured rate of inflation. For the CPI, methodological changes made from 1995 through 1998 reduced the rate of CPI inflation by about 0.44 percentage point. Changes to be introduced in 1999 and 2000 will reduce it by an additional 0.24 percentage point.

#### **Box 2-4.—Methodological Changes to Price Measurement**

The Bureau of Labor Statistics (BLS) and the Bureau of Economic Analysis (BEA) have recently made several methodological changes that have improved the accuracy of the consumer price index and the price indexes in the national income accounts. One of these changes goes into effect this year (Table 2-4). Most of the improvements made by the BLS have reduced the measured increase in the CPI, and many will also affect the deflation of nominal output and therefore raise the growth rate of measured real GDP. Changes made through 1998 include the substitution of generic drugs when patents expire on proprietary brands; the correction of a problem in rotating new stores into the survey through a procedure called “seasoning” (a problem that was corrected first in the food category and later in other categories of goods); a modification of the formula for measuring increases in rent; a change to measuring prices on hospital bills rather than the prices of hospital inputs; a switch to measuring computer prices by the computers’ intrinsic characteristics (“hedonics”); and an update of the market basket from one based on the 1982-84 period to one based on 1993-95. A change scheduled for this year is the use of geometric rather than arithmetic means to address substitution bias within categories; next year the BLS will bring in the results of more frequent rotation of the items sampled in categories with many new product introductions.

The combined effect of the changes made through 1998 has been to lower the CPI inflation rate by 0.44 percentage point per year.

**Box 2-4.—continued**

Changes to be implemented in 1999 and 2000 will lower CPI inflation by a further 0.20 and 0.04 percentage point per year. The BEA brought the geometric CPI components into the national income accounts during the annual revision of July 1998. In this revision the books were open only for the 3 previous years, and so the effect of the geometric CPIs now begins in 1995. In the benchmark revision scheduled for October 1999, this effect will be taken back farther into the historical record. The BEA has also recently switched from using the CPI to using the producer price index (PPI) to deflate physicians' services and the services of government and for-profit hospitals. These changes, made in the July 1997 annual revision of the national income accounts, reached back to 1994. Because the PPI measures of these prices have been increasing less than the comparable CPIs, the changes reduce the rate of increase of the chain-weighted price index for GDP and raise real GDP growth. These changes, in addition to those passed through from the CPI, will have cumulated to raise the annual growth rate of real GDP by 0.29 percentage point by 2000.

TABLE 2-4.— *Expected Effects of Methodological Changes on the CPI and Real GDP*

| Change                                  | Year effect is felt |              | Percentage-point effect on |                    |
|---|---------------------|--------------|----------------------------|--------------------|
|   | In the CPI          | In the NIPAs | CPI percent change         | GDP percent change |
| PPIs for hospitals and physicians ..... | (1)                 | 1993, 1994   | (1)                        | .06                |
| Generic prescription drugs .....        | 1995                | 1995         | -.01                       | .00                |
| Food at home seasoning .....            | 1995                | 1978         | -.04                       | .03                |
| Owners' equivalent rent formula .....   | 1995                | 1978         | -.10                       | .03                |
| Rent composite estimator .....          | 1995                | 1978         | .03                        | -.01               |
| General seasoning .....                 | 1996                | (1)          | -.10                       | (1)                |
| Hospital services index .....           | 1997                | (1)          | -.01                       | (1)                |
| Personal computer hedonics .....        | 1998                | (2)          | -.04                       | .00                |
| Updated market basket .....             | 1998                | (1)          | -.17                       | (1)                |
| Geometric means .....                   | 1999                | 1995         | -.20                       | .15                |
| Rotation by item .....                  | 2000                | 2000         | -.04                       | .03                |
| Pre-1999 .....                          |                     |              | -.44                       | .26                |
| 1999 and after .....                    |                     |              | -.24                       | .03                |
| TOTAL .....                             |                     |              | -.68                       | .29                |

<sup>1</sup> Not relevant for this index.

<sup>2</sup> The entire NIPA series back to 1948 reflects this methodology change, so that there is no discontinuity in the series.

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

A proper accounting for these changes can explain in part the recent low inflation in terms of the CPI (although not that in terms of the GDP price index). The rest can be explained by some combination of low nonoil import prices, low oil prices, and a downtick in the NAIRU. But it is as yet impossible to know exactly which combination of these factors is the right one.

## THE NEAR-TERM OUTLOOK

Both supply- and demand-side considerations argue for some moderation in real GDP growth from its rapid 3.7 percent annual pace of the past 3 years. On the supply side, the unemployment rate has fallen by about 0.4 percentage point per year over the past 3 years, and it is questionable whether a further decline of this magnitude could be accommodated without inflationary consequences. Labor force growth has not kept up with demand for labor in the past 2 years, nor can it be expected to keep up with a repetition of that kind of demand growth.

On the demand side, private consumption and fixed investment are expected to grow less rapidly in 1999 than they did in 1998. Consumption, which constitutes two-thirds of demand, rose at more than a 5 percent annual rate during the first three quarters of 1998. Growth of consumer spending, which was well in excess of the growth rate of disposable personal income, reflected the remarkable growth of stock market values. As a consequence, the saving rate fell almost 2 percentage points over the year, finally dropping to near zero by year's end. Unless the stock market continues to surge, consumption is likely to grow at a more moderate pace. Continued real income growth is likely to motivate further, but smaller, consumption gains.

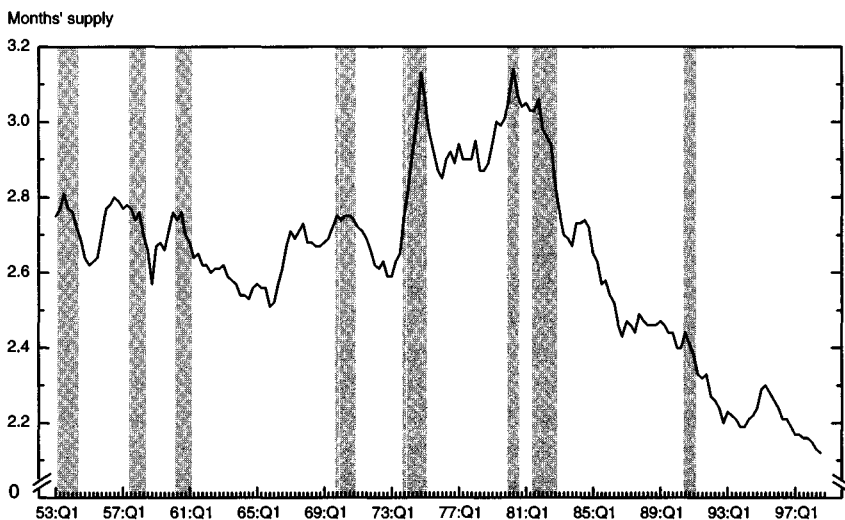
Business equipment investment grew at an extraordinary 26 percent annual rate in the first half of the year, the fifth consecutive year of double-digit growth. Business purchases of computers accounted for much of this growth; the rapid pace of innovation in the computer industry is driving new investment, and prices have been falling sharply. But equipment investment decelerated sharply in the third quarter of 1998. Investment in business structures has been about flat over the past year and a half. Low capacity utilization may be one factor limiting investment growth. However, as long as the relative price of equipment is falling, it is likely that business investment will continue to grow faster than the economy as a whole.

Strong real income growth, together with the drop in mortgage interest rates over the past year, is also buoying residential investment. The 1.62-million-unit pace of housing starts in 1998 was the highest in a decade. Even if mortgage rates remain around their current low levels, housing activity and residential investment are likely to edge down because of demographic factors and the lack of pent-up demand after several years of strong growth.

Nonfarm manufacturing and trade inventories also grew rapidly in 1998, but no faster than sales. The (nominal) inventory-to-sales ratio was thus little changed over the year and remains at one of its lowest levels ever (Chart 2-15). Nevertheless, if the components of final demand were to decelerate to a more modest rate in 1999, the level of

**Chart 2-15 Inventory-to-Sales Ratio (Nonfarm Business)**

Despite recent strong stockbuilding, inventories remain lean with respect to sales.



Note: Based on data in current prices.

Sources: Department of Commerce (Bureau of Economic Analysis) and National Bureau of Economic Research.

inventory investment would have to drop in order for this lean inventory posture to be maintained.

Some restraint is likely to come from the international economy, as the rise in the dollar over the past 3 years and the continued restructuring of several Asian economies have already weakened—and will continue to weaken—demand for American-made products. Because the direction of trade responds with a lag to changes in the exchange rate, the appreciation of the dollar over the past 2 years is likely to boost demand for imports and limit growth of exports in 1999. As a result, net exports are likely to become more negative in 1999, although they probably will not decline as much as in 1998.

Up to now, the Asian economic crisis has not had the negative effect on the U.S. economy that was anticipated a year ago. The consequences of a larger-than-expected drop in import prices have offset much of the direct loss of exports. On the one hand, American exports to the Asian economies most affected by the crisis have fallen about \$30 billion (in nominal dollars) since the second quarter of 1997. On the other hand, the weakness abroad has been a major factor in

lowering the price of imported crude oil, which has fallen almost \$8 per barrel from precrisis levels. Because the United States purchases about 3½ billion barrels of foreign petroleum and petroleum products per year, the resulting \$27 billion saving on the national oil import bill offsets almost all of the loss in exports to Asia. In addition, the drop in nonpetroleum import prices and the price discipline imposed on exporters who compete in international markets have held down inflation by about half a percentage point, as discussed earlier. Low inflation has in turn allowed interest rates to be lower, and domestic demand higher, than they would otherwise be.

A moderation in output growth to 2.0 percent is projected for the next 3 years—about half a percentage point below the economy's long-term growth rate, but roughly in line with the consensus of professional economic forecasters (Table 2-5). Over these 3 years the unemployment

TABLE 2-5.— *Administration Forecast*

| Item  | Actual   |                    | 1999  | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  |
|---|--|--------------------|-------|-------|-------|-------|-------|-------|-------|
|   | 1997   | 1998               |       |       |       |       |       |       |       |
|   | Percent change, fourth quarter to fourth quarter |                    |       |       |       |       |       |       |       |
| Nominal GDP .....                                     | 5.6  | 4.5                | 4.0   | 4.2   | 4.1   | 4.5   | 4.5   | 4.5   | 4.6   |
| Real GDP (chain-type) .....                           | 3.8  | 3.5                | 2.0   | 2.0   | 2.0   | 2.4   | 2.4   | 2.4   | 2.4   |
| GDP price index (chain-type) .....                    | 1.7  | 1.9                | 1.9   | 2.1   | 2.1   | 2.1   | 2.1   | 2.1   | 2.1   |
| Consumer price index (CPI-U) .....                    | 1.9  | 1.5                | 2.3   | 2.3   | 2.3   | 2.3   | 2.3   | 2.3   | 2.3   |
|   | Calendar year average                            |                    |       |       |       |       |       |       |       |
| Unemployment rate (percent) .....                     | 4.9  | 4.5                | 4.8   | 5.0   | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |
| Interest rate, 3-month Treasury bills (percent) ...   | 5.1  | 4.8                | 4.2   | 4.3   | 4.3   | 4.4   | 4.4   | 4.4   | 4.4   |
| Interest rate, 10-year Treasury notes (percent) ..... | 6.4  | 5.3                | 4.9   | 5.0   | 5.2   | 5.3   | 5.4   | 5.4   | 5.4   |
| Nonfarm payroll employment (millions) .....           | 122.7  | <sup>2</sup> 125.8 | 127.7 | 129.2 | 130.5 | 132.1 | 134.0 | 136.0 | 137.9 |

<sup>1</sup> Forecast.

<sup>2</sup> Preliminary.

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.

rate is projected to edge up slowly to 5.3 percent—the middle of the range of unemployment compatible with stable inflation. Thereafter, the Administration's forecast is built around a growth rate of potential output of 2.4 percent per year. The Administration does not believe that 2.4 percent annual growth is the best the economy can do; rather, this projection reflects a conservative estimate of the effects of Administration policies to promote education and investment and to balance the budget. The outcome could be even better—as indeed it

has been for the past 3 years. But the Administration's forecast is used for a very important purpose: to project Federal revenues and outlays so that the government can live within its means. For this purpose, excessive optimism is dangerous and can stand in the way of making difficult but necessary budget decisions. On the other hand, excessive pessimism can force difficult decisions where none was required. In the final analysis, the only worthy objective is the creation of a sound forecast that points to the eventual outcome using all available information as fully as possible.

As of December 1998, the current economic expansion, having lasted 93 months, was the longest ever during peacetime and the second longest on record. There is no apparent reason why this expansion cannot continue. As the 1996 *Economic Report of the President* argued, expansions do not die of old age. Instead, postwar expansions have ended because of rising inflation, financial imbalances, or inventory overhangs. None of these conditions exist at present. The most likely prognosis is therefore the same as last year's: sustained job creation and continued noninflationary growth.

## CHAPTER 3

# Benefits of a Strong Labor Market

THE NATION'S LABOR MARKET is performing at record levels: the number of workers employed is at an all-time high, the unemployment rate is at a 30-year low, and real (inflation-adjusted) wages are increasing after years of stagnation. Groups whose economic status has not improved in the past decades are now experiencing progress. The real wages of blacks and Hispanics have risen rapidly in the past 2 to 3 years, and their unemployment rates are at long-time lows; employment among male high school dropouts, single women with children, and immigrants, as well as among blacks and Hispanics, has increased; and the gap in earnings between immigrant and native workers is narrowing.

The most recent data also show that the employment relationship is strong. Job displacement—job losses due to layoffs, plant closures, and the like—has declined substantially since the 1993-95 period, and among those who have been displaced, the share that have found new work has increased. These reemployed workers still typically earn less on the new job than at the job they lost, but these wage losses are at record lows. Moreover, the popular assertion that secure lifetime jobs are disappearing appears to be overstated. This is not to suggest that the picture is entirely benign: some groups have experienced declines in job tenure since the 1980s, and the rate of job displacement remains relatively high given the current strength of the labor market. To address these and other problems, this Administration has undertaken a number of measures to strengthen education and job training and to promote lifelong learning.

Besides spreading the benefits of economic growth more widely, the robust labor market has generated other, less obvious benefits. It has contributed to a decrease in welfare case loads, allowing States and localities to focus increased resources on designing and implementing welfare reform. In addition, low unemployment and, especially, the rise in average wages may have contributed to a reduction in crime. Several studies have demonstrated an inverse relationship between labor market opportunities and criminal behavior: the better the options in legal employment, the less likely are potential criminals to commit crimes.

The chapter begins by documenting economy-wide developments in the labor market in the past few years within the context of longer run changes. It then focuses on recent improvements experienced by workers

who have traditionally not fared as well in the labor market, including high school dropouts, blacks, Hispanics, youth, immigrants, and single mothers. The chapter then goes on to examine some important but less obvious side benefits of the tight labor market. This is followed by a discussion of evidence on changes in the relationship between workers and employers, including job displacement, job tenure, and the contingent work force. Finally, the chapter reviews recent policy developments to promote job training and lifelong learning.

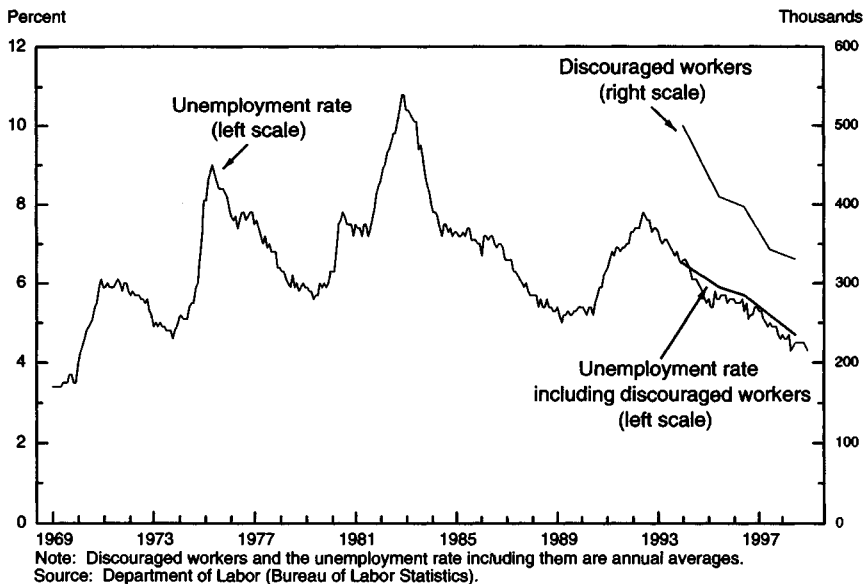
## ECONOMY-WIDE DEVELOPMENTS IN THE LABOR MARKET

### EMPLOYMENT

The usual indicators of labor market progress—employment, unemployment, and wages—show that working men and women continue to benefit from the ongoing economic expansion. Employment is at an all-time high, with 133 million Americans at work in December 1998, and only 4.3 percent of the labor force unemployed. Having fallen from 7.3 percent in January 1993, the unemployment rate is at its lowest level since February 1970 (Chart 3-1).

**Chart 3-1 Unemployment and Discouraged Workers**

The unemployment rate is at its lowest level since February 1970. Including discouraged workers increases the rate by at most four-tenths of a percentage point.



Data on discouraged workers provide further evidence of a strong labor market. The number of discouraged workers—workers who are not employed and who have not looked for work in the past 4 weeks

because they did not think they could find a job—has shrunk by one-third since 1994, the earliest year for which comparable data are available. Discouraged workers are not counted in the labor force and therefore are not captured in the official unemployment rate. However, because there are so few discouraged workers, redefining the unemployment rate to include them as unemployed increases the unemployment rate by no more than 0.4 percentage point (see Chart 3-1).

Much of the growth in employment reflects an increase in the share of women looking for and finding jobs. More women than ever before have joined the labor force: among women aged 25-64, 72.4 percent were working or seeking work in 1998, up from 70.2 percent in 1993 and 33.1 percent in 1948. The labor force participation rate among men aged 25-64 gradually declined during the 1960s and early 1970s, but it has remained steady at about 88 percent ever since.

A tight labor market in a high-employment economy means that more men and women who are looking for jobs are finding them, and finding them faster. Those unemployed in 1998 had been searching for work an average of 14.5 weeks, down from 18.8 weeks in 1994, the earliest year with comparable data. The average length of a spell of unemployment is sensitive to the number of those undergoing long spells. In 1998, 14.1 percent of the unemployed had been searching for a job for over 27 weeks, far below the 1994 figure of 20.3 percent. By contrast, the share of those unemployed for less than 15 weeks rose from 64.2 percent to 73.6 percent during the same period.

## WAGES

One of the best documented labor market trends of the past few decades has been the decline in real wages among men. According to the Current Population Survey (CPS; see Box 3-1 for a description of

### **Box 3-1.—Sources of Wage Data**

This chapter uses several different sources of data on wages. The Bureau of Labor Statistics (BLS) of the Department of Labor publishes estimates derived from monthly surveys of both households and establishments: the CPS, which surveys about 50,000 households, and payroll records reported by about 390,000 establishments representing the nonfarm sector. Earnings data tabulated by the BLS from the household data usually describe the median weekly earnings of full-time workers aged 16 and over. However, because significant portions of the populations of interest in much of this chapter often do not work full time, in many cases the Council of Economic Advisers has made special tabulations of wages including *all* workers aged 16 and over—part-time

**Box 3-1.—continued**

as well as full-time—in the CPS data. Unless otherwise specified, this is the population referred to in this chapter.

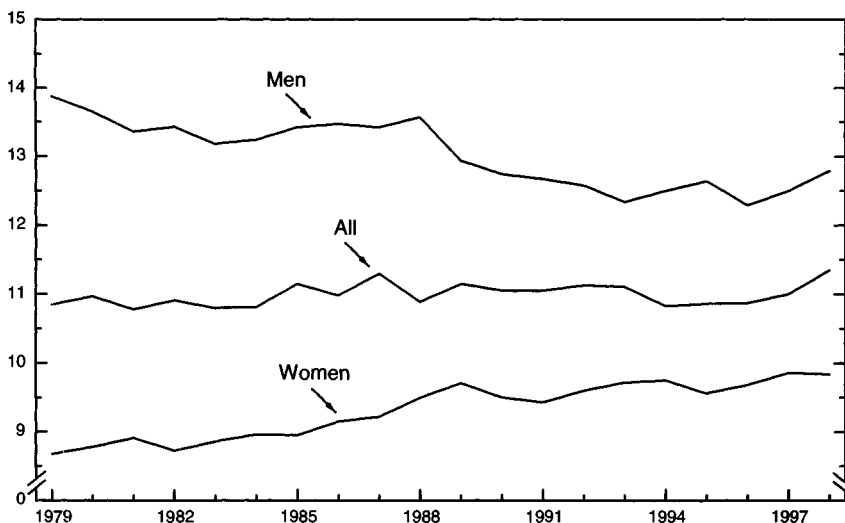
All of the Council's tabulations use the merged Outgoing Rotation Group (ORG) files of the CPS, which include a subset (25 percent) of the full CPS sample who are asked about their earnings and hours on their current job each month. In the ORG data, hourly wages are measured by dividing usual weekly earnings by usual weekly hours, both as measured on the individual's main job. All wage data are presented in real 1997 dollars, adjusted for inflation using the CPI-U-X1 (the urban consumer price index with rental equivalence).

This chapter also uses BLS establishment data, collected from businesses and State and local governments. From these data are derived estimates of average weekly earnings and hours worked for production and nonsupervisory workers. In addition, the employment cost index (ECI), also constructed from establishment data, measures total compensation paid to workers, including both wages and salaries and the cost of benefits such as health plans. Fixed industry weights are used to ensure that the ECI reflects *only* changes in compensation, not shifts in employment across industries and occupations. The CPS wage data and average weekly earnings of production and nonsupervisory workers do reflect these shifts, as well as wage trends within industries and occupations.

the data), between 1979 and 1993 the median real wage for men fell by 11.1 percent (Chart 3-2). However, progress has been made since 1996: the median real wage for men rose 1.7 percent in 1997 and 2.3 percent in 1998. Women experienced slightly stronger real wage growth in 1997 of 1.9 percent, but their wages were flat in 1998. Other measures of compensation show similar increases. Data reported by establishments (businesses and government agencies; the CPS data cited above are from surveys of households) show that, after stabilizing in the early 1990s, real hourly earnings of production and nonsupervisory workers have risen by 5.4 percent since 1993. The employment cost index (see Box 3-1) shows that total compensation (wages and salaries plus benefits) per worker increased by 2.2 percent in real terms from the third quarter of 1997 to the third quarter of 1998. Employers' wage and salary costs in that period rose by 2.7 percent and benefit costs (health insurance, paid leave, supplemental pay, retirement benefits, and the like) by 1.2 percent. Establishment data also show that the average workweek for production and nonsupervisory workers continued to hover between 34.4 and 34.8 hours, as it has since the mid-1980s.

**Chart 3-2 Median Hourly Wages of Men and Women Aged 16 and Over**  
 Men's wages generally declined between 1979 and 1993, but have risen in more recent years. Women's wages have risen steadily.

1997 dollars



Note: Sample includes part-time as well as full-time workers.

Source: Council of Economic Advisers tabulations of Current Population Survey data.

## DISADVANTAGED GROUPS

A strong labor market is particularly important to less advantaged groups in the labor market, such as workers with less education, younger workers, racial and ethnic minorities, and immigrants. The unemployment rates of these groups typically swing up and down more than the average during expansions and recessions. When employers find it hard to fill vacancies, they are more willing to hire and train workers whom they might pass over when they have fewer openings and an abundance of applicants.

For the same reason, a tight labor market can also pull up wages for disadvantaged workers. When labor is scarce, these workers can command better pay than at other times. The current expansion is especially important for disadvantaged workers given their experience from the late 1970s to the early 1990s, when wage inequality grew and less skilled groups faced persistently declining wages, on average.

The reasons for these wage declines and the rise in inequality that accompanied them were discussed in the 1997 *Economic Report of the President* and are still being debated, but it seems clear that demand for highly skilled workers has been expanding faster than supply, whereas demand for less skilled workers has declined even faster than supply. Even though the fraction of the population without a high school diploma has shrunk, as older, less educated cohorts have retired

and been replaced by younger, more educated ones, the number of jobs available to high school dropouts shrank even faster from the late 1970s to the early 1990s. An important explanation is technological change in manufacturing, as a result of which the manufacturing sector requires fewer workers to produce more output than in the past. Competition from lower wage, low-skilled labor in other countries may also have been a factor, although most studies find that technological change is more important than increased international trade in explaining the declining demand in the United States for workers with no more than a high school diploma. Meanwhile, employment has expanded dramatically in the financial, professional, and business services industries, where most jobs require a college education or beyond.

Unions have historically helped less educated workers obtain higher wages than they could get otherwise. As employment in the highly unionized goods-producing, transport, and utilities industries has declined as a share of the work force since the 1950s, however, so has union membership. Like the American economy in general, the labor market has become more competitive in recent decades, with compensation and job security more often determined by market forces than before. This has benefited many American workers who were in a position to take advantage of the new job opportunities, but it has been hard on less skilled workers at the lower end of the wage distribution.

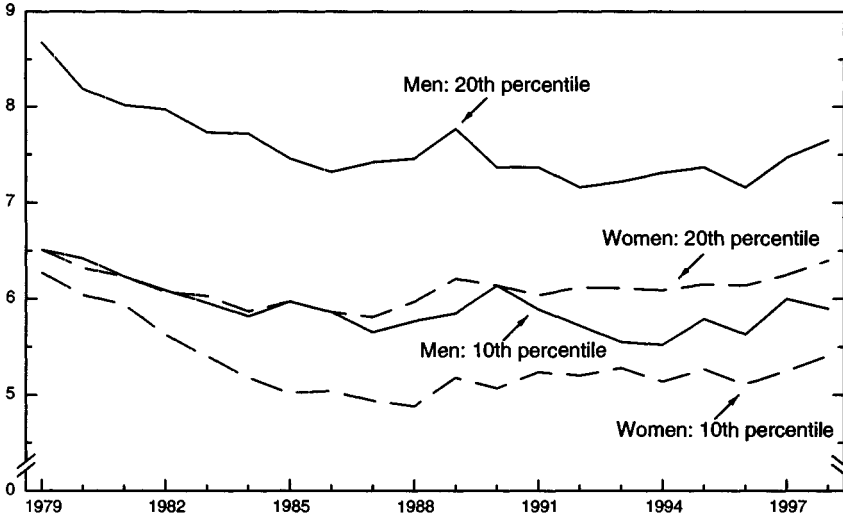
The Administration's efforts to keep the economy expanding and to make work pay have been particularly important to these workers. Not only is the overall labor market performing at record levels, but several groups of workers who had been experiencing low employment rates, declining wages, and high rates of unemployment have begun to show marked improvements. These groups include low-wage workers, workers with less than a college education, blacks and Hispanics, immigrants, and single mothers.

## LOW-WAGE WORKERS

It is well established that workers at the lower end of the wage distribution have not fared well in recent decades: from the late 1970s through the early 1990s, the purchasing power of their wages declined. Between 1979 and 1993 the real hourly wages of male and female workers (including part-timers) at the 10th percentile of the wage distribution fell by 14.8 percent and 15.8 percent, respectively (Chart 3-3). More recently, however, these lowest paid workers have seen significant gains. Real hourly wages for men 16 and older at the 10th and 20th percentiles have increased by about 6 percent since 1993, with especially large gains in the past 2 years. One might expect the earnings of low-wage women to have declined in recent years as supply expanded when a large number of them left welfare and entered the labor force. But on the contrary, wage increases for women were

**Chart 3-3 Hourly Wages of Low-Wage Workers Aged 16 and Over**  
 During the 1980s, wages declined for men and women at the 10th and 20th percentiles of the wage distribution, but significant gains have occurred since 1993.

1997 dollars



Note: Sample includes part-time as well as full-time workers.

Source: Council of Economic Advisers tabulations of Current Population Survey data.

significant, with wages for those at the 20th percentile increasing by 4.7 percent since 1993.

These gains have not been confined to the lower end of the wage distribution. Real hourly earnings of the median male worker have increased by 3.6 percent since 1993, while those of the highest earning men and women (measured at the 90th percentile; these data are not shown in the chart) have increased by 6.4 percent and 6.2 percent, respectively.

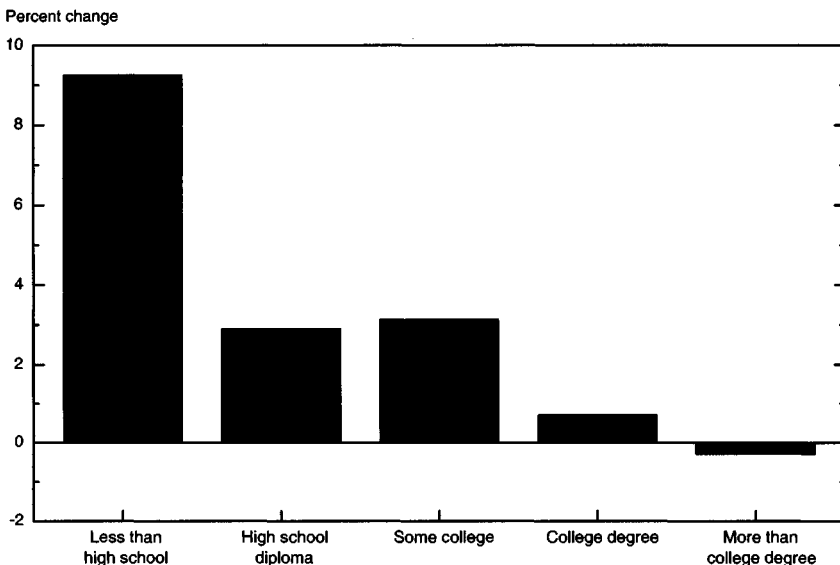
## LESS EDUCATED WORKERS

Education is a key determinant of labor market success, and much of the decrease in real wages for low-wage workers over the past two decades may be due to changes in the economy that have placed increasing value on skilled labor. The shift from goods-producing industries to services and to a more technology-intensive workplace has increased the premium on education, and particularly on workers who have at least a bachelor's degree. In this new economic environment it is important to monitor the progress of those with less education, who risk missing out on gains in the economy as a whole. During the current economic expansion, however, those with less education appear to be sharing in the benefits of the tight labor market in a number of ways.

Since 1993 the strong labor market has sharply reduced unemployment rates for workers at all levels of educational attainment.

Particularly interesting, however, are changes in the employment-to-population ratio for people with different levels of attainment. As Chart 3-4 shows, high school dropouts have experienced a much larger relative increase in their employment rate than have workers with more education. This increase is the joint result of increased labor force participation among dropouts and decreased unemployment among those dropouts who are in the labor force. The economy created enough low-skilled jobs to employ a larger share of the dropout population, which is shrinking as more-educated younger cohorts replace older ones. Chart 3-4 shows the results for men and women combined, but looking at men and women separately yields the same qualitative result.

**Chart 3-4 Percent Change in Employment Rate by Level of Education, 1993-1998**  
 Among persons aged 25 to 64, high school dropouts have experienced a larger relative increase in their employment rate since 1993 than those with more education.



Workers with less education are not only experiencing employment gains; they are also beginning to share in wage gains. From 1993 to 1998, male high school graduates aged 20 and over without any college attendance experienced a real increase in their median wage of 2.8 percent. Although small, this was an improvement over their experience from 1979 to 1993, when their median wage *fell* by 21.8 percent. In 1998 the median real wage of male high school dropouts aged 20 and over finally increased, for the first time since at least 1979, by 7.0 percent.

Although, as these numbers show, both the employment and the earnings of workers with less education have been improving, education remains a key determinant of labor market outcomes. The fiscal 1999 budget passed by the Congress contained a down payment for the

Administration's initiatives to reduce class size by hiring 100,000 new teachers. The Administration has also encouraged both young people and adults to pursue further education and job training. The new GEAR UP program, for example, provides mentors to disadvantaged students preparing for college, and the new HOPE Scholarship tax credit provides up to \$1,500 for the first 2 years of college or vocational school. Also, in 1998 the Administration obtained an increase both in total funding for Pell grants, to \$7.7 billion, and in the maximum grant, from \$3,000 to \$3,125. These grants provide financial aid to undergraduates on the basis of need.

For fiscal 2000 the Administration is proposing substantial changes to America's schools. Measures in the President's budget will hold teachers, schools, and students more accountable for educational outcomes; will reduce class size; will provide for building and renovating public schools; and will recruit outstanding new teachers. The President has asked the Congress to expand on the \$1.2 billion down payment made last year to reduce class size in the first three grades to a national average of 18. The Administration has proposed new Federal tax credits as incentives to help States and school districts build new public schools and renovate existing ones. The President's budget contains a series of new initiatives and funding increases to help recruit well-prepared people to teach where they are most needed, in high-poverty urban and rural communities. In addition, the President is proposing to help the more than 44 million adults who perform at the lowest level of literacy to acquire reading and writing skills. His budget would, among other things, establish a 10 percent tax credit for employers who provide workplace education programs for their employees who lack basic skills.

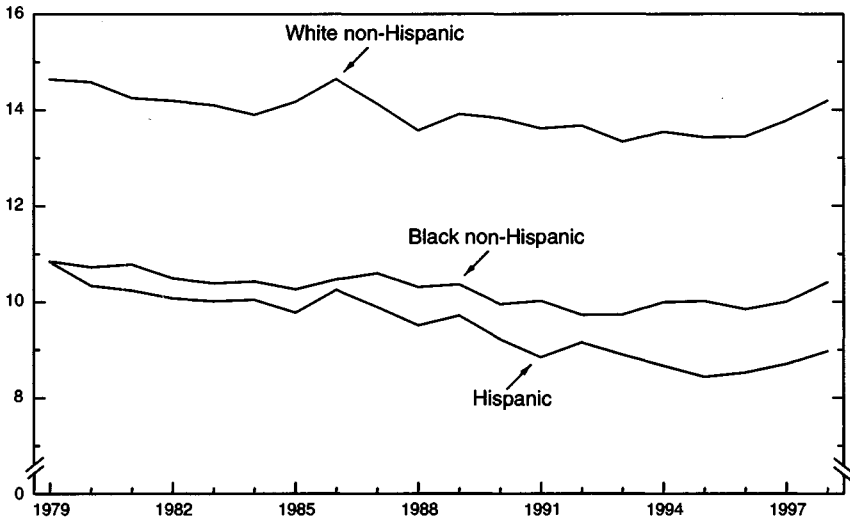
## BLACKS AND HISPANICS

After years of decline, the real wages of black men began to increase in 1993; they have risen by 5.8 percent since 1996 alone. Black women and Hispanic men and women have also experienced recent gains (Charts 3-5 and 3-6). Because blacks and Hispanics are disproportionately represented in the lower end of the wage distribution, the long-run trends in their wages are similar to those for low-wage workers generally. Both of these minority groups have less education on average than the rest of the work force, and Hispanics are younger on average. When the real wages of workers without a college education started declining in the 1970s, the median real wages of black and Hispanic men started declining as well. In the last few years, however, their wages have been rising.

Employment opportunities are also expanding for minorities. The unemployment rates for blacks and Hispanics in 1998 were the lowest ever recorded, and were 4.1 and 3.6 percentage points lower, respectively, than in 1993. But minority unemployment is still unacceptably

**Chart 3-5 Median Hourly Wages of Men Aged 16 and Older by Race and Ethnicity**  
 After years of decline, wages have risen for white and black men since 1993 and for Hispanic men since 1995.

1997 dollars

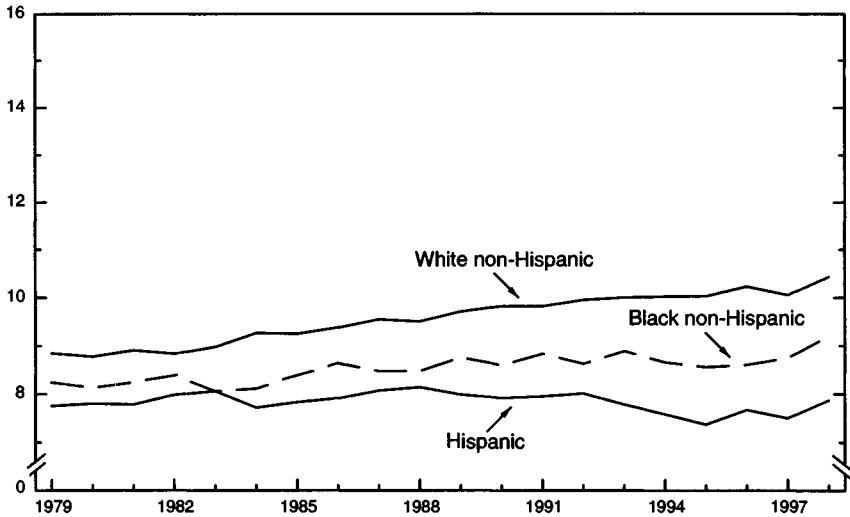


Note: Sample includes part-time as well as full-time workers.

Source: Council of Economic Advisers tabulations of Current Population Survey data.

**Chart 3-6 Median Hourly Wages of Women Aged 16 and Older by Race and Ethnicity**  
 Black and white women now earn their highest wages ever, and wages of Hispanic women have increased recently.

1997 dollars



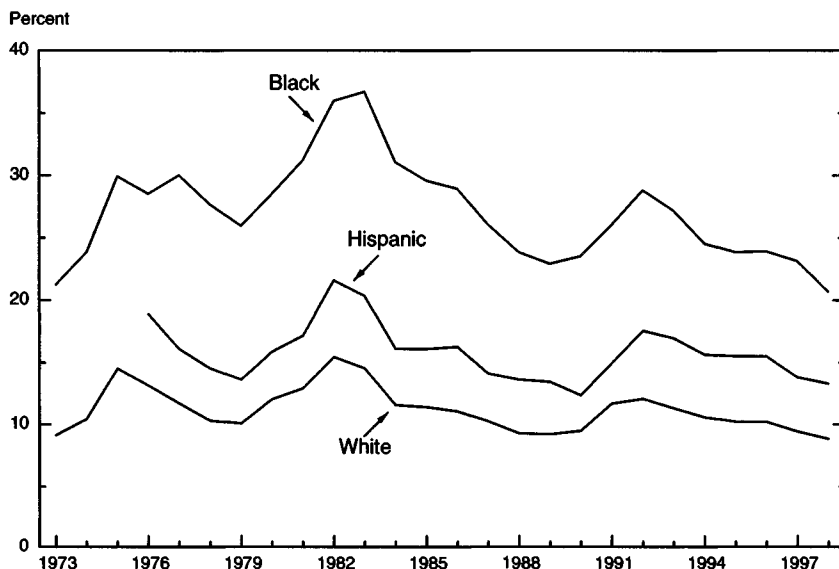
Note: Sample includes part-time as well as full-time workers.

Source: Council of Economic Advisers tabulations of Current Population Survey data.

high, at 8.9 percent for blacks and 7.2 percent for Hispanics in 1998, compared with 3.9 percent for whites.

The tight labor market of the 1990s appears to be helping even young minority workers, who suffered greater wage declines than others in the 1980s and who typically have extraordinarily high unemployment rates. By 1998 the unemployment rate among black youth aged 16-24 was 20.7 percent, lower than in any year since the data series began in 1973. And the unemployment rate among young Hispanics aged 16-24 dropped 3.7 percentage points between 1993 and 1998 (Chart 3-7). Moreover, the median real wages of young black males aged 16-24 rose by 6.2 percent in 1998 alone.

**Chart 3-7 Unemployment Rates of Persons Aged 16-24 by Race and Ethnicity**  
Unemployment rates among young people have fallen since the early 1990s, although blacks continue to have more than twice the unemployment rate of whites.



## IMMIGRANTS

Foreign-born workers often face challenges in the labor market that native-born workers do not: weaker English skills, a lack of networks for finding jobs, and unfamiliarity with American institutions and workplace culture sometimes create barriers to their obtaining good jobs. Foreign-born workers, including those from Mexico and Central America (who account for about 30 percent of new immigrants since 1980), are less likely to have completed high school than are American-born workers. However, there is wider variation in educational attainment among immigrants than among natives; whereas many immigrants have minimal schooling, many others have completed college.

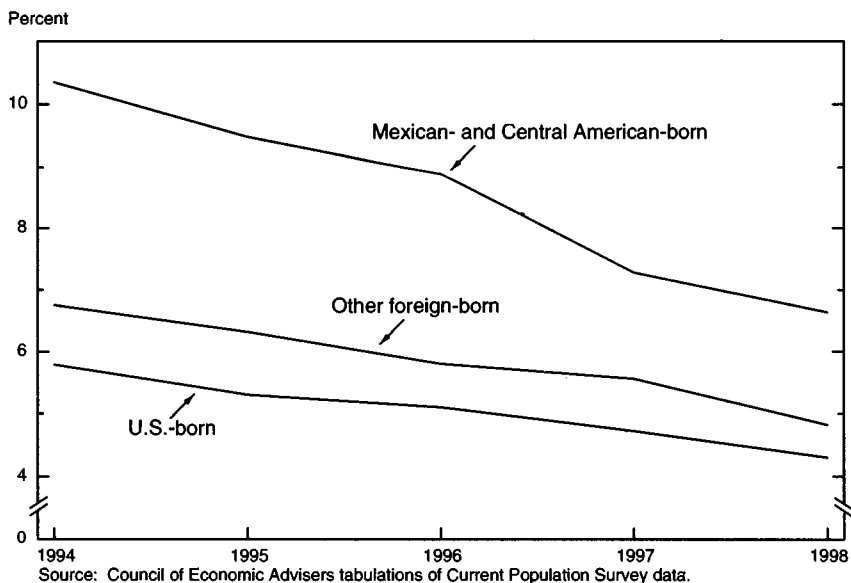
In fact, in 1990 immigrants and natives were equally likely to have a college degree.

A worrisome trend has been the decline in relative educational attainment and wages of successive cohorts of immigrants over the past few decades. Although educational levels have risen across successive cohorts since 1960, they have not kept up with the educational attainment of natives. Immigrants who entered in the late 1980s are much more likely to lack a high school diploma than persons born in the United States. However, during the past 4 years, immigrants have clearly been sharing in the labor market benefits of the economic expansion, particularly through reduced unemployment rates. (Comparable data are not available for earlier years of the CPS because the CPS did not collect data on country of birth until 1994.)

Unemployment rates decreased from 1994 to 1998 throughout the working population, but immigrants have experienced especially large declines (Chart 3-8). Particularly striking is the narrowing of the gap in unemployment rates between native-born workers and those born in Mexico and Central America. This trend has been coupled with steady

**Chart 3-8 Unemployment Rates by Nativity**

The gap in unemployment rates between natives and foreign-born persons has narrowed since 1994.



levels of labor force participation for men in this group and a small increase among women. As a result, employment rates for both males and females from Mexico and Central America have increased. A rising share of these workers are also working full time.

Certain groups of immigrants are also earning more. Since 1995 the median real wage of Mexican- and Central American-born immigrants has risen, by a total of 6.8 percent for men and 3.8 percent for women. This is particularly encouraging because one might expect the continuing addition of low-wage new entrants to the population of Mexican- and Central American-born immigrants to depress the group's median wage, even though individual immigrants' wages tend to increase with time in the United States. In fact, because entrants since 1995 are likely to have below-median wages and are included in the pool used to calculate the median wage in 1998, wages for Mexican- and Central American-born immigrants already employed in the United States in 1995 have probably risen by even more than the median for the group overall. The increases in the minimum wage in 1996 and 1997, as well as the President's proposed \$1-per-hour increase over the next 2 years (Box 3-2), are especially important for large numbers of these immigrants, whose wages are at or near the minimum.

### **Box 3-2.—Increasing the Minimum Wage**

On October 1, 1996, the minimum wage was raised from \$4.25 to \$4.75 an hour. It was again increased to \$5.15 an hour on September 1, 1997. These were the first increases in the minimum wage in 5 years, during which its real value had fallen by 15 percent. The President has proposed to increase the minimum wage further, by \$1 per hour over the next 2 years.

As Chart 3-3 shows, the wages of low-wage workers have increased markedly since 1996, and the recent increases in the minimum wage are likely to explain some of this rise. It has been estimated that almost 10 million workers benefited from the recent minimum wage hikes. Some have suggested that much of the benefit from a higher minimum wage goes to teenagers from well-off families, but in fact most minimum wage workers are adults from lower income families, and their wages are a major source of their families' earnings. Among workers who were earning between \$4.25 and \$5.15 an hour just prior to the 1996 increase, 71 percent were aged 20 or older, 58 percent were women, and one-third were black or Hispanic. Almost half (46 percent) of the affected workers worked full time, and most lived in low-income households. Over half the benefits from the higher minimum wage went to households in the bottom 40 percent of the income distribution. In 1997 the earnings of the average minimum wage worker accounted for 54 percent of his or her family's total earnings.

A potential side effect of increasing the minimum wage is a reduction in employment: with low-wage labor more expensive,

**Box 3-2.—continued**

some firms may hire fewer workers. Many studies have examined this issue, and the weight of the evidence suggests that modest increases in the minimum wage have had very little or no effect on employment. In fact, a recent study of the 1996 and 1997 increases, using several different methods, found that the employment effects were statistically insignificant. Moreover, the unemployment rates of black teenagers and high school dropouts—two groups of workers most likely to be affected by the wage hike—are lower today than they were just prior to the increases.

Increases in the minimum wage and expansions in the earned income tax credit reinforce each other. Among low-wage workers, the joint effect of these changes has been a substantial increase in income. Between 1993 and 1997 the inflation-adjusted minimum wage rose by 9 percent, while the maximum payment under the earned income tax credit rose by 38 percent for one-child families (116 percent for two-child families). For families with one earner working full time at the minimum wage, the combination of higher earnings and a larger tax refund would have raised total income by 14 percent if the family had one child, and by 27 percent for a family with two or more children. As a result of these policy changes, one- and two-child families with a single full-time minimum wage worker now earn enough to escape poverty.

**SINGLE MOTHERS**

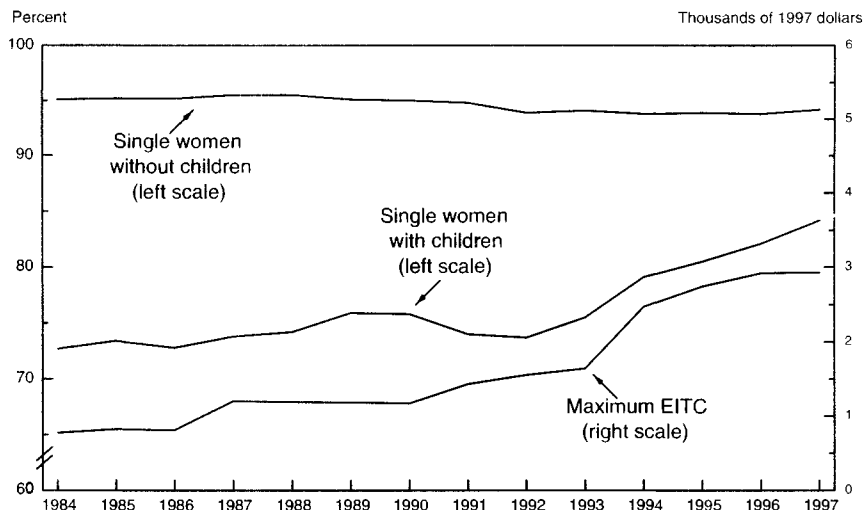
The percentage of children living in single-parent families, usually with a single mother, has risen sharply over the past few decades. The share of all families (defined as households in which one or more persons live with children of their own under age 18) that were headed by a single parent increased from 13 percent in 1970 to 32 percent in 1998. The majority of these families rely heavily on the mother's labor earnings; therefore, the labor market opportunities available to these mothers are critical for their families' economic well-being.

The labor force participation rate of single mothers aged 16-45 has been climbing since 1993, after remaining essentially flat for many years (Chart 3-9). In just the 4 years from 1993 to 1997, their participation rate increased by 8.7 percentage points, from 75.5 percent to 84.2 percent.

What caused this unusually large rise? The expansion of the earned income tax credit (EITC; Box 3-3) seems to have contributed. During the same 4 years the real value of the maximum EITC payment increased by 38 percent for workers with one child, including single mothers, and by 116 percent for those with two or more children. In contrast, the proportion of single women without children who

### Chart 3-9 Labor Force Participation Rates of Single Women

The share of single mothers in the labor force has increased dramatically since 1993, due in part to increases in the earned income tax credit (EITC).



Note: After 1990, the maximum EITC is the average of the maximum for taxpayers with one child and with more than one child.  
Source: Jeffrey B. Liebman "The Impact of the EITC on Incentives and Income Distribution," Tax Policy and the Economy, 1998. Updated by Council of Economic Advisers.

participated in the labor market—who became eligible for only a very small credit in 1994, if their earnings were very low—did not change over this period. As Chart 3-9 shows, the difference in labor force participation rates of single women with and without children has closely tracked growth in maximum EITC benefits.

One recent study concluded that as much as 60 percent of the increase in employment of single mothers since 1984 was attributable to expansions in the EITC. For the period between 1992 and 1996 the EITC explains 33 percent of the increase in annual employment among

#### Box 3-3.—The Earned Income Tax Credit

The EITC is a tax credit for low-income workers designed to reduce their overall tax burden. The credit is refundable; that is, workers can receive the full amount to which they are entitled even if it exceeds the income tax they owe. Workers apply directly to the Internal Revenue Service for the EITC and generally receive the credit as part of their tax refund.

Only families with a working member are eligible for the EITC, and the amount depends on the family's labor market earnings. For example, a worker with one child will receive a credit of 34 cents per dollar of 1998 earnings, up to a maximum of \$2,271. A family with two or more children gets 40 cents per dollar up to a

**Box 3-3.—continued**

maximum of \$3,756 (Chart 3-10). Childless workers aged 25-64 with earnings under \$10,030 are eligible for a much smaller credit of less than 8 cents per dollar up to a maximum of \$341. For all eligible workers the credit remains at the maximum over a range of earnings and then is gradually phased out.

The EITC was significantly expanded under the Omnibus Budget Reconciliation Act (OBRA) of 1993. Before the 1993 law was passed, eligible working parents received just 19 to 20 cents for each dollar earned up to the maximum. OBRA 1993 increased the maximum credit for families with two or more children by over \$1,500 (in 1998 dollars) and extended eligibility to families with incomes up to \$30,095—about \$3,600 more than under previous law. These expansions have resulted in significant increases in the labor force participation of single mothers.

A large proportion of families eligible for the EITC—81 to 86 percent in 1990—have claimed the credit. About 19.8 million workers are expected to claim the credit in tax year 1998, receiving an average of \$1,584. About 16.4 million of these claims will be for workers living with children; these families will receive an average credit of \$1,870.

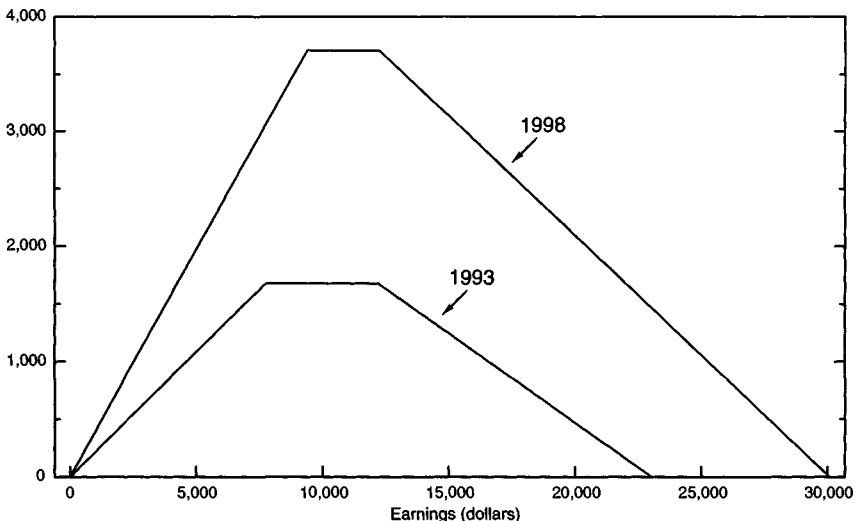
The EITC is targeted to families living in poverty, with the goal of lifting their income above the poverty line. The latest estimate from the Bureau of the Census shows that the EITC lifted 4.3 million persons—workers themselves and their family members—out of poverty in 1997, more than twice as many as in 1993. Just over half (2.2 million) of these were under the age of 18, and 1.8 million were living in families headed by unmarried women. Updates by the Council of Economic Advisers of analyses reported in the 1998 *Economic Report of the President* find that over half the decline in child poverty between 1993 and 1997 can be explained by changes in taxes, most importantly in the EITC. The EITC enabled about 1.1 million blacks and nearly 1.2 million Hispanics to escape poverty in 1997. These statistics make it clear that the EITC has become a major weapon in the fight against poverty.

this group. A second study examined the 1986 EITC expansion, which was more modest than the 1993 expansion, and found that it, too, significantly increased labor force participation among single mothers, especially those with less education. Still another study, looking at the effects of the EITC on all eligible families, found that the 1993 expansion could account for an increase in labor supply of 19.9 million hours by 1996 and induced an estimated 516,000 families to move from welfare into the work force.

**Chart 3-10 The Earned Income Tax Credit in 1993 and 1998**

The EITC has been expanded considerably since 1993, with the maximum credit increasing by over \$2,000.

Credit amount (1997 dollars)



Note: Credit amount depicted is for a family with two or more children.

Source: Department of the Treasury.

Other factors also contributed to the increase in labor force participation among single mothers. Changes in the welfare system, culminating in the enactment of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in 1996, were very important. PRWORA replaced the Aid to Families with Dependent Children (AFDC) program with Temporary Assistance for Needy Families (TANF), which made most Federal welfare assistance dependent on work effort and limited the lifetime duration of assistance. Before PRWORA was passed, States had been experimenting with work requirements and time limits under waivers of the Federal rules governing AFDC since the early 1990s. Even before that, States had been changing their formulas for calculating AFDC benefits in ways that made it more worthwhile for low-income single mothers to work. It has been estimated that changes in the welfare system account for about 30 percent of the increase in employment of single mothers between 1984 and 1996, and at least 20 percent of the increase between 1992 and 1996. PRWORA is discussed further below.

Expansions of Medicaid coverage to low-income children who were not eligible for AFDC removed another disincentive to their mothers' working. Expansions of training and child care programs for low-income workers also encouraged these women to work. These factors played a much smaller role than did the EITC and welfare reform, however. Finally, the tighter labor market has made employers more

willing to hire welfare recipients and has made it easier for all single mothers to find jobs in recent years.

## **OVERCOMING DISADVANTAGES IN THE LABOR MARKET**

The last several years have seen the gains from the ongoing economic expansion distributed throughout the population, reaching groups that had previously been left out. Low-wage workers, high school dropouts, blacks, Hispanics, immigrants, younger workers, and single mothers have all enjoyed better labor market outcomes. Administration policies, most importantly the expansion of the EITC and the increases in the minimum wage, along with efforts to keep the overall economy growing, have played a central role in achieving these successes.

However, members of these disadvantaged groups are still much more likely than other workers to be unemployed, and when they do find a job, they still earn lower wages than other groups. A competitive labor market is a two-edged sword. Although competition is the most efficient way to allocate labor and get goods produced at lower cost, it may result for some in wages that fail to ensure an adequate income. Competitive market forces produced an increasingly unequal distribution of earnings from the late 1970s into the early 1990s, so that some people found it difficult, even by working hard, to support their families.

Government can mitigate these undesirable side effects of labor market competition. Beyond its emphasis on education, this Administration has responded to the problem of low wages for the less skilled by expanding the EITC and raising the minimum wage, as described in Boxes 3-2 and 3-3. The Administration will continue to address this concern by designing policies that make work pay, improve education, and expand opportunities for education and job training, as described previously in this chapter. Moreover, the President's fiscal 2000 budget proposes an \$84 million increase in funding for civil rights enforcement, including \$14 million for an Equal Pay Initiative at the Equal Employment Opportunity Commission and the Department of Labor.

## **BENEFITS TO SOCIETY OF A STRONG LABOR MARKET**

Better employment opportunities and higher wages are obviously good for workers individually. But today's strong labor market is enhancing the well-being of the whole of American society in ways that are less obvious. One way is by easing the implementation of the 1996 welfare reform act; another is by reducing crime.

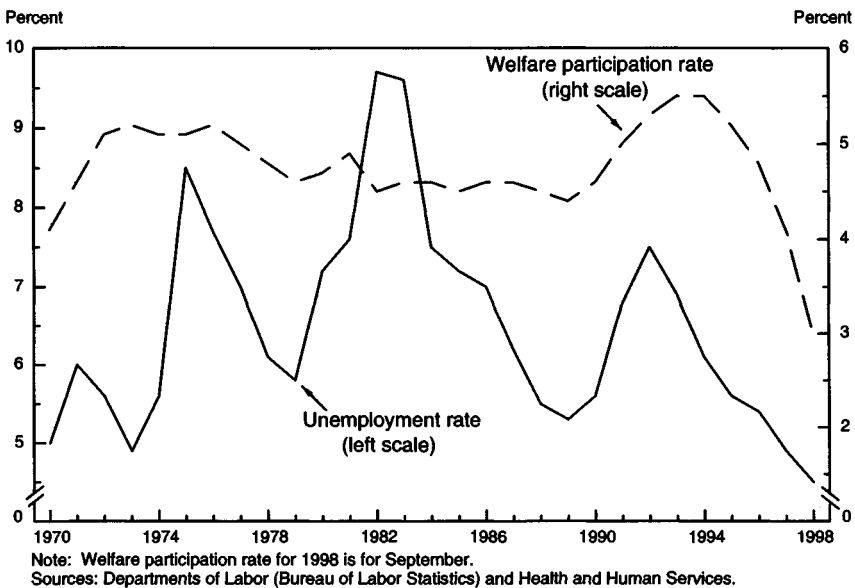
## **WELFARE REFORM**

It has been 2½ years since the President signed the Personal Responsibility and Work Opportunity Reconciliation Act into law,

initiating dramatic changes in the Nation's welfare system. Welfare assistance is now work-focused and time-limited: with few exceptions, Federal welfare assistance is strongly linked to the recipient's efforts to find a job. Adults cannot receive aid for more than a total of 5 years during their lifetime, and in some States the maximum is even less. PRWORA shifted greater responsibility for welfare management to States and localities, many of which have responded quickly by redesigning and implementing their own welfare programs. In most States this effort builds on reforms initiated under waivers approved by this Administration before PRWORA was passed.

Welfare case loads have fallen dramatically since PRWORA was enacted in August 1996 (Chart 3-11). Moreover, this reduction has been experienced nationwide, with every State except Hawaii and Rhode Island posting double-digit percentage reductions in case loads. The national case load peaked in 1994, and since that time it has declined by 42 percent; in 17 States the case load in September 1998 was less than half what it had been in March 1994.

**Chart 3-11 Welfare Participation and Unemployment**  
The percent of the population on welfare has declined dramatically since 1994.



What caused this unprecedented case load reduction? Case loads normally fluctuate with the business cycle, rising in periods of high unemployment and declining when unemployment is low, as it is today. Chart 3-11 illustrates the relationship between labor market opportunities and welfare participation over the past three decades. When unemployment increased in the early 1970s, so, too, did welfare

participation. The renewed increase in welfare participation in the late 1980s and early 1990s, as well as the decline that began in 1994, also corresponded with changes in employment opportunities during these periods.

Other evidence suggests that in the current expansion many businesses are coming to see welfare recipients as an untapped source of employees. In a 1998 survey of 400 businesses that are members of the Welfare to Work Partnership (Box 3-4), 71 percent stated that they or their industry faced a labor shortage, and that the tight labor market was one of the main reasons they were hiring welfare recipients. More-

#### **Box 3-4.—The Welfare to Work Partnership**

At the President's urging, the Welfare to Work Partnership was launched in May 1997 to lead the national effort to encourage businesses to hire people from the welfare rolls. Founded with five participating businesses, the partnership grew to include 5,000 businesses within 1 year; it currently has a membership of 10,000. In 1997 the 3,200 businesses then participating hired an estimated 135,000 welfare recipients.

An important goal of the partnership is to increase awareness within the business community that welfare recipients are productive potential employees. A survey of Michigan firms suggests that lack of such awareness may be an important barrier to some businesses: among firms that said they had been contacted by the Michigan employment agency and informed about the advantages of hiring from the welfare rolls, the majority had subsequently hired at least one welfare recipient. To overcome the awareness barrier, the partnership provides outreach, technical assistance, and support for hiring welfare recipients through a variety of channels, including a toll-free number, a World Wide Web site, a "Blueprint for Business" manual, and a guide to retaining welfare workers.

Many firms realize that welfare recipients are a pool of good potential workers, and the partnership has helped firms learn how to locate and identify them. In fact, in a survey of partnership firms who have hired former welfare recipients, 76 percent reported that these workers were "good, productive employees." The tight labor market has motivated many firms to consider hiring welfare recipients, but the hope is that the efforts of the partnership and the employment emphasis of PRWORA have built a relationship between employers and welfare offices that will endure into leaner times. If so, firms will continue to tap into the pool of reliable employees on the welfare rolls even after their hiring pressures ease.

over, the tight labor market is most likely causing employers to expand efforts to invest in and retain current workers, including former welfare recipients. The skills and job experience that former welfare recipients are accumulating during this expansion may be a lasting benefit.

However, the trend in welfare participation does not always match that in unemployment, most notably when other important changes are taking place, including changes in welfare benefits and in family structure, as well as policy reforms. Indeed, welfare participation did not increase during the recession of the early 1980s. It is difficult to determine how much each of several factors—the economy, program reforms, and other factors—has contributed to the recent case load decline. An analysis by the Council of Economic Advisers that examines these competing factors finds that a 1-percentage-point decline in the unemployment rate in each of 2 successive years is associated with roughly a 4 percent decline in the case load in the second year. Other studies have corroborated this finding. Applying this estimate to the change in the unemployment rate between 1994 and 1998 indicates that the improvement in the labor market can explain an 8.3 percent drop in welfare case loads. Given that the national welfare case load actually fell by 42.3 percent during this period, it appears that improved labor market conditions were responsible for roughly one-fifth of that decline. Similar analyses indicate that the share of the decline since 1996 that can be explained by the strength of the economy is much smaller, reflecting the importance of other changes, especially welfare reform. This result builds on the Council's analyses, which show that welfare reform achieved through State waivers played an important role in the case load reductions of the mid-1990s.

The case load reduction, combined with fixed block grant funding under PRWORA, has translated into greater resources for States and localities. The amount of the Federal welfare grant given to each State is now fixed (with some exceptions) and guaranteed, typically at the level of funding that the State received in 1994. As a result, States receive more Federal assistance today than they would have under the AFDC program, under which Federal transfers decreased as the case load fell. It has been estimated that, in 1997, 46 States had more welfare resources at their disposal—State and Federal dollars combined—under PRWORA than they would have had if the old system had been maintained. The difference nationwide was \$4.7 billion, with a median difference across all States of \$44 million, or 22 percent.

States are using these expanded resources in a variety of ways. Some have enhanced investment in services such as child care, transportation, and substance abuse treatment for those who remain on welfare, many of whom face multiple barriers to employment. Other States are expanding support for welfare recipients who have gone to work. In part because States have been unable to forecast case load levels with any degree of accuracy, some States have a portion of their

TANF grants in reserve at the Treasury. These States will be able to draw upon these reserves should case loads once again increase or should those remaining on assistance need more intensive and costly services. Many States are responding by reducing their own contribution to welfare funding (but can do so by no more than the Federal maintenance-of-effort requirement allows).

Although the additional resources have thus allowed States to concentrate on designing and implementing welfare reform, the expanded resources come with greater responsibility and accountability. States and localities now have many more decisions to make regarding their welfare programs. Moreover, because the Federal block grant is fixed, States bear most of the risk associated with a future rise in the case load.

Since PRWORA's enactment, this Administration has pursued various initiatives to enhance the welfare reform effort. The \$3 billion Welfare to Work Grants Program targets long-term, hard-to-employ welfare recipients and noncustodial parents, helping them move into lasting, unsubsidized employment. These resources can be used for job creation, job placement, and job retention efforts. Most of the resources are given directly to localities through private industry councils or local work force boards. The Administration has proposed an additional \$1 billion for the Welfare to Work Grants Program in fiscal 2000. The welfare-to-work tax credit is a credit to employers to encourage them to hire and retain long-term welfare recipients. The credit for each eligible worker hired is equal to 35 percent of the first \$10,000 in wages during the first year of employment, and 50 percent of the first \$10,000 in the second year.

The Congress fully funded (at \$283 million) the President's proposal for welfare-to-work housing vouchers for fiscal 1999. The vouchers may be used by welfare families to reduce a long commute or to secure more stable housing to eliminate emergencies that keep them from getting to work every day on time. Another important barrier facing people who want to move from welfare to work—in cities and in rural areas—is lack of transportation to jobs, training programs, and child care centers. With the President's leadership, the Transportation Equity Act for the 21st Century authorized \$750 million over 5 years to address this problem.

## CRIME

The incidence of crime can be related to many factors, both in the individual and in the policy environment, but clearly one determinant is conditions in the legal labor market. A person who has a good job usually finds his or her time better spent in legitimate activities than in committing crimes, and risks losing more income from incarceration than does someone who is unemployed or earning low wages. Statistics

show that crime rates have in fact been dropping since the current economic expansion began: between 1991 and 1997, property crimes and violent crimes per capita fell 16 percent and 19 percent, respectively, and the total crime index dropped 17 percent.

Studies have found that unemployment is related to crime rates, but that the effect tends to be modest and insufficient to explain changes in crime rates over periods longer than the business cycle. New studies suggest, however, that crime may be more strongly correlated with wages than with unemployment. These studies find that potential criminals are more likely to be influenced by longer term prospects in the mainstream economy than by shorter term conditions, and that wages are a better measure of these longer term prospects than is the unemployment rate.

The new research shows that young men—the demographic group most likely to commit crimes—respond to wage incentives. Declining real wages during the 1980s and early 1990s appear to have influenced the rise in crime rates. In particular, the decline in wages of less skilled men between 1979 and 1995 is estimated to have increased property crimes by 10 to 13 percent and violent crimes by about half that amount. These findings are consistent with the idea that economic incentives play a greater role in economically motivated crimes such as burglary and robbery. In addition, because blacks have lower wages on average than whites, about one-quarter of the racial difference in the probability of committing a crime can be explained by the wage gap between the races.

Falling wages therefore provide at least a partial explanation for why property crimes did not fall much over the 1980s and early 1990s as the proportion of 18- to 24-year-olds in the population declined. Of course, other factors such as policing and sentencing practices also affect crime rates. But the correlation between wages and crime suggests that the current strong labor market and wage growth among young men have helped reduce crime rates.

## JOB DISPLACEMENT, TENURE, AND THE CONTINGENT WORK FORCE

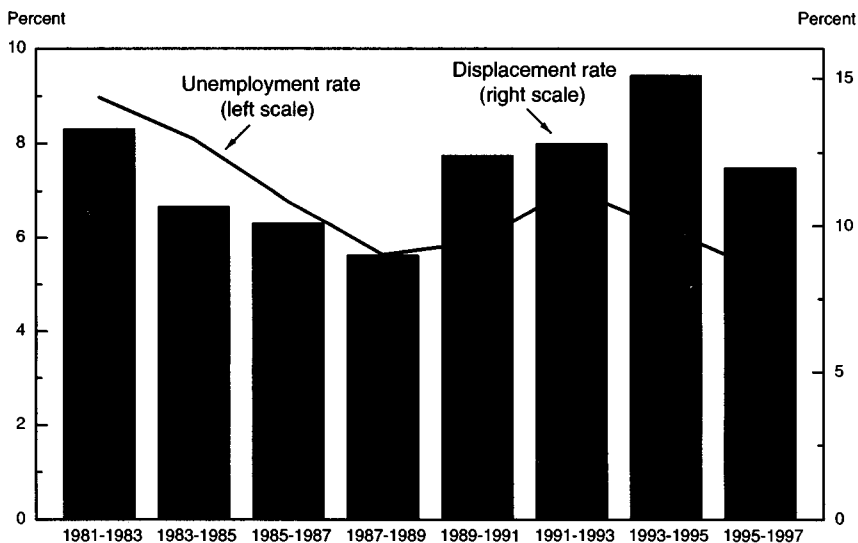
Popular accounts sometimes suggest that the relationship between workers and firms is undergoing profound change. The contemporary work environment, in this view, is characterized by more frequent corporate downsizings and other job displacements, the disappearance of lifetime employment, and the rapid growth of a “contingent work force” that can no longer count on high and rising earnings and job security. However, a growing body of research using nationally representative data calls this picture into question.

## JOB DISPLACEMENT

Workers are considered displaced if they leave their jobs involuntarily, because of a plant closing, insufficient or slack work, abolition of their position or shift, or some other, similar reason. Since 1984 the Bureau of Labor Statistics (BLS) has conducted a biennial, nationally representative survey of workers who have been displaced from their jobs sometime in the 3 years prior to the survey (in the early years of the survey the period was 5 years). Data from the 1996 survey showed job displacement to be unusually high given the overall strength of the economy. Extrapolation of the survey's findings indicated that about 15 percent of the work force had been displaced at some time between 1993 and 1995. This figure was up from 12.8 percent in 1991-93, despite a drop in the overall unemployment rate from 7.5 percent in 1992 to 6.1 percent in 1994 (Chart 3-12). This rise in job displacement led some analysts to argue that the employer-employee relationship had changed and that displacement was on a rising trend.

**Chart 3-12 Job Displacement Rate**

The displacement rate fell to 12 percent for the 1995-97 period, but it is still a third higher than in 1987-89, when unemployment was about the same.



Sources: Henry S. Farber, "Education and Job Loss in the United States: 1981-1997," Princeton University, 1998, and Department of Labor (Bureau of Labor Statistics).

Results from the 1998 survey, however, suggest that this interpretation may have been premature: that survey showed a substantial decline in job displacement, to 12.0 percent for the 1995-97 period. All major groups of workers experienced improvements: men and women, younger and older workers, high school dropouts and college-educated workers, and workers in manufacturing as well as those in professional services. Nevertheless, the rate of job displacement in 1995-97 was still

one-third higher than it had been in 1987-89, when the unemployment rate was at a similar level.

Historically, between 30 and 42 percent of displaced workers were not employed 1 to 3 years after losing their jobs. Thus it is encouraging that this rate has fallen to 24 percent in the latest survey (Chart 3-13).

**Chart 3-13 Outcomes After Job Displacement**

Among displaced workers, the share not employed 1 to 3 years after losing their jobs fell to 24 percent in 1995-97; losses in earnings reached a record low of 5.7 percent.

Percent



Source: Henry S. Farber, "Education and Job Loss in the United States: 1981-1997," Princeton University, 1998.

In addition, reemployed workers typically earn less than they did in their previous jobs. For example, one study of workers in the 1970s and 1980s who had at least some earnings in the years after displacement finds an average earnings decline of 29 percent in the year of displacement, which subsequently shrinks to 10 percent. Here again the latest data are encouraging: the reduction in weekly earnings among those reemployed was only 5.7 percent in 1995-97, a record low, and earnings losses were at or near record lows for workers of all levels of education.

## JOB TENURE

Trends in average job tenure—the length of time a person stays with the same employer—are often confused with trends in downsizing and job displacement. In fact these trends may be quite different: because many workers leave their jobs voluntarily, statistics on job tenure may not accurately reflect rates of displacement. Yet much media attention has focused on a purported disappearance of lifetime jobs, suggesting that workers are holding jobs for shorter periods, and often implying that these job terminations are more frequently involuntary. The

evidence finds that the percentage of workers with long job tenure (10 or more years) has declined somewhat. The share of workers aged 35-64 who have long job tenure fell by about 5 percentage points between 1979 and 1996 but remains substantial at roughly 35 percent. The decline in the percentage of long-tenured workers has occurred across many segments of the population. Workers at all levels of educational attainment have experienced similar rates of tenure decline, and declines have occurred across industries and occupations, narrowing gaps in average tenure that formerly prevailed between occupations. The trends differ for men and women, however, and the aggregate decline in the percentage of long-tenured workers masks an *increase* among women. Accounting for part of the overall decline since 1979 in the percentage of long-tenured workers are shifts in the demographic, industrial, and occupational composition of the labor force. Some of the decline is also due to the large number of new workers that firms have hired during the current expansion. Obviously, the addition of many workers with short job tenure by itself lowers the median tenure in the work force.

Retention rates, which give the likelihood that a given worker will remain with the same employer in the next year, are not complicated by the changing rate at which new workers are hired. Analysis of retention rates complements findings on the cross-sectional distribution of tenure over all workers. Workers with less than 2 years of tenure had moderately *higher* retention rates in the mid-1990s than in the late 1980s. On the other hand, retention rates appear to have decreased among workers with longer tenure. Again, however, some of these changes may be due to voluntary separation.

## THE CONTINGENT WORK FORCE

Contingent employment is defined by the BLS as employment without an implicit or explicit long-term contract. The BLS has conducted two surveys of such employment. The first, in 1995, found that contingent employment made up a relatively small share of total employment. The second, in 1997, found that that share was not increasing. Using the BLS's "middle" definition of contingency, about 2.4 percent of the labor force (3 million workers) identified themselves as contingent workers in February 1997, a slightly smaller share than in February 1995. This definition includes workers who say they expect to work (and have worked) under their current arrangements for 1 year or less, whether they are wage and salary workers, self-employed persons, or independent contractors. In addition, it includes temporary help and contract company workers if they have worked and expect to work for the customer to whom they were assigned for 1 year or less.

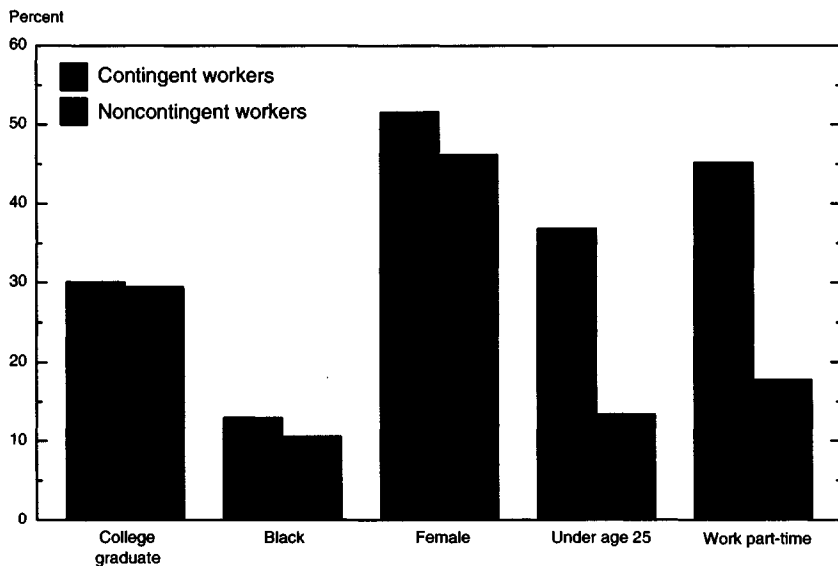
Forty percent of contingent workers in 1997 were in so-called alternative work arrangements. They included independent contractors, on-call workers, temporary help agency workers, and workers provided

by contract firms; the remaining 60 percent were in “traditional” jobs. None of these categories of contingent workers comprised more than 0.5 percent of the labor force.

Contingent and noncontingent workers were strikingly similar in terms of educational attainment and race (Chart 3-14). Also, contingent workers were employed in a wide variety of occupations, belying the view that all contingent jobs are low-skilled jobs. However, contingent workers include a relatively large proportion of very young workers: 37 percent of contingent workers, but only 13 percent of noncontingent workers, were less than 25 years old.

**Chart 3-14 Characteristics of Contingent and Noncontingent Workers, February 1997**

Contingent and noncontingent workers are similar in terms of educational attainment and race. Contingent workers are more likely to be young and working part time.



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

Forty-five percent of contingent workers were employed part time, compared with only 18 percent of noncontingent workers. Contingent workers also earned less: their median weekly earnings were only 53 percent of that of noncontingent workers, although differences in age and hours worked appear to account for much of the earnings gap. Regardless of age, however, contingent workers were less likely to be offered health insurance or a pension plan by their employer.

Data from 1997 show that nearly half of all contingent workers accepted their contingent jobs for personal reasons: because they wanted a flexible work schedule, for example, or because they were in school or in training. Thus, although contingent work is not a matter of choice for many people, it may allow others to balance their work and

their non-labor market activities. In fact, although 57 percent of contingent workers stated that they would prefer a noncontingent job, 36 percent said they preferred contingency.

For contingent work to become widespread, of course, it must also meet the needs of employers. Accordingly, a 1996 survey asked employers their reasons for using flexible staffing arrangements. (These arrangements, which included hiring from temporary agencies, short-term hires, regular part-time work, on-call arrangements, and contract work, were most likely not all contingent jobs as defined above. But most were probably either contingent jobs or alternative work arrangements.) The most commonly cited reasons were fluctuations in workload and the need to cover absences of regular staff. Many employers also said they hired from temporary agencies or took on part-time workers as a means of screening candidates for regular jobs: 21 percent of those using agency temporaries and 15 percent of those using regular part-time workers cited this reason as important. Savings on wage and benefit costs were cited as important by only 12 percent of employers using agency temporaries, by 21 percent of those using regular part-time workers, and by 10 percent of those using short-term hires and on-call workers. Even so, the survey found that the hourly costs of workers in flexible staffing arrangements were lower than those of regular workers in similar arrangements, and that the savings were primarily due to lower benefit costs.

## MYTHS AND REALITIES

Nationally representative data on the employer-employee relationship thus run counter to much current conventional wisdom. The last several years have seen both a decline in job displacement and, for those who are displaced, shorter spells of joblessness and a smaller loss of earnings upon finding a new job. The disappearing lifetime job of popular mythology is not to be found in the data, which instead show only modest declines in job tenure. Moreover, contingent workers are not disproportionately workers with little education, the wages they earn are similar to those of noncontingent workers of the same age, and contingent work has not become more prevalent in recent years. In addition, the flexibility of the contingent arrangement appears to be a significant benefit to many workers as well as to their employers. On the other hand, job displacement remains relatively high given today's low unemployment rates, and contingent workers are much less likely to receive pension or health benefits than are noncontingent workers. These developments are part of the reason why this Administration has expanded and redesigned Federal policies and programs of job training, education, lifelong learning, and assistance to dislocated workers—initiatives discussed in the next section.

## NEW DEVELOPMENTS IN JOB TRAINING AND LIFELONG LEARNING

The Federal Government and the governments of the States provide assistance to workers through a number of channels. Unemployment insurance, job training, and reemployment services are cornerstones of the worker support network, helping workers to identify job opportunities and to retool, and providing financial support until they find their next job.

In the face of a rapidly changing global economy and the increased rewards to more highly skilled workers, this Administration has sought to strengthen America's work force development system and to promote lifelong learning. In August 1998 the President signed the Workforce Investment Act (WIA), which gives workers greater control over their training, streamlines public employment and training services, and makes all training providers more accountable for their services. WIA establishes Individual Training Accounts, self-directed accounts that allow workers more choice over their own training or retraining. To help workers make informed decisions about which training program is best for them, WIA also requires that training providers report the performance of their graduates in terms of job placement, earnings, and job retention. In addition, WIA establishes universal access to core employment services, such as skills assessment, career counseling, information about vacancies, job search assistance, and follow-up services to assist in job retention.

WIA streamlines employment services through consolidation. The Federal Government has set up partnerships with 48 States to build systems of one-stop career centers, which provide convenient access to a variety of training and employment programs under one roof. The act requires each local area to have at least one one-stop center providing job training, employment service activities, unemployment insurance, vocational rehabilitation, adult education, and other assistance. More than 800 such centers are already in operation.

WIA also strengthens accountability for States, localities, and training providers. States and localities will have to meet performance goals for job placement, earnings of placed workers, and retention, or else face sanctions. But if they exceed their goals, localities qualify to receive State incentive grants. To become eligible for funds under WIA, training providers must be certified under the Higher Education Act, the National Apprenticeship Act, or the State procedure used by the local Workforce Investment Board. To retain eligibility, each provider must meet performance standards established by the local board. The information that training providers must report on the performance of their graduates will be available at the one-stop centers, allowing potential trainees to make an informed choice among programs. This in turn will make providers more responsive to trainees' needs.

The Administration is especially concerned about those whose careers are interrupted by corporate restructuring, changes in government policies, or turbulence in global markets. The Administration has pushed to expand assistance programs for these dislocated workers, helping to nearly triple funding for these programs to \$1.4 billion between 1993 and 1999. Under the Economic Dislocation and Worker Adjustment Assistance Act (EDWAA), one of the funding streams consolidated under the WIA, the Administration provides grants to State and local programs. They in turn decide who most needs assistance and how best to provide services, which can include on-site rapid response for announced plant closings, job search counseling and support, literacy courses, vocational education, and financial assistance during training. In addition, the Trade Adjustment Assistance (TAA) program, including a special transitional adjustment assistance provision under the legislation implementing the North American Free Trade Agreement (NAFTA-TAA), continues to help those workers whose jobs may be affected by competition from imports.

Workers are considered dislocated if they have lost their jobs and are unlikely to return to their previous industries or occupations. Included are those who have lost their jobs as a result of massive layoffs, plant closure, natural disaster, or Federal action. Farmers and ranchers hurt by general economic conditions, as well as the long-term unemployed with limited opportunities in their original occupations, may also qualify. (Note that the definition of "dislocated" is more narrow than that of "displaced" workers, discussed above.) In program year 1998, over 600,000 of these dislocated workers will have participated in the EDWAA program. In the program year that ended in June 1997, 71 percent of dislocated workers leaving the program were employed and had earnings, on average, of \$10.39 per hour, or 94 percent of their previous wages. The Administration's strong and continued support for this program has also generated new funding for assisting trade-impacted workers not formerly covered by TAA or NAFTA-TAA and for buttressing the training system with innovative approaches for targeted groups.

The lifetime learning tax credit, enacted in 1997, targets adults who want to go back to school, change careers, or take a course or two to upgrade their skills, as well as college juniors and seniors and graduate and professional degree students. The 20 percent credit applies to the first \$5,000 of a family's qualified education expenses through 2002, and to the first \$10,000 thereafter.

Information about job openings and potential workers is especially important in a rapidly changing economy. America's Labor Market Information System, an Internet-based system that shares data on available jobs (America's Job Bank) and workers (America's Talent Bank), has been designed to meet this need. America's Job Bank (located on the World Wide Web at <http://www.ajb.dni.us/>) posts roughly 700,000 jobs on

any given day and received over 6 million “hits” (individual job searches) in July 1998 alone. America’s Talent Bank (<http://www.atb.org>) was fully integrated with the job bank in May 1998, and as of July a total of 112,000 résumés had been posted with the service. In addition, workers and employers can obtain information about the wages and employment prospects of certain occupations across the country using America’s Career InfoNet (<http://www.acinet.org/acinet/>).

These policies help ensure that all workers can find employment following a job loss, or improve their training and skills in order to move up in the labor market. This Administration is committed to making sure that the labor market benefits all workers, and that the benefits of the current economic expansion are enjoyed by all.



## CHAPTER 4

# Work, Retirement, and the Economic Well-Being of the Elderly

JUST 50 YEARS AGO, the baby boom was getting under way, and about 1 out of every 12 Americans was 65 or over. Today, about one out of every eight Americans is elderly, and the oldest baby-boomers are preparing for retirement. As the baby-boomers continue to age, the elderly population will rise dramatically. It is projected that by the time the youngest baby-boomers hit age 65, in 2029, almost 20 percent of Americans will be elderly—about 2½ times the proportion in 1950.

As America adjusts to this phenomenal demographic change, it is important to assess the economic well-being and work decisions of the current and the soon-to-be elderly. A review of statistics on the well-being of older persons and the labor market outcomes of workers who are approaching retirement age yields four important conclusions. First, long-term trends in the labor force participation of older Americans, both male and female, are changing. The century-long decline in male labor force participation at older ages has leveled off since 1985. More men aged 55-64 are continuing to work, often part time or in a different occupation, after “retiring.” Meanwhile the share of women aged 55-64 participating in the labor force has increased by almost 10 percentage points in the past 15 years.

Second, employer-provided pensions and health insurance are also undergoing rapid change. The share of participants in defined-contribution pension plans, such as 401(k) plans, is growing and the share in defined-benefit plans shrinking. Employer-provided health insurance coverage for retirees has also become less widespread, less generous, and more expensive. These developments have many ramifications, both for retirement incentives and for the incomes and living standards of retirees.

Third, the economic status of the elderly as a group has improved remarkably during the past three decades. Their poverty rate has fallen to less than half what it was in 1970. In that year the elderly were more than twice as likely to live in poverty as the nonelderly, but today poverty is slightly less prevalent among the elderly than it is among younger persons.

Finally, the elderly are a diverse group, which means that averages can be quite misleading. In particular, although most elderly groups—men and women, blacks and whites, older and younger elderly, single

as well as married persons—have enjoyed economic progress, large disparities in well-being prevail among these groups. The most recent data show that just 4.6 percent of elderly married men, but 28.8 percent of elderly black women and 17.9 percent of elderly widows, live in poverty. And whereas Social Security benefits account for at least 80 percent of income for 38 percent of all elderly households, another 9 percent rely on Social Security for less than 20 percent of their income. Moreover, among those now approaching retirement age, over 10 percent have no financial savings whatsoever, and 30 percent have less than \$1,200, whereas the top 10 percent have over \$200,000 in financial assets. Over half of all blacks and Hispanics aged 51-61 have no financial holdings.

### POPULATION AGING, LIFE EXPECTANCY, AND HEALTH STATUS

As we approach the 21st century, the confluence of a reduction in fertility and improvements in longevity is causing the share of older people in the population to rise. The total fertility rate—the number of children that an average woman will bear over her lifetime—has declined substantially since the turn of the century. This decline was not a steady, uninterrupted one, however: a substantial increase in fertility was associated with the baby boom of 1946-64. The total fertility rate increased from 2.3 in 1940 to 3.8 at the peak of the baby boom in 1957. It then fell to 3.2 by the end of the boom, and today the total fertility rate is about 2.0.

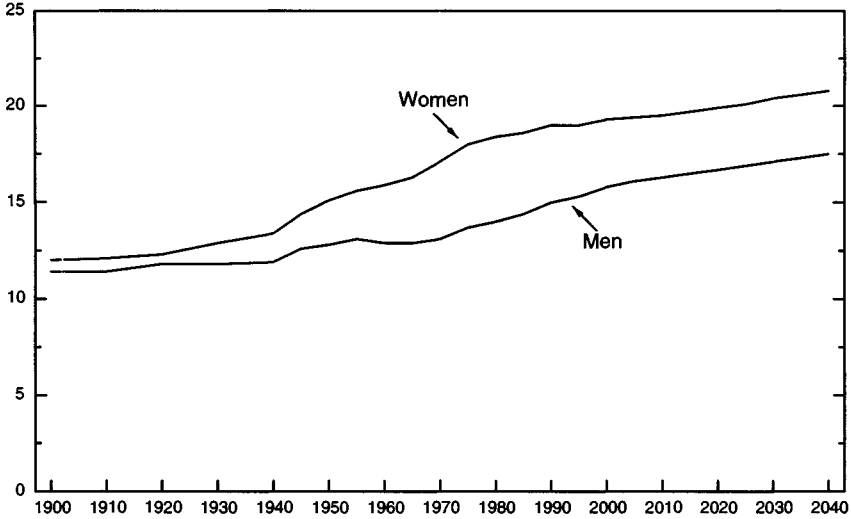
Life expectancy has risen throughout the 20th century. Americans today are more likely than their parents and grandparents to reach old age, and having reached that threshold they live a greater number of years thereafter. In 1900, 65-year-old men and women had similar remaining life expectancies, at 11.4 years and 12.0 years, respectively (Chart 4-1). These figures had risen by mid-century to 12.8 years for men and 15.1 years for women. The 1950s and 1960s saw substantial gains in life expectancy for older women, but stagnation for older men. Since the 1970s, however, strong gains have occurred for both sexes. Current life tables indicate that 65-year-old men and women today can expect to live an additional 15.7 years and 19.2 years, respectively. And projections imply that life expectancy will continue to increase in the next century.

The anticipated transition of the baby-boom generation into old age has drawn attention to the aging of the population. The baby-boomers, who are currently between the ages of 35 and 53, will begin to reach age 65 by 2011. Chart 4-2 shows this bulge in the population, which swelled the number of children and adolescents 30 years ago. This group will reach retirement age over the next 30 years. Although the growth rate of the elderly population will be very low between 1995

**Chart 4-1 Life Expectancy at Age 65**

The number of years that Americans can expect to live after the age of 65 has increased throughout the 20th century and is expected to continue increasing.

Years of life remaining

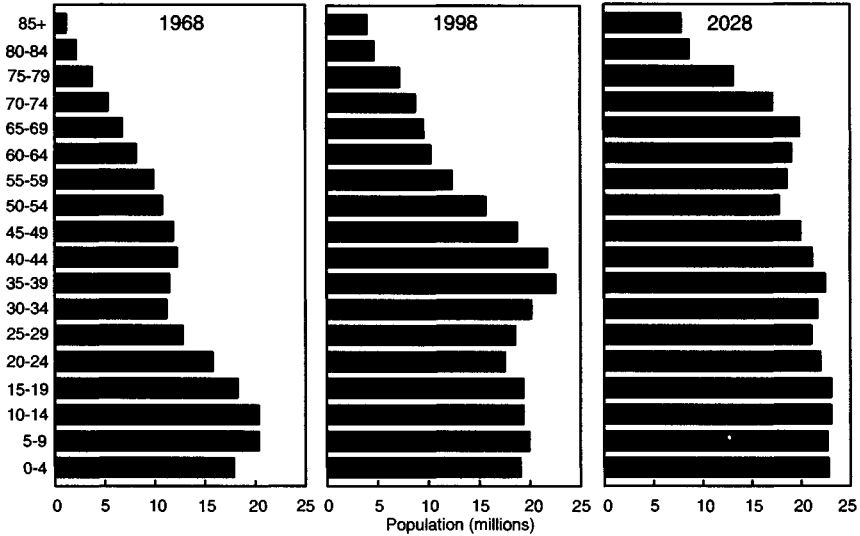


Source: Data prior to 1998 from Department of Health and Human Services; 1998-2040 projections from Social Security Administration.

**Chart 4-2 Population of the United States by Age**

Baby-boomers created a bulge in the population of children and adolescents 30 years ago and will move into retirement ages over the next 30 years.

Ages



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

and 2010 as a result of low fertility in the 1930s, that rate will more than double in the following 20 years. Also as a result of the baby boom, different age groups among the elderly will peak at different times: those between 65 and 74 will peak at 38 million in 2030, and those 75 to 84 will peak at 29 million 10 years later.

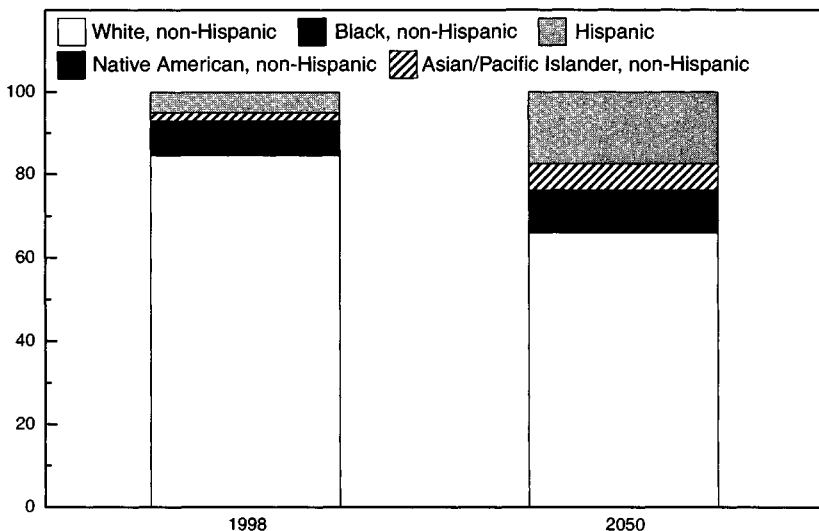
The “oldest old,” those aged 85 and over, are of particular concern because of their high rates of poverty and institutionalization, described below. This group will grow both in number and as a share of the population, from about 4 million today to 18 million by 2050. Accounting for about 1.5 percent of all Americans today, the oldest old are projected to make up 23 percent of the elderly population and about 5 percent of the overall population 50 years from now.

At the same time that the size of the elderly population is increasing, its racial, ethnic, and gender composition will also change. In 1998 the non-Hispanic white population accounted for the largest proportion of elderly, and their number is projected to nearly double to 52.0 million by 2050. But the proportion of non-Hispanic whites in the elderly population will decline as the numbers of elderly persons of other racial and ethnic groups grow even faster, causing their proportion of the elderly population to double (Chart 4-3). The elderly Hispanic population, for example, is expected to grow to 13.8 million in 2050, or eight times what it was in 1998. In 1994, elderly women outnumbered elderly men by a ratio of 3 to 2 overall, and by 5 to 2 among those over 85. About half of elderly women were widowed, more than three times the percentage for elderly men, who were nearly twice as likely to be married.

**Chart 4-3 Projections of the Population Aged 65 Years and Over**

The share of the elderly population that is white, non-Hispanic is projected to fall by about one-fifth between 1998 and 2050.

Percent



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

Population aging is not just an American trend but a major global phenomenon—a natural result of better health and nutrition and lower fertility and mortality rates worldwide. Never before have so many people in so many societies lived for so long. Yet as much as population aging is a natural result of the benefits of increased longevity and survival among all age groups, it also represents a fundamental shift in social structure that affects labor markets, family structures, and the social contract among generations.

Increasing life expectancy does not automatically imply that health status has improved. In fact, despite improvements in mortality at older ages in the 1970s, some studies claim that the health status of the elderly worsened during that period. But since 1980 the evidence points to a decline in chronic disability among the elderly. In 1994 the number of people aged 65 and older who were disabled (that is, who had functional problems lasting 90 days or longer in dealing with various normal activities of daily living) was 14.5 percent (or 1.2 million) lower than would have been expected if the age-specific chronic disability rates observed in 1982 had persisted. This decline was found to have contributed significantly to reducing the rate of institutionalization between 1982 and 1994. However, many older Americans still require long-term care (Box 4-1).

Although disability rates have declined they are much higher in lower socioeconomic groups. In 1993, for example, persons aged 50 and over who had not graduated from high school tended to perform much worse on four measures of physical functioning than did those who had attended college.

## OLDER WORKERS AND RETIREMENT

Retirement patterns have been changing over time in response to changes in institutions and in the preferences and practices of employers and workers. These changes are reflected in changing long-term trends in the labor force participation of the elderly (that is, the proportion of the older population who are either employed or looking for work), particularly the decline in labor force participation rates of older men during most of this century. Recent years, however, have seen a leveling off of this decline. Since the mid-1980s, 55- to 64-year-olds in each year have been just as likely to be in the labor force as those in the preceding years. They have been more likely to work part time and less likely to work full time, however. This section reviews these changing patterns of retirement and their causes. It turns out that a variety of factors influence the timing of retirement, such as the rules governing pensions and Social Security benefits, characteristics of jobs held by the elderly and accommodation made to impaired elderly workers, and health insurance coverage. The section concludes with a discussion of unemployment, job loss, and tenure as experienced by the elderly.

#### **Box 4-1.—Easing the Burden of Long-Term Care**

Like Social Security and Medicare, long-term care will become a primary concern of baby-boomers as they approach retirement age. In 1994 an estimated 2.1 million elderly living in the community needed help because of problems with three or more activities of daily living (such as eating, bathing, dressing, or moving around) or because of a comparable cognitive impairment. That number will rise as the population ages, and the fast-growing population of the “oldest old,” those 85 and older, is at greatest risk.

Much long-term care today is provided informally: about 65 percent of elderly persons living in the community and needing long-term care assistance rely exclusively on unpaid sources, most often family and friends. Surveys have found that 8 of every 10 caregivers provide unpaid assistance averaging 4 hours a day, 7 days a week. For many, such assistance competes with the demands of paid employment. In addition, home and community-based care requires substantial out-of-pocket expense, totaling over \$5 billion in 1995.

The Administration has proposed four initiatives to help relieve the burden of families with members in need of long-term care. The first is a tax credit of up to \$1,000 for people of all ages with three or more limitations in activities of daily living (or a comparable cognitive impairment). Persons needing long-term care themselves, or their family members who care for and house them, can claim the credit, which phases out at incomes of \$110,000

#### **LONG-TERM TRENDS IN LABOR FORCE PARTICIPATION AT OLDER AGES**

Labor force participation rates for men 55 and older have declined during most of the 20th century. For example, the participation rate of men aged 55-64 fell from 89.5 percent in 1948 to 68.1 percent in 1998 (Chart 4-4). These trends in labor force participation are the result of two factors: trends in retirement age and trends in longevity. The average retirement age depends on the retirement rate at each age, and retirement rates have been increasing at younger ages and decreasing at older ages. Consequently, the estimated median age of retirement (defined as complete withdrawal from the labor force) for men declined, from 66.9 years in the 1950-55 period to 62.1 years in 1990-95.

Early in this century, most men worked until they died or became disabled, and both death and disability tended to occur at much younger ages than today. Today more men live longer after retiring than they did in earlier decades. Over the 1950-95 period, male life expectancy at age 65 rose by 20 percent. This helped to reduce over time the participation rate of men 65 and older, by increasing the

**Box 4-1.—continued**

for couples and \$75,000 for unmarried taxpayers. The credit would provide financial support for about 2 million Americans, broadly expanding an existing set of tax allowances. Under current tax policy, taxpayers can claim the child and dependent care tax credit to cover part of the cost of care of a disabled spouse, when that cost is incurred by the taxpayer in order to work. A taxpayer who itemizes can also deduct any qualified long-term care expenses that exceed 7.5 percent of adjusted gross income. The new tax credit would defray some costs of both formal and informal care. Over half the chronically ill people thus helped will be elderly persons.

Second, the National Family Caregiver Support Program would fund State initiatives establishing “one-stop shops” that assist families caring for elderly relatives through training, counseling, and arranging for respite care.

Third, the Administration has proposed a national campaign to educate Medicare beneficiaries about the program’s limited coverage of long-term care and help inform their care decisions. The need for information is great: nearly 60 percent of Medicare beneficiaries are unaware that Medicare does not cover most long-term care.

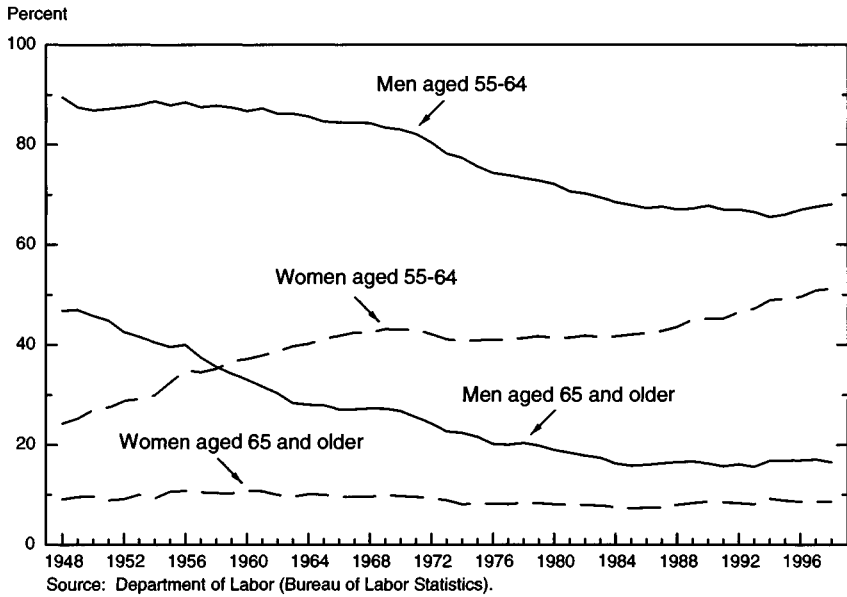
Finally, the Administration has proposed that the Federal Government serve as a model employer, by offering nonsubsidized, quality long-term care insurance to all Federal employees and using its market leverage to negotiate favorable group rates.

denominator (the total number of men in this age group). Therefore, the participation rate of men aged 65 and over has declined even more than the decline in average retirement age might suggest.

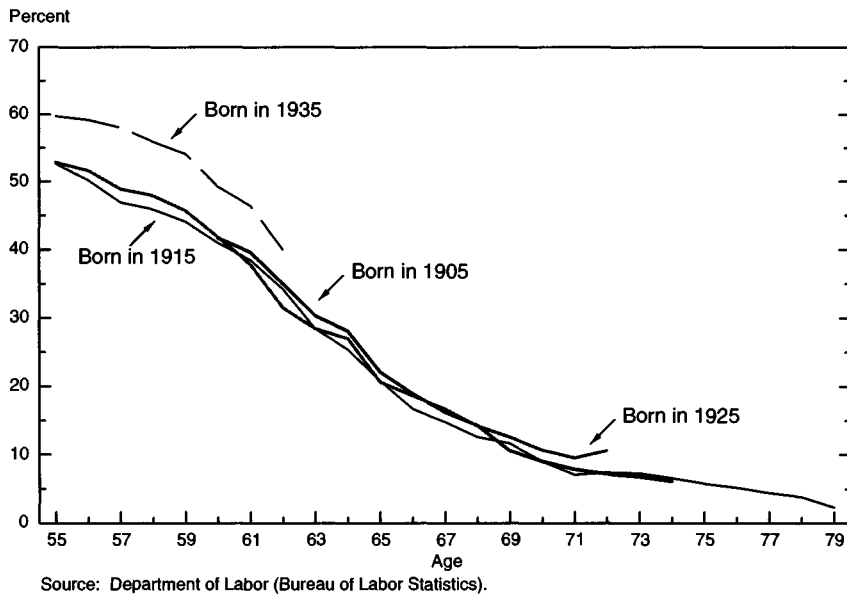
Meanwhile the labor force participation rate for women aged 55-64 has actually increased since 1948—in fact it has more than doubled, from 24.3 percent to 51.2 percent (Chart 4-4). This has happened despite a decline in women’s median retirement age, from 67.7 years in 1950-55 to 62.6 years in 1990-95, because more recent cohorts of women have been more likely to be in the labor force during most of their adult lives (Chart 4-5).

In the face of long-term improvements in health and longevity, why has the retirement age fallen, not risen, during the 20th century? Rising wages are a large part of the answer. As their earning power has risen, men have enjoyed both more income and more time for activities other than paid work. They have taken some of this additional time in the form of leisure at the end of life, as well as shorter workdays and workweeks and more holidays during the year. The growth of Social Security and employer pensions since the 1930s has also facilitated

**Chart 4-4 Labor Force Participation Rates of Older Men and Women**  
 Labor force participation by older men generally declined until the mid-1980s but has since leveled off; that of older women has increased since 1948.



**Chart 4-5 Women's Labor Force Participation Rates at Each Age**  
 Increases in the labor force participation of women across birth cohorts have offset the decline in labor force participation as women age.



earlier retirement, by increasing lifetime wealth for the early cohorts in the Social Security system and by providing income in old age. Even though earnings were rising from generation to generation, many individuals might not have saved enough to retire without these sources of income. For these reasons the average length of retirement has risen faster than the average male life expectancy at age 55; hence, the average male retirement age has fallen.

## RECENT CHANGES IN THE LABOR FORCE PARTICIPATION OF OLDER MEN

There are signs that this long-term trend toward earlier retirement may have abated. Since the mid-1980s the decline in labor force participation rates for men in the older age groups has leveled off (Charts 4-4 and 4-6). Other evidence indicates that an increasing proportion of male pension recipients are continuing to work. For example, in March 1984, 37 percent of men aged 55-61 who had received pension income in the previous year were working. By March 1993 this number had climbed to 49 percent.

Rather than withdrawing from the labor force completely, many older men are leaving long-term career jobs but continuing to work, often part time or part year. Many are becoming self-employed. Chart 4-7 shows, for example, that between 1985 and 1997 the fraction of men aged 60-61 who worked full time, year round declined from 55.1 percent to 51.8 percent, while the fraction working part time increased from 5.7 percent to 10.4 percent. Increases in part-time work also occurred among men in other age groups. In 1997, 16 percent of employed men aged 55-64 and 30 percent of those 65 and over were self-employed.

The use of "bridge jobs" between a full-time career and complete retirement is not a new phenomenon. Evidence from the 1970s indicates that even then about a quarter of older workers took such transitional jobs. More recent evidence suggests that a somewhat higher percentage may be taking such jobs since 1985.

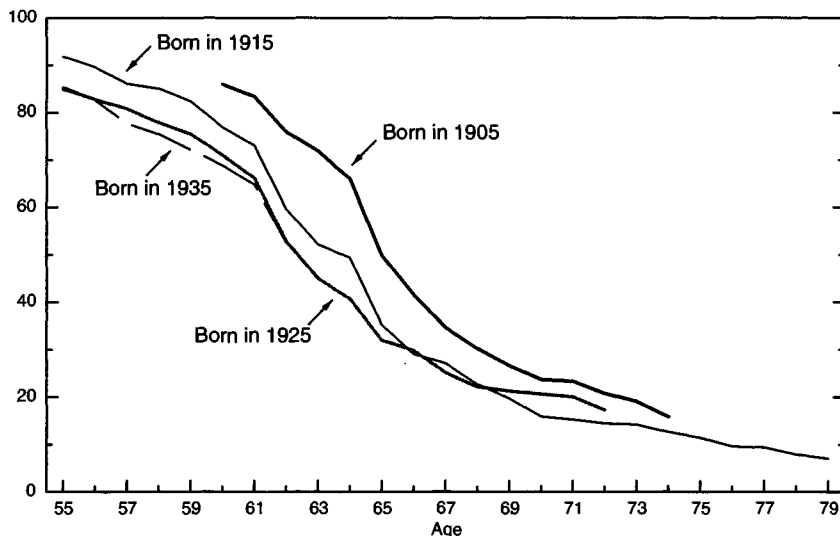
What accounts for the apparent stalling of the decline in male labor force participation at older ages? It is not yet clear whether the leveling off since the mid-1980s is a short-term, cyclical phenomenon or a new long-term pattern. And in any case, older men's hours of work are still falling, even if the percentage of older men working is not, because of the shift from full-time to part-time work seen in Chart 4-7.

The recent increase in work by pensioners may stem from a need for income by those who were displaced during the recession of 1990-91. Some elderly persons cannot afford full-time leisure, but can finance part-time leisure by working part time. Pension recipients' need for income may also have grown in recent years because of rising health care costs. Not only have these costs risen in general, but many employers have stopped providing health insurance to their retirees or have reduced their benefits, as discussed below. The increase in early retirement

**Chart 4-6 Men's Labor Force Participation Rates at Each Age**

Not only does men's labor force participation decline with age, but until recently each new cohort of older men had lower age-specific participation than the one before.

Percent

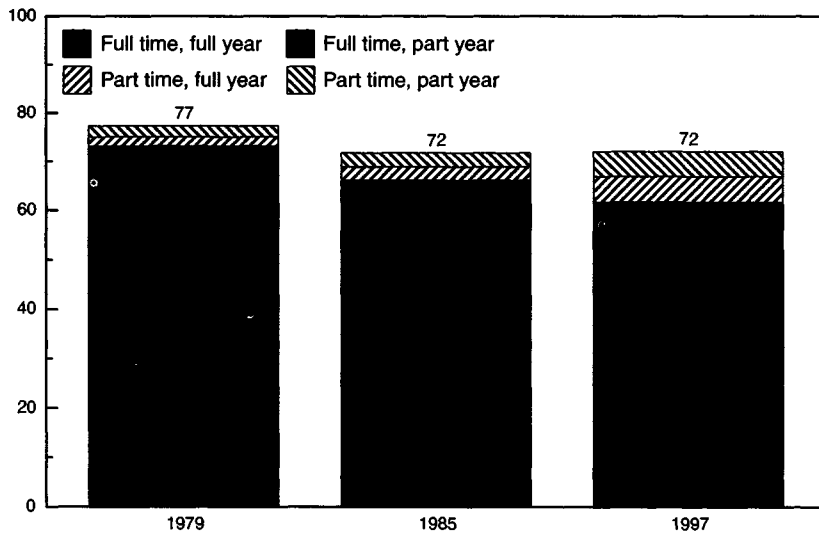


Source: Department of Labor (Bureau of Labor Statistics).

**Chart 4-7 Full-Time and Part-Time Work Among Men Aged 60-61**

The fraction of men aged 60-61 who were working was the same in 1985 and 1997, but there was a shift from full-time to part-time work.

Percent



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

buyouts may also have contributed to increased work by pensioners. More workers now than in the past are able to spend their pension funds for other purposes, in advance of or at retirement. The shift to defined-contribution pension plans (discussed below) means that benefits are more often received in the form of a lump-sum distribution upon termination of a job, instead of as an annuity, as is typically the case in defined-benefit plans. Many workers spend these lump sums instead of rolling them over into another retirement account, thus reducing the funds available to them in retirement.

The rise in work among older persons may also be related to changes in the demand for labor. Employers may be becoming more willing to hire older workers, as the "baby bust" that followed the baby boom leads to labor shortages. Since 1980 the part-time wages of older men have risen relative to those of younger men. This has made part-time work more attractive to retirees.

If the long-term decline in the labor force participation rate among older men has indeed run its course, it could indicate a limit to the desire for more years of complete leisure at the end of life. Older people may want to continue using their skills, or to try something new, when they leave a career job while still relatively young and healthy (and to earn some income in the process). The growth of the service sector, where jobs are less physically demanding and schedules more flexible than in manufacturing, makes work at older ages more attractive today than in the past. Changes in pensions and Social Security rules, discussed below, have also removed many of the incentives to retire abruptly and completely.

If rising lifetime wages have been driving the long-term decline in labor supply of older men, we might expect that supply to level off in the coming decade, as the cohorts born after 1945, who came of age as wages stagnated in the 1970s, start turning 55. In other words, not only may their labor force participation rates remain more or less constant, but so may the share of these workers working full time, year round. Alternatively, an increase in labor force participation may combine with an increase in part-time, part-year work. Much will depend on employers' demand for older workers, as reflected in the wages, fringe benefits, and working conditions offered to them, and on the incentives built into pension and Social Security rules—pension incentives being a reflection of employers' demand for older workers.

## INFLUENCES ON THE TIMING OF RETIREMENT

What factors enter into a worker's decision to retire sooner rather than later? Among the possible considerations are changes in wages and other compensation as one grows older, the structure of employer pensions and Social Security, the worker's health and the availability of health insurance coverage, and the influence of prevailing social norms. Although the effect of each factor cannot be quantified precisely, all play a role in the retirement decision.

## *Compensation*

Wages on a given job do not tend to decline with age, nor should they be expected to: there is little evidence that productivity declines with age per se, in the absence of disability. Although clinical tests have found that manual dexterity declines with age, other skills improve, and older workers develop ways to compensate for whatever skill losses they do suffer. Wages do decline when older workers change jobs, but one cannot infer from this that age alone reduces productivity. Lower wages following a job change may be due to the loss of “firm-specific human capital”—such as seniority, knowledge of the organization, working relationships, or goodwill gained in the former workplace. It may also reflect the worker’s choice to move to a position entailing less responsibility or less strenuous or stressful working conditions. Nevertheless, older workers who lose their jobs may opt to retire rather than accept the wage reduction that may accompany a job change.

## *The Availability of Social Security and Employer Pensions*

The structure of Social Security and employer pensions may also influence the exact timing of labor force withdrawal. Certain Social Security rules (Box 4-2) create an incentive for many people to retire at age 62, the earliest age at which benefits are available for persons without disabilities. This is evident in the large drop in labor force participation of both men and women at age 62 (Charts 4-5 and 4-6) and in the spike in retirements among men at that age that has appeared since the mid-1960s, after early benefits were made available to men in 1961 (Chart 4-8).

Social Security has a number of conflicting effects on work incentives. On the one hand, the combined Social Security and Medicare payroll tax of 15.3 percent lowers the net wage, which by itself would tend to discourage work. On the other hand, more years of work could increase future benefits for some who have had years with little or no earnings, because substituting years of higher earnings raises one’s average monthly earnings in the Social Security benefit formula. Future benefits are a form of deferred compensation, and increasing them tends to encourage work.

Apart from these features, the present value of expected Social Security benefits does not change for the average person, regardless of whether he or she begins to receive Social Security benefits at age 62 or at the normal retirement age (NRA). This is because the benefit increases by 8.3 percent per year that it is deferred (up to age 65), which is actuarially fair for a person with average life expectancy, and better than fair for someone with longer than average life expectancy. However, not everyone is average; many may not expect to live that long. For them, Social Security wealth decreases the longer they postpone benefits beyond age 62. This creates an incentive to begin taking benefits at 62 rather than later, for workers whose life expectancy is lower than the average.

### **Box 4-2.—Social Security Rules**

The old-age, survivors, and disability insurance program of the Social Security system is designed to replace a portion of earnings lost because of retirement, disability, or death. It is financed by a dedicated tax of 12.4 percent on earnings in covered jobs, up to a maximum in 1999 of \$72,600. That maximum is indexed each year to changes in the average wage. Formally, half the tax is levied directly on the employer, and half on the employee through payroll withholding, but it is generally agreed that, in an economic sense, the burden of the tax falls entirely on the worker. Self-employed workers pay the full tax.

Retirement benefits are based on a person's lifetime average indexed monthly earnings (AIME; the indexing reflects increases in national average wages) in covered employment. Only earnings up to the maximum taxable earnings in each year are counted. Before earnings are averaged, a certain number of years with the lowest (or zero) indexed earnings are dropped. The monthly benefit payable at the normal retirement age (called the primary insurance amount, or PIA) is calculated according to a progressive formula in which the replacement rate (the PIA as a percentage of average lifetime earnings) falls as lifetime earnings rise. Benefits are indexed to the consumer price index, and therefore have risen more slowly than average wages in the past two decades.

The normal retirement age (NRA) is the age at which one becomes eligible for a full retirement benefit. The NRA is currently 65 but is scheduled to rise gradually to 67, beginning with workers who will reach age 62 in the year 2000. Retirees may, however, begin receiving a permanently lower benefit as early as age 62. This minimum age for receiving benefits will remain at 62 even as the NRA rises. The benefit reduction is calculated to be actuarially fair (that is, it preserves the present value of expected benefits for a person with average life expectancy).

Between ages 62 and 70, receipt of both normal and actuarially reduced benefits is subject to a retirement earnings test. For persons below the NRA the annual benefit is reduced by \$1 for every \$2 of annual earnings above a certain exempt amount (\$9,600 in 1999). For those between the NRA and age 70 the reduction is \$1 for every \$3 of annual earnings above a higher exempt amount (\$15,500 in 1999). These exempt amounts are scheduled to increase in the future, and the President has proposed that this earnings test be eliminated entirely.

Persons who begin receiving retirement benefits before reaching the NRA and then earn more than the exempt amount, so that their benefits are reduced or completely withheld for a given

**Box 4-2.—continued**

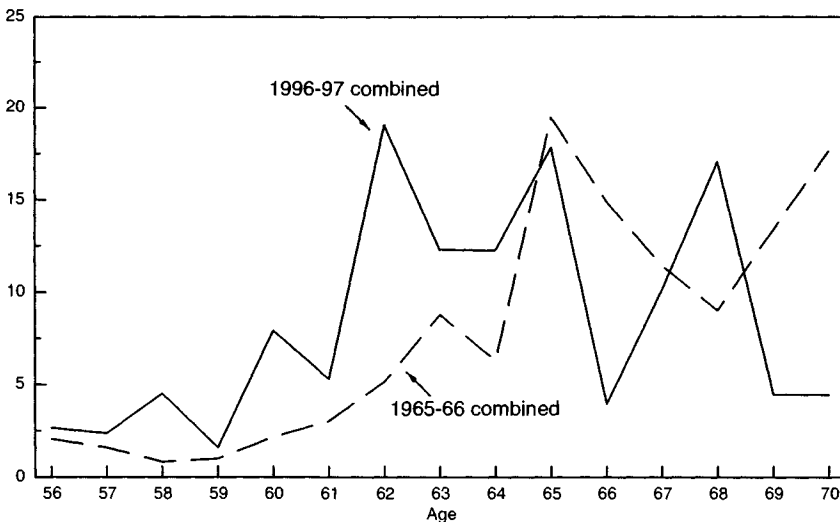
month because of the earnings test, receive an actuarially fair increase in benefits when they reach the NRA. Thus, benefits lost are recovered later. Moreover, earnings from age 62 up to the NRA are considered in the AIME and may well increase the benefit one receives at the NRA. On the other hand, workers continue to pay the Social Security payroll tax, as well as income and other payroll taxes, as long as they work. From the NRA on, postponed benefits are increased by only 5.5 percent per year (for persons who reach age 65 in 1998-99), which is less than actuarially fair. However, this adjustment for delayed retirement is being gradually increased, in a process that began in 1990 and will continue until cohorts reaching the NRA in 2009 and after get an actuarially fair 8 percent per year for postponing benefits, up to age 70.

Those who discount future income at a higher rate than 8.3 percent may also want to start taking their Social Security benefits early. In particular, they may have a strong preference for current over future income because they are unusually “present oriented” or risk averse. Also, those who want to receive their Social Security benefits before the NRA need not leave the labor force entirely to do so. They can receive their full benefit as long as they keep their earnings under the exempt amount (see Box 4-2). However, part-time jobs are not always

**Chart 4-8 Net Labor Force Exit Rates of Men at Each Age**

The peak age at which men retire from the labor force has dropped from 65 to 62 in the past three decades.

Percent decline in labor force participation rate



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

available with the same hourly pay, benefits, and working conditions as full-time jobs, so that many may prefer to stop working completely rather than take a part-time job. Other individuals may wish to retire or work part time even before age 62, but cannot yet collect any Social Security benefits and do not have sufficient savings and pension income to live on. Because future Social Security income cannot be used as collateral for a loan, this creates an incentive to continue working until age 62. All of these considerations help to explain the spike in retirements at that age.

The fact that Social Security benefits deferred beyond age 65 are increased by only 5.5 percent per year (for workers aged 65 in 1998-99) means that Social Security wealth declines for a worker with life expectancy equal to or lower than the average who continues to earn more than the exempt amount beyond that age. As recently as 1989, the increase was only 3 percent per year. (See Box 4-2 for an explanation of this phased-in increase in benefits deferred beyond the NRA.) This provision has acted like an additional tax on earnings above the exempt amount that kicks in at age 65. Although the exempt amount is higher at ages above the NRA than below it, good part-time jobs may not be available for workers over age 65. The decline in Social Security wealth for persons whose earnings exceed the exempt amount at ages 65 and above has provided a special incentive to retire at that age, which is reflected in another drop in labor force participation and a spike in retirements at age 65 (Charts 4-5, 4-6, and 4-8). The rules governing private pension and Medicare benefits, as well as other social factors, also create incentives to retire at 65, as discussed elsewhere in this chapter.

Because the Social Security rules do not vary across persons in a given age group, it has been difficult to measure Social Security's effect on labor supply separately from other factors. One study used data for age groups that were subject to different exempt amounts from just before and after changes in the earnings test rules. The study found that the earnings of a substantial number of workers—over 20 percent of male workers aged 67-69, and nearly 10 percent of those aged 63-64—were clustered within \$1,000 below the exempt amount. The cluster moved when the exempt amount moved. This study estimated that the effect of the earnings test is to reduce the average annual working hours of male workers aged 65-69 by about 4 percent. Only 28 percent of men (and 18 percent of women) in this age group are currently in the labor force, but more might seek jobs if the earnings test were completely eliminated, as the President has proposed.

In recent years the most common age for starting Social Security benefits has shifted from 65 to 62. Part of the explanation may be the continuing increase in lifetime income, which allows recent cohorts to retire earlier. Social norms may also be shifting, making it more

acceptable for men to be idle before age 65. The decisions in 1956 and 1961 to make Social Security benefits available at 62 for women and men, respectively, may have both reinforced and expressed such a change in norms—in a democratic society, legislation often tends to follow social norms. The abolition in 1978 of mandatory retirement before age 70 (Box 4-3) may also have removed age 65 as the predominant focus for retirement planning.

#### **Box 4-3.—Age Discrimination in the Labor Market**

The Age Discrimination in Employment Act (ADEA) of 1967 outlawed age-based employment discrimination against both employees and job applicants who are 40 years of age or older. Later amendments prohibited mandatory retirement before the age of 70 (in 1978) and then outlawed mandatory retirement altogether (in 1986), with a few exceptions. A 1990 amendment prohibited employers from denying benefits to employees because of age.

The number of age-discrimination charges filed with the Equal Employment Opportunity Commission (EEOC) has fluctuated over the past decade between about 14,500 and 19,800 per year. That number remained fairly constant between 1987 and 1990, increased sharply in the early 1990s (reaching a high of 19,809 in 1993), and then fell substantially after 1994. In fiscal 1998, 15,191 such charges were filed. Of the charges filed that year, 12 percent had outcomes favorable to the party bringing charges. Most of the rest ended either with a ruling by the EEOC of no reasonable cause or for administrative reasons.

Incentives provided by employer pensions must also be considered in any effort to explain changing retirement patterns. Twenty years ago, most employer pensions were of the defined-benefit (DB) type (Box 4-4). Workers covered by such plans typically had strong incentives to retire before age 65, as early retirement benefits had a higher actuarial value. Defined-contribution (DC) plans, including those with 401(k)-like features, on the other hand, contain no incentives for early retirement, because pension wealth continues to grow until the funds are withdrawn. As these plans have become more widespread in the past 20 years, workers have been less constrained in their choice of retirement age.

#### *Job Characteristics and Job Accommodation*

For the elderly as for others, the effect of health problems on the ability to work, and thus on the decision to work or retire, depends on several factors. These include the type of job one has, the opportunities for accommodating health problems, and the opportunities to switch to

#### **Box 4-4.—Types of Pension Plans**

Under a defined-benefit plan, a worker qualifies for a pension benefit by working in a covered category (which may exclude certain types of workers, such as part-timers) for a given number of years. This period, called the vesting period, is now 5 years for the vast majority of workers in the private sector. The benefit is then available at a certain age and is usually calculated by multiplying a given percentage of final earnings by the number of years of service. About half of workers with DB pensions are in plans that are integrated with Social Security; that is, the pension benefit formula reduces the pension amount to adjust for expected Social Security benefits. Reduced benefits may be available at an earlier age. These benefits often have a higher actuarial value than normal retirement benefits, and this produces strong incentives to retire at a certain age. Most DB plans in the private sector are insured by the Federal Government (see Box 4-7).

By contrast, defined-contribution plans do not entail age-specific retirement or work incentives. DC plans are essentially tax-favored savings accounts to which employers may contribute, sometimes even if the employee does not also contribute. Examples of DC plans are savings or thrift plans, deferred profit-sharing plans, money purchase plans, employee stock ownership plans (ESOPs), and 401(k) arrangements. Benefit levels in DC plans are not guaranteed and are not federally insured. Instead, the funds are invested, often at the worker's direction, and the amount of the eventual retirement benefit depends on the amounts contributed and on the portfolio's performance over the years. Benefits are usually paid in a lump sum upon departure from the firm, although sometimes other options are available. These funds are usually portable; that is, they may be rolled over tax-free into another pension plan or an individual retirement account. Because the employer's obligation is limited to its financial contribution and the plans reduce administrative costs and enhance flexibility, they are popular with employers.

Section 401(k) of the tax code allows an employee of a for-profit firm to contribute a share of his or her cash compensation to a DC plan, and to defer taxes on both the initial contributions and the investment returns. Employees of nonprofit organizations, State and local governments, and Indian tribes can participate in similar tax-deferred annuity programs. Under most before-tax retirement savings plans, the employer matches a percentage of contributions, but Section 401(k) does not require employers to contribute in this manner. This chapter refers to all plans providing for *employee* contributions as "401(k)-type plans." Although 401(k)-type plans are popular DC plans, there are other types of DC plans that do not provide for tax-deferred employee contributions (for example, most money purchase pension plans and a substantial share of profit-sharing plans and ESOPs).

a less demanding job. There is no consensus on what constitutes a physically demanding job. One definition considers a job physically demanding if it entails regularly lifting objects that weigh at least 25 pounds. By this definition the share of older Americans employed in such jobs has fallen steadily, from 25 percent in 1950 (for those aged 60-64) to 7 percent in 1990. But other job requirements besides physical strength may make continuing work difficult for older workers. For example, about 90 percent of older workers say that their jobs require good eyesight and intense concentration.

Employers frequently accommodate the health impairments of their elderly workers. More than half of older workers who develop a new, health-related job limitation continue to work, and around half of those report that their employer has made some special accommodation for them. The most common types of accommodation involve changing the structure of the job, rather than making new investments in equipment or incurring other direct employment-related costs. Changes in job structure include changing the scope of the job (reported by 51 percent of those who have received accommodation), allowing more breaks and rest (45 percent), and providing assistance with certain aspects of the job (37 percent). Although the evidence is limited, accommodation rates appear to be similar for workers at all levels of education.

The direct cost of accommodating older workers with impairments appears to be small in most cases, with a median of about \$200 per accommodation; 70 percent of accommodations cost less than \$500. These estimates do not, however, take into account losses in productivity from changes in job scope and increased assistance from co-workers, nor, on the other hand, do they consider the cost saving of not having to hire and train a replacement worker.

### *Health Insurance and Retirement*

Studies have found that the availability of health insurance to persons under 65 that is not contingent on working—either employer-provided retirement coverage or Medicare eligibility of a spouse—tends to increase a worker's likelihood of retiring. Widespread provision of retiree health benefits by employers may have contributed to the pre-1985 trend toward retirement before age 65, but its influence has diminished since then. The magnitude of the response and the role health insurance has played in retirement trends remain highly uncertain, however.

Between 1987 and 1996 the share of wage and salary workers aged 55-64 who were covered by health insurance from a current employer—their own or a nonelderly family member's—remained constant at 73 percent, despite increased availability of health insurance from employers. Although more workers in this age group were offered coverage, the takeup rate—that is, the fraction of offers accepted by the

worker—declined. More of these older workers are getting their health coverage through a spouse's employer, as the share covered by health insurance from their own main job fell by 2.5 percentage points, to 61.7 percent. The share of employees aged 55-64 who had access to health insurance coverage through either their own or a family member's job rose from 78.5 percent to 80.4 percent. However, the share of those with access who actually were covered by health insurance dropped from 92.8 percent to 90.4 percent, possibly because of the increased cost of premiums to the worker. Many of the rest had other private or public health insurance, but the fraction of non-self-employed workers aged 55-64 who were uninsured increased by almost 3 percentage points, to 12.0 percent in 1996.

Many employers provide health insurance for their retired workers, although an increasing number are requiring the retiree to share the cost. In 1993, 45 percent of full-time workers in medium-size and larger firms had access to health benefits upon retirement that were at least partly paid for by their employer. This fraction had declined considerably between 1985 and 1988 but changed little since then. Virtually all of these workers could get coverage from their employer to bridge the gap between retirement and eligibility for Medicare at age 65, and some coverage would continue after that for all but a small percentage. However, the percentage of workers who would have to pay part of the cost of coverage increased dramatically from 1988 to 1993, from 46 percent to 61 percent of those offered coverage before age 65, and by a similar amount for those offered coverage from age 65 on. Nevertheless, by one estimate the annual employer cost per retiree soared by 34 percent in real terms between 1988 and 1992 alone, to \$2,760 (in 1992 dollars).

Because a majority of employers do not offer health insurance coverage to their retirees, and some firms, especially smaller ones, do not even provide coverage to their active workers, a large and growing number of 55- to 64-year-olds have no health insurance. The number of uninsured people in this age group grew by 7 percent in 1997 alone. Persons in this age group are considerably more at risk of needing expensive medical care than younger people, and often they cannot obtain commercial health insurance or find it unaffordable. And unless they are disabled or poor, they are not eligible for public insurance such as Medicare or Medicaid. The President has therefore proposed to allow 55- to 64-year-olds to purchase Medicare coverage (Box 4-5).

## UNEMPLOYMENT AND JOB LOSS

Unemployment is less prevalent among the elderly than among younger workers. In 1998 the unemployment rate among 20- to 24-year-olds was 7.9 percent, the rate for 25- to 54-year-olds was 3.5 percent, and the rate for 55- to 64-year-olds was lower still at 2.6 percent.

#### **Box 4-5.—Medicare Reform**

The Medicare program, like Social Security, reflects the Nation's commitment to provide for the needs of its older members, and to support disabled Americans of all ages. Reforming Medicare to protect its financial soundness and ensure that it provides high-quality care for its beneficiaries has been one of the Administration's top priorities. The President worked to include important Medicare provisions in the Balanced Budget Act of 1997, which paved the way for an increasingly broad array of innovative health insurance choices for beneficiaries and shored up the Medicare trust fund. The President has taken steps to enroll more lower income seniors in supplemental benefit programs that provide financial assistance in paying Medicare premiums and other health care costs not covered by Medicare. The President has also developed initiatives to provide new preventive care benefits, to assist beneficiaries whose managed care plans have left the program, and to reduce Medicare fraud.

Even with these reforms, the aging of the population and the continuing development of new medical treatments will lead to mounting cost pressures for the Medicare program in the years ahead. The President has proposed to reserve 15 percent of the projected Federal budget surpluses over the next 15 years for the Medicare trust fund, which would extend the program's solvency from 2008 to 2020. In addition, with the President's encouragement, the National Bipartisan Commission on the Future of Medicare was formed to consider reforms to address the difficult long-term problems facing the program. The Commission's report, due in March 1999, will be an important next step toward the Administration's goal of developing a bipartisan agreement that will preserve and strengthen Medicare for all Americans in the 21st century.

The rate was slightly higher, at 3.2 percent, for workers 65 and older. Older workers have historically had lower unemployment rates than younger workers, and these data show that the current employment situation for older workers is strong.

In addition to having lower unemployment rates, older workers are less likely to be displaced (that is, to have lost their job because of a plant closing, insufficient or slack work, abolition of their position or shift, or some other similar reason) than are workers in their 20s and 30s. This has been true in every year since national data on displacement first became available in 1984. (See Chapter 3 for a general discussion of displaced workers.) According to the latest survey, conducted in 1998, the displacement rate (the ratio of workers displaced anytime in the 3 years prior to the survey to total employment at the time of the

survey) was about 13 percent higher for workers aged 25-34 than for those aged 55-64. The rate of displacement fell from the 1993-95 period to the 1995-97 period for all age groups. However, the decline was relatively small among older workers: the displacement rate fell 10 percent among those aged 55-64, compared with 21 percent among those aged 25-34.

Although the rate of job loss is lower among older than among younger workers, the cost of being displaced may be higher for workers in their late 50s and early 60s. Older displaced workers are much more likely to leave the labor force after job loss. Among workers displaced in 1995-97, 30 percent of 55- to 64-year-olds and 55 percent of workers 65 and older had left the labor force by 1998, compared with just 9 percent of workers aged 25-54. Presumably many of these older displaced workers retire following displacement. But among displaced workers who remain in the labor force, the share who are unemployed is higher among older workers. In addition, for workers who do find jobs after being displaced, wage losses are substantially higher among older workers than among younger ones. Thus, even if displacement is less likely among older workers, when it does occur it may be more costly.

## THE UNPAID CONTRIBUTIONS OF THE ELDERLY

It is not easy to attach a dollar figure to the value of the many unpaid contributions made by the elderly to the economy and society. Nevertheless, it is important to acknowledge the wide range of productive activities in which they are engaged. According to a 1996 survey, 43.5 percent of the population over age 55 volunteered at nonprofit organizations and for other causes, averaging 4.4 hours per week per volunteer. Many quite elderly persons are part of this active corps of volunteers: almost 34 percent of those 75 years old and older reported volunteering. The settings in which older people volunteer are both formal and informal. For example, 65 percent of volunteers aged 55 or older reported serving with a religious institution, 22 percent volunteered with an educational institution, and 37 percent worked informally in their neighborhoods or towns.

Many older people need ongoing assistance because of functional limitations or cognitive impairments, yet do not need nursing home care. Instead they often receive informal care, typically from other elderly persons, including their spouses and children. This informal caregiving work is largely hidden, because it is for the most part performed in a nonpublic setting and is typically unpaid. The work may, however, be essential to the caregiver's family and to the financial stability of the household, as formal care arrangements may cause severe financial strain. The provision of assistance by family members and friends may also reduce the burden on publicly provided services (see Box 4-1 for a discussion of long-term care).

A 1992 survey found that 15.1 million Americans over the age of 55 were providing direct care to sick or disabled family members, friends, or neighbors. Twenty-eight percent of men and 29 percent of women aged 55 and over were caring for others, as were 22 percent of all persons aged 75 and over. The typical amount of caregiving was 5 hours per week, but 2.4 million caregivers spent 18 or more hours per week. And although the proportions of men and women who were caregivers were close to equal, the total number of female caregivers was greater because women outnumber men in the older population.

Grandparents, and even great-grandparents, are important sources of assistance to families. In some households children reside with a grandparent; in others one or more grandparents assist parents with caregiving in various ways. According to the 1992 survey, 14.2 million Americans over the age of 55 helped take care of their grandchildren or great-grandchildren.

The Bureau of the Census reports that in 1997, 3.9 million children, or 5.5 percent of all children, lived in a household maintained by a grandparent—a 76 percent increase since 1970. There were substantial increases in the number of households maintained by grandparents, with or without a parent present. Among children living in households maintained by grandparents, the greatest increases since 1970 were in households where one parent also resided. More recently, the number of grandchildren living with their grandparents without any parents present has increased most rapidly.

This increase in grandparents' assistance with the care of their grandchildren parallels the increase in single-parent families, but it may also be due in part to the increased financial pressures faced by young married couples, who struggle to meet the demands of careers while raising children. Grandparents also step in when parents cannot function adequately because of drug use, mental or physical illness, or incarceration, or when parents abuse or neglect their children.

## THE ECONOMIC WELL-BEING OF THE ELDERLY

By almost any measure, the economic well-being of the elderly has improved tremendously over the past three decades. Income is the most widely used measure, but it is only a starting point, because it has several weaknesses as a measure of well-being. First, people are most concerned about the goods and services that income can buy—about consumption, in other words—not income per se. People save in some periods to finance their consumption in later periods. As a result, income may be higher or lower in one year than another even though consumption is similar in both years. This logic suggests that it is important to consider the consumption of the elderly, which is examined below. A second weakness of income as a measure of

well-being is that families have different needs, depending on the number of people in the family, their ages, where they live, and so on. Thus, an income that would seem generous to one family might be barely adequate for another. A third weakness of the income measure is that some economic goods do not have an easily quantifiable monetary value and are therefore not recorded as income. Most important for the elderly, home ownership and medical insurance certainly increase well-being, yet they are not captured by measuring before-tax money income. As a result, two families with identical incomes and identical needs could have very different economic status: one might, for example, own a valuable home and have generous medical insurance coverage, whereas the other rents an apartment and has no insurance.

Because of these weaknesses, three other sets of indicators of well-being are examined here in addition to income: the poverty rate, indicators of wealth accumulation (including home equity), and indicators of health status. The poverty rate adjusts differences in income across families for disparities in family size and composition. Wealth provides a cushion for people to smooth their consumption over time and creates a buffer against adversities, such as health problems, that may require substantial expenditure. Finally, earlier in this chapter changes in health status and life expectancy were examined, which are also important measures of well-being.

Most of the national data used to examine families' economic status are based on surveys of the noninstitutionalized population. This limitation is not of great importance when examining older workers, or even all persons over 65—only 5 percent of the elderly live in an institution (typically a nursing home). However, the proportion of institutionalized elderly rises sharply with age, to almost one-fourth of all persons 85 and over. Older persons in institutions typically have few economic resources and are in poor health. Therefore, findings from surveys of the noninstitutionalized population will not necessarily apply to the oldest old. Box 4-6 examines changes in living arrangements of the elderly during the 20th century, with a focus on widows.

## INCOME AND CONSUMPTION

### *The Three-Legged Stool*

Economic security in old age is often described as a three-legged stool, the legs being Social Security benefits; income from accumulated assets, including savings and home ownership; and pension income. But the notion of a stool with three legs of roughly equal size is misleading. The importance of each source of income varies tremendously among the elderly—many Americans depend almost entirely on Social Security, for example. In addition, for many elderly households labor market earnings provide a fourth leg to the stool. Moreover, the

#### **Box 4-6.—The Changing Living Arrangements of the Elderly**

Through most of history, the family has played an important role in providing support to the needy elderly. Shared housing can be an especially important and intensive form of support, and the past century has seen tremendous changes in living arrangements among the elderly. These changes have been particularly striking among elderly widows, who now account for 27 percent of all persons over 65.

The share of elderly widows living alone stayed roughly constant at a low level—10 to 15 percent—for several decades until about 1940 (Chart 4-9). Between 1940 and 1980, however, that proportion increased sharply, and the share living with adult children fell. By 1980, 59 percent of elderly widows were living by themselves, and only 22 percent shared a home with their children. This strong upward trend in widows' independence ended in 1980: living arrangements in 1990 were similar to those observed in 1980. It is estimated that rising economic status, primarily due to wider coverage and more generous benefits from Social Security, accounted for 62 percent of the increase in the share of elderly widows living alone between 1940 and 1990. About 9 percent of the change was explained by a decline in the number of children available for widows to move in with.

When elderly people have been asked to express their attitudes about living arrangement options in the event they needed care, 68 percent say they would like to receive assistance in their own home, and only 20 percent state that they would like to move in with relatives. Apparently, improvements in widows' economic status have allowed them to fulfill this desire to live independently. But despite these gains, poverty remains relatively high among widows (see Table 4-4).

average share of income from each source has changed over time and may continue to change in the future.

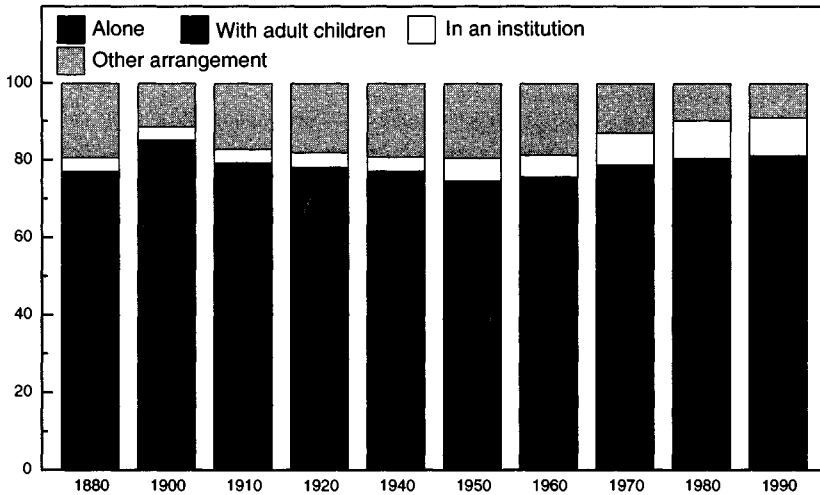
In 1962, before the sharp increases in Social Security benefits of the late 1960s and early 1970s, Social Security accounted for 31 percent of income for the elderly and their spouses; asset income accounted for 16 percent, and pension income was 9 percent. Earnings were also important at 28 percent. The remaining 16 percent of income included welfare and all other sources of income.

Income from these sources has grown at different rates in the past 30 years (Chart 4-10; income data refer to before-tax money income, the official Census Bureau definition, unless otherwise noted). The share provided by Social Security has increased, to 40 percent of income on average in 1996, whereas pensions and asset income each

Chart 4-9 **Living Arrangements of Elderly Widows**

Between 1940 and 1990, the share of elderly widows living alone increased sharply, and the share living with adult children fell.

Percent



Source: Kathleen McGarry and Robert Schoeni, "Social Security, Economic Growth, and the Rise in Independence of Elderly Widows in the 20th Century," National Bureau of Economic Research Working Paper No. 6511, 1998.

composed about one-fifth of income. The share of income comprised of labor earnings has declined substantially, as is to be expected given the decline in elderly labor force participation during this period. These changes took place during a period when the median incomes of both married and single elderly persons nearly doubled.

The composition of income looks quite different at different income levels. Among elderly households in the bottom fifth of the income distribution in 1996, Social Security accounted, on average, for 81 percent of income, public assistance for 11 percent, and asset income and pensions for only 3 percent each (Chart 4-11). Clearly, a large segment of the elderly have saved relatively little for their retirement. Elderly households in the top quintile of the income distribution rely fairly evenly on Social Security, asset income, pensions, and labor market earnings.

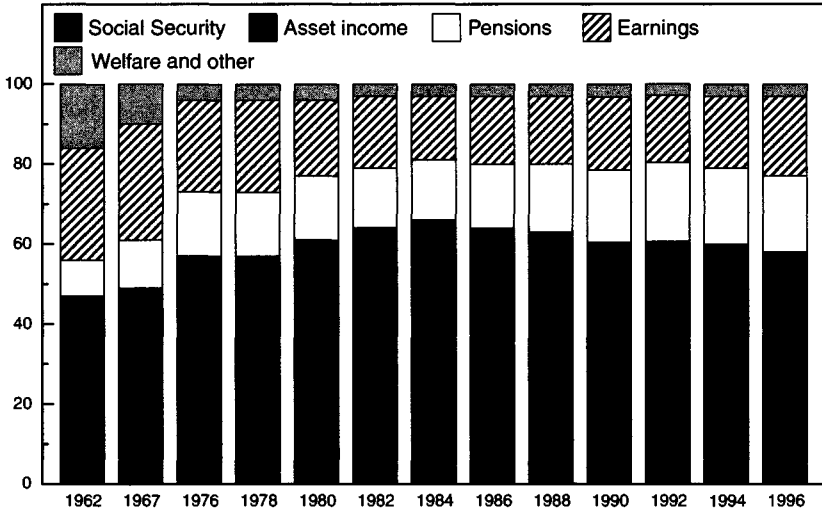
### *Saving Social Security*

Social Security plays an important and unique role among the sources of income for the elderly. As discussed in Chapter 1, it is a family protection plan as well as a pension system, providing Americans for more than half a century with income in retirement and protection against loss of family income due to disability or death. In particular, by providing a lifetime annuity, it offers a level of income security difficult to obtain in private markets. Through its special contribution to the well-being of the elderly, survivors, and the disabled, Social Security has been an extremely successful social program. Yet the demographic pressures of population aging,

**Chart 4-10 Composition of Income Among the Elderly**

The share of income from earnings has declined over time for persons aged 65 and older and their spouses, while the share from pensions has increased.

Percent



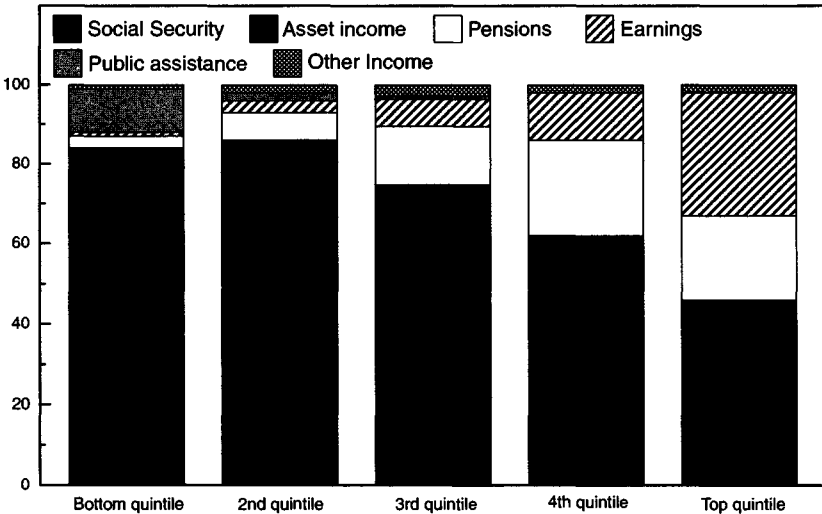
Note: Data are for elderly persons and their spouses.

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

**Chart 4-11 Composition of Income by Quintile Among the Elderly, 1996**

The composition of income differs for lower versus higher income elderly. Social Security is the main source of income for poorer households.

Percent



Note: Data are for elderly persons and their spouses.

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

mentioned earlier in this chapter and discussed at greater length in the 1997 *Economic Report of the President*, will require forward-looking action from policymakers to preserve the program's financial viability in the first quarter of the next century and beyond. Chapter 1 describes the President's proposals to do this.

### *From Defined-Benefit to Defined-Contribution Pension Plans*

An important source of income for many elderly is employment-related pensions. The past 20 years have seen dramatic changes in the prevalence of the two main types of pension plans. Defined-contribution plans, including 401(k)-type plans, have gained in popularity as participation in defined-benefit plans has declined (Table 4-1; see also Box 4-4 for a discussion of the two types of plans). The portability of DC plans favors mobility among jobs, and workers' demand for more-portable benefits may have contributed to the ascendance of these plans. DB plans are more prevalent in unionized manufacturing firms and in the public sector, both of which have seen a decline in their share of the work force, thus contributing to the decline in DB participation rates. Before passage of the Employee Retirement Income Security Act (ERISA) in 1974 (Box 4-7), employees in DB plans were exposed to the serious risk that their employers would underfund the plan or divert its funds to other purposes. Even with the protections afforded by ERISA against underfunded DB plans, DC plans have become increasingly popular, suggesting that workers have come to accept the investment risks inherent in these plans in exchange for their flexibility. Benefits in DC plans depend on uncertain investment returns, whereas DB retirement benefits are more certain because they are usually tied to years of employment according to a known formula. Many workers are in DC plans that supplement a DB plan, but almost all of the recent growth in DC participation has been among workers who do not have DB plans.

The growing prevalence of DC, and especially 401(k), plans represents a major shift of responsibility for providing for retirement income from the employer to the worker, making the provision of retirement income more and more like individual (albeit tax-advantaged) saving. Concomitantly, the trend toward DC plans has shifted certain risks between employer and worker. Under a DB plan, the nominal benefit amount is guaranteed at retirement, and the employer bears the risk of providing this amount. The worker has no control over how the pension fund is invested. Moreover, a worker's pension is at risk if he or she changes jobs. Since there typically is no provision for worker contributions, workers usually receive nothing at all from jobs that end before the vesting period is completed. Finally, because benefits for vested employees are determined in nominal terms when employment terminates, inflation may drastically erode a pension's purchasing power by the time a separated worker reaches retirement age.

TABLE 4-1.—*Estimated Pension Coverage and Offer Rates for Private Sector Wage and Salary Workers*

| Year       | Percent of workers covered by a           |  |                               | Percent of workers offered a 401(k)-type plan <sup>2</sup> |
|------------|---|--|-------------------------------|--|
|            | Primary defined-benefit plan <sup>1</sup> | Primary defined-contribution plan <sup>1</sup> | 401(k)-type plan <sup>2</sup> |  |
| 1981 ..... | 37  | 9  | (3)                           | (3)  |
| 1982 ..... | 36  | 10   | (3)                           | (3)  |
| 1983 ..... | 35  | 11   | 3                             | 7  |
| 1984 ..... | 34  | 11   | (3)                           | (3)  |
| 1985 ..... | 33  | 13   | (3)                           | (3)  |
| 1986 ..... | 32  | 14   | (3)                           | (3)  |
| 1987 ..... | 31  | 15   | (3)                           | (3)  |
| 1988 ..... | 30  | 15   | 14                            | 25   |
| 1989 ..... | 29  | 16   | (3)                           | (3)  |
| 1990 ..... | 28  | 17   | (3)                           | (3)  |
| 1991 ..... | 27  | 18   | (3)                           | (3)  |
| 1992 ..... | 26  | 20   | (3)                           | (3)  |
| 1993 ..... | 26  | 20   | 23                            | 35   |
| 1994 ..... | 24  | 21   | (3)                           | (3)  |
| 1995 ..... | 23  | 23   | (3)                           | (3)  |

<sup>1</sup> For workers covered under both a defined-benefit and a defined-contribution plan, the defined-benefit plan is designated as the primary plan unless the plan name indicates it provides supplemental or past service benefits.

<sup>2</sup> All plans providing for tax-deferred employee contributions, whether or not the employer also contributes.

<sup>3</sup> Not available.

Source: Department of Labor (Pension and Welfare Benefits Administration).

Most private 401(k)-type DC plans, on the other hand, rely on worker contributions for at least a portion of benefits. The worker typically decides how much to contribute and where to invest the funds (within certain limits). Although workers have greater control over investments in DC plans, they also bear the risk of variable returns on those investments, in marked contrast to DB plans. Because there is no vesting period for *employee* contributions in either type of plan, they belong to the worker from the start. Employers often make matching contributions to 401(k) plans, which belong to the worker once the vesting period is completed. A job change need not affect the worker's accumulation, provided the worker leaves the funds in the account or rolls them over into a new tax-deferred account. However, only a third of those aged 45-54 in 1993 who had received a lump-sum pension distribution had put it into a retirement account; fewer than half had put it into any financial asset. Of those aged 25-34, only 25 percent had put their lump sums into financial assets, including retirement accounts.

Less wealthy, lower income, and less educated workers tend to be more risk averse in their investment choices; that is, they tend to invest in more conservative, fixed-income securities rather than in stocks. By taking less risk (other than inflation risk), they earn lower long-run rates of return on average and therefore tend to end up with smaller accumulations at retirement than do higher income, wealthier

### **Box 4-7.—The Federal Role in Employer-Provided Pension Plans**

The Employee Retirement Income Security Act of 1974 governs pension and welfare plans sponsored by private employers. The act covers both defined-benefit and defined-contribution plans. ERISA was enacted because of concerns about the private pension system: that too few employees were receiving or would receive the pensions they had come to expect; that too many participants were being treated unfairly by plans and employers; and that existing law was inadequate to deal with these problems. Title I of the act spells out the protections it provides for workers and fiduciary standards for employers, trustees, and service providers. Title II sets forth standards that plans must meet in order to qualify for favorable tax treatment, and Title III contains administrative provisions. Title IV, which is carried out by the Pension Benefit Guaranty Corporation, a Federal agency, regulates employers' funding of their plans to make sure they set aside sufficient funds to pay the promised pensions. It also insures vested participants' pensions, at least up to certain levels, against the eventuality that the employer cannot pay.

This Administration has worked for continued pension reform to promote retirement saving. Many of the President's proposed pension provisions were adopted in the Minimum Wage Increase Act of 1996. That act expanded pension coverage in several ways. It created a new 401(k)-type plan for small businesses, with a simple, short form intended to make it easier for small businesses to provide their workers with pensions. It made it easier for employers to let new employees participate in 401(k) plans immediately. It required State and local government retirement savings plans to be held in trust so that employees do not lose their savings if the government declares bankruptcy. It expanded access to 401(k)-type plans to employees of nonprofit organizations and Indian tribes. And it promoted portability for veterans by allowing reemployed veterans and their employers to make up for pension contributions lost during active service.

More recently, the Administration has proposed a number of initiatives to address concerns about women's pension arrangements. One proposal would allow time taken under the Family and Medical Leave Act to count toward eligibility and vesting. For some workers such a provision could make the difference between receiving or not receiving credit toward minimum pension vesting requirements for an entire year of work (a minimum amount of work is required in a given year for it to count toward the vesting period). Another would address the needs of widows by requiring

**Box 4-7.—continued**

employers to offer an option that pays a survivor benefit to the nonemployee spouse equal to at least 75 percent of the benefit the couple received while both were alive, in exchange for a smaller benefit while both are alive. This option would give the surviving nonemployee spouse the security of a larger benefit than otherwise, which may better reflect the cost of living for one person compared with two. This would improve the protection provided by the Retirement Equity Act of 1984, which requires that pensions be paid in the form of a joint life annuity in which the surviving nonemployee spouse receives at least 50 percent of the benefit received while both spouses were living, unless the retiree's spouse signs a consent to have the pension paid in some other form, such as a lump sum or a single life annuity.

individuals with the same contributions, although their return is also more certain. At least partly because they have lower incomes and less wealth on average, blacks and women make more conservative investment choices, and consequently would tend to accumulate even less in a DC plan that provides for employee-directed investments, compared with white men, than their lower contributions alone can account for. They also are more likely to cash out their lump-sum distributions when changing jobs.

It is important to distinguish risk aversion based on lower income and wealth from risk aversion based on lack of knowledge and investment experience. Those who have fewer resources to cushion potential losses cannot afford to take as much risk as those with more to spare. This is a perfectly sound reason for avoiding risk. However, if lower income groups are choosing assets with less risk and correspondingly lower expected yields out of lack of knowledge, or because they misperceive the amount of risk involved in higher yielding assets, the policy implications are different. Of course, income, wealth, education, experience with investments, and knowledge of investment principles are correlated with each other. Women also may have less knowledge of investments because husbands have traditionally taken care of these financial matters for the family, although this is no doubt changing as family structure and roles within the family change. There is an urgent need to educate all workers about investments so that, if they are managing 401(k) investments, they have a better chance of achieving their retirement income goals.

Depending on what happens to coverage and participation rates and to average contributions and rates of return, the DC "revolution" could either increase or reduce the average pension income of older Americans. But the movement toward DC plans could result in greater

inequality among retirees who have the same job tenure. Under a DB plan that bases benefits on pay and years of service and is not integrated with Social Security (as explained in Box 4-4), the pensions of workers with the same years of service will differ only in proportion to their pay. Under a DC plan, however, their pensions will differ according to the difference in investment returns (compounded) as well as in proportion to pay. If the difference in returns is positively correlated with pay, the inequality of retirement income will be magnified. Moreover, contribution rates may be more unequal in 401(k) plans, because they are partly or wholly chosen by the employee (subject to certain rules and dollar limits, which may be especially restrictive for higher paid employees). In most DB plans, benefit levels are determined by the employer (also subject to certain rules and limits).

It is difficult to predict the effect of the shift from DB to DC plans on the average pension incomes of women and minorities relative to white men. Because women earn less on average than men, and minorities earn less than whites, the pensions of women and minorities are smaller on average under either type of plan. The evidence is that, for people aged 51-61 in 1992, the male-female differential in accumulated pension wealth from *all* jobs was smaller in DC than in DB plans, even though the male-female differential in accumulated pension wealth on the *current* job was greater in DC plans (Table 4-2). These data on pension wealth do not, however, control for possible differences in earnings, job turnover, and tenure between participants in DC and DB plans.

One might expect gender and racial gaps to be greater in DC plans at a given date on the workers' *current* jobs because white men tend to have longer job tenure than women and blacks. In DC plans, pension benefits grow exponentially with tenure, because the contributions earn a compound rate of return, whereas in most DB plans benefits increase only proportionally with years of service and salary (unless benefits are integrated with Social Security). A dollar invested each year at 4 percent annual interest is worth \$12.48 after 10 years and \$30.97 after 20 years. Therefore, at a given date, a worker who has been in a DC plan for 20 years will have 2.48 times the accumulation of a worker who has been in the plan for only 10 years, even if they made exactly the same contribution to their accounts in each year they participated in the plan. In most DB plans that are not integrated with Social Security, the worker who separates after 20 years of service would receive only twice the benefit of an equally paid worker who separates at the same time after 10 years of service.

However, when pension wealth from *all* jobs is considered, the gender and racial gaps may be *smaller* in DC plans because they do not penalize job turnover and intermittent labor force participation as much as DB plans do. This depends crucially, however, on whether the DC funds are left to grow rather than withdrawn and spent when jobs

TABLE 4-2.— *Gender Differences in Pension Wealth, 1992*

| Kind of pension plan                        | Percent with pension wealth |     | Ratio of male to female median individual pension wealth |
|---|-----------------------------|-----|--|
|   | Women                       | Men |  |
| From all jobs during lifetime: <sup>1</sup> |                             |     |  |
| Defined-benefit .....                       | 31                          | 54  | 2.2  |
| Defined-contribution .....                  | 28                          | 38  | 1.7  |
| On current job only: <sup>2</sup>           |                             |     |  |
| Defined-benefit only .....                  | 31                          | 30  | 1.3  |
| Defined-contribution only .....             | 22                          | 21  | 2.7  |
| Both .....                                  | 16                          | 24  | 2.1  |

<sup>1</sup> Self-reported for all lifetime jobs, all nonretired non-self-employed respondents aged 51-61 in 1992 who worked since 1982.

<sup>2</sup> Pension providers' administrative records for current job only, currently employed respondents aged 51-61 in 1992.

Source: Health and Retirement Survey, Wave 1. For lifetime jobs data, custom tabulations by Marjorie Honig, October 1998; for current job data, Richard W. Johnson et al., *Gender Differences in Pension Wealth: Estimates Using Provider Data*, unpublished paper, August 1998.

end. And as we have seen, many recipients of lump-sum payments do spend them rather than roll them over.

DB plans provide benefits in the form of an annuity, which guarantees an income for life, unless the plan provides, and the participant elects, a lump-sum payment option. The optional forms of annuity and lump sum are calculated using a uniform mortality table for all races and both sexes combined, so that participants do not receive different monthly benefits simply because of their race or sex. However, whites (and Hispanics) and women have longer remaining life expectancies at age 55 than blacks and men, respectively, and so receive the stream of benefits over a longer period of time, on average.

The accumulation in a DC plan, on the other hand, does not depend on life expectancy. But participants in DC plans cannot assure themselves a guaranteed income for life, unless their plan provides a group annuity option or they purchase an annuity on their own. DC plans thus pose the risk that the beneficiary will outlive his or her savings. The private market for annuities is subject to adverse selection, in that those who expect to live a long time are more likely to purchase annuities, and this drives up their price. This works to the disadvantage of women in DC plans, since they are more likely than men to live long enough to run out of money if they do not have an annuity.

Finally, market forces may cause wages to adjust to differences in employers' pension costs, so that workers who get more deferred pension compensation in one type of plan may "pay" for this benefit in the form of lower wages, or their wages may grow more slowly with time on the job. All of these considerations leave it an open question

whether minorities and women are likely to be better off relative to white men in DB or DC pension plans.

### Consumption

The economic status of the elderly is ultimately measured by the standard of living that they enjoy. Elderly households typically spend less on consumption than younger households (Table 4-3), in part because the average elderly household has fewer people. But the three largest expenditure categories for elderly households are the same as those for younger ones, namely, housing, transportation, and food. As is well known, health care accounts for a greater share of expenditure for elderly households than for younger ones: 11.7 percent versus 4.2 percent.

TABLE 4-3.— *Consumption Patterns of Elderly and Nonelderly Households by Age of Household Head, 1997*

| Item                                     | Percent of total expenditures |               |                  |
|--|-------------------------------|---------------|------------------|
|  | All households                | Head under 65 | Head 65 and over |
| Housing .....                            | 32.4                          | 32.3          | 33.1             |
| Transportation .....                     | 18.5                          | 19.0          | 15.6             |
| Food.....                                | 13.8                          | 13.7          | 14.3             |
| Personal insurance and pensions.....     | 9.3                           | 10.2          | 3.9              |
| Health care .....                        | 5.3                           | 4.2           | 11.7             |
| Entertainment .....                      | 5.2                           | 5.3           | 4.5              |
| Apparel and services .....               | 5.0                           | 5.1           | 4.3              |
| Cash contributions.....                  | 2.9                           | 2.4           | 5.4              |
| Miscellaneous .....                      | 2.4                           | 2.4           | 2.5              |
| Education .....                          | 1.6                           | 1.8           | .6               |
| Personal care products and services..... | 1.5                           | 1.5           | 1.8              |
| Alcoholic beverages .....                | .9                            | .9            | .8               |
| Tobacco and smoking .....                | .8                            | .8            | .6               |
| Reading.....                             | .5                            | .4            | .7               |
| AVERAGE DOLLAR EXPENDITURES .....        | \$34,819                      | \$37,543      | \$24,413         |

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

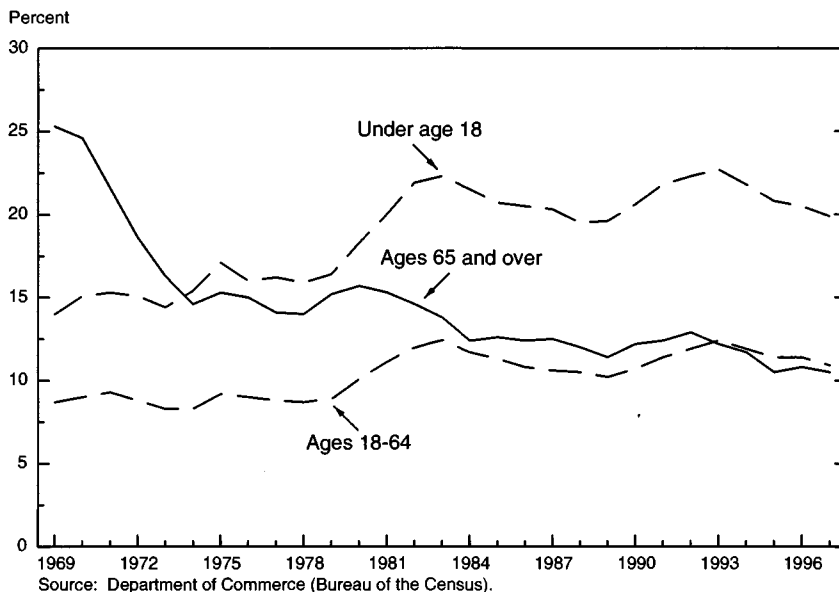
### POVERTY

The reductions in poverty among the elderly in recent decades have been remarkable: in 1970, 25 percent of all persons over 65 were living in poverty, but in 1997 only 11 percent were poor (Chart 4-12). Much of this improvement occurred in the early 1970s, in part because of double-digit percentage increases in Social Security benefits enacted in 1971, 1972, and 1973. But progress has been made since then as well: elderly poverty has fallen by 28 percent in the last 15 years alone, and since 1993 it has declined by 14 percent.

Many elderly people, however, live just above or just below the poverty line; relatively small changes in their income could move them

Chart 4-12 **Poverty Rate by Age Group**

Poverty among the elderly has declined dramatically, from 25 percent in 1969 to 11 percent in 1997.



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

into or out of poverty. In 1997, 6.4 percent of the elderly were “near poor”; that is, their before-tax money income placed them above the poverty line but below 125 percent of that line. Another 5.9 percent had incomes below, but at least 75 percent of, the poverty threshold.

The decline in poverty among the elderly has been experienced across demographic groups: men and women, whites and blacks, younger as well as older elderly persons, and married as well as single persons (Table 4-4). In particular, poverty among black elderly persons has fallen from 48.0 percent to 26.0 percent since 1970, while the rate for whites has fallen from 22.6 percent to 9.0 percent. And poverty among widows has been reduced by half during the same period, with a decline of almost 3 percentage points between 1993 and 1997.

At the same time, Table 4-4 highlights the tremendous variation in the income status of the elderly, and the fact that poverty remains high for several groups. Poverty rates for elderly women are nearly twice as high as those for elderly men, and 72 percent of all elderly living in poverty are women (Table 4-5). Widows, who account for roughly half of all elderly women, have an especially high rate of poverty, at 17.9 percent. The President has proposed to address this problem as part of the ongoing discussions to save Social Security.

### *Identifying the Needy Population*

Who are the elderly living in poverty? The majority of impoverished elderly are single—either widowed, divorced, or never married

TABLE 4-4. — *Poverty Rates Among the Elderly for Various Demographic Groups*  
[Percent]

| Year       | Men  | Women | Whites | Blacks | Widows | Ages 65-79 | Ages 80 and over |
|------------|------|-------|--------|--------|--------|------------|------------------|
| 1970 ..... | 19.0 | 28.4  | 22.6   | 48.0   | 36.8   | 23.0       | 31.1             |
| 1980 ..... | 11.0 | 19.1  | 13.6   | 38.1   | 25.1   | 14.2       | 22.6             |
| 1990 ..... | 7.6  | 15.4  | 10.1   | 33.8   | 21.4   | 10.5       | 18.6             |
| 1993 ..... | 7.9  | 15.2  | 10.7   | 28.0   | 20.7   | 10.7       | 17.7             |
| 1997 ..... | 7.0  | 13.1  | 9.0    | 26.0   | 17.9   | 9.7        | 13.4             |

Source: Council of Economic Advisers tabulations of March Current Population Survey data.

(Table 4-5). Just over half (51 percent) are widows or widowers. Seventy-two percent of the elderly poor are women, compared with only 56 percent of the nonpoor elderly. Although elderly persons from minority groups are more likely to be in poverty than elderly whites, whites account for two-thirds of the elderly poor. Finally, as shown in Table 4-4, poverty is more widespread among the oldest old than among younger elderly persons. However, only 13.7 percent of all elderly persons in poverty are 85 or older (Table 4-5).

### *Alternative Measures of Income and Poverty*

The income measure above can be broadened to include other factors that affect well-being, including taxes, noncash benefits (such as food stamps), and the imputed amount that would have to be paid if homeowners rented their home. If all of these factors are

TABLE 4-5. — *Sociodemographic Characteristics of the Poor and Nonpoor Elderly Population, 1997*  
[Percent]

| Characteristic           | Elderly in poverty | Elderly not in poverty |
|--------------------------|--------------------|------------------------|
| Age                      |                    |                        |
| 65-74 .....              | 48.6               | 56.6                   |
| 75-84 .....              | 37.7               | 34.9                   |
| 85 and over .....        | 13.7               | 8.6                    |
| Female .....             | 71.8               | 56.2                   |
| Marital status           |                    |                        |
| Married/separated .....  | 28.1               | 59.9                   |
| Widowed .....            | 51.2               | 30.3                   |
| Divorced .....           | 12.3               | 6.0                    |
| Never married .....      | 8.5                | 3.8                    |
| Race/ethnicity           |                    |                        |
| Non-Hispanic white ..... | 67.2               | 88.6                   |
| Non-Hispanic black ..... | 21.0               | 7.0                    |
| Hispanic .....           | 11.7               | 4.4                    |

Source: Council of Economic Advisers tabulations of March 1998 Current Population Survey data.

included, the elderly appear to be in better shape than if these factors are excluded. Average before-tax income for all households headed by someone 65 or older was \$31,269 in 1997. Adding net capital gains (\$1,116, on average) and subtracting taxes (\$4,033, on average) leads to average after-tax income of \$28,352. Adding in noncash government transfers (\$153), imputed rent (\$4,274), and employer-provided health insurance (\$321) increases the value to \$33,100. Benefits that are not included in this calculation are the values of Medicare and Medicaid, which are substantial but difficult to determine. These calculations demonstrate that a broader accounting of income available for consumption suggests that before-tax cash income underestimates monetary well-being by an average of a minimum of \$1,831 (because Medicare and Medicaid are not valued), or 5.5 percent.

As described earlier, an alternative measure of well-being is consumption, or how much people spend on goods and services. It has been shown that the trends in "income poverty" and "consumption poverty" are similar: consumption poverty among the elderly was 84 percent higher, and income poverty 70 percent higher, in 1972-73 than in 1988.

## WEALTH

Wealth holdings allow families to maintain consumption when earnings and income are low. Wealth includes financial assets such as savings accounts, stocks, bonds, and mutual funds, as well as nonfinancial assets such as homes, vehicles, and businesses. Table 4-6 reports the share of families holding each of these types of assets and, for those holding that asset, its median value as of 1995.

The vast majority of the elderly—over 90 percent—have at least some assets. Among elderly families holding financial assets, the median value in 1995 was roughly \$20,000. Median values of nonfinancial assets varied by age: elderly families headed by 65- to 74-year-olds had greater median nonfinancial assets (\$93,500) than did those whose head was 75 or older (\$79,000); the family home was the most important nonfinancial asset across age groups. Financial wealth is commonly held in the form of retirement accounts: 35 percent of families headed by a 65- to 74-year-old held such an account, with a median balance of \$28,500. In 1995 fewer than 15 percent of elderly families held mutual funds outside retirement accounts, although those who did have accounts had substantial holdings, on average.

Wealth holdings among the elderly vary enormously (Table 4-7). In 1994, 10 percent of all households with a member aged 70 or older had \$162 or less in total wealth (in 1996 dollars), and at least that many had no financial assets at all. Another 20 percent had no more than \$541 in financial assets and less than \$30,311 in total wealth. At the same time, 10 percent had at least \$415,622 in total wealth, with at least \$175,341 in financial assets.

TABLE 4-6.— *Family Holdings of Financial and Nonfinancial Assets, by Age of Head of Family, 1995*

| Type of asset                 | Percent of families holding assets |             |             | Median value among holders (thousands of dollars) |             |             |
|-------------------------------|------------------------------------|-------------|-------------|---|-------------|-------------|
|                               | All families                       | Age of head |             | All families                                      | Age of head |             |
|                               |                                    | 65-74       | 75 and over |   | 65-74       | 75 and over |
| FINANCIAL ASSETS .....        | 90.8                               | 92.0        | 93.8        | 13.0  | 19.1        | 20.9        |
| Transaction accounts .....    | 87.1                               | 91.1        | 93.0        | 2.1   | 3.0         | 5.0         |
| Certificates of deposit ..... | 14.1                               | 23.9        | 34.1        | 10.0  | 17.0        | 11.0        |
| Savings bonds .....           | 22.9                               | 17.0        | 15.3        | 1.0   | 1.5         | 4.0         |
| Bonds .....                   | 3.0                                | 5.1         | 7.0         | 26.2  | 58.0        | 40.0        |
| Stocks .....                  | 15.3                               | 18.0        | 21.3        | 8.0   | 15.0        | 25.0        |
| Mutual funds .....            | 12.0                               | 13.7        | 10.4        | 19.0  | 50.0        | 50.0        |
| Retirement accounts .....     | 43.0                               | 35.0        | 16.5        | 15.6  | 28.5        | 17.5        |
| Life insurance .....          | 31.4                               | 37.0        | 35.1        | 5.0   | 5.0         | 5.0         |
| Other managed .....           | 3.8                                | 5.6         | 5.7         | 30.0  | 26.0        | 100.0       |
| Other financial .....         | 11.0                               | 10.4        | 5.3         | 3.0   | 9.0         | 35.0        |
| NONFINANCIAL ASSETS .....     | 91.1                               | 92.5        | 90.2        | 83.0  | 93.5        | 79.0        |
| Vehicles .....                | 84.2                               | 82.0        | 72.8        | 10.0  | 8.0         | 5.3         |
| Primary residence .....       | 64.7                               | 79.0        | 73.0        | 90.0  | 80.0        | 80.0        |
| Investment real estate .....  | 17.5                               | 26.5        | 16.6        | 50.0  | 55.0        | 20.0        |
| Business.....                 | 11.0                               | 7.9         | 3.8         | 41.0  | 100.0       | 30.0        |
| Other .....                   | 9.0                                | 8.9         | 5.4         | 10.0  | 16.0        | 15.0        |

Source: 1995 Survey of Consumer Finances.

The 1998 *Economic Report of the President* described in detail the gaps in earnings and income between races and ethnic groups. However, these disparities are small relative to the differences in wealth. The median household income of elderly whites is about twice that of elderly blacks and Hispanics, but the comparable ratio for wealth is about five to one. Gaps in holdings of financial assets are even wider. In fact, as Chart 4-13 shows, median financial wealth for households with a member 70 or older is zero for blacks and Hispanics. This means that over half of the members of these groups have no financial assets at all; the only wealth they have consists of their home or other physical assets. This result holds for those approaching retirement age as well: over half of households that contained a black or Hispanic person aged 51-61 had no financial assets in 1992.

In sum, a large share of the elderly have very little wealth, and what wealth they do have is mostly in the form of housing and other illiquid assets, not financial assets. At the same time, a significant share of elderly people have quite large wealth holdings, including ample financial assets.

## ARE OLDER WORKERS SAVING ENOUGH FOR RETIREMENT?

One reason why it is important to know the level of wealth holdings of older persons is to determine whether they will have enough resources in retirement. Answering this question is difficult for a

**TABLE 4-7.— Total and Financial Wealth of Households by Percentiles**  
[1996 dollars]

| Percentile | With member aged 51-61 <sup>1</sup> |           | With member aged 70 and over <sup>2</sup> |           |
|------------|-------------------------------------|-----------|---|-----------|
|            | Total                               | Financial | Total                                     | Financial |
| 10 .....   | 1,115                               | -1,338    | 162                                       | 0         |
| 30 .....   | 45,705                              | 1,115     | 30,311                                    | 541       |
| 50 .....   | 111,809                             | 15,607    | 84,206                                    | 8,659     |
| 70 .....   | 222,950                             | 55,738    | 166,682                                   | 41,995    |
| 90 .....   | 585,690                             | 208,459   | 415,622                                   | 175,341   |
| 95 .....   | 964,259                             | 367,868   | 669,974                                   | 313,882   |
| Mean ..... | 269,946                             | 81,779    | 177,678                                   | 65,116    |

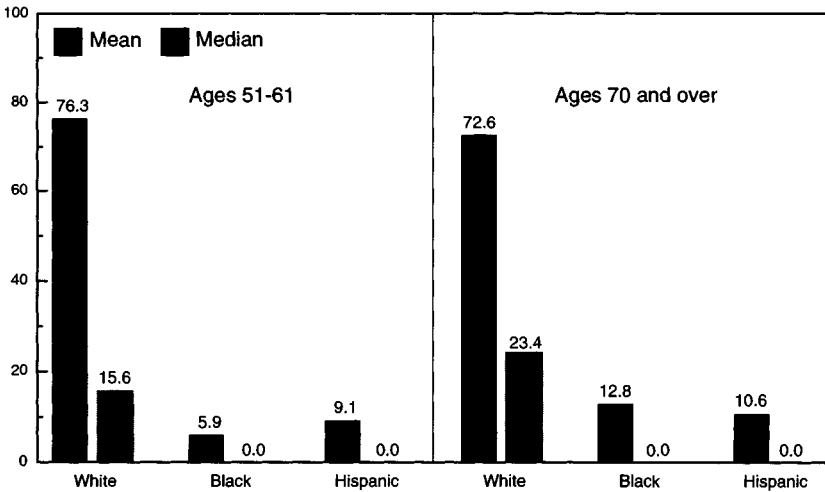
<sup>1</sup> Data are for 1992.

<sup>2</sup> Data are for 1994.

Note. Total wealth includes equity held in homes, value of business and other tangible assets, and a detailed list of financial assets.

Source: James P. Smith, *The Changing Economic Circumstances of the Elderly: Income, Wealth, and Social Security*, Center for Policy Research, Syracuse University, 1997.

**Chart 4-13 Household Financial Wealth by Race and Ethnicity**  
Among older Americans, financial wealth is much higher for whites than for blacks or Hispanics. Over 50 percent of blacks and Hispanics have no financial wealth.  
1996 dollars (thousands)



Note: Data are for households with a member of the given age. Data for ages 51-61 are for 1992 and data for ages 70 and older are for 1994.

Source: James P. Smith, "The Changing Economic Circumstances of the Elderly: Income, Wealth, and Social Security," Center for Policy Research, Syracuse University, 1997.

variety of reasons, including the fact that life expectancy, future interest rates, streams of income, and needs during retirement are highly uncertain. Moreover, to address this question one must first define what one means by “enough.” Recent studies have defined “enough” as the amount of resources that preretirees need to maintain their current standard of living throughout retirement. These studies take into account the fact that the postretirement income needed to maintain the preretirement standard of living is smaller than the amount needed prior to retirement.

There is evidence that a significant share of the population approaching retirement are not saving enough to maintain their preretirement standard of living. It has been found that persons aged 51-61 in 1992 who have household earnings of \$30,000 (the median) would need to save 18 percent of their income in the years remaining until retirement, if they wish to retire at age 62 and maintain their preretirement consumption levels throughout retirement. This 18 percent is above and beyond the household’s automatic contributions to Social Security and pensions. Postponing retirement to age 65 reduces the necessary saving rate to 7 percent. Typical actual saving rates for persons approaching retirement have been estimated at 2 to 5 percent.

These estimates mask substantial variation within the population approaching retirement. It has been found that roughly 70 percent of households with persons aged 51-61 need to add to their savings, above and beyond their automatic contributions to Social Security and pensions, in order to retire at age 62 and maintain their standard of living; this estimate decreases to 60 percent if retirement is postponed to age 65. But by the same token, roughly one-third do not need to add to their savings to maintain consumption throughout retirement. Not surprisingly, the saving rate necessary to maintain the preretirement standard of living is substantially higher for households with less wealth. Finally, although several theories have been advanced to explain why so many people have a saving shortfall, the available empirical evidence is not conclusive.

To help Americans save enough to enjoy a more secure retirement, the President has proposed to reserve about 12 percent of the projected unified budget surpluses over the next 15 years—averaging about \$35 billion a year—to establish new Universal Savings Accounts (USAs). Under the proposed plan, the government would provide a flat tax credit for Americans to put into their USA accounts and additional tax credits to match a portion of each extra dollar that a person voluntarily puts into his or her USA account. This plan would provide more help for low-income workers. These accounts will build on the current private sector pension system to enable working Americans to build wealth to meet their retirement needs.



## CHAPTER 5

# Regulation and Innovation

BECAUSE INNOVATION—the development and adoption of new technology—is essential to U.S. economic performance over time, regulation that interferes with innovation, however justifiable on other grounds, comes at a cost. Therefore, in such areas as competition policy, environmental regulation, and electric power restructuring, the Administration has worked to ensure that regulation not only does not interfere with innovation, but indeed fosters beneficial technological change and adapts itself to such change as well.

Appropriately designed regulation can achieve desirable outcomes that unconstrained commercial activity would not produce. Historically, regulation in the United States has been selectively applied both to certain types of undesirable economic behavior and to certain effects of that behavior. Antitrust laws, for example, promote competition and prohibit anticompetitive actions that interfere with market performance. Industry-specific economic regulation has traditionally constrained the exercise of market power by natural monopolies such as telephone companies and electric utilities. Environmental regulation, for its part, has targeted the side effects of economic activity on the health of people and of the environment.

Although regulation, when wisely applied, can prevent economic harm and protect economic benefits, real productivity gains over time depend on innovation—on the steady flow of new ideas, products, and processes. Over the past 50 years, more than half of all productivity gains in the U.S. economy, as measured by output per labor hour, have come from innovation and technical change. Innovation thus boosts all sectors of the economy; it is important for agriculture just as it is for semiconductors. Those industries that fall under the rubric of high technology—including aerospace, telecommunications, biotechnology, and computers—provide particularly dramatic examples of growth through innovation: their combined share of manufacturing output has increased by more than half since 1980. Indeed, high-technology products have become an increasingly important part of everyday life for American consumers. The spread of Internet use in the past 6 years, from a few specialized applications to a routine tool for tens of millions of Americans, is one notable illustration. But it is through innovative effort economy-wide, both public and private, that the United States has succeeded in strengthening its position as the world leader in research and development (R&D; Box 5-1). To take just one measure,

the number of patents granted in the United States grew to more than 140,000 in 1998, after passing the 100,000 mark for the first time in 1994.

Given the economic importance of innovation, public policy can achieve greater good when it extends its perspective beyond the immediate goals of particular regulatory programs and takes into account the effects of regulation on the development and adoption of new technology. This chapter first addresses how U.S. antitrust policy, beyond its conventional focus on the price and output benefits of competition, has

### **Box 5-1.—The Scope of Government Support of R&D**

The Federal Government supports innovative activity in both direct and indirect ways. And it does so in no small measure: data from 1997 show that U.S. Government agencies provide about 30 percent of all funds spent on R&D in the United States. The government's share of funds for basic research (research that advances scientific knowledge but has no immediate commercial objectives) is higher still, at about 57 percent. The National Institutes of Health (NIH), for example, are a principal source of funding for biomedical research. NIH programs provide resources for such projects as AIDS/HIV treatment, cancer research, and the Human Genome Project. The government has also taken a direct role in R&D and scientific education through the National Science Foundation and other agencies such as the Department of Energy, which oversees the large complex of Federal laboratories. Federally funded research has been responsible for major developments in space technology, defense systems, energy, medicine, and agriculture, to list just a sample. Federal agencies face the continuous challenge of matching their missions to the technological needs of an evolving world.

Industry provides most of the remaining 70 percent of R&D funding in the United States. Indeed, its proportion has grown steadily in the past decade, to about two-thirds of the total. But government plays a role—an indirect one—in this effort as well, for example through tax incentives that encourage innovation. The research and experimentation tax credit, which allows firms to reduce their tax obligations by 20 percent of qualifying R&D expenditure, was recently extended until June 1999. The government also supports basic research that underlies many applied advances in private industry, and it engages in partnerships with institutions such as universities to share the risk of long-term R&D efforts that have the potential to create widespread benefits.

incorporated consideration of the long-run benefits of innovation. The chapter then examines how alternative ways of implementing environmental regulation affect the innovation and diffusion of new technology. Finally, the restructuring of the electric power industry is presented as an illustration of how technological change affects the desired form of regulation, and how regulatory changes in turn affect the pace and direction of new technological and market developments.

## COMPETITION POLICY AND INNOVATION

Innovation makes enormous contributions to the Nation's economic growth, not just in the large and growing high-technology sector but across all sectors of the economy. The impact of new technologies goes beyond expanding the range of choices for consumers and lowering prices; often, new ideas have significant consequences for the very structure and performance of markets. In turn, one firm's competitive strategy and market behavior can affect the incentive and the ability of all firms in an industry to produce innovative goods and services, sometimes for the worse. The reciprocal effects of technological innovation on markets, and of markets on innovation, pose ongoing challenges for antitrust policy. The antitrust authorities have not shied from these challenges: 1998 saw the continued application of the antitrust laws in technologically complex industries, and renewed attention to the economic benefits of innovation in assessing the health of these vital markets.

## MERGER REVIEW AND INNOVATION

Corporate merger activity continues at a swift pace: in fiscal 1998 over 4,000 merger notifications were filed with the Antitrust Division of the Justice Department and the Federal Trade Commission, the two Federal agencies concerned with antitrust. About 7,000 additional mergers were valued at less than \$10 million, the level at which pre-merger notification is required. The total value of all mergers in 1998 is estimated at over \$1.6 trillion. The scope of merger activity in 1998 is comparable, depending on the measure used, to that experienced at the turn of the century and in the late 1980s. Although, as in other years, most of these mergers were small, the recent wave of economic consolidation has been distinguished by the number of very large mergers and by the number of mergers in such highly innovative sectors as telecommunications, aerospace, and biotechnology. These transactions, in addition to simply creating bigger firms, sometimes create measurably more concentrated markets. Given the importance of these advanced industrial sectors for future growth, a pressing question for antitrust authorities has been how such changes in market concentration and firm size affect innovative activity.

The United States has a decades-long history of enforcing its antitrust laws to ensure that mergers, acquisitions, and other structural changes in firms and markets do not unduly empower the resulting enterprises to raise prices or restrict output. The use of antitrust policy as a framework for preserving and encouraging innovation, however, is a more recent development, on which there is less consensus. The relationship between an industry's market structure and the amount of innovative activity in that industry may differ from the relationship between market concentration and short-term price competition, the conventional focus of antitrust. Whereas concentration nearly always weakens price competition, its effects on innovation are less clear-cut. Antitrust authorities investigating today's mergers thus confront a difficult task: they must not only assess the likely effects of consolidation on prices and output in the relevant product market, but also account for a merger's potential impact on innovation and the benefits it promises to consumers in the long run.

## DO BIGGER FIRMS HELP OR HURT INNOVATION?

Several recent mergers are notable for their sheer size. In the last few years the financial services, telecommunications, and petroleum industries have all seen mergers or proposed mergers valued in the tens of billions of dollars. Antitrust policy in the United States does not, however, generally treat firm size per se as important for determining the strength of competition. Market share, which does not necessarily correlate with size, is understood to be the more relevant determinant of whether prices and quantities are set competitively.

There has been greater debate, however, about the relevance of firm size for *innovation*. Indeed, one could make perhaps as strong a theoretical case that bigness is good for innovation as that it is bad or indifferent. Some commentators, following the economist Joseph Schumpeter, have praised large enterprises for their superior ability to attract the financial and human capital, bear the risk, and recoup the investment required for sustained research and development (R&D) activities. Small firms, on the other hand, have been touted as more creative and more nimble in adapting to changes and opportunities than their larger, more bureaucratic counterparts.

Empirical studies have consistently found that big enterprises are more likely than small ones to undertake at least some R&D. In addition, among those firms that do undertake R&D, bigger firms tend to make larger R&D investments. Beyond a threshold level of size, however, it is less evident that larger firms' R&D investments are *proportionately* greater than those made by smaller firms. Most recent research supports the consensus view that, in general, R&D rises only proportionately with firm size.

Data matching R&D investment with the number of patents generated have shown that smaller firms produce more innovations per

R&D dollar than do large firms. But these results do not necessarily imply that large firms are less desirable from an innovation standpoint. First, not all patents are equivalent in value, and not all successful R&D is patented. So simply counting patents is an imperfect measure of innovative productivity.

Second, there may be diminishing returns to R&D. Big firms, because of their greater resources and ability to diversify, may simply be more willing to risk investing in projects that appear to have less prospect of success. Some of these projects do succeed, making discoveries that smaller firms might have missed.

Finally, large firms may earn higher returns on their R&D than small ones because they can deploy innovations across a broader array of products, or take advantage of process cost savings over a larger production volume. This may explain why large firms continue to invest in R&D even after their proportionate patent yield drops below that of smaller firms.

In short, although available data and research do call into question the conjecture that large firms are superior innovators, they do not necessarily support the contrary view that large firms are bad for technological progress and economic growth. The evidence suggests that the large firms created by some recent mergers will have no special tendency—but likewise no special reluctance—to engage in innovation.

## MARKET CONCENTRATION, COMPETITION, AND INNOVATION

The focus on market share in U.S. competition policy fits logically with antitrust's basic premise that economic performance improves with competition. Of course, exception is made for industries that are natural monopolies, in which costs per unit of output decline as a firm's production increases, to the point that it is most efficient to have just one firm produce all output. In such markets, which historically have included railroads, electric power, and telecommunications, monopoly may actually be better for consumers, so long as the monopolist can be prevented from abusing its power to raise prices or stifle innovation by potential competitors. Competition in such cases would require wasteful duplication of facilities—parallel sets of railroad tracks, or duplicate sets of wires connecting houses to the electric power grid or the telephone network. For this reason natural monopolies have generally been allowed to operate but subjected to strict regulation. In most industries, however, economic theory and antitrust policy have long seen more rather than less competition as best serving the purpose of lowering prices, expanding output, and making consumers better off.

The presumption in favor of greater competition becomes less universal when the policy goal is not just lower prices for a given set of goods produced under a fixed set of technologies, but also the preservation of efficient innovative activity by firms over time. As a theoretical

matter, depending on various conditions, either monopoly power or competition may yield the greater amount of innovation. On the one hand, rivalry over market share gives competitive firms an incentive to develop new products and processes that will help them improve or defend their market position. On the other hand, competitive firms face greater risk in their investments in innovation than do those with market power. Even if a firm does make a potentially profitable discovery, and even if it can establish intellectual property rights over that discovery that give it a temporary monopoly, rivals may soon develop similar or better advances that diminish or negate its value. The risk that a competing firm's successful innovations will trump one's own grows with the number of competitors, and the expected return to innovation may fall to the point where it does not justify the cost.

Firms in competition also face more-binding financial constraints. A monopolist or other firm with market power probably has, or can raise, more cash for R&D and has a better chance of recouping its R&D investment. Large, established firms might be particularly adept at marshaling resources for incremental innovation or for helping to bring a small firm's invention to market.

Even a monopolist—especially an unregulated one—has an incentive to engage in cost-reducing innovations. But because a monopolist already has the market share for which competitive firms strive, it may have less incentive to pursue product innovations and improvements than do firms facing competition. Further, a monopolist will have an incentive to innovate strategically to protect its monopoly by excluding rivals and by avoiding cannibalization of its existing business. This may lead it to delay implementation of those innovations it does develop. A monopolist might therefore be a qualitatively inferior innovator from the perspective of consumers and overall economic welfare. A dominant firm may also have an incentive to deter others from engaging in innovative activity that threatens its market power. The result could be a shift in the industry-wide pattern of innovation that makes everyone except the dominant firm worse off.

The findings of empirical studies do not resolve this ambiguous theoretical relationship between competition and innovation. Some studies find innovation to be most intense among firms in oligopoly markets that provide a mix of competitive incentives and above-competitive returns. Other studies find no such correlation. To the extent there is consensus, it is that neither the presence of many competitors nor pure monopoly correlates systematically with optimal levels of innovation. But even in such polar cases, predictions about R&D activity are hard to make. The determination requires looking at the facts in each case, because market factors other than concentration, as well as a firm's regulatory status and the nature of its products and technologies, also affect innovation.

In some industries, fierce competition yields substantial R&D: dozens of firms today are racing to develop new antiobesity drugs, for example. But monopolies can be energetic innovators, too: during AT&T's decades of dominance of the telecommunications industry, its Bell Laboratories research arm developed a steady stream of new technologies. In each case factors independent of market structure made the difference. The market for antiobesity drugs is new, the rewards for successful R&D are huge—future sales could reach an estimated \$5 billion per year—and the efficient level of R&D investment could be quite high. In the case of AT&T, although innovation in telecommunications might have been greater under competition, consumer demand for increased capabilities in the telephone system, opportunities to enter new markets, and the guarantee of steady, regulated returns that could help fund risky R&D made complacency undesirable even for an established monopolist.

In addressing innovation, antitrust policy must therefore temper the strong presumption in favor of competition that applies in conventional analysis of short-run price and output levels. Although more rivalry rather than less will often remain the rule of thumb, enforcement authorities cannot as confidently presume as a matter of economic theory that more competition is good or that market power is bad for R&D. When the overall level and the future path of innovation are at issue, case-by-case analysis of the economic facts is likely to be even more vital than in conventional antitrust investigations.

## MERGER POLICY IN HIGH-TECHNOLOGY MARKETS

The puzzles posed by the economics of innovation have not deterred the antitrust authorities from investigating how mergers in several U.S. industries would affect the flow of new ideas, products, and processes. They have, however, taken a deliberate, measured approach to their investigations. Recent enforcement decisions have taken into account both the traditional presumptions about competition and the inability to rely on those presumptions when it comes to promoting innovation. But they also reflect careful consideration of the ambiguous effects that firm size and market structure may have on innovation. Thus, although the antitrust authorities have recognized the need for a dynamic perspective on mergers and have not refrained from enforcement based on concerns about innovation, they have brought such actions only where changes in market concentration were extreme and, generally, where other evidence of effects on innovation was present.

### *Early Cases*

One of the first enforcement actions motivated by innovation concerns occurred in 1990, when the Federal Trade Commission (FTC) challenged the acquisition of Genentech, Inc., by the Swiss-based

company Roche Holdings, Ltd. Some of the issues raised in that case were traditional questions about reduction of competition: for example, Roche was on the verge of becoming a major challenger to Genentech's dominant position in the market for products to treat human growth hormone deficiency. But more central to the Commission's complaint was that Roche and Genentech were actual—not just potential—competitors in the development of some other important therapeutic innovations, especially for the treatment of AIDS and HIV infection. Concerns about dynamic effects on the market and on the pace of innovation, not about short-term price or output levels, drove the enforcement decision.

The Justice Department's Antitrust Division first challenged a merger on innovation grounds in 1993, when it investigated the proposed acquisition of General Motors' Allison Transmission Division by ZF Friedrichshafen, a German company. Allison and ZF together produced 85 percent of world output of heavy-duty automatic transmissions for trucks and buses, but they actually competed head to head in only a few geographic markets. The Justice Department nonetheless concluded that even markets whose concentration would be unaffected by the merger would be harmed by the combined company's reduced incentive to develop new designs and products, and it therefore moved to block the transaction.

These two cases differ in important ways, and each establishes a significant precedent for factoring innovation effects into competition policy. In reaching its decision to challenge Roche's acquisition of Genentech, the FTC did not have to predict that the resulting increased concentration in the biotechnology industry would reduce innovation. Rather, the increase in concentration was accompanied by concrete evidence that Roche was at an advanced stage in developing a competing human growth hormone treatment, and that Roche and Genentech were among a small group of companies racing to develop certain AIDS/HIV treatments. The merger would thus have concentrated actual, not merely potential or speculative, R&D efforts.

The Justice Department's action in the ZF/Allison case was in one respect bolder. There was no specific R&D effort that the Antitrust Division found would be compromised by the acquisition. But the decision indicates that where the consolidation is so great as to leave an industry near monopoly and without other potential sources of new developments, potential harm to the "innovation market" could justify challenging the transaction. These two factors—very high levels of concentration and evidence of parallel and competing innovation efforts—have also formed the basis for several recent actions through which the relationship between antitrust and innovation has further developed.

## *Aerospace*

The aerospace industry is one of the most innovative in the United States. Its market is characterized by high concentration but also, outside the defense sector, by international competition. In the past 2 years the FTC has approved one major aerospace merger, and the Justice Department has blocked another. Innovation considerations are central to explaining both these enforcement decisions.

In 1997 the FTC approved the merger of Boeing Co. and McDonnell Douglas Corp., the two largest commercial aircraft manufacturers in the United States. In that case, analysis of innovation in the aerospace industry supported the merger, not because the transaction was expected to increase R&D, but because the analysis showed that McDonnell Douglas had fallen behind technologically and could no longer exert competitive pressure on Boeing or its overseas rivals. Acquisition by Boeing would therefore not reduce competition and would allow McDonnell Douglas' assets to be put to better use by a more technologically advanced enterprise.

Concerns about progress in aerospace innovation led to the opposite conclusion in Lockheed Martin Corp.'s proposed acquisition of Northrop Grumman Corp., first announced in 1997. The Justice Department's challenge to the merger last year noted that Lockheed and Northrop were two of the leading suppliers of aircraft and electronics systems to the U.S. military. The Department concluded that the merger would give Lockheed a monopoly in fiberoptic towed decoys and in systems for airborne early warning radar, electro-optical missile warning, and infrared countermeasures. In addition, the merger would reduce the number of competitors in high-performance fixed-wing military airplanes, on-board radiofrequency countermeasures, and stealth technology from three to two. The agency contended that consolidation in these markets would lead to higher prices, higher costs, and reduced innovation for products and systems required by the U.S. military.

Although traditional competitive concerns about prices were an important part of the challenge to this acquisition, concerns about innovation were central. For example, the Justice Department noted that both Lockheed and Northrop had launched R&D efforts in advanced airborne early warning radar systems, and it concluded that consolidation of the two efforts would harm future military procurement. The Department also found evidence that competition is particularly important for technological advances in high-performance military aircraft. It thus concluded that "competition is vital to maximize both the innovative ideas associated with each military aircraft program, as well as the quality of the processes used to turn innovative ideas into cost-effective, technically sound, and efficiently produced aircraft."

The antitrust authorities' linking of competition to innovation in the Lockheed/Northrop case was a cautious one. Two factors weighed heavily toward blocking the transaction. First, there was evidence that Lockheed and Northrop either were actually conducting competing R&D on relevant products or were the leading contenders to conduct such R&D in the future. Second, there was evidence that their consolidation would lead to either monopoly or substantial dominance in relevant product markets, not just reducing but in large part eliminating competitive pressure. Thus, a combination of market structure and the existence of parallel innovation efforts pointed toward a likely reduction in innovative activity if the merger were consummated.

### *Biotechnology and Pharmaceuticals*

The FTC recently focused on innovation concerns in crafting a consent agreement with two merging firms in the biotechnology and pharmaceuticals industry. In 1996 Ciba-Geigy Ltd. and Sandoz Ltd., two Swiss firms with substantial U.S. operations, announced plans to merge into a new company, to be known as Novartis. The FTC raised several objections to the merger. Some of the objections concerned traditional antitrust matters: the FTC was concerned that the combination would give the merged entity power to reduce competition and raise prices in the market for herbicides used in growing corn and in that for flea-control products for pets. The FTC accordingly ordered that one party divest its businesses in those markets as a condition for its approval. The more novel parts of the Commission's challenge, however, had to do with the prospects for innovation in the market for gene therapy products, which allow treatment of diseases and medical conditions by modifying genes in patients' cells.

At the time of the FTC's investigation, in 1996 and 1997, no gene therapy products were yet on the market; indeed, none had even been approved by the Food and Drug Administration. Conventional antitrust analysis therefore did not apply, because there was no product market in which to analyze the merger's effects on prices and output. The Commission instead adopted a dynamic perspective: looking to the future, it found two reasons for long-run competitive concerns. First, the market for gene therapy products is expected to grow rapidly, with annual sales of \$45 billion projected by 2010. Second, Ciba and Sandoz were among a very few firms with the technological capability and rights to intellectual property necessary to develop gene therapy products commercially. Together they would control essential patents, know-how, and proprietary commercial rights without which other firms, even if they did eventually develop gene therapy products, would be unable to commercialize them.

The FTC concluded that "preserving long-run innovation in these circumstances is critical." The Commission did not, however, block the merger. Instead, it crafted a consent decree designed to correct those

aspects of the transaction that raised concerns for current and future competition. As noted, the Commission required divestiture of certain overlapping herbicide and flea-control businesses. More interestingly, the Commission did not require divestiture of either firm's gene therapy division. Instead, Ciba and Sandoz agreed to license technology and patents sufficient to allow one of their rivals to compete against the merged entity in the development of gene therapy products.

The Commission's remedy steered between the potentially conflicting economic effects that a merger can have on R&D. On the one hand, consolidating complementary capabilities can enhance innovation and allow a combination of firms to achieve what the same firms could not have achieved separately. On the other hand, concentrating markets to near-monopoly levels can dampen the pressure to innovate and reduce the enhanced probability of success that comes from multiple R&D efforts. The Commission declined to order either Ciba or Sandoz to divest its gene therapy subsidiary because it found that the R&D efforts of the parent companies and their subsidiaries were closely coordinated, so that divestiture would have been disruptive and counterproductive for innovation. The decision instead to order compulsory licensing to a capable competitor was designed to preserve both market competition and the benefits of the merging parties' relationships with each other and their respective gene therapy subsidiaries.

The market context in this case is significant. Ciba and Sandoz were not merely two of several viable competitors in the relevant market; their merger did not simply change the degree of competition within a middling range of market concentration. Rather, their combination concentrated virtually all innovation capability and essential inputs for the commercialization of gene therapy under one corporate roof. Innovation concerns became sufficient to motivate intervention because the facts showed a combination of monopoly market structure and a reduction in the number of potential innovation efforts. These provided sound economic support for the use of competition policy to preserve the impetus for technological progress. But the FTC's action also broke important new ground: it expressly recognized that a current merger could be challenged on grounds of future innovation and competition in a product market that does not yet—but likely will—exist.

## INTELLECTUAL PROPERTY AND ANTITRUST

As the above discussion of merger review demonstrates, the incorporation of innovation concerns into antitrust enforcement often involves intellectual property issues. The purpose of intellectual property protection is to encourage people to bring inventions and other creative works into the marketplace. In so doing it furthers, in the words of the U.S. Constitution, "the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their

respective Writings and Discoveries.” To be sure, not all inventors or artists are motivated by economic gain. But in many cases the decision to devote time and resources to risky, innovative projects or to invest in publication will hinge on the ability to profit from success.

Patents in the United States accordingly confer limited rights to exclude others, even those who have come up with the same idea independently, from making, selling, or using a covered invention without the patentholder’s consent. Patenting allowed Eli Whitney to capture the profits his cotton gin made possible, just as today it allows an electrical engineer to secure her rights to the returns on an advance in computer technology. Copyright statutes similarly provide protection against unauthorized copying of original works in a variety of media (including electronic media; see Box 5-2), even if the copying is not literal or exact. Only Thelonious Monk (or the record company to which he sold the rights) could freely record “Round Midnight”; only a software developer (or a manufacturer to which the developer grants a license) has exclusive rights to copy and sell its programs commercially. Finally, trademark laws can be used to protect brand recognition. One restaurant entrepreneur cannot misleadingly use another restaurant’s name for his own new business; a new soft drink’s label cannot look too much like the market leader’s.

On the surface, a tension exists between intellectual property protection and competition policy: one grants exclusive rights that confer a limited, temporary monopoly; the other seeks to keep monopoly at bay. But at a more basic level the two areas of policy have a common goal: to enhance economic performance and consumer welfare. For that reason patents, for example, are extended only to novel, nonobvious, and useful inventions and are limited in duration to 20 years. Copyrights are granted for the life of the author plus 70 years.

Once an innovative product has been developed, efficiency dictates that it be produced competitively. So patents should not provide a greater incentive to invent than is necessary to get the invention into the stream of commerce. The limits on the duration, scope, and availability of patents implicitly balance the benefits of preserving incentives to innovate against the efficiency costs of granting exclusive rights. A similar balance between innovation and competition appears in U.S. antitrust policy, which recognizes that innovation sometimes benefits from cooperation among competitors (Box 5-3). The National Cooperative Research and Production Act, for example, reduces potential antitrust liability for qualifying R&D and production joint ventures. In fiscal 1998, 38 such joint ventures registered with the Department of Justice and the FTC, bringing to over 750 the number of registrations since the statute was passed in 1984.

Similarly, the 1995 Antitrust Guidelines for the Licensing of Intellectual Property acknowledge the exclusivity conferred by intellectual property protection but recognize that patents do not necessarily

### **Box 5-2.—Electronic Commerce and Digital Copyright Protection**

More than 70 million Americans now have access to the Internet, which they use in no small part for commercial activities, including the purchase of music, video, software, text, and other information goods that can now be sent directly from one computer to another. The volume of this electronic commerce exceeded \$10 billion in 1998 and is predicted to reach \$300 billion within a few years. Electronic commerce provides unprecedented opportunity for firms and individuals to sell and distribute such digital goods widely and quickly. But with these benefits comes risk: the ease with which a recording company can deliver a new song to buyers electronically is matched by that with which buyers can illegally copy and resell it. For electronic commerce to reach its potential, sellers must be sure that their products are legally protected from such piracy.

New copyright legislation has taken steps to protect digital goods and so encourage innovative commercial uses of electronic media. The 1998 Digital Millennium Copyright Act makes it a crime to break the “digital wrappers” that protect electronically encrypted intellectual property, or to sell equipment designed to penetrate such encryption. This increased protection of digital goods will help spur commerce and innovation, but it may also unduly restrict legitimate uses of copyrighted material. For example, the fair use doctrine allows free access to copyrighted works for limited personal, educational, and research purposes that do not compromise the work’s commercial value. What has traditionally been prohibited is not access to the copyrighted work, but rather its indiscriminate copying and distribution. An absolute ban on bypassing digital wrappers might allow publishers to impose a per-use fee on publications in digital format. This would block free access to such works and thus erode the fair use principle. The 1998 Digital Millennium Copyright Act attempts to balance the need to preserve commercial incentives with the right to fair use by permitting anyone who cannot get access to materials usually covered by the fair use doctrine to petition the Librarian of Congress for an exemption from the statute.

confer market power and that licensing of intellectual property is generally procompetitive. Licensing and other arrangements for transferring patents or copyrights can help bring complementary factors of production together and thus allow faster and more efficient use of new inventions. This benefits consumers by reducing costs and encouraging the introduction of new products. Under the guidelines, the FTC and

### **Box 5-3.—Cooperative Innovation and the Y2K Problem**

As explained in Chapter 2, many older computer programs encode years using only the last two digits and will not properly interpret “00” as “2000” when the year 2000 arrives. This “year 2000” (Y2K) problem may cause data to be lost and programs and systems to fail worldwide. The risks are particularly acute in industries where different firms’ computer systems are highly interdependent. Accordingly, once the extent of the problem was recognized, a number of manufacturing firms and securities firms proposed, through their trade associations, to exchange information among themselves and their computer services suppliers that would expedite resolution of the problem in their industries. Participating firms would share information gathered from manufacturers about efforts to make chips, other hardware, and software compliant with Y2K demands, and would exchange the results of product tests, successful remedies, and information about the sources of various computer products.

The competitive concerns raised by the prospect of such collaboration were multifaceted. For example, securities firms compete with each other not just in the provision of financial services, relevant information for which is stored in each company’s computers, but also in the procurement of computer systems. Exchange of information about products and the results of various tests could potentially be used by rivals as a vehicle for fostering and monitoring collusion in both areas of competition. At the same time, computer hardware manufacturers and software developers compete in the development of new products and in innovating around

the Department of Justice balance these benefits case by case against the risk that a particular licensing arrangement could reduce competition in the product market or in the development of new technologies.

For example, in 1997 the Justice Department concluded that an agreement to package certain patents essential for advanced video-compression technology into a single license was permissible because the patents were complements and because the licenses, which would be granted on a nondiscriminatory basis, were unlikely to facilitate collusion or the exercise of market power. But in another action the FTC required rescission of an agreement that pooled patents for laser systems used in eye surgery because the partners in the deal were the only independent competitors in the market for that equipment prior to the pooling arrangement. Recently, the Justice Department successfully concluded its 1996 challenge to a license that granted a hospital access to software necessary to repair medical imaging equipment only if the hospital agreed not to compete with the licensor in providing repair

**Box 5-3.—continued**

challenges like the Y2K problem. The proposed information exchange could give these firms competitively valuable details about their rivals' product developments or terms of sale to customers, undermining competition and opening the door for collusion here as well.

Collaboration on the Y2K problem also offered clear benefits, however. A joint effort would avoid duplicative equipment testing and information gathering, allow more efficient identification of successful remedies, and permit faster and more accurate responses to computer system vendors about remaining problems. Manufacturers could devote resources to product improvement that would otherwise have been devoted to exchanging information.

The Justice Department stated in its letters reviewing the proposed collaborations, issued July 1 and August 14, 1998, that it did not foresee grounds for enforcement action, because the proposals contained sufficient safeguards that the benefits of cooperation outweighed the risks to competition. The firms agreed to cooperate without exchanging price or customer information that could be used to restrain competition. And computer manufacturers would receive test information about their own products only, not those of their rivals. Although the Justice Department recognized that the information exchanges could still affect competitive strategy, it concluded that the agreements were unlikely to lessen innovation or pricing rivalry among vendors and offered real prospects for reducing the costs and increasing the speed of a resolution to the Y2K problem.

services to third parties. These cases reflect careful monitoring by the antitrust authorities of the interaction among intellectual property protection, competition, and innovation.

## NETWORK COMPETITION AND INNOVATION

Antitrust policy in the United States has devoted substantial attention in the past year to the relationship between competition and innovation in what are today called network industries. Enforcement actions in the credit card and software industries as well as consent decrees in the telecommunications industry have highlighted the challenges enforcement agencies face in balancing long-run encouragement of innovation with short-run concerns about competition.

Networks are a familiar concept to Americans: we are linked to each other by telephone networks, we increasingly shop and obtain information through the web of linked computers we call the Internet, and we confidently slide a card issued by one bank into an automatic teller

machine owned by another. The distinguishing characteristic of network goods is that their value to each consumer increases the more they are used by others. New telephone subscribers add to the number of people that existing subscribers can call; their participation in the network increases the system's value to current and future users. New buyers of a word processing package are more people with whom earlier purchasers can easily exchange documents. This additional value that new users add to network goods is termed a "network externality."

Network benefits are not limited to communications systems or to systems in which communication is an element. A good whose usefulness depends on the existence of complementary products—products used in conjunction with the original good—may likewise increase in value to users as more and more people adopt it. A widely used product may attract greater investment in the provision of complements than one that has few users. In the personal computer industry, for example, software producers typically devote most of their efforts to writing programs that will be compatible with the more widely used hardware platforms and operating systems. (Achieving compatibility sometimes requires reverse engineering of existing products; see Box 5-4). Over time more, better, and cheaper software thus becomes available for more popular machines than for others. Similarly, the best-selling video game platform will attract more game developers, thus reinforcing the advantage of that platform over competitors.

Because of network externalities, a product's popularity can be self-reinforcing: new customers buy the more popular good because of the larger externality, which then grows still further, making the product yet more attractive to additional purchasers. This dynamic sometimes makes network markets "tip" toward monopoly. A network monopoly has benefits for consumers not generally found in conventional markets, because its dominance can maximize the network externality. But network dominance also poses hazards that compound conventional economic concerns about monopoly.

First, the product that becomes the network standard will not necessarily be the most capable, most efficient, or highest-quality product on the market. Because consumers want the good that will offer the largest network externality, expectations about a product's success can be at least as important to their purchase decisions as price and quality. Consumers using products, even superior products, that have lost the competitive battle receive a much smaller network benefit, and may eventually have to incur the costs of switching to the dominant product. These include not only the cost of purchasing the rival product but the cost of learning to use it. By the same token, if an inferior good gets a decisive lead in "installed base" among consumers, their switching costs may be enough to keep them from moving to the superior standard. And new customers may find that the greater network externality available from the leader offsets the price or design advantages of the contender.

#### **Box 5-4.—Reverse Engineering and Compatibility**

When competing network products are mutually compatible, consumers benefit from the same network externality regardless of which product they choose. If the value of a word processing package depends on the number of people with whom documents can be shared, then a new entrant can overcome its network disadvantage by enabling its product to exchange files with the leading program. Similarly, if a new game platform can play cartridges designed for rival systems, it gains value from the increased availability of complementary goods. Translation between systems is not always perfect, however, and a dominant firm facing new rivals might try to reestablish its advantage by reintroducing incompatibility in subsequent versions of its software. Nevertheless, cross-compatibility remains an important competitive strategy for entrants into network markets—and is beneficial for consumers.

To achieve compatibility, a competitor may have to “reverse engineer” the rival’s product, to learn how to make it work together with its own. For that reason, firms with a market edge might try to protect their products against efforts to establish cross-compatibility by restricting competitors’ access to critical interfaces where information is exchanged. One means of doing so is to enforce a copyright on the particular lines of computer code that a rival would have to use to make its product compatible. Courts, however, have been increasingly reluctant to uphold copyright protection for such purely functional aspects of computer programs. A leading producer may instead try to encrypt or otherwise technologically protect the information to which a rival seeking compatibility needs access. The Digital Millennium Copyright Act of 1998 expressly permits software developers to circumvent such protections. It thereby limits the extent to which a program copyright can block competition by noninfringing programs or in markets for complementary software. But to avoid undermining the incentive to develop new software, the act allows circumvention only to the extent necessary to achieve compatibility.

Second, these same switching costs can make network markets particularly hard for new competitors to enter, especially if new products cannot interconnect with those already in the market. This potentially makes network monopolies quite stable and reduces the dominant firm’s incentives to introduce innovative products and services. An example is the delay in the marketing of digital subscriber line (DSL) technology for high-speed telecommunications. Although DSL technology has been available since the 1980s, only recently did local telephone

companies begin to offer DSL service to businesses and consumers seeking low-cost options for high-speed telecommunications. The incumbents' decision finally to offer DSL service followed closely the emergence of competitive pressure from cable television networks delivering similar high-speed services, and the entry of new direct competitors attempting to use the local-competition provisions of the Telecommunications Act of 1996 to provide DSL over the incumbents' facilities.

Third, a network monopolist may have advantages in selling complementary goods that allow it to extend its dominance from one market to another. Advantages in complementary markets are not necessarily anticompetitive. The provider of one good may be able to exploit economies of scale and scope that make it a superior provider of the complementary good. But a monopoly provider of one product may also be able to tie or bundle a second product in a way that forecloses competition in the second product market. For example, it may condition sale of the monopoly good on whether the buyer also purchases the complementary good.

### *The Challenge for Antitrust*

In network markets as in others, antitrust law does not condemn monopolies legitimately achieved. Incentives to innovate and compete might diminish if dominance itself, honestly earned, could be second-guessed by enforcement authorities. Instead, what antitrust proscribes is anticompetitive conduct—predatory or exclusionary practices—that creates or maintains monopoly power. The particular challenge of network markets is that, because network effects can accrue rapidly and be costly to reverse, there is a premium on being able to identify and stop anticompetitive activity quickly. Once dominance is acquired, it may be impractical or undesirable to use regulatory or antitrust remedies to undo the outcome, even if an inferior standard prevails or if anticompetitive tactics have been employed. To be sure, antitrust can target unlawful conduct designed to preserve or extend those outcomes. But once customers have adopted a standard, remedies that would reduce the accrued network externality are costly, no matter how dominance was achieved.

Identifying predatory or exclusionary practices early can be difficult in the network context. Competitive strategies that would be inherently suspect in a conventional goods market may be reasonable in network markets, especially when competitors believe, rightly or wrongly, that the winner will take all. For example, pricing below cost is often a tell-tale sign of predation in conventional markets. But in network markets it may be a matter of competitive necessity to price below cost in order to penetrate the market quickly, gain a lead in installed base, and raise expectations that a product will deliver a large network benefit. Predatory pricing rules in Federal antitrust policy do allow for

transitional circumstances and recognize that prices may not reflect startup costs for new entrants. In applying those rules in network markets, authorities must analyze, on the facts of each case, when aggressive pricing constitutes a legitimate strategy that other competitors would rationally pursue, and when they amount to predatory conduct that forecloses competition.

Similarly, when a network monopolist enters a market for complementary products on terms that make it hard for competitors to succeed, authorities must determine whether the monopolist's advantage stems from genuine efficiencies or from anticompetitive arrangements. Where efficiencies are identified that cannot be achieved in a manner that has less effect on competition, enforcement agencies must balance the welfare gains from those efficiencies against the welfare losses from reduced competition. A good illustration of the problem comes from the days before personal computing. Technological innovations adopted in the 1970s made mainframe computer components sufficiently compact that certain memory devices were for the first time built into the main computer cabinet and hardwired into the central processing unit. IBM Corp., the market leader, thus began to sell computers and memory storage as an integrated unit. Independent manufacturers of IBM-compatible memory devices sued, claiming IBM had leveraged its market power in mainframe computer processors into the more competitive peripherals market. In *California Computer Products v. IBM*, decided in 1979, the U.S. Court of Appeals ruled in IBM's favor after finding on the facts that, in this particular case, integration was an efficient and natural result of beneficial product innovation.

Several very recent enforcement actions demonstrate the complex issues at stake in network competition and show how preserving both the incentive and the opportunity for development of innovative products and services has become an essential concern of competition policy. Among these are actions in the credit card industry and in the markets for Internet software and services.

### *Credit Cards*

As use and acceptance of a particular brand of credit card grow, that card becomes more valuable for both businesses and consumers. This gives rise to a classic network externality, with all the benefits to consumers—and the possible effects on competition and innovation—already described. Concern over competition and innovation among general-purpose credit card networks recently prompted the Department of Justice to file an antitrust suit against the two largest networks, Visa and MasterCard.

The credit card industry operates at two distinct levels. Consumers and merchants are most directly involved in the downstream level, which encompasses card issuance and card acceptance services. The players at that level are banks and other institutions that issue cards

and compete for customers on the basis of interest rates, annual fees, payment terms, customer service, and various enhancements or usage bonuses. The Justice Department's challenge concerns the industry's second level: the upstream level, encompassing the underlying card networks themselves. These networks provide various services to card issuers: they implement systems and technologies for card use and clearance, develop card products, and promote the card brand. They also set fees for participation in the card network.

The competitive dynamics of these two levels are very different. If numerous institutions can join a network and issue cards, competition at the downstream level—for consumers of card services and merchants requiring acceptance services—will be strong. Competing at the network level, however, is more difficult. Establishing brand name recognition, developing processing and information systems, and building a sufficient base of merchants and card users take enormous amounts of time and money. Either a new entrant at the network level must attract potential issuers from more established systems, or it must enter the market at both levels itself, issuing cards and providing acceptance services as well as providing network services. The difficulty of the undertaking can be surmised from the fact that only one new network, Discover (now Novus), has successfully entered the general-purpose credit card market in the last 30 years.

Visa and MasterCard began as separate, competing networks owned and governed by their card-issuing members. Each eventually accepted the other's members into its network as participating owners. As a result, the two networks now have substantially overlapping ownership and governance. The Justice Department's case focuses primarily on the innovation-reducing consequences of this arrangement. The Department alleges that the corporate governors have stopped both networks from introducing new products and services because improvements in one network, although they would benefit consumers, would largely shift profits from the other network rather than raise overall returns. And with a combined 75 percent share of the credit card market by volume of transactions, the governors face little pressure from competitors to implement new initiatives in the systems jointly.

The Justice Department's complaint specifically identifies innovations that it alleges were delayed by the two networks' overlapping structure. One of these is "smart card" technology: the use of integrated circuits in the cards themselves to store more data, perform a greater array of functions, and better monitor fraud and credit risk. According to the Department, when Visa indicated that it did not want to introduce smart cards, MasterCard's board decided not to continue their development. Whether the decision was anticompetitive or driven by legitimate business judgment about the commercial viability of smart card technology remains to be proved. But whatever the outcome, the

Justice Department's challenge represents an important application of antitrust policy to the particular problems of competition and innovation in network industries.

### *Telecommunications and the Internet*

Network effects have been essential to the structure and regulation of telecommunications. At the beginning of this century communities were often served by competing telephone systems, with AT&T and an alliance of independent companies each taking about half the market. Generally, the competing systems refused to interconnect with each other and exchange traffic, and so a customer could only call people who subscribed to the same network. Eventually, AT&T was able to tip the market in its favor by patenting superior long-distance technology to which subscribers of competing telephone companies were denied access. This gave consumers an incentive to switch to AT&T, and the company grew into a nationwide monopoly.

In 1984 the Federal Government broke up AT&T's integrated monopoly into a long-distance company and seven regional companies providing local telephone service. Each of these seven companies still had a monopoly over the local service network in its region. The Telecommunications Act of 1996, however, opened the door to local telephone competition by requiring the regional monopolies to, among other things, interconnect and exchange traffic with new entrants into the market on nondiscriminatory terms. From the standpoint of network economics, this provision makes entry easier by allowing any new telephone company, no matter how small, to offer consumers the same network benefit as a larger carrier.

Preserving competition has also been a regulatory priority in telecommunications networks other than the telephone system. Internet "backbone" providers transport information between the high-capacity computer networks that make up the Internet. They sell their services to businesses, institutions, and the Internet service providers (ISPs) that offer Internet access directly to consumers. They also negotiate terms for the exchange of traffic with each other to provide the universal connectivity that defines the Internet. When MCI Communications Corp. and WorldCom, Inc., which in addition to their other lines of business were two leading backbone service providers, were merging in 1998, the Justice Department required MCI to divest its Internet backbone business to an independent competitor. Without the divestiture, the merged company would have had substantial control over the transport of Internet traffic, making it more tempting to reduce the services it provided to rival networks with which it exchanged traffic. The Department's enforcement action thus helped preserve competition in the backbone market and ensure that no single company could dominate the "network of networks" that comprises the Internet.

In another part of the Internet market, the Justice Department has challenged what it alleges are anticompetitive practices in the market for browsers, software that consumers use to access the Internet from their computers. All computers have operating systems that control and allocate the hardware resources of the computer and allow it to run various applications programs of the user's choosing, such as word processors and browsers. The necessity for any new operating system to be accompanied by a range of compatible applications creates a barrier to entry into the operating system market. Operating systems are subject to network effects because more programs will be developed to run on the more widely used systems. As more programs are developed to run on a particular operating system, that system becomes yet more popular to consumers. The result is a market for operating systems that has a propensity to tip to a dominant provider. Currently, Microsoft Corp.'s Windows operating system dominates the market for systems that run on IBM-compatible personal computers.

The Justice Department claims, among other charges, that Microsoft has misused its dominance in the market for personal computer operating systems to maintain power in that market and to attempt to gain dominance in the complementary market for browsers. Microsoft, which packages its browser with current versions of Windows, has allegedly required computer manufacturers to agree, as a condition for receiving licenses to install Windows on their products, not to remove Microsoft's browser or to allow the more prominent display of a rival browser. Because consumers demand that manufacturers preload Windows onto new personal computers, manufacturers face heavy costs if they do not accept Microsoft's terms. Similarly, the Department claims that Microsoft has refused to display the icons of ISPs on the main Windows screen or list them in its ISP referral service unless the ISPs agree, in turn, to withhold information about non-Microsoft browsers to their subscribers. The ISPs are also required, the Department alleges, to adopt proprietary standards that make their services work better in conjunction with Microsoft's browser than with others. Microsoft responds that integrating its Internet browser makes its operating system more functional and increases the features and uses of programs written for that operating system, to the ultimate benefit of consumers. The company also claims that the contractual arrangements with ISPs are nothing more than cross-promotional agreements, which are common within the computer industry.

The case against Microsoft reflects an effort by the Justice Department to prevent perpetuation of monopoly by allegedly anticompetitive means, to protect competition in the Internet browser market and to maintain incentives for the development of innovative software by preventing anticompetitive actions against successful products. The challenge for competition policymakers in this context is to preserve competitive opportunities without punishing successful competitors.

At issue is where to draw the line. Is a successful company's use of aggressive tactics legitimate, so that regulation might reduce future innovation incentives and consumer welfare? Or do those tactics cross the line into misuse of market position to engage in predatory or exclusionary conduct that forecloses competition and innovation, to the ultimate detriment of consumers? Striking the right balance is essential for promoting innovation and protecting consumer welfare in the fast-moving conditions of network competition.

## ENVIRONMENTAL REGULATION AND INNOVATION

Environmental regulation addresses the problem of environmental damage caused by pollution generated as a consequence of economic activity. As long as polluters do not bear the full cost of the environmental damage they impose on others, they will lack the incentive to reduce emissions adequately. Unregulated markets therefore typically generate too much pollution. Well-designed environmental regulation can reduce pollution and increase the net value of economic activity, which is the value of goods and services produced after deducting all costs of production, including the social costs of environmental damage.

Environmental policy may have a significant impact on the pace and direction of innovation, which over the longer term may be of greater importance than the impact of policy on immediate environmental outcomes. In what follows, the interaction of environmental regulation and innovation is examined. The incentive to generate new technologies under alternative forms of environmental regulation is discussed. This is followed by a discussion of the diffusion of existing technology among potential adopters and the role for policy to modify diffusion rates. Some of the major points of this discussion are illustrated in the context of policy regarding global climate change. Finally, the long-run impact of environmental regulation on productivity is discussed.

## ENVIRONMENTAL POLICY AND INCENTIVES TO INNOVATE

### *Three Approaches to Environmental Regulation*

Governments can implement environmental regulation in any of three principal ways: by providing producers and consumers with economic incentives to reduce their emissions, by enforcing limits on the rate of pollution discharge, or by mandating technology that producers or consumers must use to reduce pollution. This Administration's environmental policy has increased the use of incentive-based approaches. The preference for such approaches is often justified on static cost-effectiveness grounds: an incentive-based approach can achieve any environmental goal at lowest cost, given existing technology, because it induces emitters to reduce emissions as efficiently as they can with the

technology at hand. But incentive-based approaches can also be justified on dynamic grounds: under incentive-based regulation, sources of emissions may be more inclined to develop new technology that reduces pollution at lower cost than under alternative forms of regulation. In this way, market forces ensure that innovation and creativity are used to help improve the environment rather than devoted to finding ways to escape the brunt of regulation.

Examples of incentive-based approaches include tradable permit systems, emissions taxes, subsidies to reduce pollution, and liability rules. Under a tradable permit system, the government issues permits that allow emission of a given quantity of a pollutant; total emissions are limited by the number of permits issued. Emissions without a permit are banned. Although total emissions are thus capped, each source of emissions can choose its own level of emissions by buying or selling permits. The added flexibility afforded by permit trading allows sources that find abatement expensive to buy permits from sources that can abate at less cost. Thus, overall emissions are reduced at lower total cost. In 1998, for example, the Environmental Protection Agency (EPA) introduced regulations to reduce nitrogen oxides ( $\text{NO}_x$ ) emissions in 22 States and the District of Columbia, allowing for emissions trading among electric utilities that are sources of  $\text{NO}_x$  emissions. Sources needing more permits than have been allocated to them can buy them from sources that succeed in reducing emissions below their initial allocation.

Under an emissions tax, sources of emissions are taxed on their activities that cause environmental damage. If the tax is set to approximate the social cost of the environmental damage caused by the activity, sources face appropriate incentives to reduce emissions to an economically efficient level, that is, the level at which the social benefits deriving from additional pollution reductions just cover their cost. Despite the theoretical appeal of emissions taxes, however, they have rarely been used to regulate pollution in the United States.

Subsidies, on the other hand, have been used occasionally to encourage the use of more environmentally benign technologies. A system of environmental subsidies mirrors that of an emissions tax: sources of potential environmental benefits receive government payments to encourage their beneficial activities. For example, under the Energy Policy Act of 1992, electricity produced from wind and biomass fuels—two environmentally benign sources of energy—receives a tax credit of 1.5 cents per kilowatt-hour generated.

Finally, liability rules impose financial responsibility on emissions sources for any environmental damage they cause, thus providing them with a direct incentive to reduce the adverse environmental impacts of their activities. For example, the Oil Pollution Act of 1990 makes firms liable for cleanup costs, natural resource damages, and third-party damages caused by their oil spills into surface waters.

Similarly, the Clean Water Act makes parties liable for the costs of cleaning up their spills of hazardous substances.

As noted at the outset, an economic advantage of incentive-based approaches is their static cost-effectiveness: given existing technology, they achieve a given environmental objective at lower cost. For example, a system of tradable permits minimizes the cost of a given amount of emissions reduction by ensuring that the reduction is undertaken by those emissions sources, and only those sources, that can do it most cheaply. This comes about because any source that can lower emissions at a cost below the market price of permits will profit by doing so, through the sale of its unneeded permits in the market. Likewise, any source for which the cost of reduction exceeds the market permit price will find it profitable to pollute beyond its allowance, covering its excess emissions by buying additional permits in the market.

It is not always feasible to monitor the contribution of individual sources to environmental damage. In such cases it is impractical to allocate emissions permits, levy taxes on emissions, or assign liability for damage. Instead, incentive-based environmental regulation may take the form of providing incentives for emissions sources to change their production methods, rather than incentives to reduce pollution per se. For example, fertilizer runoff from farmland causes nitrate pollution of ground and surface waters, but it is difficult to measure the pollution attributable to each of the many widely scattered ("non-point source") producers. In part because farmers contribute to non-point source pollution, the Department of Agriculture pays up to 75 percent of the costs of certain conservation practices that reduce environmental damage, under the Environmental Quality Incentives Program of 1996.

In contrast to incentive-based approaches, technology standards stipulate the equipment and methods that sources must employ to control emissions. Performance standards, on the other hand, specify a limit on the emissions allowed by each source but allow the source to choose how best to meet this limit. Many environmental regulations combine elements of both performance and technology standards. For example, the Clean Water Act requires sources to meet an effluent performance standard for conventional pollutants that is set according to what could be achieved using the "best conventional technology." Often this becomes a de facto technology standard. Conversely, technology standards sometimes allow sources to use technologies other than those specified if they can demonstrate that the alternative technology will achieve the same amount of pollution reduction.

In the context of environmental regulation, technology or performance standards, in contrast to incentive-based approaches, may not be cost-effective, because they provide no mechanism for concentrating emissions reductions where they are cheapest. Of the two types of standards, performance standards are preferred because they allow emissions sources

the flexibility to choose lower cost methods of abatement. Technology standards may also lock in the use of pollution control technologies that are unnecessarily costly in the face of changing conditions.

### *Incentives to Innovate Under the Three Approaches*

Although incentive-based regulation may thus be preferable to regulation by performance or technology standards from the perspective of the short-term, static cost of achieving given environmental objectives, evaluation of the relative cost-effectiveness of the three approaches over longer horizons is more complex. Achieving ambitious environmental goals in a growing economy will require advances in technology (Box 5-5). The evolution of pollution control costs over time is affected by innovation, and the three approaches differ in the incentives they offer potential innovators. Innovation may be particularly important when environmental regulation is relatively new, because then there are often unexplored avenues of research and significant learning-by-doing effects.

An important criticism of technology standards is that they may provide little incentive to search for more cost-effective ways to reduce emissions. A technology standard provides an incentive to develop cheaper new technologies only if those technologies can meet mandated targets and win regulatory approval. Performance standards, in contrast, provide an incentive to find lower cost ways of reducing emissions, at least to the level of the standard. However, they may give little incentive to search for new methods to reduce emissions *below* the

#### **Box 5-5.—Recent Trends in Air Quality**

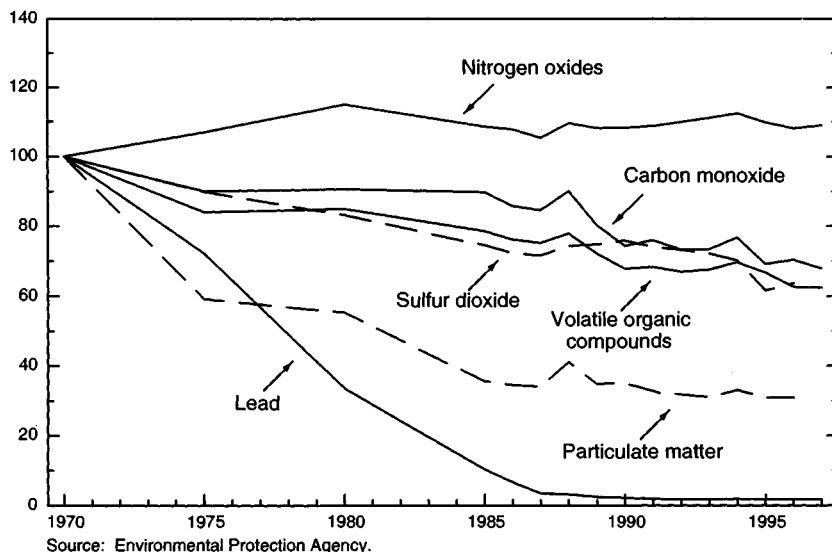
Environmental regulation has sharply reduced emissions of a number of important pollutants over the past several decades. Emissions of five of six major air pollutants (the exception being nitrogen oxides) have fallen substantially since passage of the 1970 Clean Air Act Amendments (Chart 5-1). The EPA's phaseout of lead additives in gasoline has been largely responsible for the spectacular fall in lead emissions since the 1970s: lead emissions in 1997 were less than 2 percent of 1970 emissions.

These improvements occurred during a period of considerable economic growth. From 1970 to 1997, real GDP expanded by 114 percent, so that emissions per unit of GDP have fallen dramatically since 1970. In certain sectors the reduction in pollution per unit of output has been especially striking. Vehicular emissions of volatile organic compounds per mile traveled have fallen by 81 percent, and emissions of carbon monoxide by 73 percent, since 1970. These impressive reductions could not have taken place without substantial innovation in new processes and products as well as their widespread adoption.

### Chart 5-1 Emissions of Six Major Air Pollutants

Since the Clean Air Act Amendments of 1970, the emissions of five out of six major air pollutants have fallen dramatically.

Index (1970 = 100)



current standard, unless standards are expected to become tighter in the future.

One way to increase the incentive to innovate under performance standards is for regulators to commit to the implementation of a strict standard in the future. Such strict, “technology-forcing” performance standards raise the value of innovations that lower pollution control costs. Whereas requiring emissions sources to meet a stringent standard immediately with existing technology may impose large costs, announcing the same stringent emissions targets well in advance provides an incentive to innovate, as well as time to develop the infrastructure and make other investments necessary to adopt and implement new technologies. This can reduce compliance costs significantly. For example, in 1970 the California Air Resources Board adopted stringent air emissions standards for new cars, which took effect in 1975. Many at the time did not believe the standard could be met at a reasonable cost. Yet the stringent standard contributed to the development of an emerging technology, the catalytic converter, which cut automobile emissions dramatically and is widely used today. There is a downside, however, to the technology-forcing approach. Innovative activity is risky: investments in R&D may or may not pay off in new discoveries. If they do not, compliance costs may fall by less than anticipated, and the ambitious environmental goal may prove extremely costly to meet. And relaxing the goal at a later date in the face of high compliance costs, thereby rewarding failure, has its own drawbacks.

In contrast to both performance and technology standards, incentive-based approaches reward emissions sources for developing methods that reduce emissions, regardless of their current level. For example, under a system of tradable permits, any technology that reduces emissions allows a source to profit from higher permit sales (or lower permit purchases). Similarly, under emissions taxes, subsidies to reduce pollution, or liability rules, innovations are rewarded through lower costs, higher subsidies, or lower liability payments, respectively. Because incentive-based approaches provide rewards for reducing emissions at all pollution levels, rather than just to a given standard, they offer incentives for innovation that are superior to those under either technology or performance standards.

### *The Impact of Alternative Regulatory Policies on Reducing Sulfur Dioxide Emissions*

Regulation of sulfur dioxide (SO<sub>2</sub>) emissions from coal-fired electric generating plants illustrates the importance of environmental regulatory structure for cost savings and innovation. The 1977 Clean Air Act Amendments required new fossil fuel-fired electrical generating plants to remove 90 percent of SO<sub>2</sub> from their smokestack emissions (70 percent if the plants use low-sulfur coal). This policy effectively mandated the use of scrubbers, devices that remove SO<sub>2</sub> from the exhaust gases produced by burning coal.

Title IV of the 1990 Clean Air Act Amendments established a tradable permit program for SO<sub>2</sub> emissions. In phase I of the program, which began in 1995, permits were allocated to 110 electric utility plants around the country. In phase II, which begins in 2000, the program will be extended to cover virtually all fossil-fuel-burning electric generating plants and is ultimately expected to reduce SO<sub>2</sub> emissions to 50 percent of 1980 levels. Under the tradable permit program, plants that can reduce emissions cheaply, by switching to low-sulfur coal, for example, can sell permits to plants for which emissions reduction is more expensive. Estimates of cost savings just from allowing trading range from 25 to 43 percent.

Changing the SO<sub>2</sub> regulatory system to a tradable permit system may also spur innovation that results in additional cost savings. Original compliance cost estimates will be overstated when they do not adequately take technological advances into account. (Box 5-6 explores whether there is a systematic tendency for preimplementation cost estimates to exceed costs actually achieved.)

In fact, estimates of the cost of reducing SO<sub>2</sub> emissions in 2010 have fallen substantially over time. In 1990 the EPA forecast that the total annual compliance cost for SO<sub>2</sub> emissions reduction in 2010 would be in the range of \$2.6 billion to \$6.1 billion (in 1995 dollars). In contrast, a 1998 study projected annual compliance costs in 2010 at just over \$1 billion (again in 1995 dollars). Factors other than technological change

### **Box 5-6.—Comparing Estimates of Environmental Compliance Costs Before and After Regulation**

In part because of the recent experience with SO<sub>2</sub> regulation, some environmentalists have voiced concern that estimates of compliance costs made before regulation is implemented systematically overstate the likely costs. A recent study reviewed the limited number of cases, from 1972 through the early 1990s, where both pre- and postimplementation cost estimates exist, to determine whether the former routinely overestimated compliance costs. The study found both cases of overestimation and cases of underestimation. Prior to 1981, compliance costs for nearly all new regulations were apparently overestimated. Since then, however, the accuracy of estimates has improved and the balance has been more equal.

Preparing accurate estimates of compliance costs involves many challenges. When estimating costs in advance of implementation, analysts must inevitably base their forecasts on the policies actually proposed. But policies are often changed or relaxed in the process of implementation, so that comparison of these early estimates with actual implementation costs often ends up comparing apples and oranges. Furthermore, cost estimates prepared before implementation typically assume 100 percent compliance. But not all firms may comply, and those that do not are often those with the highest compliance costs. Cost estimates after implementation are inevitably based on data covering only those firms in compliance, and hence they tend to be lower than estimates based on perfect compliance. On the other hand, to the extent that cost estimates are not sufficiently optimistic about future technological advances, the costs of compliance will be overstated.

also help explain the dramatic decline in expected compliance costs. For example, certain aspects of the program that effectively loosened the limit on total emissions were not included in the original forecast.

Perhaps the single most important factor, however, was the decline in railroad freight rates as a result of railroad deregulation. Coal from the Powder River Basin in Montana and Wyoming has the lowest production cost and lowest sulfur content of any coal in the United States. Lower railroad rates reduced the cost of transporting low-sulfur Powder River Basin coal to Midwestern utilities. Coal-fired electric generating plants already dependent on coal transported from distant locations gained direct cost savings. Other plants found they could reduce emissions at lower cost by switching to low-sulfur coal rather than investing in scrubbers.

The SO<sub>2</sub> experience reveals several advantages of relying on incentive-based approaches to environmental regulation. First, even with a given technology, allowing trading lowered compliance costs. Second, tradable permits provided added incentives to innovate. Third, tradable permits allowed sources the flexibility to adapt to changing circumstances rather than be locked into a prescribed method. The Administration has recently adopted rules to allow trading of NO<sub>x</sub> emissions and is a strong proponent of establishing an effective international permit trading system to meet the reductions in greenhouse gas emissions agreed to in the 1997 Kyoto agreement on climate change.

### *Getting Innovation Incentives Right*

It is widely recognized that the volume of R&D activity undertaken in a market economy may fall short of what would best serve society's interest. The market failures that produce this outcome apply broadly throughout the economy but may be particularly acute in the area of environmental technology.

One critical reason why private R&D activity may be less than what is socially ideal is that the economic and social benefits of a promising new technology may exceed what the innovating firm can capture for itself. This appropriability problem can emerge where patent protection is incomplete, so that rival firms can quickly and freely imitate an innovation, or where basic research leads to advances in knowledge that are difficult to patent. Even where patenting is secure, there are often important knowledge spillovers from one firm to another. Innovations in one field may spawn ideas that lead to innovations in others. Empirical evidence supports the notion of appropriability effects: such evidence strongly indicates that the social rate of return from R&D greatly exceeds the private rate of return. Therefore, a strong case for public support for R&D can be made, to better align the private returns with the social.

Two additional concerns relating to the private provision of R&D are of specific importance to environmental policy. First, environmental regulation itself may aggravate the appropriability problem. As noted above, under technology and performance standards, emissions sources do not receive credit for the value of environmental improvements they introduce. As a result, beyond the usual appropriability problems facing innovators, there may be too little incentive for firms to generate environmental innovations.

Second, inappropriate incentives for innovation may also result when environmental regulation, even when incentive-based, is either too lax or too stringent. When regulation is too lax, emissions sources may have insufficient incentive to innovate to reduce emissions or to lower costs; when it is too strict, they may spend more on devising

innovations than the resulting reduction in emissions is worth. Abstracting from the appropriability concerns common to all R&D, incentive-based approaches generate efficient innovation incentives only when they succeed in “getting prices right”—that is, when they ensure that the prices of tradable emissions permits or the taxes levied on emissions fully reflect the actual damages resulting from pollution. Only under these conditions will potential innovators appropriately weigh the cost of innovations against the expected benefits, including both expected reductions in compliance costs and the benefits from reduced pollution.

Thus, although private sector incentives to innovate are typically insufficient, more R&D activity is not always better. Like other investments, investment in R&D activity is justified only when the expected benefits exceed the costs. Of course, it is difficult at the outset to predict the success of an R&D venture, because the returns are inherently uncertain. As Albert Einstein put it, if we knew what we were doing, it wouldn't be research.

Even when regulation succeeds in “pricing” environmental damage appropriately, a strong case can usually be made for government support of environmental research because of the large gap that likely exists between social and private returns, particularly in the area of basic research. The Federal Government funds environmental research to identify environmental threats and find solutions to those threats. Basic research into environmentally friendly technologies can provide the knowledge base for the development of cheaper means of controlling the environmental impact of economic activity. In 1994, direct Federal investment, amounting to \$5.1 billion, accounted for around 50 percent of all U.S. environmental R&D expenditures. The greater part of the government's environmental R&D investment is carried out through its system of research laboratories and competitive grants to universities and researchers. Research is also undertaken through public-private research partnerships such as the Partnership for a New Generation of Vehicles (Box 5-7).

## ENVIRONMENTAL POLICY AND THE DIFFUSION OF TECHNOLOGY

Although innovation is a necessary precondition for improved environmental technology, better environmental performance will not be realized unless that new technology is adopted. Regulatory, informational, and other hurdles may block or delay the adoption of new, more environmentally friendly technologies. Policy may play a useful role in encouraging the diffusion of new technology if consumers or firms do not adopt new technologies as fully or as rapidly as is best for society.

### **Box 5-7.—The Partnership for a New Generation of Vehicles**

The Federal Government can play a particularly vital role in promoting R&D in situations where the private sector's incentive to pursue innovations with environmental payoffs is distorted. For example, low gasoline prices have made consumers less concerned about fuel efficiency, dampening the automobile industry's interest in developing more-fuel-efficient vehicles. Yet vehicle emissions are a major source of greenhouse gas emissions and other pollutants, and therefore such efforts would produce clear benefits to society.

In response, the Partnership for a New Generation of Vehicles was established in 1993 between the Federal Government and the major domestic automakers, with the aim of dramatically increasing the fuel efficiency of vehicles while maintaining performance and price. A goal of the program is to develop, by about 2004, a production prototype of a mid-sized sedan that would achieve 80 miles per gallon. The R&D needed to reach that goal ranges from basic research into lightweight materials and alternative power sources to applied engineering of new manufacturing processes. To entice firms to join the research endeavor, the government co-funds both basic and more applied research and provides access to the extensive Federal laboratory system and its experts. To date, several new technologies have been developed that are bringing this goal closer to reality.

### *Patterns and Incentives in Technological Diffusion*

The diffusion of a new technology often follows a well-established pattern. Initially, the new technology is adopted by only a few. Over time the pace of adoption increases, slowly at first and then more rapidly. The pace of adoption finally reaches a peak and then begins to fall as the market approaches saturation. The trendline of cumulative adoption thus follows an S-shaped curve. The spread of information among potential adopters seems to explain this pattern. A few pioneers are the first to become aware of the new technology and make the decision to adopt. Word of the new technology then spreads to those in contact with the pioneers, and each new user informs several others, so that adoptions begin to pick up momentum. Finally, after the bulk of the population of potential adopters has learned about the new technology, the rate of new adoption slows.

This pattern of diffusion provides important insights into the rate of adoption, but it does not answer the policy question of whether that rate is efficient. Failure to adopt technology may be appropriate—the costs of adoption may simply exceed the benefits. But market failures may also impede adoption, even when the benefits outweigh the costs.

For policy purposes it is important to distinguish between these two situations. Only in the second can policy play a constructive role in promoting the adoption of new technology. Like the incentives for innovation, the incentives for adoption of new technologies will be inadequate when market prices fail to reflect the full environmental impact of pollution. For example, if energy prices do not reflect the full environmental consequences of energy use, consumers will have an inadequate incentive to purchase energy-efficient products. An obvious solution to this problem is to “get prices right”—to adjust energy prices so that consumers face the true costs of their decisions.

A different problem arises when potential adopters lack complete information about potentially useful new technologies. In making their decisions about what products to buy, consumers may need to acquire information. As long as consumers both pay all the costs of acquiring information and reap all the benefits of making a more informed decision, their lack of complete information does not constitute a market failure. But in fact they do not reap all the benefits: in the course of adopting a new technology, one person often spreads information about that technology to others, through conversation or by observation. This sharing of information confers a benefit on those who receive it, but because the first adopter does not profit from that benefit, he or she will not account for it in deciding whether to adopt.

If this problem results in too little sharing of information, and therefore too little adoption of worthy new technologies, the solution may be for the government to provide information, or to require others to provide it. The government can also lower the cost of acquiring information by providing a credible source of objective information. The Energy Policy and Conservation Act of 1975, for example, requires many appliances to carry energy labels showing the product’s energy efficiency rating and an estimate of its annual energy costs. The EPA and the Department of Energy also operate the Energy Star program, in which products are assessed for their energy efficiency, and efficient products are allowed to display the Energy Star label.

Another approach when consumers lack full information is to regulate technology directly. For example, the Department of Energy has implemented energy-efficiency standards for appliances. This approach may be preferred when providing information is costly.

### *Residential Energy Conservation: The Energy Paradox*

Studies have found that many consumers are unwilling to invest in energy-efficient products such as compact fluorescent light bulbs, improved insulation materials, and energy-efficient appliances, even though they would save money by doing so. Their failure to make these energy-saving and apparently cost-saving investments is sometimes called the “energy paradox.”

Consumers' investment in energy efficiency, whether in installing better insulation or buying more energy-efficient appliances, typically involves, like most investments, an initial cost followed by future benefits from lower energy bills. Studies have calculated the rate of return for a variety of investments in energy efficiency and found that these returns often have a present value that exceeds typical financing costs. Thus, consumers could expect net economic savings over time.

One possible explanation for the energy paradox is that many consumers are not in a position to capture the promised savings and therefore have little or no incentive to invest in energy efficiency. For example, renters may not make energy-efficient investments if their rent includes a fixed amount for utility costs, so that they do not directly reap the benefits from conservation. Consumers might also lack information about energy-efficient alternatives. For instance, there is some evidence that providing free information increases adoption rates for energy-efficient lighting. Or consumers may simply be myopic, influenced more by the immediate cash expense than by the promise of future savings. Policies that lower the initial cost of purchase may therefore be the most effective in encouraging adoption.

Some analysts think the energy paradox may be an illusion, an artifact of flawed data or logic. The engineering data used to estimate energy-efficiency gains may be too optimistic: the gains achievable in a laboratory setting may be far greater than what a typical consumer in a typical home would realize. Consumers may fail to install insulation or other energy-saving investments correctly, for example. The costs of investing in energy efficiency may be underestimated as well. The time and resources consumers devote to learning about energy-efficient investments are not usually factored into the analysis. For some consumers, these costs may exceed any possible savings. Energy-efficient products may also have other features or other effects that consumers do not like. Improved insulation may raise indoor air pollution by reducing ventilation; fluorescent light bulbs may not fit existing light fixtures. Finally, given uncertainty about the future price of a new technology, delay may be rational. Even if immediate adoption would save money, consumers who wait may get a better price and thus save even more. Because adoption can take place at any time, analyses that ignore this "option value" of waiting may overstate the value of current adoption.

A conclusive answer to the energy paradox has yet to be found. In any case, recent low energy prices combined with implementation of energy efficiency standards for appliances and various informational programs seem to have reduced the opportunities for investments that save both energy and money.

## INNOVATION AND DIFFUSION: AN APPLICATION TO CLIMATE CHANGE POLICY

Climate change is a problem that will be with us for a long time: policies to address the threat will require the abatement of greenhouse gas emissions over decades, even centuries. Given this long horizon, innovation in technologies that can reduce greenhouse gas emissions must play a role, and therefore the impact of climate change regulation on incentives to innovate cannot be ignored. The ultimate cost of global efforts to address this environmental challenge will depend importantly on the pace at which such innovation takes place. The Administration's efforts to deal with climate change therefore incorporate many of the principles discussed above, to create appropriate incentives that promote both innovation and the speedy diffusion of new technology. These efforts are reflected both in achievements in international negotiations and in domestic actions.

Emissions of greenhouse gases, primarily from the burning of fossil fuels and deforestation, have led to a 30 percent increase in the atmospheric concentration of these gases (primarily carbon dioxide, methane, and nitrous oxide) from levels prevailing prior to the industrial revolution. If emissions continue along their projected, "business as usual" path, a doubling of carbon dioxide concentrations from their levels before the industrial revolution is likely midway through the next century. According to the best climate models, this could lead to global warming of the atmosphere of between 1.8 and 6.3 degrees Fahrenheit by 2100. The potential adverse impacts of such a change are many: a rise in sea level, greater frequency of severe weather events, shifts in growing conditions due to changing weather patterns, changes in the availability of fresh water, threats to human health from increased range and incidence of disease, and damage to ecosystems and biodiversity.

To address the risks of climate change, the member countries of the United Nations have participated in a series of international negotiations, including conferences in Rio de Janeiro in 1992, in Kyoto in 1997, and most recently in Buenos Aires in 1998. Building on the 1992 United Nations Framework Convention on Climate Change, the Kyoto climate change agreement places binding limits on emissions of greenhouse gases by the industrial countries over the period from 2008 to 2012. The agreement contains several features that promote the cost-effective reduction of these gases. For example, its proposed emissions trading program grants sources the flexibility to trade emissions allowances with sources in other industrial countries. Further, the agreement provides industrial countries with the flexibility to implement policies that promote trading across different types of greenhouse gases. Sources in industrial countries will have opportunities to invest, through the agreement's Clean Development Mechanism, in

clean-energy projects in developing countries, and thereby generate emissions credits for use at home.

The emphasis on emissions trading in the Kyoto agreement embodies the Administration's preference for incentive-based environmental regulation. For the reasons explained above, an incentive-based approach should give firms strong incentives to find low-cost methods of reducing or sequestering greenhouse gas emissions. By pricing greenhouse gas emissions, this approach also stimulates the diffusion of existing technologies and provides private sector incentives for R&D into the next generation of technologies. In addition, announcing emissions targets well in advance may produce payoffs akin to those of a technology-forcing standard. Such an approach provides incentives for firms to innovate, while also allowing them time to adjust by replacing depreciating plants with equipment incorporating new technology, thereby further lowering the cost of emissions reduction. In conjunction with the international trading system proposed under the Kyoto agreement, the Administration supports developing a domestic greenhouse emissions trading program starting in the 2008-12 commitment period. This would allow U.S. firms to participate in international trading of greenhouse gas emissions, as part of an efficient, low-cost national abatement strategy.

Because 82 percent of domestic greenhouse gas emissions come from the burning of fossil fuels, achieving climate change policy goals will require improving the energy efficiency of the economy. The rate of energy efficiency improvement (EEI) across the economy can be thought of as the sum of three factors: market-induced, policy-induced, and autonomous EEI. Market-induced EEI reflects the effect of changes in energy prices on consumption decisions. Policy-induced EEI reflects the effects of policies on energy consumption. The autonomous component of EEI is that which would take place even in the absence of policy and market price changes. The gradual structural shift in the U.S. economy toward services and away from manufacturing and agriculture may explain some of this component. Changes in energy efficiency over recent decades is summarized in Box 5-8.

Policies can provide incentives to invest in energy-efficient technologies and increase the rate of EEI through price changes. For example, the Administration's economic analysis on climate change found that a tradable permit program that results in permit prices of \$23 per ton of carbon would increase the annual rate of EEI approximately 25 percent above the level projected in the absence of such a policy.

In addition to policies affecting energy prices directly, the Administration believes that a strong argument can be made for policies to stimulate innovation and diffusion through R&D and appropriate fiscal incentives. The President's 2000 budget includes continued funding for the Climate Change Technology Initiative (CCTI), a program

### **Box 5-8.—Energy Efficiency Since the 1970s**

Energy efficiency in the United States is now much greater than it was at the time of the first oil shock just over 25 years ago. Nevertheless, because of growth in the economy, the United States today consumes more energy than it did in 1973. The ratio of energy use to GDP, a measure of the energy intensity of output, fell rapidly in the 1970s and early 1980s but stopped declining in the late 1980s. More recently it has again begun to decline (Chart 5-2). Yet despite these efficiency gains, total energy use rose by 27 percent between 1973 and 1997 (Chart 5-3), stimulated by population growth and rising GDP per capita. Virtually the entire increase came after 1986, a year that ushered in a period of relatively low energy prices. Before 1986, relatively high energy prices had kept energy use flat.

One of the most dramatic increases in energy use has been in that by motor vehicles: their annual fuel consumption rose 54 percent between 1970 and 1996. Although the average fuel efficiency of new passenger cars more than doubled between 1973 and 1996, from 14.2 to 28.5 miles per gallon, the fuel efficiency of the Nation's vehicle fleet has not increased as much, because of a shift toward light-duty trucks and sport-utility vehicles. The efficiency gains were also partly offset by an increase in miles traveled per vehicle and a large increase in the number of vehicles. The net effect of these changes has been a small decline in fuel use per vehicle but a large increase in total energy consumption (Chart 5-4).

Energy use in homes, in contrast, was about the same in the early 1990s as it was in the 1970s, as efficiency gains have kept pace with increases in the number of households, in average house size, and in the average number of appliances per household. For example, the efficiency of the average new refrigerator improved 192 percent from 1972 to 1996. Energy use per household declined rapidly in the late 1970s and early 1980s but has been stable since.

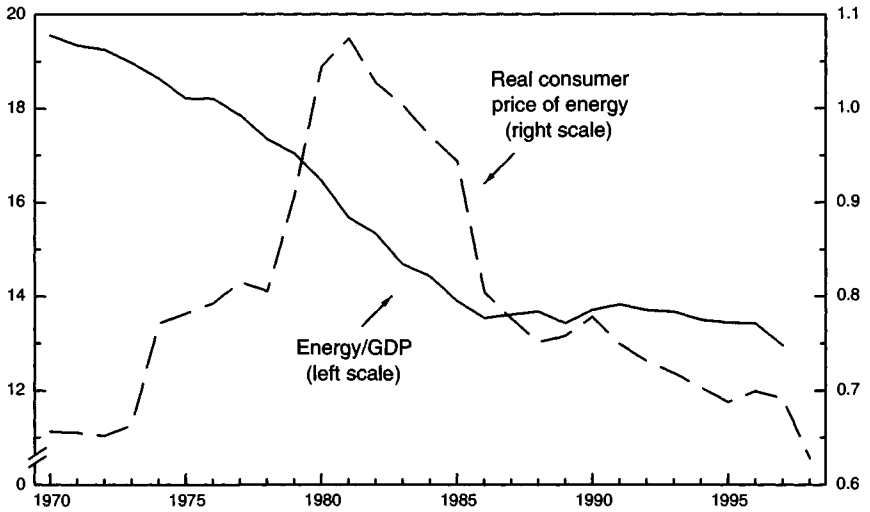
designed to spur the development and adoption of new energy- and carbon-saving technologies through tax incentives and R&D investments. Many of the efforts within the CCTI reflect recommendations made in a 1997 report by the President's Committee of Advisors on Science and Technology. The Committee found that "the inadequacy of current energy R&D is especially acute in relation to the challenge of responding prudently and cost-effectively to the risk of global climatic change from society's greenhouse gas emissions." By providing public support for energy R&D through the CCTI, the level of innovation will likely increase, offsetting in part the appropriability problems associated with this type of R&D.

### Chart 5-2 Energy Efficiency and Prices

Energy efficiency improved rapidly in the 1970s and early 1980s, periods of rising energy prices. But as energy prices have fallen since then, energy efficiency has stagnated.

Thousands of Btus per dollar

Index (1982-84 = 1)



Note: The relative consumer price of energy is the ratio of the CPI for energy to the CPI for all items.

Sources: Energy Information Administration, Department of Commerce (Bureau of Economic Analysis), and Department of Labor (Bureau of Labor Statistics).

### Chart 5-3 Energy Consumption

Total energy use has increased significantly since the mid-1980s as energy prices have fallen.

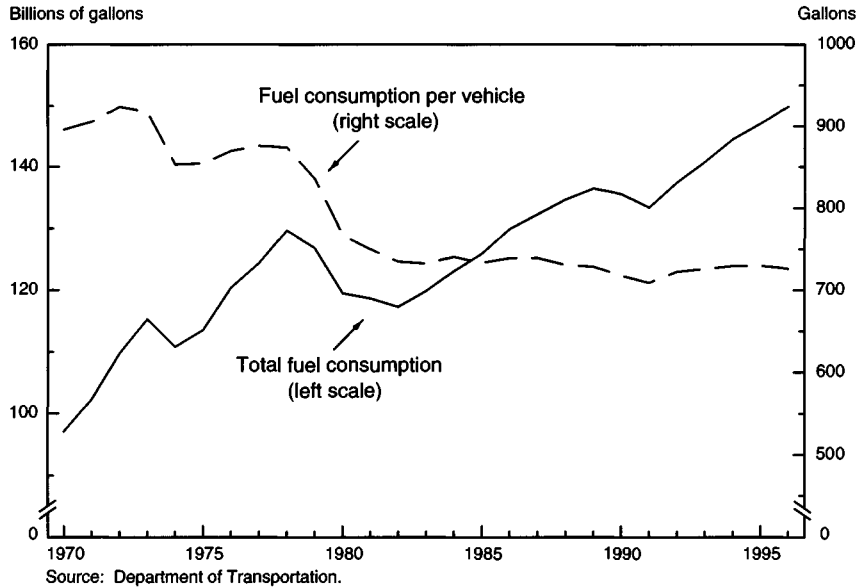
Quadrillion Btus



Source: Energy Information Administration.

#### Chart 5-4 Fuel Consumption by Motor Vehicles

Although fuel consumption per vehicle has declined, total fuel consumption by vehicles has continued to increase.



The proposed CCTI package for fiscal 2000 contains \$3.6 billion over the 1999-2004 period in tax credits for energy-efficient purchases and renewable energy. These include tax credits of \$1,000 to \$4,000 for consumers who purchase highly fuel-efficient vehicles, a 15 percent credit (to a maximum of \$2,000) for purchases of rooftop solar equipment, a 10 to 20 percent credit (also subject to a cap) for purchases of energy-efficient building equipment, a credit of \$1,000 to \$2,000 for purchasing energy-efficient new homes, an extension of the wind and biomass tax credit and an expansion of eligible biomass sources, and an investment credit for the purchase of combined heat and power systems. The package also contains \$1.4 billion for fiscal 2000 for additional R&D investments covering the four major sources of carbon emissions in the economy—buildings, industry, transportation, and electric power—and investments in carbon removal and sequestration. The proposal builds on the fiscal 1999 budget, which included more than \$1 billion in CCTI funding for R&D. The funding in that budget represented a 25 percent increase over fiscal 1998 appropriations for climate change R&D.

Complementing these fiscal measures, the Federal Government can undertake other actions to promote the diffusion of climate-friendly technology. In October 1997 the President called for a series of steps to reduce energy use by Federal buildings, vehicle fleets, and other new equipment, and to promote the use of renewable energy sources. As the Nation's largest single energy user, the Federal Government spends nearly \$8 billion each year for power to operate facilities, vehicles, and

equipment, and more than 90 percent of this energy comes from fossil fuels. The Federal Government plans to expand its procurement of renewable and less carbon-intensive fuels. These efforts will accelerate the diffusion of new energy-efficient and carbon-lean technologies. Further, the Federal Government's experience with these technologies should speed their diffusion through the rest of the economy, by demonstrating their applicability and feasibility for other users.

## THE LONG-RUN COSTS OF ENVIRONMENTAL REGULATION

The policies just described are based on the conviction that the development of new technology, and the widespread adoption and diffusion of already existing technology, can make environmental protection less expensive, and that over the long run it is possible to have both economic growth and a sounder environment. Yet some analysts make a much bolder claim: they argue that further environmental protection can be achieved at little or no economic cost. The energy paradox, described above, perhaps provides some evidence for this claim. If stricter environmental regulation is costless, then implementing such regulation is unambiguously desirable, because it would mean that real environmental benefits can effectively be had for free. Although it is a difficult proposition to test, the weight of the evidence suggests that stricter environmental regulation would impose an additional cost, but a modest one.

There are several ways in which stricter environmental regulation, by conferring benefits on regulated firms and the economy as a whole, might pay for itself. First, environmental regulation might force firms to reconsider their methods of production, which could lead them to discover new methods that simultaneously lower both emissions and cost. For example, in direct response to environmental regulations requiring the phaseout of chlorofluorocarbons, a new method was found for cleaning electronic circuit boards that not only eliminated the use of these chemicals but increased product quality and lowered operating costs as well. Second, firms that become subject to strict environmental regulation before their rivals do may gain a competitive (first-mover) advantage over their competitors by developing new products and technologies for which demand may later become widespread. For example, Scandinavian pulp and paper equipment suppliers increased their exports after more environmentally friendly production processes were introduced in Scandinavia. Third, if there are significant spillover effects from R&D, all firms may benefit from additional R&D activity that comes in response to environmental regulation, even though each firm individually might not have expanded its R&D efforts without the spur from regulation.

Many would dispute the proposition that environmental benefits can be obtained at no net cost. After all, if opportunities for profitable

investment are there for the taking, why should firms need prodding by regulators to seize them? Profit-maximizing firms gain by cutting costs and seizing strategic advantages. The profit motive itself should ensure that no large cost savings go unrealized, or first-mover advantages untapped. This critique, however, does not take into account the benefit of additional R&D in the presence of spillover effects. Moreover, difficulties in internal organization may prevent a firm from operating in a manner fully consistent with profit maximization. However, it is not clear that government policies can be designed to overcome these internal organizational problems.

Resolving the debate about whether environmental regulations impose long-run costs will require solid empirical evidence. Although it is difficult to test the proposition directly with existing data, some evidence concerning the long-run productivity consequences of environmental regulation is available. (Some intriguing evidence also exists on the environmental regulatory consequences of increased productivity; see Box 5-9.) The bulk of this evidence indicates that increasing the stringency of environmental regulation does entail a modest reduction in long-run productivity.

## REGULATION AND INNOVATION: THE CASE OF THE ELECTRIC POWER INDUSTRY

This chapter has discussed the interplay between regulation and innovation, showing how innovation often necessitates regulatory change, and in turn how regulatory change can affect the pace and direction of innovation. Here we illustrate these themes with a discussion of the ongoing deregulation and restructuring of the electric power industry, one in which technological and organizational innovation has changed the appropriate form of regulation. The electric power industry provides an appropriate case study both because of recent initiatives to introduce competition in electric power generation and because of the potential environmental impacts of power generation.

Although other industries (air travel, trucking, and telecommunications, for example) have been opened to competition over the past few decades, the electric power industry, with sales of \$212 billion in 1996, is among the largest yet to be targeted for deregulation. Competition has already been introduced at the wholesale level (electric power generation), but retail electricity markets (the sale of electricity to final consumers) are still, for the most part, regulated monopolies. In 1998 the Administration proposed legislation to remove many of the remaining barriers to competition and encourage States to implement retail competition. The goal of the Administration's Comprehensive Electricity Competition Plan is to provide consumers access to the wholesale power market while maintaining regulation of transmission and

### **Box 5-9.—Is There an Environmental Kuznets Curve?**

We have so far examined the question of whether environmental regulation affects productivity. But could there be an effect in the opposite direction? Some have suggested that higher productivity might lead to increased demand for environmental protection, by way of an increase in income per capita.

In an empirical analysis, the economist Simon Kuznets found that income inequality rose with income per capita at low levels of income, but fell with income per capita at higher levels. The inverted-U relationship thus described has come to be known as the Kuznets curve. Several analyses of patterns of emissions of air and water pollutants across countries have shown a similar relationship to income per capita: emissions seem to increase with income at low incomes, and fall with income at high incomes—an environmental Kuznets curve. If the familiar inverted-U relationship in fact holds in this domain as well (a more recent study, using the latest available data, failed to find it), countries that reach a certain level of development should experience declining pollution with economic growth, because of increased demand for environmental protection with higher income. In other words, growth is not necessarily an enemy of the environment.

Just where the turning point in the relationship between development and environmental quality occurs, if it occurs, is important for predicting whether global emissions of any pollutant are likely to increase or decrease in the near future. If peak pollution levels occur at relatively low levels of income per capita, global emissions should soon begin to fall as more countries pass the peak. However, a substantially higher peak would mean that pollution will likely get worse before it gets better. One study found that sulfur dioxide concentrations peak at income per capita levels around \$5,760, roughly that of a middle-income country like Chile. A second study using slightly different data and methods found that emissions per capita of sulfur dioxide, particulate matter, nitrogen oxides, and carbon monoxide peaked at higher income levels.

Unlike air and water pollutants, which have primarily local effects, greenhouse gas emissions seem to increase with income at all income levels. This should not be surprising. Because greenhouse gas emissions contribute to changes in the global atmosphere but do not have visible local effects, national governments, even in the richer countries, come under less pressure from their citizens to regulate their national emissions alone. Without international agreements to limit greenhouse gas emissions, achieving a more prosperous world may entail ever-increasing emissions.

distribution systems, which will probably remain natural monopolies. Just as telephone deregulation has allowed consumers to choose their long-distance company, so deregulation of the electric power industry will soon allow them to choose their source of electricity. The plan has five main objectives: to encourage States to implement retail competition; to protect consumers by promoting competitive markets; to ensure access to and the reliability of the power transmission system; to promote and preserve public benefits (for example, through assistance to low-income customers and consumer education); and to amend existing Federal statutes to clarify Federal and State authority with respect to the industry. The Administration's proposed deregulation plan provides an excellent example of how an enlightened regulatory approach can remove barriers to private innovation, resulting in both economic and environmental benefits. The competitive incentive to produce electricity more efficiently is expected to translate into lower fuel consumption and less pollution.

## FROM INNOVATION TO DEREGULATION AND COMPETITION

The electric power industry has been regulated since the early 1900s, when States first began to grant electric companies exclusive service areas. Electric utilities were overseen by public utility commissions (PUCs) and guaranteed a "reasonable" rate of return on their investments, provided they set reasonable rates and met various social objectives such as universal access.

Regulation was justified on the grounds that it was less costly to have one electric utility provide service than to have competing utilities. Firms faced enormous startup costs in installing generating units, transmission and distribution lines, and individual connections. Duplication of transmission and distribution networks by competing firms would have caused unnecessary expense. With the support of the privately owned utilities, States restricted competition by granting utilities monopoly status to encourage them to make the necessary investments and avoid wasteful duplication. As demand for electricity grew rapidly, developments in generating technology also supported the notion that electricity supply was a natural monopoly. By the 1970s, coal- and nuclear-fired plants generally needed to be very large, exceeding 500 megawatts capacity, to exploit economies of scale. The capital demands for such a large plant needed to be spread over a large consumer base for the utility to recoup its investment. Since then, technological and organizational innovations in electric power generation have blunted its natural monopoly characteristics and reduced the need to restrain competition in the generation of electricity. Deregulation in the natural gas industry and the increased availability of gas caused gas prices to fall. The cheaper fuel source spurred innovation in electric power generation and made combined-cycle gas turbine plants, which today can be as small as 100 megawatts, competitive with much

larger coal plants. In 1994 these technologies contributed to a 35 percent fall in the average size of new fossil-fuel generating plants relative to that of existing plants. These changes mean that large users can threaten to generate their own electricity if their utilities do not offer lower rates. Technologies on the horizon promise further reductions in the efficient size of electricity generation, to the point where even residential users may some day find it economical to generate their own power (Box 5-10).

The development of an interconnected electricity system, and an improved understanding of how to operate generating plants and the transmission grid independently of each other, have made competition feasible. As the market for electric power grew, individual systems began to interconnect, making it physically possible for consumers in one utility's service area to receive electricity from generators in another. To maintain the integrity of the electric power grid, the quantity of electricity supplied must always match the quantity demanded. With quantities demanded fluctuating constantly, the output of generators supplying power to the grid must be closely coordinated. Until recently, this was taken to mean that generation, transmission, and distribution services needed to be jointly owned. Recent technological and institutional innovations, however, such as computerized controls and independent system operators (ISOs), offer ways to coordinate unaffiliated generators and provide fair, open access to transmission lines while maintaining their integrity.

Today the electric power industry is governed by a mix of State and Federal regulation. But a series of Federal actions beginning in 1978 has begun to introduce competition at the wholesale level. The Public Utility Regulatory Policies Act of 1978 (PURPA) first opened the door by requiring public utilities to purchase power from renewable sources and from sources using cogeneration (see Box 5-10). The price of this "qualified power" was determined by State regulators and tended to be greater than the utility's average cost of generation. Although this requirement saddled some utilities with high-cost, long-term contracts, it also demonstrated that generators not owned by the public utility could be integrated into the electric power system, and it helped spur the development of smaller scale generating technologies. The Energy Policy Act of 1992 went further, creating a new class of independent generating companies that could sell power directly to utilities. In April 1996 the Federal Energy Regulatory Commission (FERC) issued Order 888, requiring public utilities to provide access to their transmission lines at reasonable, nondiscriminatory rates.

At the State level, to further these policies and reap the benefits of competition, many utilities are collaborating to create regional or statewide ISOs to manage their transmission grids. ISOs set transmission prices and can contract for network services (to provide back-up power, for example). There are currently four ISOs in operation

### **Box 5-10.—The Trend Toward Decentralized Power Generation**

The trend toward smaller, cleaner, and quieter generating plants, combined with certain aspects of the physics of electricity transmission and generation, has led some to claim that the days of centralized electric power are numbered. Generating electricity from a fuel source is never perfectly efficient; some of the energy in the fuel source is inevitably lost in the transformation process. This energy typically takes the form of heat, which can be captured and used in industrial processes, or as space heating if the generator is physically close enough to consumers in need of heat. An electric power plant thus produces two potentially valuable products—electricity and heat—for the price of one. The exploitation of these potential economies is called cogeneration.

Once generated, electricity typically goes through many steps before reaching the end user. It may be transmitted over high-voltage wires for long distances, after which it must be transformed into lower voltage to be distributed, and finally transformed again before being delivered to consumers. On average, some 7.5 percent of the electricity generated is lost through the distribution chain before reaching the end user. On-site electricity generation avoids the greater part of these losses, thus increasing efficiency and lowering costs.

In the past, economies of scale in electricity generation and the nuisance of locating loud and polluting plants near homes and businesses outweighed this incentive for small-scale local generation. This situation has begun to change, however, as very small scale plants are becoming more competitive with large-scale generation, and as plants are becoming quieter and less polluting.

These changes do not necessarily imply the total demise of centralized power. An electric power grid remains an efficient way of allowing generating plants with different production characteristics to serve consumers with different load profiles. For example, electricity demand from many businesses peaks during the day, whereas residential demand is concentrated during the mornings and evenings. If each of these groups generated its own electricity, not only would each need to have its own facilities, but each facility would spend many hours per day with slack capacity. A single large generating plant can supply the same customers with less total generating capacity. Depending on the size of distribution losses and the value of excess heat, it would be wasteful to have two separate plants, one at the office and another one at home, when one plant could service both loads.

around the country, and seven others are in the planning stages. Still others are planning to form power exchanges or pools to help create efficient spot power markets.

States throughout the country are going further, expanding consumer choice by introducing retail competition into electricity markets. Eighteen States have passed legislation or issued regulations toward this end. Many States and utilities across the country have implemented pilot programs, and statewide retail competition is, to various degrees, already being offered in California, Massachusetts, Montana, Pennsylvania, and Rhode Island.

Although States are thus moving forward, several Federal laws and regulations still hamper full competition in retail markets. For example, the Public Utility Holding Company Act of 1935 makes it hard for utilities to cross State lines to compete in each other's markets. PURPA requires public utilities to purchase expensive "qualified power" but would not impose such costs on new competitors. The Administration's electricity competition plan would remove these and other barriers to competition. It would also modernize the institutions that protect the reliability of the electricity supply system, enabling them to function more effectively in emerging competitive markets.

## THE BENEFITS OF DEREGULATION

The traditional means of regulating monopolies through rate setting did not provide strong incentives for utilities to improve their efficiency or offer new services—things that would happen naturally in a competitive market. By allowing companies to compete to provide electricity to consumers, deregulation forces companies to search for more efficient means of producing and delivering electricity, as well as new means of providing the energy services desired by customers. In a \$212 billion industry, even small efficiency gains from competition can have large benefits.

Above and beyond the direct efficiency gains in the production and delivery of electricity, retail competition can encourage firms to offer new products and find innovative ways to reduce overall energy costs. Time-of-day metering can encourage consumers to shift their purchases away from peak periods and thereby reduce capacity requirements. As already discussed, there appear to be barriers in the markets for energy-efficient products. Utility commissions have therefore stepped in to force public utilities to invest in energy efficiency. In the move toward a competitive industry, utilities are now rethinking such investments. There is no way for a utility to force consumers to keep buying its power once the utility has made an efficiency investment (buying insulation for a consumer's house, for example). New structures will develop in a more competitive market to allow firms to pay for and install energy-efficient equipment in return for a share of the subsequent savings. Restructuring, by making it easier to bundle efficiency services with

the provision of electricity, could provide incentives for increased growth of energy service companies (ESCOs). The potential role for ESCOs is illustrated by the experience in California under deregulation, where many supply contracts for commercial and industrial customers include an energy management component.

Competition may also permit customers to express, through their purchases, their preferences for environmentally sound electricity. "Green" power marketers have sprung up in many of the States now offering retail competition and in those with pilot programs. For a premium, these marketers sell electricity that is generated with a greater proportion of renewable sources than the current mix. If enough consumers are willing to pay enough extra for green power, it will provide a profit motive to encourage the future development of such resources.

### **THE CHALLENGES OF A COMPETITIVE MARKET: ENVIRONMENTAL AND SOCIAL OBJECTIVES**

Regulatory changes bring with them a host of challenges, as old ways of meeting various objectives must be rethought. In the past, PUCs had direct oversight over utilities. In some States they sought to include environmental considerations in their approval criteria for new generating assets. This encouraged the construction of generating plants that were less polluting than would have been the case if utilities were allowed to ignore this issue. With competition, however, PUCs lose their ability to influence the composition of electricity supply. If a utility is required to buy more expensive clean energy, its rates will have to reflect the higher costs. With competition, consumers would then be able to buy power from other providers who had lower costs because they were not subject to the same provisions.

In a competitive market, unless these environmental spillovers are internalized through other means (such as existing environmental regulations), the government must step in to pursue them in new ways. For example, as already noted, PURPA requires utilities to buy power from "qualified" clean generators. In support of the same goals, the Administration's proposal includes establishing a tradable renewable portfolio standard to promote more environmentally friendly power production. This approach would require each generator to cover a fraction of its total generation from renewable sources (not including hydroelectric power). If a seller did not generate enough renewable power by itself, it could purchase credits from companies that exceeded their generation requirement.

Similarly, under competition, other social objectives cannot be pursued by placing requirements on only one set of actors—the utilities. Therefore, the Administration's competition plan would establish a "public benefits fund" to support affordable electricity service to low-income customers, invest in energy efficiency measures, and promote

other social goals. The fund would be supported by a surcharge on all electric power transmission.

Deregulation relies on the forces of competition to keep prices reasonable for consumers. The benefits of deregulation, therefore, depend on the extent of competition in each market. The Administration's plan enhances FERC's authority to block anticompetitive mergers and to promote competition through divestiture and other means.

## CHAPTER 6

# Capital Flows in the Global Economy

INTERNATIONAL FINANCIAL DEVELOPMENTS last year posed serious challenges for the world economy. What began in the summer of 1997 as a regional currency crisis in developing Southeast Asia erupted into a wider and deeper economic disturbance in 1998. By late summer the turmoil had extended to many other financial markets and to a number of economies around the globe. The outbreak of financial and economic turmoil in Russia in August immediately threatened to spread the contagion to Latin America. Interest rates in these and other emerging market countries rose sharply, and large-scale capital flight raised risk premiums on their sovereign bonds. Several countries experienced sharp depreciations of their currencies or strains on their foreign exchange reserves. Prices of stocks, bonds, and other financial and real assets fell. Commodity prices continued to fall, engendering talk of global deflation. Ultimately the financial turbulence led to a general flight from risky assets even within the United States and Western Europe. Japan's hopes for recovery from a long-enduring slump were dashed.

Prompt policy action and signs of a turnaround in Asia improved the outlook later in 1998. Even so, by late 1998 a third of the world's economies were in recession or experiencing markedly slower growth. The International Monetary Fund (IMF) has estimated world economic growth at only 2.2 percent in 1998 and projected that it would remain at that level in 1999, in stark contrast to robust growth of 4.2 percent in 1997. Those estimates indicate a deceleration of global growth to levels not seen since the pronounced world slowdowns of 1974-75, 1980-83, and 1990-91. The risk of such a global slowdown poses new challenges to economic policy.

The widespread financial turmoil—perhaps the most severe experienced by the world economy during the last 50 years—followed a period of increasing global integration of goods and financial markets. World trade has increased dramatically as trade restrictions have steadily fallen and many countries have made a historic commitment to opening their economies to international trade. Restrictions on international capital transactions have also been eased, and the integration of financial markets has led to an unprecedented volume of cross-border capital flows.

The recent turbulence should not cloud the benefits of this ongoing trend toward globalization. The integration of markets has provided

greater opportunity, faster growth, and rising standards of living for a large share of the world's population. Trade among countries has fueled growth by harnessing the benefits of international comparative advantage and providing a dynamic stimulus to productivity. Financial integration, too, offers advantages. Open capital markets have promoted growth by allocating capital to those countries whose domestic investment opportunities exceed domestic saving. The ability of capital to flow to all corners of the world has allowed global investors to diversify the risk in their portfolios. And the knowledge that these investors are watching over their shoulders may have helped governments achieve discipline in their monetary and fiscal policies.

The promise of these long-term benefits should not, however, lead us to neglect the real costs of the current crisis—or the possibility of new crises years hence. Therefore the United States, together with other industrial and developing countries and the international financial institutions, has taken a number of important steps. To support continued growth in a context of low inflation and to restore confidence in unsettled financial markets, the Federal Reserve and other central banks worldwide have reduced key interest rates. To support economic stabilization in Brazil and to head off further contagion, the IMF has assembled a \$41 billion stabilization package for that country. To ensure the IMF's continued ability to respond to financial crises, the Congress has approved the Administration's request for \$18 billion in new funding, the U.S. share of a roughly \$90 billion international package. To secure financial stability and help avoid crises in the future, Indonesia, the Republic of Korea, and Thailand have undertaken serious structural reform of their economic and financial systems. To resolve its long-festered banking problems and stimulate its economy, Japan has passed bank reform legislation and a program of fiscal stimulus. Finally, to strengthen the international financial system and make it less crisis prone, the international community is working together to foster reforms of the international financial architecture. These measures serve to promote confidence and improve the prospects for growth in the world economy in 1999.

This chapter analyzes the factors that have led to increased global financial integration. Next it considers the causes of the Asian crisis and its contagion to other economies, the policy response to the global turmoil, and the role of Japan. The chapter concludes with an analysis of the effects of the international financial crisis on the United States.

Chapter 7 is devoted to a discussion of developments in the international financial system and proposed reforms to its architecture aimed at reducing the likelihood of future crises and promoting the orderly resolution of those that do occur. That chapter also discusses the prospects for the recently launched monetary union in Europe and the implications of the creation of the new European currency, the euro, for the U.S. dollar.

# INTERNATIONAL CAPITAL FLOWS, THEIR CAUSES, AND THE RISK OF FINANCIAL CRISIS

## TRENDS IN FINANCIAL INTEGRATION

The phenomenal growth of international capital flows is one of the most important developments in the world economy since the breakdown of the Bretton Woods system of fixed exchange rates in the early 1970s. Their growth can be traced to the oil shock of 1973-74, which spurred financial intermediation on a global scale. Mounting surpluses in the oil-exporting countries could not be absorbed productively within those economies, and at the same time the corresponding deficits among oil importers had to be financed. The recycling of "petrodollars" from the surplus to the deficit countries, via the growing Euromarkets (offshore markets for deposits and loans denominated in key currencies, particularly the dollar), produced the first post-Bretton Woods surge of international capital flows. As a result, many developing countries gained access to international capital markets, where they were able to finance their growing external imbalances. Most of this intermediation occurred in the form of bank lending, as large banks in the industrial countries built up large exposures to developing countries' debt.

The buildup of these external liabilities eventually became excessive and, together with loose monetary and fiscal policies in the borrowing countries, sharp declines in their terms of trade, and high international interest rates, triggered the debt crisis of the 1980s. Starting in Mexico in 1982, that crisis rapidly engulfed a large number of developing countries in Latin America and elsewhere. The rest of the 1980s saw a period of retrenchment, with a significant slowdown in capital flows to emerging markets (especially in Latin America) as burdensome foreign debts were rescheduled, restructured, and finally reduced with the inception of the Brady Plan in 1989.

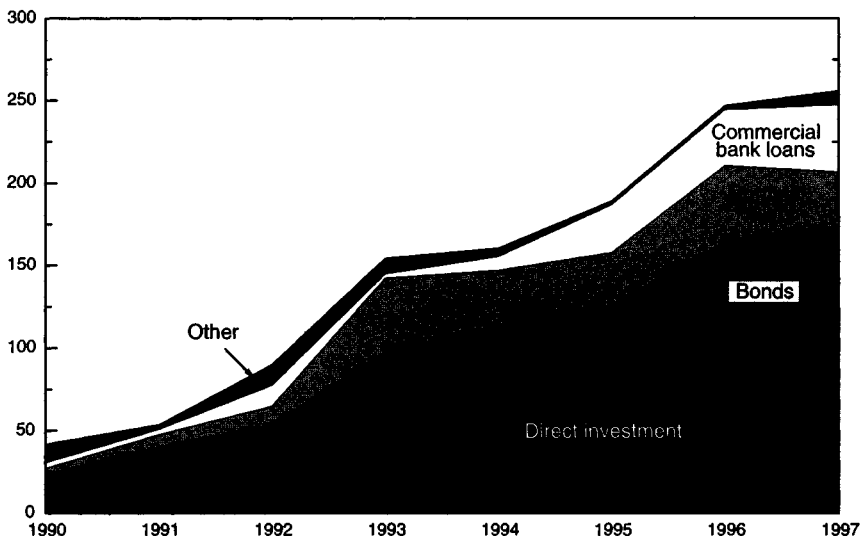
The resolution of the 1980s debt crisis led to new large-scale private capital inflows to emerging markets in the 1990s. Several factors encouraged this renewed surge of international financing. Many Latin American countries were adopting policies emphasizing economic liberalization, privatization, market opening, and macroeconomic stability. Countries in Central and Eastern Europe had embarked on their historic transition toward market economies. And rapid growth in a group of economies in East Asia had caught the attention of investors worldwide. Net long-term private flows to developing countries increased from \$42 billion in 1990 to \$256 billion in 1997.

The largest share of these flows took the form of foreign direct investment—investment by multinational corporations in overseas operations under their own control. These flows totaled \$120 billion in 1997 (Chart 6-1). However, bond and portfolio equity flows accounted

**Chart 6-1 Net Capital Flows to Developing Countries**

Foreign direct investment is the largest source of net capital flows to developing countries.

Billions of dollars



Source: World Bank.

for 34 percent of the total in that year, amounting to \$54 billion and \$33 billion, respectively. In contrast, commercial bank loans represented only 16 percent of net flows to developing countries, or \$41 billion, in 1997, compared with about two-thirds in the 1970s. To the extent it went to bond rather than equity flows, this massive relative switch out of bank lending, which is characterized by a small number of substantial lenders, would eventually pose a problem not encountered in the 1980s, namely, how to coordinate the actions of a large number of creditors (an issue discussed further in Chapter 7).

Table 6-1 reports gross inflows and outflows of both foreign direct investment and portfolio investment (two of the main components of capital flows) for both developing and industrial countries over several decades. Two points are noteworthy. First, although net flows have been large and growing, the magnitude of gross flows may be a better indicator of financial integration. As investors in one country diversify their portfolios by purchasing foreign assets, and as foreign investors increase their purchases of assets in the first country, gross flows may increase substantially without net flows changing nearly as much. And in fact gross cross-border inflows and outflows have grown even faster than net flows. Second, the rise in cross-border capital flows has occurred in developing and industrial countries alike. Although the Mexican peso crisis of December 1994 led to a modest slowdown in capital flows to emerging markets in 1995, they surged again thereafter until the Asian crisis erupted in the summer of 1997.

TABLE 6-1.— *Capital Flows to Industrial and Developing Countries*  
 [Billions of dollars]

| Flows                  | Industrial countries |                      | Developing countries |                      |
|------------------------|----------------------|----------------------|----------------------|----------------------|
|                        | Direct investment    | Portfolio investment | Direct investment    | Portfolio investment |
| <b>Gross outflows:</b> |                      |                      |                      |                      |
| 1973-78 .....          | 28.6                 | 11.8                 | 0.4                  | 5.5                  |
| 1979-82 .....          | 46.9                 | 35.0                 | 1.1                  | 17.8                 |
| 1983-88 .....          | 88.2                 | 126.5                | 2.3                  | -5.1                 |
| 1989-92 .....          | 201.3                | 274.6                | 10.4                 | 10.3                 |
| 1993-96 .....          | 259.6                | 436.4                | 19.2                 | 19.2                 |
| <b>Gross inflows:</b>  |                      |                      |                      |                      |
| 1973-78 .....          | 17.9                 | 24.4                 | 5.0                  | 1.3                  |
| 1979-82 .....          | 36.6                 | 51.0                 | 14.6                 | 3.1                  |
| 1983-88 .....          | 69.3                 | 139.1                | 15.5                 | 4.0                  |
| 1989-92 .....          | 141.9                | 343.0                | 37.8                 | 27.5                 |
| 1993-96 .....          | 173.0                | 549.9                | 106.4                | 95.9                 |
| <b>Net inflows:</b>    |                      |                      |                      |                      |
| 1973-78 .....          | -10.7                | 12.6                 | 4.6                  | -4.2                 |
| 1979-82 .....          | -10.3                | 16.0                 | 13.5                 | -14.7                |
| 1983-88 .....          | -18.9                | 12.6                 | 13.2                 | 9.1                  |
| 1989-92 .....          | -59.4                | 68.4                 | 27.4                 | 17.2                 |
| 1993-96 .....          | -86.6                | 113.5                | 87.2                 | 76.7                 |

Source: International Monetary Fund.

Further evidence of the trend toward global financial integration is the sharp expansion of foreign exchange trading. This growth has been evident both in spot markets (where currency transactions are settled within 2 business days, or “on the spot”) and in the use of derivative instruments (where trading is for future delivery of currencies, or in options to buy or sell currencies). Most purchases and sales of foreign exchange are related to financial transactions rather than merchandise trade, and indeed foreign exchange trading has grown much faster than international trade in goods over the last two decades (Box 6-1).

## THE CAUSES OF INCREASED CAPITAL FLOWS

Several factors have undoubtedly contributed to this phenomenal growth of international capital flows. First, countries have opened their financial markets, both domestically and internationally, as governments in industrial and developing economies alike have phased out restrictions on financial activity and progressively reduced or eliminated controls on cross-border capital transactions. In many instances, this financial liberalization has been accompanied by macroeconomic stabilization, privatization, trade liberalization, and deregulation. These structural reforms in capital-scarce developing countries have created significant investment opportunities, attracting a surge of foreign capital with the expectation of high rates of return. Growth in international trade has also increased the

### **Box 6-1.—The Explosive Growth of Foreign Exchange Trading**

The single statistic that perhaps best illustrates the dramatic expansion of international financial markets is the volume of trading in the world's foreign exchange markets. The Bank for International Settlements (BIS, an international institution in Basle, Switzerland, that acts as a kind of central bankers' bank) released in October 1998 a preliminary compilation of a triennial survey of 43 foreign exchange markets. It shows that, in current-dollar terms, the volume of foreign exchange trading in these markets grew 26 percent between April 1995 and April 1998, following a 45 percent increase between 1992 and 1995. That volume now stands at \$1.5 trillion per day (after making corrections to avoid double counting). By way of comparison, the global volume of exports of goods and services for *all* of 1997 was \$6.6 trillion, or about \$25 billion per trading day. In other words, foreign exchange trading was about 60 times as great as trade in goods and services.

In the BIS preliminary survey, spot market purchases amounted to 40 percent of foreign exchange transactions in 1998, down from 44 percent in 1995. Forward instruments continued to grow in importance relative to spot sales. Over-the-counter derivatives, although still a smaller fraction of total transactions, have been the fastest-growing segment of the market.

A striking feature of the foreign exchange market is the small percentage of trades made on behalf of nonfinancial customers. In the most recent survey, transactions involving such customers represent only 20 percent of total turnover.

Trading also tends to be focused geographically in a few major centers. Arguably there is a natural equilibrium consisting of one major center in each of the world's three 8-hour time zones. New York is the major center in the Western Hemisphere, with U.S. volume now equal to \$351 billion per day (18 percent of world turnover). Tokyo established itself in the 1980s as the major center in the third of the world that includes Asia. Its turnover, however, has fallen off recently, as markets in Singapore have gained. Average daily transactions totaled \$149 billion (8 percent of the world total) in Japan and \$139 billion in Singapore. London continues to handle the greatest volume of foreign exchange transactions, with its share of world turnover increasing to 32 percent, at an average daily volume of \$637 billion.

To summarize, the volume of world trade in foreign exchange has continued to grow. Derivatives far exceed spot market transactions. Most trades take place between professional traders at banks and other financial institutions; only a fraction of foreign exchange sales and purchases directly involve those who import and export goods and services.

volume of trade-related financing and bolstered trade in derivative instruments, as buyers and sellers seek to hedge their exposures to currency and commercial risk.

At the same time, financial innovations in the United States and other industrial economies have rendered cross-border investments more accessible to institutional and individual investors. Revolutionary advances in information and communications technology, together with significantly lower transportation and transactions costs, have underpinned this rapid development. Mutual funds, hedge funds, and the growth of new financial instruments, including derivatives, have enabled investors to choose which risks they will and will not accept in their quest for higher returns. A radical increase in the available range of instruments and assets has afforded investors unprecedented opportunities to increase returns and decrease risks through global diversification. Although most wealth is still primarily invested in domestic assets, international portfolio diversification is now an option for both institutions and households.

## THE FINANCIAL CRISES OF THE 1990s

Although financial crises have a long history and have recurred throughout the century, the same two decades that have seen spreading financial liberalization and ever-growing global capital flows have also witnessed such crises, which imposed serious real costs on the economies affected. Since the resurgence of these flows after the 1980s debt crisis, three more financial crises of at least regional importance have struck. The first occurred in 1992-93, when several currencies in the Exchange Rate Mechanism (ERM) of the European Monetary System experienced speculative attacks. Italy and the United Kingdom were forced to abandon the ERM in the fall of 1992 and allow their currencies to depreciate; Sweden, whose currency was effectively pegged to the ERM currencies, was obliged to follow suit shortly thereafter. A series of devaluations of several other ERM currencies ensued, and the ERM exchange rate bands for France and the remaining members had to be widened in the summer of 1993, to cope with the speculative pressure on their currencies.

The collapse of the Mexican peso in December 1994 touched off the second crisis. Other Latin American currencies quickly came under attack through what became known as the tequila effect. The third crisis of the 1990s, the Asian currency and financial crisis that has now spread to Russia, Latin America, and beyond, was triggered by the devaluation of the Thai baht in July 1997. (The history and causes of that crisis are described in detail below.) Although each of these crises had distinct characteristics and causes, several common elements, which factor significantly into current debates surrounding the reform of the international financial architecture, can be identified.

## *Recent Financial Liberalization*

In most crisis countries, significant liberalization of international capital transactions and the progressive elimination of capital controls preceded the crisis. Italy and France had fully liberalized capital movements in the years just before the ERM crisis. Mexico had progressively liberalized its domestic and international financial regime in the early 1990s. Similarly, several East Asian economies had embarked on financial liberalization, both domestic and international, over the course of the 1990s.

## *Semi-Fixed Exchange Rate Regimes*

All three crisis episodes occurred under semi-fixed exchange rate regimes. Each country that fell victim to crisis had attempted to stabilize the value of its currency with respect to those of its key trading partners. None, however, had fixed its exchange rate in a rigid way. For example, exchange rates in the ERM had been permitted to move against one another within a band (typically plus or minus 2¼ percent from a central parity rate), in an arrangement designed as a step toward European monetary integration. Similarly, the Mexican peso had followed a crawling band against the dollar, which allowed it to escape the very high inflation rates the country had suffered in the 1980s. Finally, the currencies of several Asian economies were loosely pegged to currency baskets in which the dollar had an effective weight of at least 80 percent. Although all these arrangements may have speeded integration into the world system of trade and finance and helped curb inflation in some episodes, they also, in the Mexican and Asian cases, may have hindered the adjustment of real exchange rates in the face of large trade deficits. The sudden abandonment of relatively fixed exchange rates in time of crisis reinforced negative market expectations, intensifying financial market pressures and producing severe recessions in the presence of large foreign currency-denominated debts.

The rigidly fixed exchange rate regimes of Argentina and Hong Kong are organized as currency boards, in which only as much domestic currency is issued as is backed by holdings of U.S. dollars (see Box 7-1 in Chapter 7). Their exchange rate regimes have successfully withstood the recent crisis, but at some cost to their economies.

## *Contagion*

In all three episodes, a crisis that began in one country quickly spread beyond its borders. In some cases the next victims were neighbors and trade partners; in others they were countries that shared similar policies or suffered common economic shocks. At times, as in the summer of 1998, changes in investor sentiment and increased aversion to risk contributed to contagion within and across regions. (The causes of contagion are discussed further in a later section.)

### *Concurrent Banking Crises*

The currency crises of the 1990s have often been associated with banking and financial sector crises. This is most clearly evident in the Asian and Mexican episodes, but weaknesses among financial institutions also played a role in the ERM devaluations. In Finland and Sweden, banking crises emerged in conjunction with the currency turmoil, whereas in Italy some segments of the banking system experienced financial distress. The Asian crisis provides a striking example of the link between currency and banking crises, underscoring the profound vulnerability to which fragile financial and banking sectors subject an economy. The causal links between banking crises and currency crises are complex and often reciprocal: financial weaknesses may contribute to a currency crisis, and a currency crisis can exacerbate a financial crisis by increasing the burden of foreign currency liabilities.

## THE ASIAN CRISIS AND ITS GLOBAL REPERCUSSIONS

### THE ASIAN ECONOMIC MODEL

For over two decades, beginning in the 1970s and in some cases earlier, a number of East Asian economies grew at very rapid rates, in a phenomenon widely hailed as the "Asian miracle." Thirty years ago it might have seemed that industrialization was a privilege reserved, with the sole exception of Japan, for the European countries and a few others where Europeans had settled. The East Asian miracle economies not only disproved this notion but industrialized far more quickly than their predecessors had. Starting from 1780 (roughly the beginning of the industrial revolution), the United Kingdom took 58 years to double its income. The United States and Japan took almost as long (47 years, starting from 1839, and 35 years, starting from 1885, respectively). Yet Korea accomplished the same feat in 11 years and China in just 10 (starting in 1966 and 1977, respectively).

These economies' remarkable success served to enhance living standards, reduce poverty, and expand economic opportunities for multitudes of the region's inhabitants. Perhaps even more impressive, these economies maintained a more equal distribution of income and wealth than did many developing countries that lagged behind. East Asia's success was achieved through a focus on the fundamentals—the factors that most economists consider critical to economic growth. These include high rates of saving and investment, sustained investments in education (with particularly high completion rates for basic education and high literacy), a pronounced work ethic, and an outward orientation characterized by heavy involvement in international trade

and investment (although openness to imports and foreign investment was in some cases highly selective). The East Asian strategy also emphasized sound macroeconomic management, including low budget deficits and inflation rates.

The East Asian recipe for economic success, with its clear focus on the underpinnings of economic growth, has served and should continue to serve as an inspiration for countries seeking to escape poverty, the recent crisis notwithstanding. Indeed, as developing countries around the world increasingly opted for capitalism over state planning in the 1980s and 1990s, they were not merely reacting against the conspicuous failures of state planning in their own economies and in the former Soviet bloc; they were also attracted to East Asia's inspiring example. Their enormous strengths notwithstanding, it is now commonly recognized that the East Asian economies concealed structural weaknesses, which eventually contributed to the crisis. Arguably, Asian governments relied too much on centralized state coordination rather than decentralized market incentives to maintain their progress. Government favoritism toward selected industries and exports was widespread, as was protection of domestic industries against foreign competition. Other practices distorted private sector lending and investment incentives. For example, relationship-driven banking (Box 6-2) hindered capital market discipline and flexibility. Financial institutions in general were often poorly supervised and inadequately regulated; implicit and explicit government bailout guarantees fostered moral hazard in the financial sector (as discussed below). A heavy dependence on bank debt rather than equity (as securities markets in some countries were underdeveloped) led to excessive leveraging of firms. The activities and balance sheets of corporations and financial institutions lacked transparency, as reflected in weak accounting and disclosure standards. Enforcement mechanisms were informal rather than formal: effective bankruptcy and foreclosure laws were lacking. Box 6-3 presents a further analysis of the Asian growth model.

## A HISTORY OF THE CRISIS AND ITS CONTAGION

In the summer of 1997, financial turmoil in Thailand spread to several neighboring economies with outwardly similar features at similar stages of development: Indonesia, Malaysia, and the Philippines. This contagion took the form of declines in both equity and currency markets. Next, Singapore and Taiwan, concerned about the competitive effects of these four economies' currency depreciations, decided to let their currencies float rather than resist the speculative pressure building against them. By October the contagion was affecting Hong Kong (whose return to China that summer had already increased the political uncertainty about its future), putting pressure on the Hong Kong dollar and sharply depressing local stock markets. The first bout of truly global contagion then ensued, as stock markets in the United

States and Europe fell sharply, and as other emerging market economies were forced to raise interest rates to prevent a run on their currencies. The spread of the crisis to Korea and further deterioration in Indonesia led to a severe and worsening crisis in the winter.

Investor sentiment seemed to improve by March 1998, as the Thai and Korean currencies stabilized and Korea successfully converted its short-term bank debt into longer term loans. Also, higher interest rates and tighter monetary policy in Latin America following the October episode helped stabilize investors' confidence in that region. In April, however, several negative developments led to a new loss of investor confidence. Plunging commodity prices, resulting in part from the deepening recession in Asia, hurt a wide range of commodity exporters. Oil exporters such as Ecuador, Mexico, Russia, and Venezuela were hit hard by plunging oil prices. Agricultural exporters such as Argentina, Australia, Canada, and New Zealand were also affected, as the crisis in Asia and abundant global supply led to a sharp fall in agricultural prices. Mineral producers such as Chile and Peru suffered damage as well.

Violence in May surrounding the collapse of the Suharto regime devastated confidence in Indonesia and again shook confidence in the rest of East Asia. Currency pressures on economies as far removed as South Africa, a sharp deterioration of business conditions in Japan, and the continued fall of the yen added to the pessimism. The yen's weakness led to concern that China might devalue its currency in response and that the Hong Kong peg would collapse, causing another round of currency depreciations in Asia. However, China gave assurances that it would not devalue, and the pegs held. These adverse developments, however, led to another round of sharp declines in emerging market equities starting in May.

Financial turmoil spread next to Russia, where the fall in the price of oil (one of the country's biggest exports) fed a growing current account imbalance in an economy already weakened by inadequate tax collection, a large fiscal imbalance financed by short-term ruble debt, and disappointment at the slow pace of structural reform. The manifestations included a sharp fall in the Russian stock market, speculative pressure on the ruble, and a sharp increase in the interest rate on ruble-denominated public debt. Despite negotiation in July of an IMF package aimed at reducing the fiscal deficit, the Russian government failed to restore confidence. It proved unable to implement its anticrisis program in the face of opposition from the legislature, from powerful business interests, and from advocates of a return to communism. The deterioration in market conditions culminated in a comprehensive breakdown in confidence in the first weeks of August.

On August 17 the Russian government, faced with growing losses of foreign reserves triggered by capital outflows, decided to devalue the ruble, to restructure its short-term public debt unilaterally in a form

### **Box 6-2.—Market-Based (Arm's-Length) Versus Relationship-Based (Insider) Finance**

Financial economists have long distinguished between market-based and relationship-based financial systems, broadly characterizing the Anglo-American system as the former and citing many Asian economies as examples of the latter. This generalization can provide useful insights for understanding Japan's persistent financial problems as well as the crisis in East Asian emerging markets. The details, however, differ widely within Asia. In Japan the best example is the "main bank" relationship that many established firms traditionally have with their primary lenders. In Asian developing countries the relationships that underpinned financial transactions were often based more generally on personal or political connections. Loans from a bank to an affiliated firm are called connected lending; loans guided by the government are called directed lending.

Although securities markets are more important in market-based systems, commercial banks are prominent in both systems. A crucial distinction concerns the roles that they play. In a market-based system, banks are one of many sources of external finance for firms. They compete with bond and commercial paper markets, along with markets for equity, to provide funds to companies. In such a system, bank loans are typically provided through arm's-length market transactions. Loans are contracted for specific periods, and interest rates are competitively determined on the basis of independent assessments of risk.

A decade ago, economists commonly emphasized the benefits that were thought to result from a relationship-based system. It was argued that main banks in Japan, for example, were better able to distinguish between temporary and fundamental problems when affiliated firms got into financial trouble. They could therefore continue to lend to those firms whose problems were only temporary, under circumstances where impatient, market-based financial systems would be unable to tell the difference, and therefore could not lend.

It was also argued that relationship banking improved young firms' access to funds. In market-based systems, competition

that implied material default, and to impose a 90-day moratorium on private sector payments of foreign liabilities. These decisions led to a profound financial crisis, which in turn sparked a dramatic spread of investor pessimism to Latin America and other emerging markets and a sharp downturn in equity markets in the United States and other industrial countries. The contagious spread of turmoil from Russia to Brazil and other Latin American countries arguably signaled a degree

**Box 6-2.—continued**

limited a bank's ability to take chances, since nothing prevented its competitors from subsequently stealing its customers if business went well. In relationship-based systems, on the other hand, long-term relationships promised handsome payoffs for banks from those firms that succeeded.

Some credited this financial system with promoting the Asian economies' high rates of investment and growth. But along with their strengths, relationship-based systems also possess weaknesses, which the Asian crisis has now exposed. Relationship-based systems neglect the information encapsulated in market prices. This information, the product of numerous independent assessments of profitability and risk, possibly becomes more important as economies develop and attractive opportunities for further investment become relatively more scarce. Relationship-based systems might also foster the corruption and abuse that have become known as "crony capitalism."

Long-term banking relationships create value when they facilitate the transfer of funds to profitable firms that are either young or temporarily distressed. Perhaps they are also unavoidable if an ineffective legal system forces investors to maintain some type of control to prevent their funds from being misused. They destroy value, however, when they misallocate resources.

The Asian crisis seems to offer numerous examples of such misallocation. Borrowers that should have been foreclosed upon, or at least cut off from further lending, were allowed to continue borrowing, which increased their losses and those of their banks. Lack of transparency in financing practices may have enabled bankers and corporate managers, shielded from market constraints, to invest in pursuit of personal priorities rather than in their firm's best interest. It appears, for example, that some Asian firms, unchecked by external market discipline, developed excess capacity in industries such as steel and electronics. Many Asian economies are currently struggling to overcome the adverse real consequences of these misguided financial decisions.

of financial panic, as investors apparently withdrew capital indiscriminately from most emerging market economies regardless of their strength. This sharp loss of confidence may have partly originated in the perception that the IMF had few resources left, or that it was not willing to use them to rescue a country that until then had been considered "too important to fail." If this is the case, it appears that investors drew the wrong lesson from the IMF's enforcement of

conditionality in the face of unsound Russian macroeconomic policies. The loss of confidence may also have been partly caused by the perception that other countries might follow Russia down the path of unilateral default, debt moratoria, and capital controls.

Although the major Latin American economies were structurally much stronger than the Russian economy, investors now sought to avoid risk everywhere. Emerging market sovereign spreads (Box 6-4) over U.S. Treasuries rose to about 1,500 basis points (15 percentage points) by September (Chart 6-2). In all probability this signaled an

### **Box 6-3.—The Asian Growth Model in Perspective**

The Asian crisis caught most analysts by surprise. Some had warned of economic policy flaws in Asia, but few expected them even to produce a sharp slowdown, and no one predicted the profound crisis that actually materialized. Until recently many observers thought that the East Asian countries possessed the strong economic fundamentals and structural characteristics necessary for sustained long-run growth.

If structural weaknesses in the Asian economic system lie at the origin of the crisis, as many observers contend, a natural question is why the crisis occurred when it did. One hypothesis is that countries pass through natural stages of economic development, and that the Asian financial system, based on such practices as relationship banking, is better suited to countries in the early stages. After all, financial intermediation by banks (even in the context of relationship banking) is a tremendous step to take for countries where firms are used to financing all investment out of family savings or retained earnings. Relationship banking may mimic the close ties of extended family lending and thus ease the transition to a more arm's-length financial system. Moreover, as long as growth is rapid, high leverage (that is, a high ratio of debt to equity) is sustainable. But when growth slows, the financial system needs to adapt, and firms need to reduce their high leverage.

Some slowdown in East Asia's growth was probably inevitable at some point, after the breakneck growth of the preceding decades, for the simple reason that economic convergence served as one of the driving forces of that growth. An economy that starts out behind the world leaders in income per capita can close part of the gap over time by growing more rapidly, provided of course such fundamentals as an outward orientation and investment in physical and human capital are in place. Convergence occurs for two reasons: the high rate of return on capital in labor-abundant economies, and the opportunity to emulate the most advanced technology and management practices of the leaders. But as the

extreme rise in investor risk aversion, and large-scale flight from emerging markets and other risky investments in favor of “safe havens,” notably U.S. Treasury bills. The sharp increase in the preference for liquidity, together with attempts to unwind highly leveraged positions, added to pressure on the prices of a wide range of risky assets. As described in Chapter 2, capital markets within industrial countries, including the United States, were also affected by the flight to quality: as yields on safe government securities fell, the spread of high-yield securities (junk bonds) over Treasuries increased sharply.

**Box 6-3.—continued**

income gap closes, this impetus to growth diminishes. Economies encounter diminishing returns to capital, limits on labor supply growth from rural-to-urban migration, and infrastructure constraints. Also, as they draw closer to the technological frontier, they have less to learn from those who have gone before. Japan had achieved convergence by the 1980s, and Hong Kong and Singapore by the 1990s. Korea and the others still had some way to go—a very long way in some cases. Nevertheless, the basic principle remains that the smaller the remaining gap, the less the forces of convergence contribute to further growth.

One controversial view is that East Asia’s growth from the beginning had more to do with the rapid accumulation of the factors of production—both labor, through increased labor force participation rates, and capital, due to very high investment rates—than with growth in the productivity of these factors. Some studies have found only modest underlying growth rates of multifactor productivity (a measure of increased efficiency in the use of all factors, resulting in part from technological progress). If this view is correct, it means that East Asia’s high growth rates were not sustainable in the long run, given that the rate of employment growth must at some point decline, and given an expected reduction in the rate of investment. However, even this view implies at worst a gradual slowdown of growth, not the sudden and severe crisis that occurred.

The answer to why the East Asian crisis struck when it did is thus probably a complex one. As discussed below, it appears that, around mid-1997, the factors working to produce an eventual slowdown in growth interacted in unfortunate ways with existing financial sector weaknesses, excessive corporate leverage, financial fragility resulting from poorly designed capital market liberalization, foreign indebtedness, a slowdown in export markets, worsening terms of trade, and the development of overcapacity in many sectors. The crisis was the result.

#### **Box 6-4.—Sovereign Spreads in Emerging Markets**

The Asian crisis has introduced into popular parlance a number of terms formerly encountered only in arcane financial discussions among bankers and economists. One of these is “sovereign spread.” A simple definition of sovereign spread is the difference between yields on bonds issued by the government of one country (for example, an emerging market country) and those (safe) bonds issued by the government of a major industrial country. The yield in question is the yield to maturity, or the rate of return earned by holding the bond until it matures (including all interest and principal payments), and the bonds being compared must be of the same maturity and currency denomination for the comparison to be valid.

Using the prices of bonds issued by governments in emerging market economies, one can measure the implicit risk premium that the market demands to compensate for the extra default risk entailed in holding a bond from a particular emerging market. (Default risk is the risk that the debtor will fail to pay all principal and interest on its obligation on time. The bonds of the major industrial country governments are considered to carry little or no default risk.) The sovereign spread on foreign currency-denominated bonds measures only the default risk of a country's obligations—not currency risk, because payments are to be made in foreign currency.

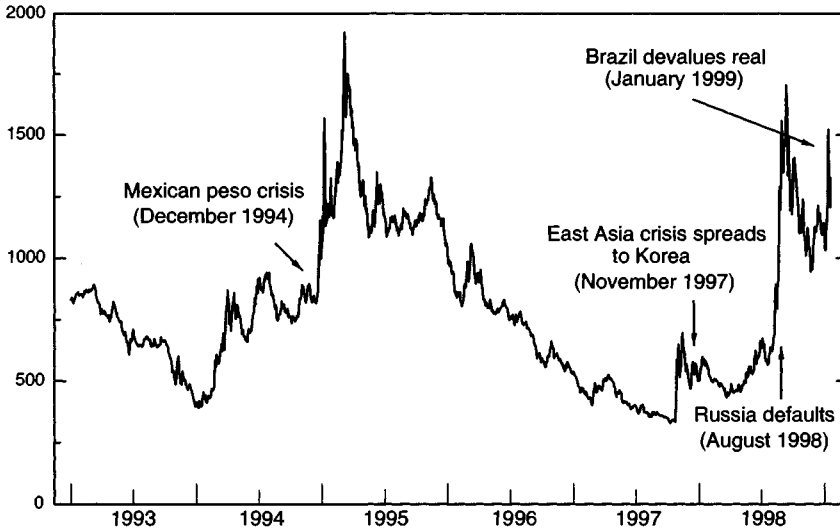
During the periods of extreme market turbulence following the Mexican peso crisis in 1994 and the Russian default in 1998, sovereign spreads rose sharply. In the latter episode these spreads reached about 1,500 basis points by mid-September (Chart 6-2). Estimates of the default probabilities incorporated in emerging market bond prices can be derived fairly easily from their sovereign spreads, given the assumption that U.S. government bonds are default risk-free. At their height, these spreads implied very high default probabilities for many countries, leading to the conclusion either that markets were exceptionally pessimistic or that investors were becoming exceedingly risk averse.

A second interesting comparison relates to the difference in yields on dollar- and local currency-denominated bonds. As long as the default risk on these bonds is the same, this differential measures the market's assessment of currency risk, that is, the risk deriving from changes in the international value of the currency. Interestingly, even under most “fixed” exchange rate regimes, a positive currency risk premium can be observed, suggesting that investors expect a devaluation at some point or that they require an implicit “insurance” premium to compensate for that possibility.

**Chart 6-2 Perceived Risk and the Spread on Emerging Market Bonds**

The risk premium on emerging market bonds shot up between March and September 1998. Spreads subsequently declined, then rose again following Brazil's devaluation.

Stripped spread over Treasuries (basis points)



Source: J.P. Morgan Emerging Markets Bond Index.

Even the spreads between Treasuries and high-grade corporate bonds rose to some extent, reflecting the generalized increase in risk aversion. The huge losses and near-collapse of a prominent hedge fund contributed to the panic. By early October there were hints of a generalized global credit crunch: rising spreads on the entire range of bond instruments from high-quality corporate bonds to junk bonds and emerging market sovereign instruments; an interruption of access to international capital markets for most emerging economies; a drying up of bond financing in all emerging markets and a shrinkage in new bond issues in industrial countries; evidence of a tightening of lending standards by commercial banks in the United States; a slowdown in reported earnings growth; and a contraction in stock markets worldwide.

However, by the middle of November, conditions in international and domestic capital markets had improved noticeably, thanks to a number of positive developments:

The Administration, as discussed in Chapter 1, took the lead in proposing a comprehensive set of steps to contain and resolve the crisis. These proposals included measures to support growth in the industrial countries, as well as policy reforms in emerging markets to promote their recovery; creation of a precautionary facility within the IMF to support countries subject to speculative pressures despite good economic fundamentals; measures to support the accelerated systemic restructuring of Asian banks and corporations; significant increases in the support by multilateral financial institutions of

social safety nets in the crisis countries; increases in trade financing to the affected countries; and reform of the international financial system architecture to make it less crisis prone.

- On October 30 the leaders of the Group of Seven (G-7) nations (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) issued a joint statement affirming their strong commitment to growth and the resolution of the crisis; endorsing the U.S. proposal for an enhanced IMF facility to provide contingent short-term lines of credit for countries pursuing strong, IMF-approved policies; presenting concrete proposals to implement initial reforms to the system; and laying out areas for further consideration in the effort to strengthen the international financial architecture. The G-7 finance ministers and central bank governors issued a more detailed statement that same day.
- The Federal Reserve reduced the Federal funds rate three times: at the end of September, in mid-October, and again in mid-November. These moves helped restore confidence and liquidity. Interest rate reductions in a number of other industrial countries, including Canada, Japan, and most of the European countries, significantly eased monetary conditions in the world economy.
- In October the Congress approved an \$18 billion funding package for the IMF, opening the way for about \$90 billion of usable resources to be provided by all IMF members to the liquidity-strapped institution.
- In November, negotiations leading to an IMF-led support and stabilization package for Brazil were concluded. The G-7 and 13 other countries agreed to support this country's adjustment efforts.
- Japan passed legislation to address the problems of its banking sector, and the Japanese government proposed a supplemental fiscal package, restoring some confidence in Asian markets.
- The yen appreciated sharply in October, reducing the risk of a devaluation by China that might have led to another round of devaluations in Asia. The stronger yen will also stimulate the exports of other East Asian countries to Japan and third-country markets, although it will raise debt-service costs for East Asian countries that have large amounts of yen-denominated debt.
- In mid-November the leaders of the member nations of the Asia-Pacific Economic Cooperation embraced a comprehensive strategy to accelerate recovery and restart growth. They undertook commitments to pursue prudent, growth-oriented macroeconomic policies, strengthen domestic financial institutions, and further liberalize trade and investment. The crisis-affected countries reaffirmed the importance of

restructuring the corporate and financial sectors to help revitalize the private sector. These countries also committed themselves to building and strengthening social safety nets to protect the poor and economically dislocated, with support from the multilateral development banks and the international community.

## THE CAUSES OF THE CRISIS

Identifying the cause or causes of the Asian crisis has engendered heated debate. Countries that experienced currency and debt crises in the past, such as the Latin American countries in the 1980s, typically shared several common characteristics. These included large budget deficits and a large public debt, high inflation as a result of monetization of those deficits, slow economic growth, and low saving and investment rates. (A deficit is said to be monetized when the central bank finances it by printing additional currency.) In Asia, in contrast, most of the economies engulfed by the crisis had enjoyed low budget deficits, low public debt, single-digit inflation rates, rapid economic growth, and high saving and investment rates.

The absence of the macroeconomic imbalances typical of past crises has led some to argue that the Asian crisis was not due to problems with the economic fundamentals. These analysts contend that the crisis represented an essentially irrational but nevertheless self-fulfilling panic, akin to a bank run, fueled by hot money and fickle international investors. (See Box 6-5 for a discussion of domestic bank runs.) Although speculative capital flight certainly exacerbated the crisis, it is now commonly agreed that, along with their many strong fundamentals, the East Asian crisis economies also shared some severe structural distortions and institutional weaknesses. These vulnerabilities eventually led to the crisis in the summer of 1997.

First, connected lending and, at times, corrupt credit practices rendered the financial sectors of the crisis economies fragile. Loans were often politically directed to favored firms and sectors. In addition, regulation and supervision of banking systems were notably weak, and implicit or explicit guarantees that the government would bail out financial institutions in trouble created moral hazard (see Box 6-5). These weaknesses contributed to a lending boom and overinvestment in projects and sectors, especially real estate and certain other sectors not exposed to international competition, that were risky and had low profitability; excess capacity also accumulated in some sectors whose goods were internationally traded. Before the crisis, speculative purchases of assets in fixed supply fed an asset price bubble in some economies, with equity and real estate prices rising beyond levels warranted by the fundamentals. Poor corporate governance and what has come to be called "crony capitalism" fed the distortions in the system and fueled the investment boom. Domestic and international capital

### **Box 6-5.—Moral Hazard in Financial Institutions**

Moral hazard is a key concept in the economics of asymmetric information, the study of transactions in which buyers and sellers differ in their access to relevant information. In general terms, moral hazard occurs whenever economic actors covered by some form of insurance pursue riskier behavior as a consequence.

Examples of moral hazard abound: insured homeowners, for instance, are more likely to build homes in a flood plain or in areas prone to wildfires, and less likely to install alarms and antitheft systems; insured drivers might drive more recklessly. If insurers can observe such behavior, they can penalize it through higher premiums. But if they cannot, they may try to regulate their clients' behavior and make sure that the client bears a portion of any losses. Sometimes these strategies are enough to mitigate moral hazard, but in extreme cases moral hazard may cause insurance markets to disappear entirely.

Banks are subject to a rather unique risk that both requires insurance and creates moral hazard. The risk is that a bank's depositors might suddenly, with or without good reason, lose confidence in the institution and seek to withdraw their funds en masse. Given that most of the assets of any bank are tied up in loans to clients, even a well-managed bank will quickly exhaust its cash reserves in the face of such a run. And any attempt to liquidate its other assets prematurely will diminish their value. Thus, even strong banks can fail if a bank run occurs, and the failure of one bank can cause runs on others.

Banks, of course, play a pivotal role in all modern economies, not only through their intermediation between saving and investment, but also through their operation of the economy's payments system.

liberalization may have aggravated the original distortions by allowing banks and firms to borrow more money at lower rates in international capital markets.

In Thailand, restrictions on entry into banking led to the growth of unregulated, nonbank finance companies, whose excessive borrowing intensified the real estate boom. Liberalization of international capital restrictions, for example through the establishment of the Bangkok International Banking Facility, enabled Thai banks and firms to borrow heavily abroad, in foreign currency, at very short maturities. No fewer than 56 of these heavily indebted finance companies were in distress even before the crisis and were eventually closed after the crisis broke.

In Korea, excessive investment was concentrated among the chaebols, the large conglomerates that dominate the economy. The

**Box 6-5.—continued**

Most governments therefore provide both a system of deposit insurance, to discourage bank runs, and lender-of-last-resort facilities, to assure banks ample access to liquidity in emergencies. In addition, governments frequently rescue troubled financial institutions that are deemed “too big to fail,” that is, whose failure could do damage to the broader financial system or provoke a run on other institutions.

By reducing the risk faced by banks, however, such insurance mechanisms create moral hazard. With their loans largely funded from government-insured deposits, banks have an incentive to gamble by purchasing excessively risky assets. When things turn out well, shareholders reap the rewards; if things turn out badly, the government bears most of the cost. Bank depositors are similarly subject to moral hazard: if deposit insurance protects them from loss in the event their bank fails, they have little incentive to monitor the bank’s risk taking.

Insurance against bank runs thus comes at the inevitable expense of increased moral hazard. Even so, its provision may still be justified. What is clear, however, is that either implicit or explicit government guarantees call for effective prudential supervision and regulation of banks and the maintenance of strong capital adequacy standards to mitigate the effects of moral hazard.

In East Asia, implicit and explicit government guarantees were coupled with inadequate prudential supervision and regulation of banking systems. Perceived government guarantees may have encouraged foreign investors to lend more to Asian banks and monitor their loans less carefully than they would have otherwise. Moral hazard thus contributed to Asian banks’ excessive borrowing from abroad and excessively risky investing at home.

chaebols’ control of financial institutions, together with government policies of directed lending to favored sectors, led to overinvestment in such industries as automobiles, steel, shipbuilding, and semiconductors. By early 1997, well before the crisis hit Korea, 7 of the 30 main chaebols were effectively bankrupt.

In Indonesia, a large share of all bank credit consisted of directed credit, channeled to politically privileged firms and sectors. Although Indonesia had already suffered a banking crisis in the early 1990s, such practices remained widespread. Moreover, most of the borrowing was in foreign currency terms, compounding debtors’ inability to repay when the local currency depreciated. A large fraction of foreign banks’ lending to Indonesia was not intermediated through the domestic banking system but went to firms directly.

Empirical studies confirm that, by the eve of the crisis, the return to capital had fallen sharply in East Asia as the result of excessive investment. Studies document a rapid buildup of fixed assets throughout Asia between 1992 and 1996, with particularly rapid growth in Indonesia and Thailand. With most of this growth financed by debt (especially in Korea and Thailand), many corporations were already heavily leveraged by 1996, well before the currency crisis increased the burden of that portion of the debt denominated in foreign currency. At the same time, moderate to low profitability severely impaired the ability of many Asian firms to meet their interest obligations. In Korea, the average debt-to-equity ratio of the top 30 chaebols was over 300 percent by the end of 1996; by 1997 the return on invested capital was below the cost of capital for two-thirds of the top chaebols.

In spite of high saving rates, the investment boom in East Asia led to large and growing current account deficits, financed primarily through the accumulation of short-term, foreign currency-denominated, and unhedged liabilities by the banking system. Exchange rate regimes entailing semi-fixed pegs to the dollar exacerbated the problem in two ways. First, as the U.S. dollar appreciated between 1995 and 1997, so did the semi-pegged currencies. This worsened the trade deficits of those economies whose currencies were closely following the dollar. Second, the promise of relatively fixed exchange rates led borrowers to discount the possibility of a future devaluation, and thus to underestimate the true cost of foreign capital. Also, although budget deficits were low in most of the region, the implicit and explicit government guarantees of a bailout of the financial system in a crisis implied large and growing unfunded public liabilities, which only emerged once the currency crisis had triggered a wider banking crisis.

Disturbances originating outside of East Asia made these economies still more vulnerable to crisis. One such development was, for several economies, a slowdown of export growth in 1996 and a worsening of the terms of trade, partly associated with a slump in the world price of semiconductors. Another was the persistent stagnation of the Japanese economy throughout the 1990s. The resulting weakness of the yen caused an appreciation of those Asian currencies that were effectively pegged to the dollar. Yet another exogenous event was the emergence of China as a major regional competitor.

In 1997 the bubble burst. Stock markets dropped, and the emergence of widespread losses, and in some cases outright defaults, revealed the low profitability of past investment projects. Non-performing loans, already on the rise before the currency crisis, escalated, threatening many financial institutions with bankruptcy. In addition, the firms, banks, and investors that had relied heavily on external borrowing were left with a large stock of short-term, foreign currency-denominated, unhedged foreign debt that could not be easily repaid. The ensuing exchange rate crisis intensified this problem, as the

fall in local currencies dramatically increased the domestic currency value of the foreign-denominated debt, unleashing further financial pressures on banks and firms. The free fall of currencies was intensified by the sudden rush of firms, banks, and investors to cover their previously unhedged liabilities. Thus, accelerating depreciation aggravated the original foreign currency debt problem, creating a vicious circle.

Concern among investors about the commitment of governments to structural reforms heightened their uncertainty about policy, contributing to massive capital outflows. Although problems with the fundamentals likely triggered the crisis, currency and stock markets may also have overreacted, with panic, herd behavior, and a generalized increase in risk aversion producing a sudden reversal of capital flows, exacerbating the crisis.

The sharp reversal of capital flows to East Asia in the second half of 1997 is clearly evident in the data. Table 6-2 shows that net private flows to five Asian crisis countries (Indonesia, Korea, Malaysia, the Philippines, and Thailand), which had averaged \$90 billion per year in 1995-96, experienced a dramatic turnabout in 1997 to a net outflow of \$1 billion. This sharp reversal, amounting to about 10 percent of the combined GDPs of these countries, took place entirely in the second half of the year, as foreign investors fled and international banks sharply contracted their short-term loans. Commercial banks

TABLE 6-2. — *Five Asian Economies: External Financing*  
[Billions of dollars]

| Item                                       | 1995  | 1996  | 1997  | 1998<br>(esti-<br>mated) | 1999<br>(pro-<br>jected) |
|--|-------|-------|-------|--------------------------|--------------------------|
| CURRENT ACCOUNT BALANCE .....              | -41.0 | -54.6 | -26.3 | 58.5                     | 43.2                     |
| External financing, net .....              | 81.5  | 100.6 | 28.8  | -.5                      | -1.2                     |
| Private flows, net .....                   | 79.0  | 103.2 | -1.1  | -28.3                    | -4.8                     |
| Equity investment, net .....               | 15.9  | 19.7  | 3.6   | 8.5                      | 18.7                     |
| Direct equity, net .....                   | 4.9   | 5.8   | 6.8   | 6.4                      | 14.2                     |
| Portfolio equity, net .....                | 11.0  | 13.9  | -3.2  | 2.1                      | 4.5                      |
| Private creditors, net .....               | 63.1  | 83.5  | -4.7  | -36.8                    | -23.4                    |
| Commercial banks, net .....                | 53.2  | 65.3  | -25.6 | -35.0                    | -18.8                    |
| Nonbanks, net .....                        | 9.9   | 18.2  | 21.0  | -1.7                     | -4.6                     |
| Official flows, net .....                  | 2.5   | -2.6  | 29.9  | 27.8                     | 3.5                      |
| International financial institutions ..... | -.3   | -2.0  | 22.1  | 21.6                     | -2.0                     |
| Bilateral creditors .....                  | 2.9   | -.6   | 7.9   | 6.1                      | 5.5                      |
| Resident lending/other, net .....          | -26.5 | -26.8 | -35.0 | -16.9                    | -14.9                    |
| Reserves excluding gold <sup>1</sup> ..... | -14.0 | -19.3 | 32.5  | -41.1                    | -27.0                    |

<sup>1</sup> Minus sign indicates increase.

Note. Countries are Indonesia, Malaysia, Philippines, South Korea, and Thailand.  
Detail may not add to totals because of rounding.

Source: Institute of International Finance.

withdrew \$26 billion in 1997. Although equity investments also lost value in 1997, the decisions by international commercial banks not to roll over their loans to Indonesia, Korea, and Thailand worsened the financial crisis and the currency collapse. It is estimated that net private outflows in 1998 were even larger than in 1997, amounting to some \$28 billion, driven again by large-scale bank withdrawals.

The drastic reversal of capital flows required a wrenching adjustment of the current accounts of the affected countries. Deficits in the current account (the aggregate of goods and services trade, investment income, and transfer transactions) can only be sustained as long as foreign lending is available to finance them. The withdrawal of that financing therefore resulted in higher domestic interest rates, depreciated currencies, and a sharp economic contraction, producing a substantial decline in imports and an abrupt about-face in the current account from deficit toward surplus. The aggregate current account balance of the five crisis countries moved from a deficit of \$55 billion in 1996 to one of only \$26 billion in 1997 (with most of the adjustment in the second half of the year) and an estimated surplus of \$59 billion in 1998. As private capital flows have fallen sharply, the role of financing external obligations has been transferred to the official sector (the IMF and other multilateral as well as bilateral official creditors) and to foreign reserves. Whereas in 1996 the five Asian countries made small net transfers to official creditors, in 1997 and 1998 they received net official flows of \$30 billion and \$28 billion, respectively. Moreover, whereas in 1995 and 1996 net private inflows in excess of current account imbalances led to sharp increases in the five countries' foreign exchange reserves, the turnaround of capital flows in 1997 led to a loss of reserves equaling \$33 billion.

The fundamentals in the crisis countries and the policies they followed thus go a good way toward explaining the reversal of capital flows in 1997. But the size of those flows and their concentration in the second half of 1997 suggest that, in addition to the debtors' excessive reliance on short-term bank debt, investor flight, especially by commercial banks, contributed to worsening the crisis. Calls for greater private sector involvement in crisis resolution (as proposed, for example, in the reports of the G-22 working groups, discussed in Chapter 7) recognize that the private sector needs to be involved in preventing financial crises and, should crises occur, needs to contribute constructively to their containment and orderly resolution. Indeed, the Korean crisis eased in early 1998 when commercial banks agreed to roll over about \$20 billion in loans to Korean banks by turning them into medium-term loans.

## THE CAUSES OF CONTAGION

Contagion, or the spread of market dislocations from one country to the next, has been observed in the behavior of exchange rates, stock

markets, and the sovereign spreads of emerging market economies. Some observers interpret this contagion in the same way they do the crisis itself, namely, as proof that markets are irrational and prone to unjustified panic. Various explanations based on economic fundamentals can also be adduced, however.

### *Common Shocks*

Contagion may be due to common economic shocks. For example, falling commodity prices hurt commodity-exporting countries. This can explain why the same shocks affected countries as distant from each other as Canada, Chile, Indonesia, Russia, and New Zealand.

### *Trade Linkages*

When one country devalues its currency, its competitive position improves relative to that of its major trading partners. The trading partners' currencies may then experience pressure as speculators recognize that their trade deficits are likely to rise. Another channel of contagion via trade occurs through income effects: a downturn in Japan depresses Asian exports to Japan, and vice versa. Trade linkages fostered the spread of the currency crisis within East Asia in 1997. Evidence suggests that contagion is related to the strength of trade links and regional factors.

### *Competitive Devaluations*

Contagion may also have resulted from the prospect, or simply the fear, of competitive devaluations among countries competing in third-country markets. For example, the first wave of currency declines in Asia in the summer of 1997 worsened the cost competitiveness of other economies throughout the region that initially maintained their nominal exchange rates fixed. This led to attacks on many of these currencies. Concerns about loss of competitiveness help explain, for example, the decisions of Taiwan and Singapore to allow their currencies to fall as the other regional currencies were depreciating. The weakness of the yen in 1997 and much of 1998 may also have provoked fears of competitive devaluations in the region.

### *Other Real and Financial Linkages*

Other links between countries' real and financial sectors may also serve as a conduit for contagion. If one country invests in and lends heavily to another, bad economic news in the latter will upset markets in the former. Pressures in the financial and currency markets of Hong Kong, Korea, and Singapore, for example, were related to the fact that these economies had heavily lent to, invested in, and traded with firms in Indonesia and the other crisis economies. Losses of this nature also affected banks and other financial firms in Japan, Europe, and the United States that had invested in East Asia, Russia, and Latin

America, and these linkages partly account for the contagion to industrial countries' financial markets.

### *Imperfect Information and Investor Expectations*

Yet another channel of contagion involves alterations in investors' perceptions concerning common structural conditions in different economies or likely policy responses. For example investors' belief in the strength of the Asian economic model may have changed when one of the star performers stumbled. The failure of financial institutions in one country may lead investors to believe, in the absence of better information to the contrary, that institutions in similar countries in the same region might be facing the same problems. Similarly, the unwillingness or inability of several Asian economies to defend their currencies more aggressively may have altered investors' views concerning the policy preferences of other economies in the region.

Contagion may also have resulted as investors changed their assessments of the odds of official bailouts. In mid-August 1998, Russia decided to devalue its currency, default on its debt, and impose exchange controls. Although Russia had been considered the classic example of a country deemed too important to fail, its inability to meet the conditions of its IMF program and its policy actions led to the interruption of further official assistance. These events shook international investors' confidence and, rightly or wrongly, increased their concern that other emerging markets might follow similar policies or might not be bailed out. Spreads on emerging market sovereign instruments had not previously priced in this possibility, and the resulting contagion to Brazil and the rest of Latin America was rapid and sharp.

### *Market Illiquidity*

Some large, highly leveraged financial institutions (including some hedge funds) lost money when Russia defaulted. They then, in effect, faced margin calls that forced them to liquidate their positions in other markets, providing yet another avenue of contagion. In markets that are imperfectly liquid, such sales will force down prices. The phenomenon thus points to the role played by market illiquidity in propagating contagion.

### *Shifting Risk Aversion and Investor Sentiment*

The explanations of contagion just outlined can be categorized as involving rational assessments on the part of market participants, based either on the actual fundamentals or their perceptions thereof. Other hypotheses advanced to explain the phenomenon are based on "irrational" investor behavior. Some argue that, as volatility in financial markets increased, investors simply withdrew en masse, without distinguishing among emerging markets according to their fundamentals. Phenomena such as financial panic, herd behavior, loss of

confidence, and a generalized increase in risk aversion may indeed have played some role in the spread of the crisis in 1997-98 within Asia, from Asia to Russia, from Russia to Latin America and other emerging markets, and eventually to G-7 capital markets.

One indication of increased risk aversion among investors is the sharp increase in sovereign spreads in the summer of 1998 (see Box 6-4). Explaining so large an increase in spreads in many countries without resort to increased risk aversion requires the unlikely assumption that the perceived probability of sovereign defaults had risen to very high values in many emerging markets. For example, the sharp increase in spreads experienced by Argentina, whose probability of default was surely not extremely high, provides evidence of an increase in risk aversion.

## THE POLICY RESPONSE TO THE CRISIS

### THE ROLE OF THE INTERNATIONAL COMMUNITY

The international community (chiefly the IMF, the World Bank, the Asian Development Bank and the G-7) moved quickly to stem the spreading financial crisis. The United States encouraged the rapid development of financial stabilization packages to respond to requests for support, first from Thailand in July 1997 and later from Indonesia and Korea. As a condition for financial assistance, the IMF has generally required substantial economic reforms, including banking sector restructuring and, initially, fiscal discipline and the maintenance of high interest rates to curb capital outflows and currency attacks. The objective of these programs has been to restore investor confidence by tackling the root causes of the crisis in each country. For this reason, the programs went beyond addressing major fiscal, monetary, or external imbalances, and sought to strengthen financial systems, improve government policymaking and corporate governance, enhance transparency of policies and economic data, restore economic competitiveness, and modernize the legal and regulatory environment. The IMF's practice of making its lending dependent on such policy programs, which it continues to monitor and enforce as funds are being disbursed, is termed "conditionality." The IMF makes every effort to work with countries to identify reforms consistent with their circumstances, and the conditions negotiated can be altered over time if the economy does not respond as expected.

In the Asian crisis, the IMF-supported programs evolved as the dimensions of the crisis became clearer. The Indonesian case provides a striking example. The initial IMF package of October 1997 required strict fiscal discipline. In June 1998 a renegotiated agreement allowed the country to run a budget deficit of as much as

8.5 percent of GDP in 1998. Indonesia's economic performance had deteriorated, as policy uncertainty, political turmoil, and violence worsened the economic outlook through the summer of 1998. As a result, budget deficits had automatically risen. The IMF recognized that, in this context, the additional fiscal stringency needed to counter such a passive deterioration of the budget deficit would prove counterproductive.

In those countries that implemented IMF policy reforms most assiduously, particularly Korea and Thailand, the stabilization packages were successful in calming financial markets and creating the basis for growth to resume. A measure of financial stability returned in these countries in 1998 as the packages were implemented. Both countries saw their currencies appreciate in the first half of 1998 after sharp drops in 1997; domestic interest rates fell back to precrisis levels by the summer; trade balances improved substantially; and foreign reserves began to increase again. The financial crisis produced severe real consequences in both countries, as economic activity dropped sharply in 1998 and recessions began. However, by the late fall of 1998 some signals suggested that both economies may have bottomed out and that economic recovery might start in 1999. In particular, both economies saw an increase in real exports and some tentative signs of a recovery in economic activity.

## THE MOTIVATION OF THE IMF PROGRAMS IN ASIA

The severity of the Asian crisis has led some critics to challenge the IMF's approach and the wisdom of the measures that it imposed. Several criticisms can be distinguished.

### *Structural Reforms*

One criticism relates to the breadth of the restructuring efforts that the IMF required. Critics contend that the IMF has intruded excessively in the domestic affairs of crisis countries by insisting on structural reforms, which lie beyond its traditional competence in the area of macroeconomic adjustment. However, an effective rescue strategy had to address the factors responsible for the crisis, and these were primarily structural rather than macroeconomic. IMF lending would have served little purpose if the weaknesses in the financial sector (ranging from poor bank supervision and regulation to murky relations among governments, banks, and corporations) were not addressed. Similarly, improved corporate governance and an end to crony capitalism, on which the IMF insisted, would help countries avoid future crises. Market analysts had made it plain that halfhearted reform efforts would do little to restore market confidence.

The IMF's focus in the Asian crisis on structural reform, rather than only on macroeconomic issues, represents neither an unprecedented expansion of its domain nor an unwarranted intrusion into areas

beyond its competence. The IMF's approach to crisis management has always evolved over time in response to the changing problems faced by the world economy. For example, after 1973 the IMF turned its attention from the balance of payments problems of the industrial countries, which by then had abandoned fixed exchange rates, to the problems of developing countries, many of which were newly independent. Similarly, it adopted new approaches in response to the international debt crisis of the 1980s and adapted its policies to aid the transition of the former Soviet bloc countries to market economies after 1990. It is appropriate and desirable that an international agency adapt and evolve in response to developments in the world economic system.

### *The Prescription of Tight Monetary Policies*

A second criticism relates to the IMF's monetary policy conditions, in particular its insistence on high interest rates to limit currency depreciation. Critics contend that high interest rates stifle growth and lead to the bankruptcy of otherwise viable firms. The logic of the IMF's high interest rate strategy was to contain the extent of currency depreciation. Like high interest rates, a plummeting currency in countries with large net external liabilities also stifles growth, by increasing the debt burden of banks and other firms whose debts are denominated in foreign currencies. The result is financial distress, bankruptcy, and economic contraction. Arguably, the failure of Malaysia and Indonesia to raise interest rates sufficiently following the run on the Thai baht may have been responsible for the destabilizing depreciations of their currencies that followed. Moreover, the surge in Indonesia's inflation rate reminds us that a loose monetary policy can rapidly ignite inflation expectations.

### *Restrictive Fiscal Policies*

A third criticism is that the fiscal policy requirements in the IMF plans were unnecessarily strict. At the onset of the crisis, the Asian countries under attack were running small budget deficits or even fiscal surpluses and had achieved relatively low ratios of public debt to GDP. A loosening of fiscal policies as soon as the crisis broke would most likely have raised doubts about policymakers' commitment to reduce outstanding current account imbalances, jeopardizing the credibility of their plans. Also, even though fiscal deficits and public debt were typically low before the crisis, the crisis itself changed that picture: the projected fiscal costs of financial bailouts in several Asian countries were estimated in the range of 20 to 30 percent of GDP. Extra public liabilities of this magnitude translates into a permanent increase in the domestic interest bill paid by Asian governments of 2 to 4 percent of GDP per year. The IMF's fiscal plans, which were negotiated on a country-by-country basis, were targeted to raise the neces-

sary revenues to meet these extra interest costs. They were not just fiscal discipline for fiscal discipline's sake.

However, when recessions in the crisis countries materialized during 1998, the IMF progressively loosened its fiscal conditions to permit fiscal deficits on cyclical grounds and to accommodate programs to address the social consequences of the crisis. Like those of other countries, the economies of the crisis countries benefit from the use of fiscal policy as a counterweight to recession. It must be acknowledged, too, that the year's revelations about the size and depth of the recessionary effects of the crisis surprised not only the Asian governments and the IMF, but also the vast majority of country analysts.

### *Moral Hazard*

Not all the IMF's critics claim that its measures have been too austere. Indeed, some have argued that the generosity of the IMF's rescue packages creates moral hazard, by leading international investors to lend carelessly and inducing domestic governments to engage in risky policies in the expectation that they would be insulated from the adverse consequences of their decisions by international assistance. However, several objections can be raised against the view that the expectation of an IMF bailout contributed importantly to the crisis, and against the overly simplistic view that the IMF in fact bailed out all investors in Asia. On the borrower side, it is hard to imagine that the availability of international support in the event of a crisis does much to induce moral hazard on the part of governments. Governments have strong incentives to avoid both the economic turmoil that a crisis produces and the strict and politically unpopular conditions that come with IMF support. Moreover, on the lender side, a majority of private creditors, especially bondholders and equity investors, have sustained huge losses even where official assistance was provided. By the end of 1997, foreign equity investors had lost nearly three-quarters of their holdings in some Asian markets. Only commercial banks were spared, and that only partially. For example, although foreign banks operating in Korea demanded and got public guarantees on bank loans as a precondition for rolling over existing loans, the conditions for these rollovers entailed a burden on these creditors. Their short-term loans were converted into medium-term loans at interest rates only a few hundred basis points above U.S. Treasury rates. Finally, although some have claimed that the Mexican rescue package in 1995 raised expectations of future bailouts and thus encouraged the later surge of capital flows to Asia, no direct evidence has been adduced to support this theory.

Even if these moral hazard concerns were judged to have some validity, they would still need to be balanced against the heavy economic and human costs of inaction. Failure of the international community to respond to a crisis, leaving countries and creditors to sort out their

debts on their own, could well result in extraordinary costs all around. A lesson from the debt crises of the interwar period and the 1980s is that an official hands-off strategy requires that debtors and creditors engage in complex negotiations over a long period. During that time access to international markets is curtailed, long-term growth is drastically reduced, and the human toll may be exorbitant. Also, the experience of the 1990s suggests that highly interdependent economies can be subject to the rapid transmission of speculative waves of financial panic across regions. Therefore failure to address a local crisis with an appropriate program of international assistance, restoring market confidence promptly, may greatly increase the chances of a systemic chain reaction.

## U.S. SUPPORT OF IMF FUNDING

Since the crisis began, the United States has supported the IMF's role in extending financial support to crisis countries on a conditional basis. However, as the crisis progressed, it became apparent that it threatened even those countries that had made great progress in implementing sound macroeconomic and structural policies and had worked to strengthen the fundamentals of their economies. To deal with such threats, the United States was joined by the other G-7 countries in proposing an enhanced IMF facility to support countries with good economic fundamentals and sound, IMF-approved policies, to help them fight off contagion. This initiative builds on the establishment, in late 1997, of a new IMF facility to provide large-scale financing in exceptional circumstances, at shorter maturities and higher interest rates than under normal IMF financing.

The United States also recognized that if the IMF is to continue to play its critical role in countering contagion, its resources had to be expanded. With its nearly worldwide membership, broad experience, and sophisticated skills in financial crisis management, the IMF is the proper organization to take the lead in handling such episodes. Through the IMF, moreover, the United States succeeds in leveraging its own contributions toward crisis resolution. This Administration recognized that the United States could not expect to exert leadership in resolving the crisis unless it met its own fair share of the obligations of all IMF members. Therefore, the President requested, and the Congress agreed last year, to provide \$18 billion in much-needed new funding to the IMF. Of this amount, \$14.5 billion represents the U.S. share of a quota increase applying to all IMF members. The remaining \$3.5 billion represents the U.S. contribution to a new backup source of financing called the New Arrangements to Borrow (NAB).

Many observers have misunderstood the consequences of IMF funding legislation for the Federal budget. Corresponding to any transfer to the IMF under the U.S. quota subscription or the NAB, the United States receives a liquid, interest-bearing claim on that institution,

which is considered a monetary asset. Thus, funds provided to the IMF are not treated as outlays in the Federal budget.

The President urged the world's major economies to stand ready to activate the \$15 billion remaining in the IMF's existing emergency fund—the General Arrangements to Borrow (GAB)—to ensure the IMF's continued ability to support reform and fight contagion. The approval of the NAB doubled these emergency funds. Under the NAB, as under the GAB, IMF members whose currencies are relatively strong will stand ready to lend to the IMF when supplementary resources are needed, to forestall or cope with an impairment of the international monetary system, or to deal with an exceptional situation that threatens the system's stability. The resources available to the IMF under the GAB and the NAB combined will amount to as much as \$48 billion. The NAB was activated shortly after it entered into effect on November 17, 1998, to help finance the IMF arrangement for Brazil, which its executive board approved on December 2.

## NEW INITIATIVES TO RESTORE GROWTH IN EAST ASIA

In addition to supporting the IMF, the United States has recognized the need to do more to help crisis countries get back on their feet, to restore growth, and to mitigate the suffering inflicted on so many people in the countries affected.

The Asian Growth and Recovery Initiative, announced jointly by the United States and Japan at the summit of APEC leaders in Kuala Lumpur in November of last year, includes innovative financing schemes aimed at accelerating bank and corporate restructuring in the crisis-afflicted economies of East Asia. In Indonesia, Korea, and Thailand, for example, the combination of initially high interest rates and illiquidity has led to harsh recessions and a vast overhang of bad debt. Corporate debt-to-equity ratios, which as we have seen were already very high before the crisis, became unsustainable once the crisis struck, as a result of real currency depreciation and the burden of high real interest rates. When highly leveraged companies cannot service their debt, a self-reinforcing spiral is created in which banks' cash flows are squeezed, forcing them to contract new lending not only to the illiquid corporations but to those in better health as well. The object of bank and corporate restructuring is to restore the flow of credit and restructure corporate balance sheets, so that firms in these countries can get back to business, and to strengthen the corporate governance of these firms.

To ensure that the crisis-impacted countries maintain access to critical imports, and to help American businesses continue selling abroad, the Export-Import Bank will establish new short-term credit facilities for critical Asian and Latin American markets. The United States will coordinate its efforts with those of the other leading industrial nations to ensure that trade credit continues to flow. Moreover,

the Overseas Private Investment Corporation (OPIC) has developed a new financial instrument to help emerging market economies raise money in international capital markets. Its aim is to keep private capital flowing to crisis-impacted but deserving economies.

The severe economic downturn experienced in East Asia has caused sharp increases in unemployment and poverty, jeopardizing the substantial strides the East Asian economies had made over several decades in alleviating poverty and raising real incomes. The social costs of the crisis have been enormous, and made much worse by the absence of developed social safety nets, such as unemployment insurance and efficient welfare programs. The President has therefore asked the World Bank and the Asian Development Bank to double their aid through an expanded Social Compact initiative, with a focus on strengthening the social safety net. The emphasis would be on job assistance, basic needs, and aid to children, the elderly, and other groups especially vulnerable to economic distress.

## REFORM OF THE INTERNATIONAL FINANCIAL ARCHITECTURE

Even as it worked to mitigate the impact and contain the spread of the crisis, the Administration collaborated with other countries to find ways to strengthen the international financial system to make it less prone to future crises. Discussions in 1998 concerning the reform of the international financial architecture culminated in the October publication of three reports on the subject. The reports were written by working groups formed by the G-22, a group of systemically significant industrial and emerging market economies, first brought together in April 1998. The G-22 reports are discussed in Chapter 7.

## JAPAN'S ECONOMIC AND FINANCIAL CRISIS

Japan, the leading economy in Asia, inadvertently played an unfortunate role in the emergence and spread of the Asian crisis. Throughout the 1990s Japan has suffered a hangover from the bursting of stock market and land bubbles at the end of the 1980s. In 1996, after 4 years of disappointing growth, it appeared that the Japanese economy was finally recovering. But a large increase in the Japanese consumption tax in April 1997, implemented to address Japan's large fiscal deficit and longer term demographic pressures on its budget, caused the country to lapse into recession in the second quarter of that year.

Japan's economic weakness likely contributed to the Asian crisis through several channels. Weak growth at home reduced Japan's demand for imports from the rest of East Asia. Japanese banks, in fragile condition after the bursting of the 1980s bubble, were further weakened by a stagnant economy in the 1990s. Facing low interest

rates at home, they sought higher returns through large-scale lending to the fast-growing East Asian economies. Although U.S. and European banks had also lent extensively in the region, Japanese banks had the largest cross-border and foreign currency lending of any industrial country banks to the Asian crisis economies. Thus, Japanese banks and securities firms were particularly hard hit when the crisis erupted. As the crisis escalated, and as Japan's own economic crisis deepened in 1997 and 1998, many Japanese banks, faced with significant losses, recalled foreign loans in order to avoid a domestic lending squeeze.

Japan's role in the Asian crisis contrasts sharply with the U.S. role in the Mexican crisis of 1995. Whereas a strongly expanding U.S. economy helped Mexico avoid a worse outcome, the weakness of Japan's economy and financial institutions undoubtedly added to Asia's woes. In turn, the significant decline in Japan's own exports to the crisis countries, along with the losses suffered by its financial institutions on their Asian loans, have hit Japan's vulnerable economy hard, adding to its domestic difficulties.

Japan remained in recession throughout 1998. Real growth over the four quarters of 1997 amounted to -0.4 percent. Real GDP in the first half of 1998 was down 3.8 percent at an annual rate, and few if any signs of recovery were in evidence by the end of the year. Japan risks descent into a deflationary spiral in which falling prices cause high real interest rates, further discouraging spending.

In response to the deepening contraction and a growing credit crunch, the Japanese government has taken several significant policy steps. In the fall of 1998, legislation was approved providing public funds to address the problems of the banking system. Of the 60 trillion yen (about \$500 billion) in the package, about 30 percent has been earmarked for protection of depositors, 40 percent to recapitalize weak banks, and 30 percent to purchase the shares of nationalized banks. Although questions remain about its implementation and effectiveness, the banking reform bill is a necessary step toward restructuring Japan's financial system.

To stimulate growth, the Japanese government announced a 17-trillion-yen fiscal stimulus package in April 1998, including both public works expenditures and tax reductions. As the contraction continued to intensify, however, the Japanese government proposed further expansionary fiscal measures in the fall. In November it announced a plan to pass a third supplementary budget aimed at implementing over 17 trillion yen in additional public works and other spending measures in 1999, along with more than 6 trillion yen in tax cuts.

As the world's second-largest economy, Japan has a key role to play in maintaining global economic growth. The United States has urged Japan to take strong and sustained fiscal measures to stimulate domestic demand, restore confidence, deal promptly and effectively

with its banking problems, and open its markets and deregulate its economy. Japan's performance will help determine the prospects for Asia's recovery.

## EFFECTS OF THE EMERGING MARKETS CRISIS ON THE UNITED STATES

### MACROECONOMIC EFFECTS

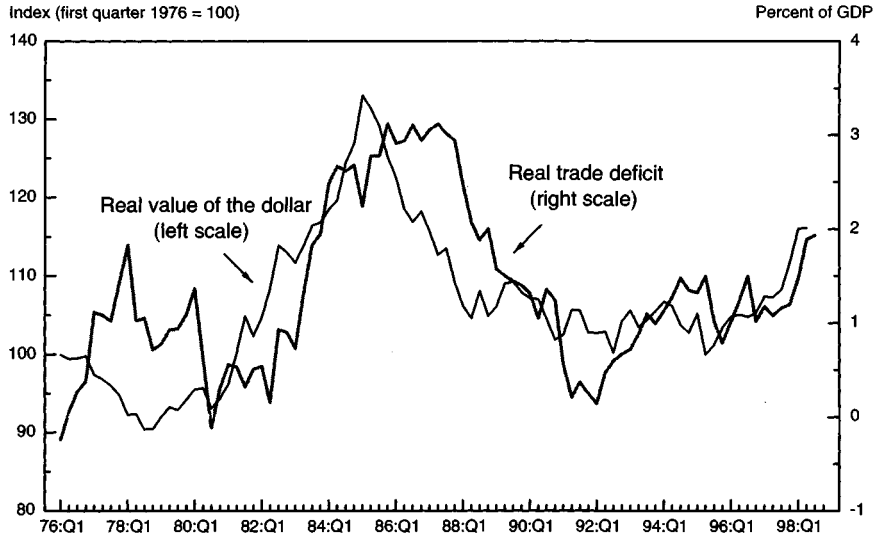
The United States enjoyed strong economic growth before the onset of the Asian crisis and has continued to do so since. But the crisis has had an impact, both real and financial. One consequence has been a marked decline in net exports and a widening of the trade deficit. The growing trade deficit (Chart 6-3) is largely attributable to three factors: faster income growth in the United States than in most other industrial countries, which raises imports; outright contraction in Japan and much of the rest of East Asia, which cuts U.S. exports; and an appreciation of the dollar in both nominal and real terms relative to both European and Asian currencies, and particularly the yen (from mid-1995 until September 1998). Since the summer of 1998 the dollar has depreciated against the yen, but the fall of the dollar against the other G-10 currencies is still modest on a trade-weighted basis (Chart 6-4).

Two sectors adversely affected by the crisis were agriculture and manufacturing. Shrinking exports and low prices (attributable partly to the financial crisis, and partly to large global supplies of agricultural commodities following bumper harvests), on top of bad weather in some regions, led to a fall in farm incomes. In manufacturing, both export industries and industries that compete with imports sustained damage. The commercial aircraft industry, for example, suffered from the fall of exports to Asia. The steel industry and the textiles and apparel industry have come under import pressure as the dollar's appreciation reduced the price of imports from the crisis countries. As discussed in Chapter 2, U.S. financial markets also felt the impact, and financial institutions have suffered losses on their emerging market loans and investments.

The appreciation of the dollar since 1995 (illustrated in Chart 6-4) also had a number of beneficial effects at home. Import prices have fallen, especially for oil and other commodities, contributing to the drop in inflation and improving the U.S. terms of trade (Chart 6-5). The terms of trade is a measure of the prices at which we sell our goods abroad, relative to the prices we pay for imports. An increase in the terms of trade translates into increased purchasing power of U.S. goods in world markets and higher real U.S. income. A strong dollar and subdued inflation have also supported lower interest rates, both short and long term, benefiting households, firms, and other borrowers.

**Chart 6-3 Real Value of the Dollar and the Trade Deficit**

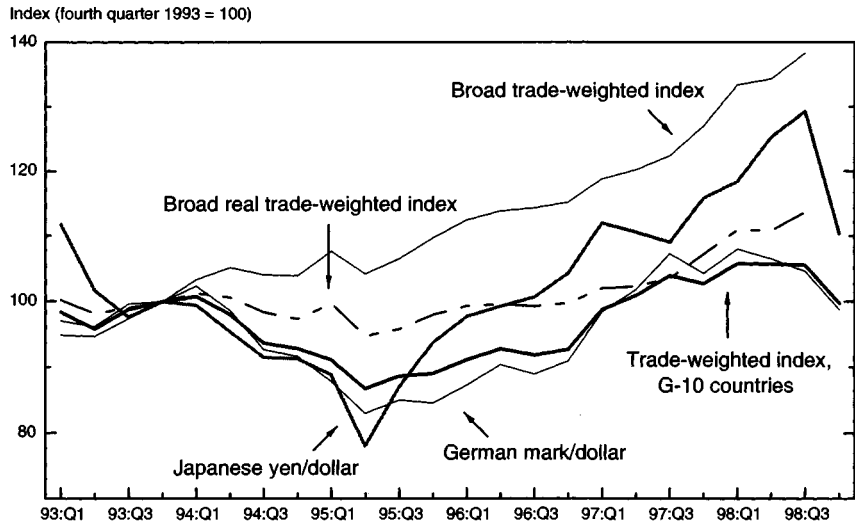
The trade deficit is a macroeconomic phenomenon: increases typically follow an appreciation of the dollar.



Sources: Department of Commerce (Bureau of Economic Analysis) and Federal Reserve Bank of Dallas.

**Chart 6-4 Dollar Exchange Rates**

The dollar has fluctuated sharply against the currencies of Japan and other major trading partners, but less sharply against broader indexes of foreign currencies.

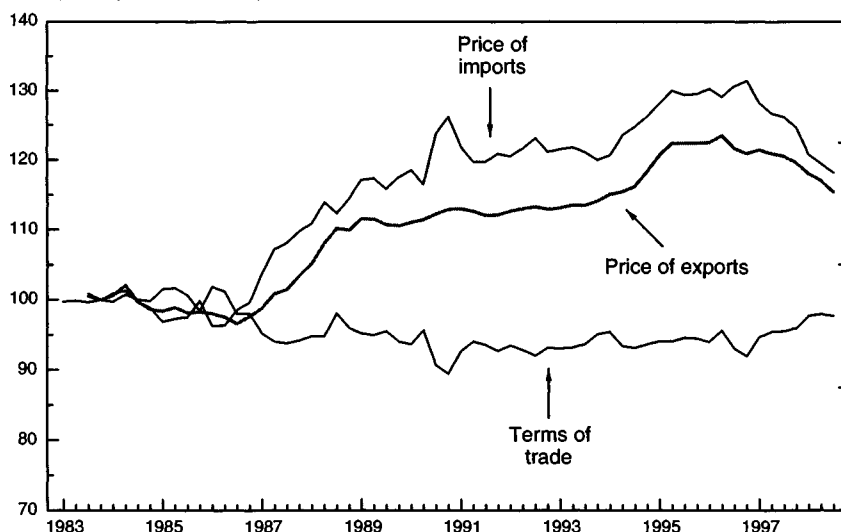


Note: The broad trade-weighted index is relative to 129 trading partners; the real measure is relative to 111, and is adjusted for domestic inflation. A rise in an index indicates an appreciation of the dollar.  
Sources: Board of Governors of the Federal Reserve System and Federal Reserve Bank of Dallas.

### Chart 6-5 Terms of Trade

Import prices have fallen more than export prices since the onset of the Asian crisis, leading to an improvement in the terms of trade.

Index (fourth quarter 1983 = 100)



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

## THE TRADE AND CURRENT ACCOUNT DEFICITS

### *The Short-Term Behavior of the Trade Imbalance*

In 1998, faster U.S. growth relative to growth in our trading partners combined with the continued appreciation of the dollar to exert a powerful impact on the U.S. trade balance. The deficit in trade in goods and services rose substantially. Based on data for the first 11 months of the year, it now appears that the deficit for 1998 will be in the neighborhood of \$170 billion, up from \$110 billion in 1997. Compared with 1997, it appears that exports of goods and services in 1998 will be down about 1 percent, whereas imports of goods and services will be up about 5 percent. Relative to past trends, the decline in exports is by far the more striking of the two figures.

A large fraction of the increase in the dollar value of the trade deficit is related to the decline in exports to Asia; the contribution of import growth to the increased nominal value of the deficit has been quite modest thus far. The decline in exports to six key East Asian countries (Indonesia, Japan, Korea, Malaysia, the Philippines, and Thailand), measured at an annual rate, was running at \$25 billion to \$30 billion in the fall of 1998. Korea alone accounted for almost two-fifths of the decline. Imports from these countries have also risen, continuing an upward trend that has persisted for several years.

The increase in the trade deficit and the negative contribution of increased imports are larger when measured in real terms rather than as nominal dollar values, because import prices have fallen more than export prices. The dollar prices of imports from four East Asian economies (Hong Kong, Korea, Singapore, and Taiwan) fell 10.8 percent between August 1997 (at the onset of the Asian crisis) and December 1998; the dollar prices of U.S. imports from Japan declined by 4.7 percent over the same period. Although measures of import prices for the other Asian crisis economies are not available, it is likely that they fell by even more, because the depreciation of their currencies against the dollar was greater. Sharp drops in the global prices of many primary commodities have also exerted downward pressure on U.S. import prices. Import prices for petroleum products were 43.0 percent lower in December 1998 than in August 1997; import prices for agricultural goods declined 3.3 percent over the same period. Despite their overall decline, the prices of U.S. imports from the Asian economies have fallen by a smaller percentage than the values of their currencies have against the dollar. This implies that the pass-through from the depreciations to the decline in import prices has so far been less than full. Because U.S. export prices have also fallen, the decline in exports of goods and services was more modest when measured in real rather than nominal terms.

### *A Longer-Term Perspective on the Current Account*

International trade has contributed greatly to growth and well-being in the United States. Nevertheless, some contend that the large and growing U.S. trade deficit costs American workers jobs; others argue that it reflects unfair trade practices of our trading partners or signals a loss of U.S. competitiveness in world markets. The growing trade deficit has indeed been associated with dislocations in some manufacturing industries, but job gains in construction, services, information technology, and other sectors not directly involved in international trade have been greater than job losses in manufacturing. Arguments about the adverse consequences of trade deficits are largely misplaced: the rising U.S. trade deficit is primarily a reflection of strong U.S. investment, employment, and output growth, not a symptom of economic weakness.

*The current account and the saving-investment balance.* Unraveling misconceptions about the trade deficit requires an understanding of the trade balance and a closely related concept, the current account balance. A country's trade balance is equal to the difference between the value of its exports and the value of its imports—in other words, the value of goods and services sold by its residents to foreigners minus the value of the goods and services that its residents buy from foreigners. The current account balance simply adds other sources of foreign income to the trade balance, to arrive at a complete accounting

of the economy's current transactions (as distinct from its capital transactions, such as borrowing in the form of foreign loans). The most important of these other sources are interest and investment earnings received on foreign assets (and paid on foreign liabilities), and aid grants and transfers.

A country's current account balance also equals the difference between its gross national income (the sum of gross domestic production and net income received from abroad) and its spending (the sum of private and public consumption and investment spending). Since national saving is the difference between gross national income and total consumption, the current account is also equal to the difference between national saving and domestic investment. If a country's national income exceeds its spending, or, equivalently, if national saving exceeds domestic investment, the current account will be in surplus. If instead a country spends (that is, consumes and invests) more than its national income, investment will exceed saving, and the current account will be in deficit.

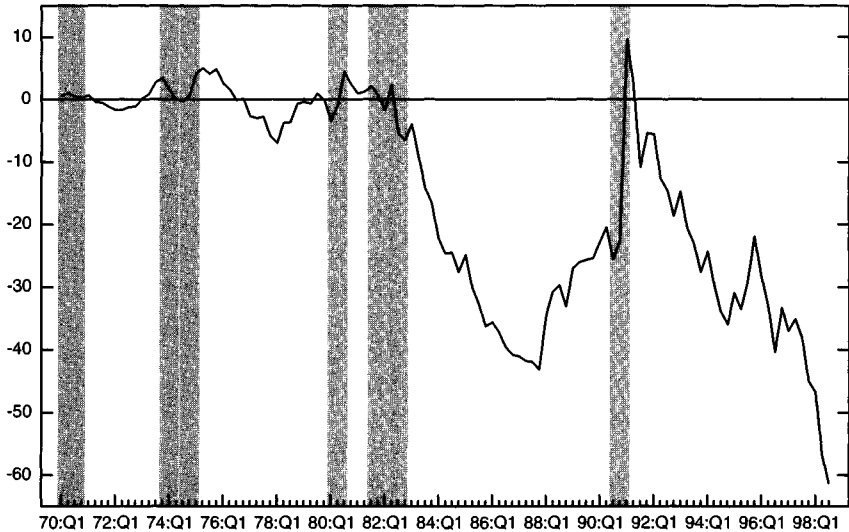
For the current account to be in deficit—that is, for investment to exceed saving—a country must be able to finance that deficit through capital inflows (borrowing) from the rest of the world. A country's current account deficit for a given period therefore equals the increase in its net foreign liabilities in that period (or the decline in its net foreign assets, if the country is a net creditor). Conversely, current account surpluses, which reflect an excess of saving over investment, increase a country's net foreign assets (or reduce its net foreign liabilities).

*Business cycles, long-run growth, and the current account.* The argument that current account deficits inevitably cause a net loss in jobs and output is at odds with the evidence. Rapid growth of production and employment is in fact commonly associated with large or growing trade and current account deficits, whereas slow output and employment growth is associated with large or growing surpluses. Chart 6-6 shows, for example, that the U.S. current account improved during the recessions of 1973-75, 1980, and 1990-91, but declined during the cyclical upswings of 1970-72, 1983-90, and 1993 to the present. This reflects both a decline in demand for imports during recessions and the usual cyclical movements of saving and investment. During a recession both saving and investment tend to fall. Saving falls as households try to maintain their consumption patterns in the face of a temporary fall in income; investment declines because capacity utilization declines and profits fall. However, because investment is highly sensitive to the need for extra capacity, it tends to drop more sharply than saving during recessions. The current account balance thus tends to rise. Consistent with this, but viewed from a different angle, the trade balance typically improves during a recession, because imports tend to fall with overall consumption and investment demand. The converse occurs during periods of boom, when sharp increases in

**Chart 6-6 Current Account Balance**

The current account balance has been positive and/or increasing during recessions and has decreased during periods of economic expansion.

Billions of dollars



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

investment demand typically outweigh increases in saving, producing a decline of the current account. Of course, factors other than income influence saving and investment, so that the tendency of a country's current account deficit to decline in recessions is not ironclad.

The relationship just described between the current account and economic performance typically holds not only on a short-term or cyclical basis, but also on a long-term or structural basis. Often, countries enjoying rapid economic growth possess structural current account deficits, whereas those with weaker economic growth have structural current account surpluses. This relationship likely derives from the fact that rapid growth and strong investment often go hand in hand. Whether the driving force is the discovery of new natural resources, technological progress, or the implementation of economic reform, periods of rapid economic growth are likely to be periods in which new investment is unusually profitable.

Investment must, however, be financed with saving, and if a country's national saving is not sufficient to finance all new profitable investment projects, the country will rely on foreign saving to finance the difference. It thus experiences a net capital inflow and a corresponding current account deficit. The current account deficit is then merely the result of thousands of individual firms issuing debt or equity or borrowing from banks to finance investment. As long as these individual decisions are sensible, the associated current account deficit

should promote, not detract from, economic welfare. If the new investments are profitable, they will generate the extra earnings needed to repay the claims contracted to undertake them. Thus, when current account deficits reflect strong, profitable investment programs, they work to raise the rate of output and employment growth, not to destroy jobs and production.

Historically, countries at relatively early stages of rapid economic development, such as Argentina, Australia, and Canada in the early part of this century, have enjoyed an excess of investment over saving, running large structural current account deficits for long periods. The same general pattern has held in more recent times: faster growing developing countries have generally run larger current account deficits than the slower-growing mature economies.

The link between trade and current account deficits and growth is also confirmed by comparing the U.S. trade balance with those of its G-7 partners since the recovery from the 1990-91 recession. Charts 6-7 and 6-8 show a clearly negative correlation between output growth and the trade balance, and between employment growth and the trade balance, respectively. The United States enjoyed the fastest output and employment growth—and the largest trade deficit—among the countries shown. Conversely, Japan had the largest trade surplus, but the second-slowest rate of growth. Trade surpluses are also the norm in Europe, where growth of output and employment has been disappointing. Similarly, unemployment in the United States has been low and falling since 1993, a period during which unemployment has remained high in Europe and has been growing rapidly in Japan.

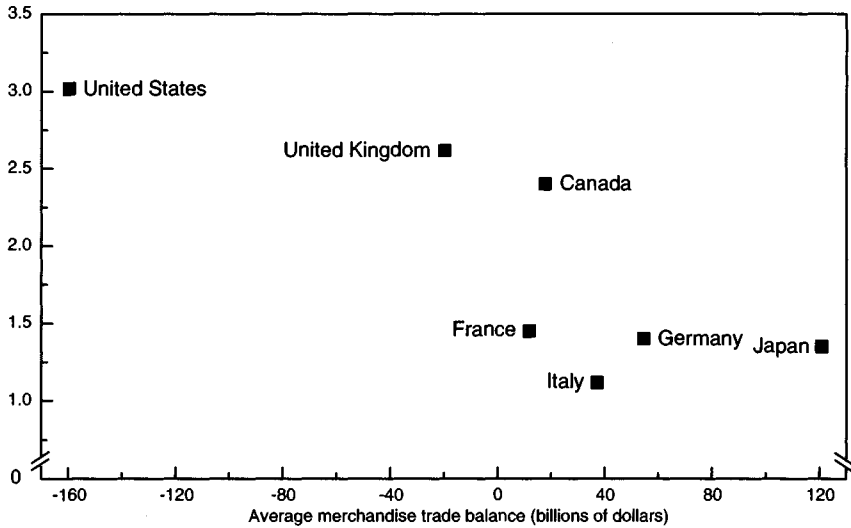
*Budget deficits and the current account.* Although current account deficits are not usually a cause for concern when they reflect strong investment opportunities, they may be worrisome if they instead reflect a decline in national saving. Since national saving includes the government's own saving or dissaving, one cause of a growing current account deficit can be rising government budget deficits. Such deficits may be harmful, resulting in an unsustainable buildup of foreign debt, if the government spending they permit is devoted to current consumption rather than productivity-enhancing public investment.

For example, in the late 1970s many developing countries ran large budget deficits, borrowing heavily in world capital markets to finance them, and accumulating large foreign debts in the process. Much of this borrowing went to support excessive government spending in the face of insufficient tax revenue. By 1982 many of these governments were having difficulty servicing their foreign debts. A severe debt crisis erupted in that year, forcing many countries to negotiate a rescheduling of their foreign liabilities to avoid default.

The large U.S. current account deficits of the 1980s, also driven by large fiscal deficits, were a matter of concern for the same reason. These "twin deficits," as they were labeled, led to high real interest

**Chart 6-7 Economic Growth and Trade Balances of G-7 Countries, 1992-97**  
 Across the major industrial countries, positive trade balances have been associated with weak economic performance.

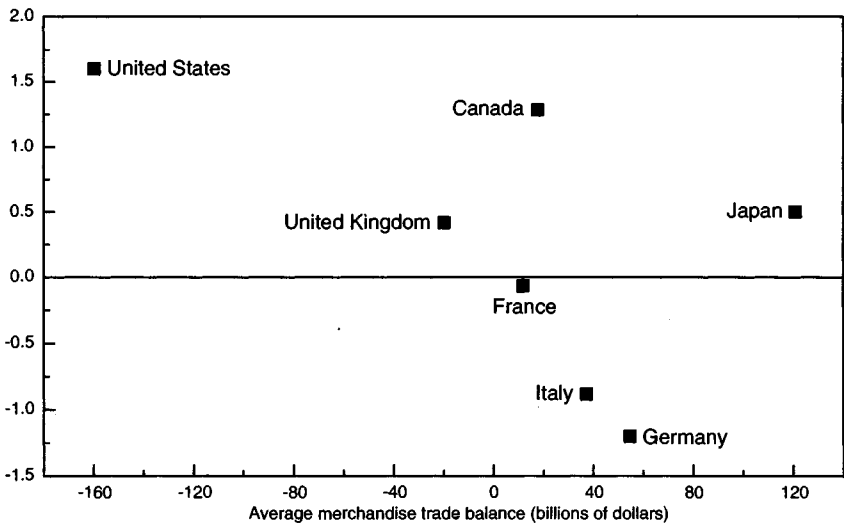
Average annual GDP growth (percent)



Source: Organization for Economic Cooperation and Development.

**Chart 6-8 Employment Growth and Trade Balances of G-7 Countries, 1992-97**  
 Across the major industrial countries, positive trade balances have also been associated with weak employment performance, and vice versa.

Average annual employment growth (percent)



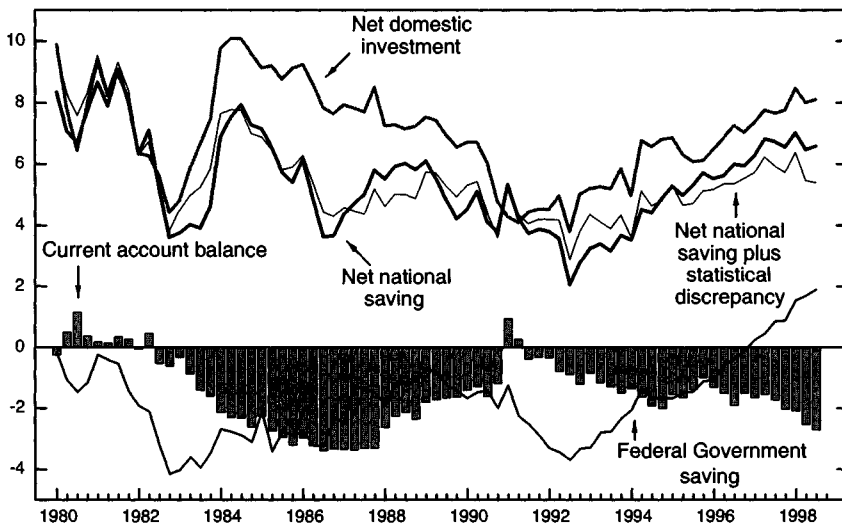
Source: Organization for Economic Cooperation and Development.

rates, a crowding out of productive investment (as evidenced by a fall in the national investment rate after its recovery from the 1982 recession), and a reduction in long-run growth opportunities. Chart 6-9 presents the U.S. current account deficit, the national and public

(Federal Government) saving rates, and the domestic investment rate. Conceptually, the current account is equal to net foreign investment, which is the difference between national saving and domestic investment; in practice, however, this equality may be obscured by measurement errors, which have been large in recent years both in the international transactions accounts and in the national income and product accounts. Thus, although over time there is a strong correlation between the current account balance and the saving-investment balance, in any given period the two measures may move in different directions. Chart 6-9 clearly shows the twin deficits of the 1980s: as fiscal deficits increased in an environment of tight monetary policy in the early 1980s, the dollar appreciated in real terms, and the current account moved into substantial deficit. The crowding out of productive investment, due to the high real interest rates associated with the fiscal deficit, is suggested by the fall in the investment rate between 1984 and 1990. The current account improved during the 1990-91 recession as the investment rate slumped sharply.

**Chart 6-9 Saving, Investment, and the Current Account Balance**  
 The current account deficit grew in the mid-1980s as saving fell faster than investment. In the 1990s, however, both investment and saving are increasing.

Percent of GDP



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

During the 1990s the Federal budget deficit first declined, then disappeared, and finally turned to a surplus in 1998. National saving increased as a consequence, despite a decline in the personal saving rate. Even so, the current account deficit has again increased. However, this increased deficit can be viewed as virtuous, because it has been driven by an even stronger increase in the pace of domestic

investment. The U.S. gross investment rate rose from a low of 12.2 percent of GDP in the middle of 1991 to 16.0 percent in the third quarter of 1998.

The investment boom that the United States has enjoyed since 1993 has contributed to expanding employment and output and will provide payoffs for many years to come. It could not, however, have been financed by national saving alone: a current account deficit provided the additional capital inflow needed to finance the boom. In the absence of foreign lending, U.S. interest rates would have been higher, and investment would inevitably have been constrained by the supply of domestic saving. Therefore, the accumulation of capital and the growth of output and employment would all have been smaller had the United States not been able to run a current account deficit in the 1990s. Rather than choking off growth and employment, the large current account deficit, perhaps paradoxically, allowed faster long-run growth in the U.S. economy.

*The Asian crisis and the current account deficit.* The experience of the Asian crisis countries demonstrates that current account deficits can be dangerous not only when they finance unsustainable budget deficits but also when they finance investments of low profitability. As already noted, the crisis-afflicted East Asian economies all enjoyed high saving rates. Their large current account deficits were attributable to their even higher investment rates. Even so, the buildup of debt deriving from these current account imbalances became unsustainable, because, as discussed above, distortions in the operation of East Asian financial systems led to excessive investment in low-profitability projects. Investment-driven current account deficits enhance economic welfare only when expected investment returns exceed the cost of the borrowed funds. Throughout the East Asian region the rate of return to capital, although still positive, appears to have been falling in the 1990s, signaling a deterioration in the quality of the investment projects.

Moreover, foreign debt must be serviced and, at some point, fully repaid. Therefore, debtor countries must ultimately run trade surpluses, which may require adjustments in their real exchange rates. Borrowing in world capital markets is perhaps least problematic when the new investments it permits augment a country's capacity to produce goods for sale in foreign markets. In contrast, many Asian countries borrowed abroad to finance commercial and residential investments, producing goods, such as office buildings and houses, that are not usually traded internationally.

*The U.S. international investment position.* If current account deficits continue year after year, creditor countries eventually become net debtors: every year the stock of net foreign liabilities rises by an amount equal to the current account deficit (ignoring valuation effects). Not all of these liabilities consist of debt: the capital inflows

that finance current account deficits can take the form of equity investment, as in foreign direct investment. Thus an increase in a country's net foreign liabilities does not automatically translate into an increase in foreign debt, strictly speaking, but rather a decrease in the net international investment position.

Chart 6-10 shows the relationship between the U.S. current account and the change in the U.S. net international investment position (where direct investment is valued at current cost). In the 1970s the United States was a net creditor country. However, the string of current account deficits in the 1980s led to a reduction of net foreign assets and eventually, in 1987, turned the United States into a country with growing net external liabilities.

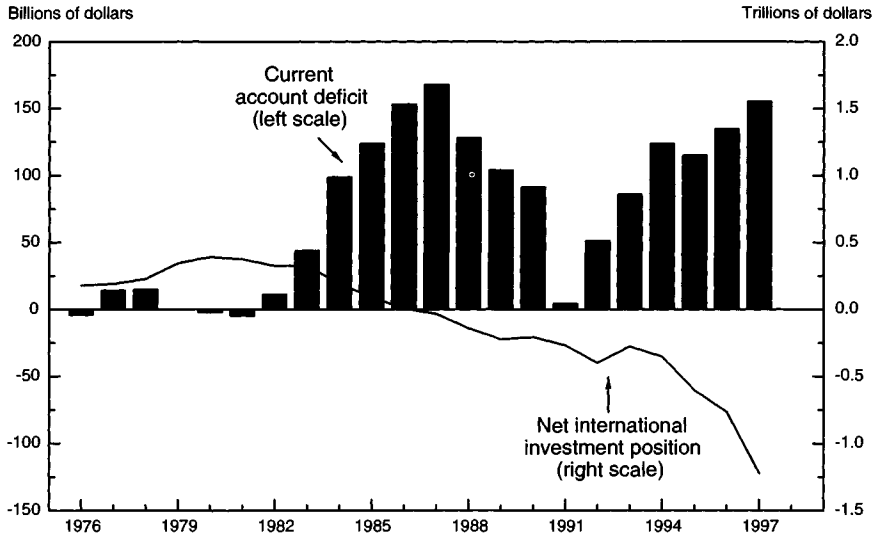
Because the U.S. current account deficits of the 1980s were primarily driven by fiscal deficits and low national saving rates, the accumulation of net foreign liabilities was greeted with some concern. The large fiscal deficits were financed by government bonds, some of which foreign investors purchased directly. Since 1993, however, current account deficits have been driven by increases in investment, with foreign financing taking the form of both direct and portfolio investment. (Chart 6-11 shows trends in both inward and outward foreign direct investment.) At present, U.S. net foreign liabilities amount to a relatively modest 15 percent of GDP.

### *Policies Toward the External Imbalance*

Calls for protection from import competition typically increase when the U.S. trade deficit burgeons, as it has since the onset of the Asian crisis. Although the crisis has caused dislocations in some export and import-competing industries, overall employment growth remains strong in the U.S. economy. As we have argued, the growing U.S. trade imbalance primarily reflects strong investment and growth opportunities in the United States in comparison with our trade partners, rather than increased barriers to trade in foreign markets. Looked at another way, the countries affected by the crisis have been forced to reduce their own current account deficits by their sudden inability to finance those deficits through foreign borrowing. The increased U.S. trade deficit, at least through the first three quarters of 1998, primarily reflects falling exports to these economies—declines in their imports engendered by the sharp economic contractions those countries have suffered.

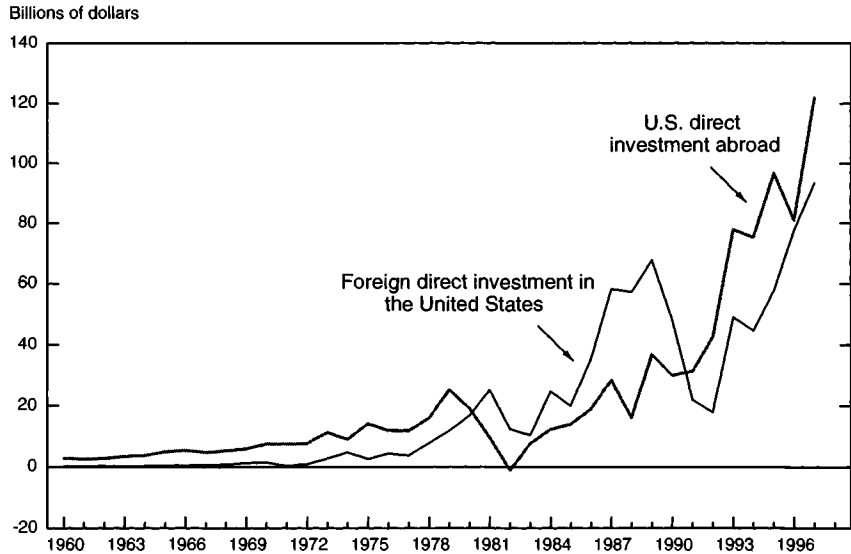
To restore world economic growth to its level before the crisis, the United States and other industrial countries must maintain open markets. Higher barriers to trade in the United States would not only hinder recovery in Asia and other crisis countries but provoke emulation and retaliation by our trading partners, which would hamper our own growth prospects. It is worth remembering that it was a dramatic switch to protectionist policies in the United States

**Chart 6-10 Current Account Deficit and Net International Investment Position**  
 As the United States started to run large current account deficits in the early 1980s, the net international investment position declined.



Note: Net international investment position at current cost.  
 Source: Department of Commerce (Bureau of Economic Analysis).

**Chart 6-11 Foreign Direct Investment Flows**  
 The 1980s saw a surge in foreign direct investment into the United States. In the 1990s, however, direct investment outflows have again surpassed inflows.



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

and other industrial countries that deepened the Great Depression. As the crisis economies recover, their demand for U.S. goods and services will increase as well, once again fueling our own export growth.

Recognizing the need to maintain open markets worldwide, the President has called for a new consensus on trade, to continue to expand America's opportunities in the global economy while ensuring that all of our citizens enjoy the benefits of trade, through greater prosperity, respect for workers' rights, and protection of the environment. The President asked the Congress to join him in this new consensus by restoring his traditional trade-negotiating authority (so-called fast-track authority), to allow him to pursue an ambitious trade agenda. At the top of this agenda is a far-reaching new round of global trade negotiations within the World Trade Organization aimed at shaping the world trading system for the 21st century.

## CONCLUSION

During a period of great turmoil in the global economy, the first imperative of the Administration has been to work with the international community to sustain worldwide growth. That is a prerequisite for the recovery of the countries now afflicted by crisis. No country, not even the United States, is an island in the world economy. The growth prospects of all the world's industrial nations will suffer unless all do their part. The United States and its G-7 partners have clearly recognized this imperative.

The United States remains committed to opening markets to international trade, recognizing that an open trade environment will be the best policy for domestic growth, support the recovery of the crisis-afflicted countries, and ensure the continued growth of the world economy. At the start of his Administration in 1993, the President declared, "The truth of our age is this—and must be this: Open and competitive commerce will enrich us as a nation. . . . And I say to you in face of all the pressure to do the reverse, we must compete, not retreat." Now, as then, the Administration remains strongly committed to outward-looking, internationalist policies.

Beyond working to ensure growth in the industrial world, the United States has focused since this crisis began on the need to contain financial contagion and restore market confidence so that capital flows can continue, and on the need to promote recovery and alleviate suffering in the crisis-afflicted countries. The Administration has supported the IMF in its mission of providing financial assistance to those countries in crisis that are willing to implement the often tough reforms needed to strengthen the underpinnings of their economies. At the same time, the Administration is collaborating

with other countries to strengthen the architecture of the international financial system, with the goal of enhancing its stability in a world of continued integration of global product and financial markets. These reforms of the international financial architecture are discussed in Chapter 7.

## CHAPTER 7

# The Evolution and Reform of the International Financial System

THE FINANCIAL PROBLEMS THAT BEGAN in Asia in the second half of 1997 have exposed weaknesses both in emerging market countries and in the international financial system. In response, the United States has taken steps, jointly with the international community, not only to contain the financial crisis but also to foster reforms of the international financial system to make it less crisis prone in the future. The recent turmoil followed a robust period of increasing integration of world product and financial markets—a trend well epitomized by the long-anticipated realization of European Monetary Union in January 1999.

The recurrence of currency and financial crises in the world economy poses major challenges to policymakers. What are the causes of these repeated crises, and of instability and financial market volatility? Are financial integration and globalization partly to blame? Does integration into modern global financial markets require the loss of macroeconomic policy autonomy? What regime of exchange rates is best for emerging market economies and other small countries in this new world of global capital mobility? Can the Bretton Woods institutions—the International Monetary Fund (IMF) and the World Bank—which were designed for a world of fixed exchange rates and limited capital mobility, still promote the stability of the international financial system in a radically different environment? What institutional framework best promotes the stability of the international financial system? Answers to these questions will be critical to efforts to strengthen the stability of the international financial system and help to ensure that global financial integration will continue to sustain prosperity and growth in the world economy.

A broad international consensus now supports reform of the global financial architecture to achieve several goals: to increase transparency (that is, to improve the availability of information about macroeconomic and financial conditions); to strengthen and reform domestic financial institutions so as to prevent crises from occurring; and to improve the mechanisms available to resolve those crises that do occur. This chapter starts by describing proposals that have been advanced in each of these three areas. It then analyzes the next steps that are being considered in the redesign of the international financial system. Finally, it considers European Monetary Union, the prospects for the euro as an international currency, and the possible implications for the U.S. dollar.

## REFORM OF THE INTERNATIONAL FINANCIAL ARCHITECTURE

As explained in Chapter 1, the international community, under U.S. leadership, has proposed a set of reforms to strengthen the international financial system. These reforms, designed to reduce the incidence of future crises, are referred to collectively as the “new international financial architecture.” Their aim is to create an international financial system for the 21st century that captures the full benefits of global markets and capital flows, while minimizing the risk of disruption and better protecting the most vulnerable groups in society. The work accomplished toward these goals in 1998 was only the latest stage in an evolutionary process that has been under way for some years.

### FROM THE HALIFAX SUMMIT TO THE G-22 REPORTS

A broad debate on the steps needed to strengthen the international financial system was already under way when the Mexican peso was devalued suddenly in December 1994. The ensuing crisis, however, gave the debate considerable impetus and pertinence. The annual summit of the leaders of the Group of Seven (G-7) nations (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) in 1995, held in Halifax, Nova Scotia, initiated work in a number of areas. One such area was additional study of means to promote the orderly resolution of future financial crises. The finance ministers and central bank governors of the G-10 countries were asked to review a number of ideas that might contribute toward that objective. The G-10 (which actually has 11 members: the G-7 plus Belgium, the Netherlands, Sweden, and Switzerland) established a working party, which submitted a report—informally known as the Rey Report, after the chairman of the working party—to the ministers and governors in May 1996.

The report noted recent changes in financial markets that, in some cases, have altered the characteristics of currency and financial crises in emerging markets. It indicated that neither debtor countries nor their creditors should expect to be insulated from adverse financial consequences in the event of a crisis. It also called for better market-based procedures for the workout of debts when countries and firms are in financial distress. Reforms of bond contracts were proposed to encourage the cooperation and coordination of bondholders when the financial distress of a country or a corporation requires the restructuring of the terms of a bond. The report also suggested a review of IMF policies on “lending into arrears” to extend the scope of this policy to include new forms of debt. Such policies would allow the IMF to continue lending, in certain unusual and extreme circumstances, to countries that had temporarily suspended debt-service payments but

continued to maintain a cooperative approach toward their private creditors and to comply with IMF adjustment policies.

A number of important innovations came out of this reform process: the development of international standards for making economic data publicly available (under the IMF's Special Data Dissemination Standard); international standards for banking supervision (the Basle Core Principles for Banking Supervision); the decision to expand the IMF's backup source of financing under the New Arrangements to Borrow (25 participants in the NAB agreed to make loans to the IMF when supplementary resources are needed to forestall or cope with an impairment of the international monetary system, or to deal with an exceptional situation that poses a threat to its stability); and, more recently, a new financing mechanism in the IMF, called the Supplemental Reserve Facility, to help members cope with a sudden and disruptive loss of market confidence, but on terms designed to encourage early repayment and reduce moral hazard.

Despite some progress in strengthening the system, the eruption of the Asian crisis in 1997 demonstrated the importance of considering further questions regarding the operation of the international system. In November 1997, on the occasion of the Asia-Pacific Economic Cooperation leaders' summit in Vancouver, a number of Asian leaders proposed a meeting of finance ministers and central bank governors to discuss the crisis and broader issues. They suggested that participation in the meeting be expanded to include emerging market countries, not just the usual small number of major industrial countries. The President responded by calling on the Secretary of the Treasury and the Chairman of the Board of Governors of the Federal Reserve System to convene such a meeting. Finance ministers and central bank governors from 22 systemically significant countries in the international financial system (informally dubbed the Group of 22, or G-22) gathered in Washington on April 16, 1998, to explore ways to reform the system that could help reduce the frequency and severity of crises. Three working groups were formed to consider the following three sets of issues: measures to increase transparency and accountability, potential reforms to strengthen domestic financial systems, and mechanisms to facilitate appropriate burden sharing between official institutions and the private sector in time of crisis. The three working groups presented their reports in October 1998 on the occasion of the annual meetings of the IMF and the World Bank.

## GREATER TRANSPARENCY AND ACCOUNTABILITY

The report of the first working group reflects the existence of a broad consensus on the need for greater transparency not only by the private sector and national authorities but by the international financial institutions (IFIs) as well. The Asian crisis made clear once more that it is important for countries to provide sufficient information

about their macroeconomic and financial conditions. The information needed includes data on the size, maturity, and currency composition of external liabilities, as well as accurate and comprehensive measures of the level of foreign exchange reserves. The crisis also underscored the need for banks and corporate enterprises to provide accurate information about their financial accounts. Without such information, outsiders cannot adequately assess the true financial condition of governments and firms. The crisis made clear as well the importance of transparency on the part of the IFIs themselves, and led to calls for the IMF and other IFIs to be more open about their activities, economic analysis, policy advice, and recommendations.

The report of the G-22 working group on transparency and accountability recommends that national authorities publish timely, accurate, and comprehensive information on the external liabilities of the financial and corporate sectors in their countries as well as their own foreign exchange positions. Published information on official foreign exchange positions would extend to both reserves and liabilities, for example those deriving from government intervention in forward exchange markets. The report recommends adherence to existing international standards for transparency and finds that standards in additional areas, including monetary policy and accounting and disclosure by private financial institutions, might be useful. The report calls for better monitoring of countries' compliance with such standards, including through IMF reporting on countries' adherence to internationally recognized standards. It also recommends that the potential for greater transparency of the positions of investment banks, hedge funds, and institutional investors be examined.

Finally, the report calls on the IMF and the other IFIs to be more open and transparent. Accountability, it argues, is important for all institutions, and unnecessary secrecy would be particularly inappropriate in institutions that are telling others to be more transparent. For example, the report recommends that IFIs adopt a presumption in favor of the release of information, except where confidentiality might be compromised. It also calls for publication of program documents, of background papers to reports following the regular yearly visit by the IMF to a member state, of public information notices following the IMF Executive Board's discussion of reports on member countries' economic conditions, of retrospective program reviews, and of other policy papers.

Increased transparency can help prevent the buildup of countries' financial and macroeconomic imbalances. In the Asian crisis, for example, more information concerning the external debt of firms and banks might have limited investors' willingness to lend to such institutions in the first place. Transparency can also encourage more timely policy adjustment by governments and help limit the spread of financial market turmoil to other countries by enabling investors to distinguish

countries with sound policies from those with weaker policies. Nonetheless, transparency alone is unlikely to be sufficient to prevent another major crisis from occurring. In Asia, greater transparency about net reserves and offshore liabilities of the financial and corporate systems might well have helped attenuate the crisis. But investors also missed many warning signals in data that were widely available. More is needed than just information.

## REFORMING AND STRENGTHENING DOMESTIC FINANCIAL INSTITUTIONS

As discussed in Chapter 6, weaknesses in the financial sectors of borrowing countries now appear to have been a central cause of the Asian crisis, and of some previous financial crises as well. Commercial banks and other financial institutions borrowed and lent imprudently, channeling funds toward projects that were not always profitable. Insufficient expertise and resources in countries' regulatory institutions led to weak regulation of the financial system, and in particular to lax supervision of banks. Insurance of bank deposits was either implicit or poorly designed. Often, governments did not provide explicit deposit insurance; rather, they implicitly insured the liabilities of the banking system. Connected lending was widespread: banks and other financial firms in a business group would make loans to other firms in the group without objectively evaluating or monitoring their soundness. The result was often distorted incentives for project selection and monitoring. All these factors contributed to the buildup of severe structural weaknesses in the financial system, the most visible manifestation of which was a growing level of nonperforming loans. The growing supply of funds from abroad, facilitated in part by capital account liberalization, only heightened the problem; rising capital inflows combined with poorly regulated and often distorted domestic financial systems to create a dangerous environment.

Strengthening domestic financial systems, the focus of the second G-22 working group, will thus be a central element of ongoing systemic reform. The list of measures required is long and will take years to complete. The reforms recommended by the G-22 report include the development of liquid and deep financial markets, especially markets in securities (bonds and equities). Financial markets should be able to rely on strong prudential regulation and supervision of banks and other financial institutions, based on the Basle Core Principles of Banking Supervision and the Objectives and Principles of Securities Regulation set out by the International Organization of Securities Commissions. Appropriate restrictions on connected lending would be beneficial. The working group's report also calls on countries to design explicit and effective deposit insurance mechanisms to protect bank depositors. The report also calls for better corporate governance in both the financial sector and the nonfinancial sector, so that investment

decisions respond to market signals rather than to personal relationships. It further recommends the design and implementation of bankruptcy and foreclosure laws for insolvent firms and, more broadly, the implementation of efficient insolvency and debtor-creditor regimes, possibly including procedures for systemic bank and corporate restructuring and debt workouts for corporations in financial distress. Finally, the report advocates better coordination and cooperation among international organizations and international supervisory entities in strengthening financial systems, as well as increased technical assistance for and training of government officials and regulators.

### **BETTER CRISIS RESOLUTION, INCLUDING APPROPRIATE ROLES FOR THE OFFICIAL COMMUNITY AND THE PRIVATE SECTOR**

Although strengthening financial systems may prevent some crises from occurring and make those that do occur less virulent, it cannot be expected to eliminate them altogether. It is therefore essential to establish means of minimizing the depth and severity of crises without undermining appropriate incentives for prudent private and public behavior. This very important task constitutes the third and final pillar of the set of international financial reforms proposed in October by the G-22 working groups.

The G-22 report on this topic identifies policies that could help promote the orderly resolution of future crises, including both official assistance and policies and procedures that could facilitate the involvement of the private sector as appropriate. It noted that recent events have highlighted how the larger scale and greater diversity of recent capital flows to emerging markets generate the risk that crises can erupt more quickly and can be larger in scope than in the past. It is of critical importance that the IMF and the other IFIs remain capable of catalyzing policy reform and the restoration of market confidence in their member countries in the event of an international financial crisis, in the context of a strong program of policy adjustment. The combination of adjustment and financing should be sufficient to resolve most payments difficulties. However, the scale of private capital flows significantly exceeds the resources that the official community can reasonably provide, even with the quota increase to bolster IMF resources and other measures. Moreover, the perception that sufficient official financial assistance may be made available to allow a country to meet all contractual obligations without some form of appropriate private sector involvement might distort the incentives of both creditors and debtors. It may encourage some creditors to take unwarranted financial risk, some debtor countries to follow inappropriate policies, and both debtors and creditors to underestimate the risks they are assuming. Although the international community will continue to provide assistance—conditioned on economic reform—to deal with the prob-

lems that have given rise to crises, mechanisms are needed to allow the private sector to participate constructively in containing crises and resolving them over time. Work is under way to find constructive and cooperative ways to “bail in” private investors.

New procedures suitable to modern markets might be usefully developed for effective management of the financial difficulties of both firms and countries. When banks accounted for the majority of international capital flows, as in the 1970s and 1980s, troubled debtors could more easily resolve a crisis through joint negotiations with a small number of banks and the IFIs. Negotiations such as those developed to address the 1980s debt crisis entailed agreements to postpone debt repayments (debt restructuring) and occasionally to reduce the overall value of the obligation (debt writedown). However, the recent proliferation of creditor institutions and instruments and the growth of international bond markets have made it harder to coordinate the actions of creditors during a crisis. Unilateral actions by troubled debtors are, on the other hand, highly disruptive and can lead to contagion, if they increase investors’ concern that other countries may follow suit. This might explain why Russia’s unilateral debt restructuring in August 1998 disrupted markets as far away as Latin America.

Recognizing the need for new procedures, the G-22 report includes a number of recommendations. First, it calls for a range of policies to help prevent crises and limit the severity of those that do occur. The report emphasizes that countries might want to limit the scope of government guarantees, including those covering the liabilities of financial institutions, and to make explicit those guarantees that are offered and price them appropriately (for example, through effective deposit insurance). In addition, the report endorses the development of innovative financing techniques to permit increased payment flexibility, greater risk sharing among debtors and creditors, or the availability of new financing in the face of adverse market developments such as sudden reversals of capital flows. For example, debt contracts calling explicitly for repayments contingent on the prices of key primary commodities could automatically reduce countries’ debt burdens when prices move against them.

Finally, the report identifies key features of effective insolvency and debtor-creditor regimes (including bankruptcy, restructuring, and foreclosure laws) and highlights the role of such regimes in contributing to effective crisis containment and resolution. Workable procedures in these areas may be useful to encourage the prompt recovery of economic activity following a financial crisis. Among the most important basic objectives of an insolvency regime are to maximize the value of a firm’s assets after its liquidation or reorganization; to provide a fair and predictable regime for the distribution of assets recovered from debtors; and to facilitate the uninterrupted provision of credit for commercial transactions by providing an orderly regime for the distribution of debtors’ assets.

Other measures recommended by the working group would encourage the coordination of creditors in the event of a crisis. Following the recommendations of the 1996 Rey Report, the G-22 report proposes the inclusion of creditor coordination clauses in bond contracts. These clauses would be designed to create an environment in which all parties—creditors, debtors, and IFIs—can work together to resolve crises in the most advantageous manner possible. Collective action clauses in bond contracts could help overcome the problems to which a large number of creditors inevitably gives rise. For example, a clause allowing for the collective representation of creditors (such as through the formation of a creditors' committee) can help facilitate coordinated action among a large group of creditors. A majority action clause could prevent a small minority of creditors from impeding a debt-restructuring agreement, by allowing a qualified majority of creditors to alter the payment terms of the debt contract. Currently, most sovereign bond contracts in the United States require unanimity to restructure the terms of the contract. Similarly, sharing clauses would mandate the equal treatment of creditors by imposing a fair division of payments among them. This could discourage disruptive legal action and preferential settlements that benefit a few creditors at the expense of others.

The report also calls for new methods of crisis management in the extreme case of a temporary suspension of debt payments. Recent experience (as in Russia in 1998) underscores the fact that such suspensions and unilateral restructuring actions can be highly disruptive, especially if they substitute for policy reform and adjustment. The G-22 report argues that countries should not, and normally would not, suspend debt payments (interest and principal) until all other reasonable alternatives have been exhausted. However, suspension might occur in exceptional cases, in the event of severe and unanticipated adverse market developments. In these cases, the report emphasizes the importance for countries to rely on orderly and cooperative approaches, rather than unilateral actions, in negotiating the restructuring of contractual obligations. Unilateral action may entail significant economic and financial costs.

If a country does suspend its debt payments to private creditors, it is technically in arrears. The report argues that, in those exceptional cases when a country experiences a severe crisis and a temporary payments suspension cannot be avoided, the international community and private creditors may still have an interest in providing incentives for strong and sustained policy adjustments and structural reform. It therefore suggests that the international community can signal its conditional willingness to provide financial support, under appropriate conditions, even if a country has imposed a temporary payments suspension. The report argues that such official support should be provided only if the decision to suspend payments reflects the absence of rea-

sonable alternatives, if the government is willing to undertake strong policy adjustment, and if the government is engaged in good faith efforts with creditors to find a cooperative solution to the country's payments difficulties. An IMF policy of lending to a country that has not yet completed negotiations with private creditors, but is negotiating cooperatively and in good faith, is referred to as "lending into arrears."

A final set of recommended measures would facilitate prompt and orderly debt workouts. As outlined above, the orderly resolution of crises will require a combination of official finance, in the context of strong policy adjustment programs, and appropriate private sector involvement. Financial crises are often associated with significant financial distress in the banking and corporate sectors. Although national insolvency regimes (such as bankruptcy and corporate restructuring laws) are intended to provide an appropriate legal and institutional framework for the restructuring of corporate debt, corporate sector crises may occasionally achieve sufficient scale to threaten the solvency of a country's entire financial system, as happened in the Asian crisis.

Several measures can be undertaken to facilitate the orderly workout of the liabilities of firms in distress. One such measure is available in domestic insolvency regimes—such as corporate restructuring under Chapter 11 of the U.S. bankruptcy code—that allow distressed firms to obtain new, senior credits to ensure their ongoing operation during the restructuring of their debt. (Seniority means that the new lenders will be first in line for repayment. Without such assurance, new lenders are unlikely to come forward.) Analogously, in the international context, the report suggests that the development of better means of encouraging the private sector to provide new credits, in the event of a debt crisis or suspension of debt payments, should be considered. Otherwise, loans for basic purposes, such as working capital for production and exports, can become unavailable. In certain circumstances the government may also find it useful to develop a framework for encouraging out-of-court negotiations between private debtors and their creditors. International support can be harnessed to support restructuring efforts as well. For example, one goal of the Asian Growth and Recovery Initiative, recently launched by the United States and Japan, is to support the implementation of more comprehensive and accelerated restructuring of banks and corporations in the crisis-afflicted countries in Asia.

Implementation of the international financial architectural reforms proposed in the G-22 reports will take time. But they also promise to reduce the likelihood of future crises and the severity of those that do occur. For its part, the G-7 strongly signaled its commitment to implement many of the reforms proposed by the working groups in its October 30 declaration, a subject considered next.

## **ADOPTION OF MEASURES TO REFORM THE INTERNATIONAL FINANCIAL ARCHITECTURE**

The release of the G-22 reports was followed by detailed discussions among the G-7 finance ministers and central bank governors and with officials from other industrial and emerging market economies. The G-7 ministers and governors agreed, in a statement issued on October 30, 1998, on specific reforms to strengthen the international financial system. In the words of their communiqué, they:

agreed to carry these forward through our own actions and in the appropriate international financial institutions and forums. These reforms are designed to: increase the transparency and openness of the international financial system; identify and disseminate international principles, standards and codes of best practice; strengthen incentives to meet these international standards; and strengthen official assistance to help developing countries reinforce their economic and financial infrastructures. They also include policies and processes to ensure the stability and improve the surveillance of the international financial system. Finally, they aim at reforming the International Financial Institutions, such as the IMF, while deepening cooperation among industrialized and developing countries.

## **FURTHER STEPS TO STRENGTHEN THE INTERNATIONAL FINANCIAL ARCHITECTURE**

In their October 30 statement, the G-7 countries committed themselves to a number of reforms consistent with the recommendations of the G-22 working groups, as well as a great deal of additional analysis and research. The G-7 also stressed the need for the international community to widen its efforts to strengthen the international financial system. The G-7 thus committed themselves to initiate further work in a number of other important areas to identify additional, concrete steps to strengthen the international financial architecture. These include:

- examining the additional scope for strengthened prudential regulation in industrial countries
- further strengthening prudential regulation and financial systems in emerging markets
- developing new ways to respond to crises, including new structures for official finance and new procedures for greater private sector involvement in crisis resolution
- assessing proposals for further strengthening of the IMF

- seeking to minimize the human cost of financial crises and encouraging the adoption of policies that better protect the most vulnerable in society
- consideration of the elements necessary for the maintenance of sustainable exchange rate regimes in emerging markets.

Each of these steps poses a number of issues and challenges. Many are interrelated. Some of these issues that the international community will be examining in the future are addressed below.

## STRENGTHENED PRUDENTIAL REGULATION AND SUPERVISION IN INDUSTRIAL COUNTRIES

The crises of the past year have revealed the importance of strengthening prudential regulation to promote international financial stability. Global financial integration has led to a proliferation of financial institutions making cross-border transactions, to the growth of offshore financial centers and hedge funds, and to the development of a wide range of derivative instruments. In this new environment, investors may underestimate the risks they are assuming during periods of market euphoria, and thus contribute to an excessive buildup of exposures during the upswing.

Such developments pose significant challenges to financial regulators and supervisors. Regulatory incentives may be needed to encourage creditors and investors to act with greater discipline, that is, to analyze and weigh risks and rewards appropriately in their lending and investment decisions. Thus, it will be useful to examine the scope for strengthened prudential regulation and supervision in industrial countries. Here we explore some aspects of these regulatory challenges.

### *Enhanced International Financial Supervision and Surveillance*

Traditionally, supervision and regulation of financial systems have been domestically based. But the increased global integration of financial markets and the proliferation of institutions doing cross-border transactions suggest the desirability of enhanced *international* financial supervision and surveillance. Better national and international procedures to monitor and promote stability in the global financial system might prove useful.

Although good financial supervision still must begin at the domestic level, international institutions and national authorities involved in maintaining financial sector stability must work jointly to foster stability and reduce systemic risk. They will also benefit from exchanging information more systematically about the risks prevailing in the international financial system. A useful contribution in this regard might be a policy-oriented forum including financial authorities from the G-7 countries, key emerging markets, the IFIs, and other relevant international organizations.

Another way to improve global surveillance and coordination might be to have the IFIs, working closely with international supervisory and regulatory bodies, conduct surveillance of national financial sectors and their regulatory and supervisory regimes. For this to succeed, all relevant information would need to be made accessible to them.

### *Strengthened Bank Capital Regulation*

At the heart of the issue of bank regulation are banks' capital adequacy standards. As discussed in Chapter 6 (see Box 6-5), banks may have an incentive to make excessively risky investments, since much of the cost of failure may be borne by the government. To mitigate this tendency, banks are required to hold a certain amount of their own capital in reserve against the loans they make.

The fact that many banks are currently active on a global scale provides good reasons for common international bank capital standards. Globally active banks headquartered in countries with low capital requirements would otherwise be at an advantage over those headquartered elsewhere. In addition, by virtue of their global scale, the impact of a global bank's failure would likely extend well beyond the borders of the country in which it is headquartered.

The 1988 Basle Capital Accord established such an international bank capital standard by recommending that globally active banks maintain capital equal to at least 8 percent of their assets. In addition, the accord sought to distinguish between more and less risky assets and required that more capital be held against investments with greater risk. As a result, the 8 percent standard called for in the accord applies not to a bank's total assets but to its risk-weighted assets. Safe government bonds or cash, for example, receive a zero weight in calculating aggregate risk exposure, whereas long-term lending to banks and industrial companies in emerging markets receives a 100 percent weight. Such minimum capital standards are meant to work in conjunction with direct supervision of banks and basic market discipline to restrain excessive risk taking by banks that have access to the safety net.

Even at the time of their adoption, it was recognized that the standards called for in the Basle Capital Accord might have to be reviewed and strengthened in the face of developments in the international financial environment. Effective capital regulation is an evolutionary process, and the Basle standards have already been improved in a number of ways in the decade since their adoption, for example by the adoption of amendments covering market risk. However, recent developments have made some shortcomings of the rules for credit risk more apparent. First, the risk weights applied to broad asset categories mirror only crudely the actual risk associated with different types of assets. Second, a number of financial innovations may have made it easier for banks to assume greater risk without becoming subject to increased capital charges. Third, the current standards may

have encouraged banks in industrial countries to make short-term rather than longer term loans to banks in emerging markets. Fourth, off-balance-sheet items such as derivative positions, committed credit lines, and letters of credit may not be adequately addressed by the current standards. The task of further improving the Basle Capital Accord has just started. No consensus has yet emerged concerning the next steps in the reform of bank capital regulation. But it is likely that a strong and effective system of bank capital regulation will rely on several complementary components: strengthened capital standards; improved internal risk management controls in banks, including greater reliance on banks' own models of risk assessment; and increased reliance on market discipline.

A broad debate is certain to be waged over how to provide effective capital regulation of banks in the globalized environment in which they now operate. The Basle standards were designed for banking institutions in the G-10 countries, but the proliferation of financial institutions in emerging markets also poses the question of whether the same standards adequately address the risks faced by institutions operating in emerging markets.

The rapid development of derivative instruments and their widespread use in international financial markets pose another set of difficult regulatory issues. Derivatives are contracts written in terms of the price of some underlying asset; for example, stock options and stock futures contracts are written in terms of stock prices. Derivatives can be used to hedge risks and thus have been very useful in risk management by banks, other financial institutions, and nonfinancial firms. However, they can also be used to take speculative positions, thus increasing rather than decreasing risk. Moreover, the fact that derivative positions are recorded off the balance sheet makes it more difficult for the market and for regulators to assess their contribution to the risks taken by the institution using them. Also, because the creditworthiness of the counterparties to a derivatives transaction is not perfect, firms or banks that believe they are hedged against various risks may effectively not be.

A difficult issue concerns the type of regulatory oversight that should be put in place for derivative instruments. For example, excessive regulation of derivatives could lead the derivatives business to move to unregulated offshore markets. The President's Working Group on Financial Markets is undertaking a long-term study of derivative instruments, including their potential risks and effects. This study will review recent market developments and existing regulation and consider what regulatory or legislative changes may be appropriate. It will investigate possibilities for reducing systemic risk and eliminating legal uncertainty. It will also assess the potential use of derivatives for fraud or manipulation, and methods for curtailing regulatory arbitrage, or the exploitation of differences in regulation across different jurisdictions.

## *Issues Posed by Hedge Funds and Other Highly Leveraged Investment Funds*

Another set of difficult regulatory issues is posed by hedge funds and other highly leveraged entities. Hedge funds in their present form represent a relatively recent innovation in financial markets. The near-failure of a prominent hedge fund in September 1998 (see Chapter 2) focused renewed attention on the role and activities of these and other highly leveraged entities.

The “hedge fund” label is usually applied to investment funds that are unregulated because they restrict participation to a small number of wealthy investors (see Chapter 2 for a broader discussion of their activities). They generally use sophisticated techniques to make targeted investments. In addition, some of them use significant leverage—that is, they not only invest their own equity capital but use sizable amounts of borrowed funds as well. Regulation of hedge funds could also prove difficult. Poorly designed regulation might, for example, lead such funds to move to unregulated offshore markets.

The impact of hedge funds and other highly leveraged entities on financial markets certainly needs to be better understood. Accordingly, the Secretary of the Treasury has called upon the President’s Working Group on Financial Markets to prepare a study of the potential implications of the operation of firms such as hedge funds and their relationships with their creditors. A primary concern for regulators is to ensure that lenders appropriately manage the risks associated with extending credit to hedge funds.

The study by the President’s working group will examine a number of issues, including questions relating to the disclosure of information by entities such as hedge funds and the potential risks associated with highly leveraged institutions generally. The study will also examine whether the government needs to do more to discourage excessive leverage, and if so, what the appropriate steps might be. A number of the agencies participating in the working group are also involved in several studies on the international aspects of these questions.

## **STRENGTHENING PRUDENTIAL REGULATION AND FINANCIAL SYSTEMS AND PROMOTING ORDERLY CAPITAL ACCOUNT LIBERALIZATION IN EMERGING MARKETS**

The Asian crisis has focused attention on a wide variety of financial policies, both international and domestic in scope. Considering the central role played by financial sector weaknesses in the crisis (see Chapter 6), the case for strengthening financial systems is particularly strong in emerging markets. Accordingly, the second area in which the G-7 called for further work is the identification of concrete steps to further strengthen prudential regulation and financial systems in emerging markets. Clearly, this is an ambitious undertaking and will require

a vast number of issues to be considered and challenges to be overcome. Some of the most significant are addressed below.

Many countries have benefited significantly from the increased integration of global capital markets. But recent events have shown that integration, when countries do not have the policies and institutions in place to capture the full benefits of global integration, can also bring new risks. The right approach is to put into place the policies and institutions needed to capture the full benefits of financial integration.

Remarkably, very few countries have been tempted to turn inward as a result of the recent crisis. However, instead of facing the challenges of strengthening their financial institutions, a few have in effect decided to eschew the benefits of international capital flows by introducing controls on capital outflows as a way to prevent “destabilizing” capital flight. However, many considerations argue against the use of capital controls in a crisis. First, controls on outflows are often in practice administered in institutional frameworks in which they are used to extract economic rents and delay necessary reforms. Elaborate foreign exchange controls thus lead to corruption, besides distorting international trade. In any case, investors often find ways to avoid the controls over time. Moreover, capital controls may divert attention from the need to address policy distortions that lead to excessive borrowing, such as inadequate prudential supervision and regulation of the financial system. Reliance on targeted controls might eventually also lead countries to use capital controls indiscriminately, thus insulating unsound macroeconomic policies from the discipline of the marketplace. Capital controls and other domestic capital market restrictions also serve as a form of financial repression—a distortionary type of taxation—that reduces the incentive to save. Studies show that capital controls in Latin America in the aftermath of the 1980s debt crisis led to negative real interest rates, which eventually provoked more flight of capital out of the country rather than less. Finally, controls on outflows may discourage capital *inflows*, since foreign investors will then fear they may not be able to repatriate the proceeds of their investments in the future. Fears of the imminent imposition of controls on capital outflows can actually accelerate rather than avoid or postpone a crisis, and they can lead to perverse international contagion. For example, news of the imposition of capital controls in Russia and Malaysia in August 1998 was a factor in the spread of financial panic to Latin America and other emerging markets.

### *The Benefits of Free Capital Mobility*

The arguments for free capital mobility are numerous, especially when domestic financial systems are strong and properly supervised and regulated. The United States and most other leading industrial countries, for example, do well without capital controls. First, with unrestricted capital mobility, the market is free to allocate saving to

the best investment opportunities, regardless of where in the world those opportunities are. Investors can then earn a higher rate of return than they could if limited to the domestic market. Second, firms and other borrowers in high-growth countries can obtain funds more cheaply abroad in the absence of controls than if they had to finance their investments at home. Third, free capital mobility allows investors and households to diversify risk; access to foreign investment opportunities enhances the benefits of portfolio diversification. Fourth, the scrutiny of global investors can provide an important discipline on policymakers. Well-functioning capital markets can discourage excessive monetary and fiscal expansion, since inflation, budget deficits, and current account deficits quickly lead to reserve outflows and currency depreciation. Logically, a case for restricting capital mobility requires the identification of distortions in the market allocation of capital.

### *Increasing the Resilience of Financial Systems*

Although introducing controls on outflows is not a desirable response to a crisis, international capital inflows can reverse suddenly, and openness potentially does make emerging economies more vulnerable to such reversals. As a result, policies to increase the resilience of financial systems might be usefully identified, to make countries less vulnerable to these crises. These include effective prudential regulation and supervision of financial markets, as discussed above. The G-7 has suggested investigating concrete means of encouraging emerging market economies to adopt international standards and best practices. In addition, countries could take several steps to reduce the vulnerability of their financial systems. For example, they can encourage greater participation in their markets by foreign financial institutions. They can foster a better credit culture in the banking system. They can rely more on equity and other financing that does not result in the buildup of excessive debt burdens. They can implement an orderly and progressive liberalization of their capital accounts. And in some circumstances they might find it useful to rely on restraints on some short-term capital inflows, in the context of sound prudential regulation of the banking system.

### *The Orderly Liberalization of Capital Flows*

Most emerging market economies have historically placed heavy restrictions on their capital markets. One result of the recent crisis is a growing consensus that capital market liberalization has to be carried out in a careful, orderly, and well-sequenced manner if countries are to benefit from closer integration into the global economy. As discussed in Chapter 6, however, if domestic financial systems are weak, poorly regulated, and subject to institutional distortions, rapid capital account liberalization can lead to excessive short-term borrowing and lending and a mismatch of maturities and currency denominations in the

assets and liabilities of both financial institutions and nonfinancial firms. To reduce the risk of financial and currency crises following liberalization, effective regulatory and supervisory regimes must be in place, and the financial sector must be poised to deal adequately with these risks.

It may prove useful to develop principles to help guide countries that are liberalizing and opening their capital markets, to help reduce the vulnerability of their financial systems to sudden shifts in capital flows. Possible measures include, for example, a policy of openness to foreign direct investment and promotion of longer term equity financing. Conversely, some support consideration of measures to restrain cross-border short-term interbank flows into emerging markets, because such flows are likely to be both volatile and vulnerable to distortions arising from financial safety nets.

### *Prudential Regulation of Short-Term Interbank Cross-Border Inflows*

One approach to ensuring the stability of short-term interbank flows is through enhanced prudential banking standards. On the borrower side, a range of possible measures could be considered to help discourage imprudent foreign currency borrowing, while relying on market mechanisms to the extent possible. Prudential bank standards, such as limits on a bank's open foreign currency positions, if enforced effectively, could reduce the riskier kinds of foreign borrowing by banks. Some countries have experimented with regulatory requirements that force their banking systems to maintain "liquidity buffers" to protect against the risk of sudden shifts in funds out of the banking system. Argentina, for example, has required banks to maintain large, liquid reserves against their short-term liabilities, including their short-term foreign liabilities.

Greater prudence in the use of short-term, cross-border interbank flows could also be encouraged on the lender side. This could be accomplished through prudential regulation of the international short-term lending of banks in the industrial countries, so as to encourage more careful lending to emerging market entities that operate in weak financial systems.

### *Should There Be Broader Controls on All Short-Term Capital Inflows?*

More controversially, some have suggested wider use of market-based restraints on all short-term capital inflows, to deter short-term foreign borrowing not just through banks but by other means as well. Chile is one country that has taken this approach. In some countries, nonfinancial firms are reported to have undertaken large-scale risky cross-border borrowing directly, rather than via the banking system, in the leadup to the crisis in Asia, for example. It has been argued that

regulation of inflows to banks alone would lead to evasion through direct cross-border borrowing by nonfinancial firms. It has also been argued that taxes on general inflows may help in the management of monetary policy when surges in inflows create difficult problems, such as how to “sterilize” their impact and avoid an inflationary surge in the money supply.

The effectiveness of such controls has been questioned, however. Evasion and leakages tend to make capital controls less effective over time. Also, the apparent success of Chile may have been due more to that country's very effective prudential regulation and supervision of its financial system and fairly sound macroeconomic policies than to capital controls. Finally, such controls have tended to favor large corporations (which are more capable of raising funds directly in international financial markets) at the expense of small and medium-size ones.

The available empirical evidence from countries that have imposed controls on a broad range of short-term capital inflows shows that they do appear to have affected the composition of inflows. Controls have steered inflows away from instruments of short-term maturity and toward longer term instruments and foreign direct investment. They do not appear to have affected the overall volume of capital inflows. Opponents of controls point out that, during the recent financial turmoil, Chile, Colombia, and Brazil have all reduced their controls in order to stimulate urgently needed capital inflows and reduce pressures against their currencies. Proponents reply that these moves do not undermine the rationale for controls. Their purpose is to slow down short-term capital inflows temporarily during a cyclical phase where such inflows are feared to be excessive. In the outflow phase of the cycle (and especially in time of crisis), it is argued that it is sensible, and not inconsistent, to remove the controls. Evidence on the appropriateness of Chilean-style controls is not only mixed but preliminary and based on the experience of a limited set of countries. Given the numerous arguments on both sides, policies to restrict all short-term inflows remain quite controversial.

Alongside the policies needed to strengthen financial systems, a number of other policies are beneficial in developing countries to enhance financial stability, foster long-term economic growth, and limit their vulnerability to shifts in global capital. Countries need sound and consistent monetary and exchange rate policies, as well as fiscal policies that avoid excessive accumulation of government debt. Although short-term and foreign currency borrowing can be very appealing to a government, because it is cheaper and often easier in the short run than borrowing long term and in local currency, too much of this kind of borrowing makes countries vulnerable to sudden shifts in investor confidence. Sound public debt management is important to insure against the risk of market disruptions.

## DEVELOPING NEW APPROACHES TO CRISIS RESPONSE

Any regime designed to respond to international financial crises must provide some combination of external financial assistance and domestic policy changes. The provision of large-scale official international finance raises difficult questions concerning the criteria that should govern access to such assistance, the appropriate terms, the links (if any) to private sector involvement, and the sources of funding. Reform of the present regime also requires the consideration of new procedures for coordinating the relevant international bodies and national authorities, alongside greater participation by the private sector in crisis prevention and resolution.

### *New Structures for Official Finance*

The recent global financial turmoil points to the usefulness of developing new ways for the international community to respond to crises. This entails exploring the possibilities of new structures for official finance that better reflect the evolution of modern markets. In their October 30 declaration the G-7 agreed that, in response to the current exceptional circumstances in the international capital markets, strengthened arrangements for dealing with contagion will be beneficial. They called for the establishment of an enhanced IMF facility that would provide a contingent short-term line of credit for countries pursuing strong IMF-approved policies — that is, those cases where problems stem more from contagion than from poor policies. This would be a departure from traditional IMF packages, which are disbursed in a series of stages, or tranches, to encourage borrowers to adhere to strict policy conditionality. This facility could be drawn upon in time of need and would entail appropriate interest rates along with shorter maturities. The facility would be accompanied by appropriate private sector involvement.

The rationale for a precautionary facility is that countries with sound economic policies may be subject to attack because of contagion. The international community has a role to play in international financial crises, by intervening, when appropriate, to help limit contagion and global instability. It may make sense in today's world of large and sudden liquidity needs for more official money to be made available up front in return for policy changes that are likewise more up front. The Congress' agreement in 1998 to support an increase in the IMF quota will provide the IMF with an important pool of new, uncommitted funds. The U.S. contribution that Congressional action made possible will be strongly leveraged through the contributions of the other IMF members.

### *The Continued Need for Greater Private Sector Participation*

As described earlier in this chapter, the G-22 working group report on international financial crises pointed to the need for future work to develop new procedures for orderly and cooperative crisis resolution, to

complement the role of official finance. The G-7 has called for similar work as part of the next steps identified in its October 30 Declaration. The size, sophistication, and heterogeneity of recent international capital flows have reduced the relevance of the procedures used in the past when the private sector was involved in the resolution of severe international financial crises. These procedures were developed during an era when a small number of large international banks were the source of most capital flows to emerging markets. There is now a need to develop innovative ways for holders of new financial instruments to participate constructively in crisis containment and resolution. Also, innovative financing techniques, such as prenegotiated contingent lines of credit and financial provisions that provide greater explicit sharing of risk between creditors and debtors, are two avenues, among others, worthy of exploration.

### **STRENGTHENING THE IMF**

With the IMF's resources recently augmented, the institution's members need to be sure that its policies effectively address the new challenges of the global economy, and to provide the necessary political oversight and guidance to accomplish this objective. An enhanced IMF facility to provide a contingent line of credit, as discussed above, would constitute a significant adaptation and strengthening of the IMF's policies for crisis prevention and resolution to reflect the evolution of the global economy. Another area where policies could be strengthened is in the concerted use of periodic reviews of members' economies, to promote greater transparency of policies and compliance with standards or other expressions of best practice in areas relevant to the effective conduct of economic policy. One aspect of transparency of particular importance concerns encouraging the publication, by those countries that rely on global capital markets, of key economic data as set forth in the Special Data Dissemination Standard, which has been in effect on a voluntary basis since 1996. The IMF's own transparency could also be further improved by such steps as more widespread public release of information on the policy deliberations of the IMF's Executive Board. This could be accomplished along the lines of the procedures for the IMF's periodic reviews, mentioned above, whereby the country under review may assent to a press release. In all these areas, the IMF will need to ensure that its work continues, as warranted, to be closely coordinated with other international entities, such as the World Bank.

It will also be important to ensure that the IMF's Interim Committee, as the body designed to provide ministerial-level guidance to the work of the IMF on a regular basis, is able to continue to provide effective political-level oversight and direction of the IMF in a manner that reflects the evolving nature of the challenges of the international financial system. Consideration of proposals to achieve this objective

is in progress. Any changes adopted will need to be consistent with the parallel objective of strengthening the World Bank's Development Committee, which is the comparable entity for that organization.

## MINIMIZING THE HUMAN COSTS OF FINANCIAL CRISES

The sharp recessions in East Asia have led to a steep increase in both unemployment and poverty in that part of the world, inflicting severe social costs. More attention must be given in time of crisis to the effect of economic adjustment on the most vulnerable groups in society. Thus, strengthening social safety nets in crisis countries is also an important goal of stabilization packages. Ways must be found to minimize the human cost of financial crises and encourage the adoption of policies that better protect the most vulnerable in society. Just as important, countries should be encouraged to establish minimal social services for their populations, so as to be prepared to weather financial crises and other such shocks.

The Administration has been working with the world's multilateral development banks (MDBs; these include the World Bank and the regional development banks) to provide increased social safety nets in the countries in crisis, to help the least advantaged citizens in those countries who are experiencing hardship. The G-7 have asked the World Bank to develop, in consultation with other relevant institutions, general principles of good practice in social policy. These should then be drawn upon in developing adjustment programs in response to crises. The World Bank and the regional MDBs are well positioned to provide adequate spending in the areas of health and education—two of the most crucial areas in which the MDBs should focus their resources. Plans for employment creation, support for small and medium-size enterprises, and support in the development of unemployment insurance and pension plans are needed as well.

## SUSTAINABLE EXCHANGE RATE REGIMES FOR EMERGING MARKETS

Exchange rate regimes are institutional choices that signal policies, priorities, and commitments. They vary in their rigidity. The choices go beyond fixed versus floating rates. They range from institutional arrangements like monetary unions, dollarized regimes, and currency boards to conventional fixed exchange rates, crawling pegs, basket pegs, managed floats, and free floats. No single exchange rate regime is best for all countries at all times; rather the choice must be based on a country's circumstances.

The choice of an appropriate exchange rate regime for emerging market economies is particularly difficult, given that many emerging markets have extensive trading ties to a number of major industrial economies, and that the credibility of the policy environment in many

emerging markets will take time to establish. No matter what exchange rate regime a country chooses, it is critical that it be backed by strong financial regulation and appropriate monetary and fiscal policies. Macroeconomic stability is based on good policies, irrespective of the exchange rate regime. Policy mistakes that contribute to a currency crisis can occur under any exchange rate regime.

The three goals of financial market openness, monetary policy independence, and exchange rate stability are not conceptually consistent—indeed, these goals are sometimes called the “impossible trinity.” There are tradeoffs among these goals: a country can attain any two out of the three, but not all three; it must give up at least one. As we have seen, most countries have moved in the direction of increasingly open capital markets. For them the choice narrows to the other two goals. With perfect capital mobility, a country choosing a fixed exchange rate loses its ability to pursue an independent monetary policy; conversely, an autonomous monetary policy can be pursued only if the exchange rate is allowed to move flexibly. Therefore, a choice must be made between exchange rate fixity and monetary policy autonomy if free capital mobility is to be maintained.

### *Benefits of Fixed Exchange Rate Regimes*

Why would a country choose to fix its exchange rate, if it must give up a large part of its monetary independence to do so? There are a variety of reasons. One is that by eliminating exchange rate risk, a fixed exchange rate regime may encourage international trade and finance. However, the evidence on the effects of exchange rate stability on trade volumes is mixed. The effects on trade and finance may be greater if a country goes beyond fixing its exchange rate and simply adopts the currency of another country, through monetary union or dollarization.

Another potential benefit of fixed rate regimes is that they can foster monetary discipline. The loss of monetary autonomy under fixed exchange rates limits the ability of monetary authorities to pursue excessively expansionary and inflationary monetary policies. Thus, such a regime can be an important signal of policy commitment to achieving and maintaining low inflation, especially when countries are seeking a rapid retreat from conditions of high inflation or hyperinflation, as part of a consistent plan for macroeconomic stability.

By reducing the ability of monetary authorities to monetize fiscal deficits, a fixed rate regime may also restrain tendencies toward loose fiscal policy. Adopting a fixed exchange rate does not, however, automatically instill policy discipline. Rather, a fixed exchange rate regime or a currency board *requires* fiscal discipline and a strong financial system to be credible. (A currency board is a particularly rigid variety of fixed rate regime that issues only as much domestic currency as is backed by foreign exchange reserves; see Box 7-1 for a discussion.)

### **Box 7-1.—Currency Boards**

A currency board is a monetary institution that only issues currency to the extent it is fully backed by foreign assets. Its principal attributes include the following:

- an exchange rate that is fixed not just by policy, but by law
- a reserve requirement stipulating that each dollar's worth of domestic currency is backed by a dollar's worth of reserves in a chosen anchor currency, and
- a self-correcting balance of payments mechanism, in which a payments deficit automatically contracts the money supply, resulting in a contraction of spending.

By maintaining a strictly unyielding exchange rate and 100 percent reserves, a government that opts for a currency board hopes to ensure credibility.

The first currency board was established in Mauritius, at that time a colony of Great Britain, in 1849. The use of currency boards eventually spread to 70 British colonies. Their purpose was to provide the colonies with a stable currency while avoiding the difficulty of issuing sterling notes and coins, which were costly to replace if lost or destroyed. The colonies also benefited from this arrangement in that they could earn interest on the foreign currency assets being held in reserve. The use of currency boards peaked in the 1940s and declined thereafter. In the 1960s, many newly independent African countries replaced their currency boards with central banks, and most other countries followed suit in the 1970s.

The introduction of currency board-like arrangements in Hong Kong (1983), Argentina (1991), Estonia (1992), Lithuania (1994), and Bulgaria (1997) constitutes a small resurgence in their use worldwide. A currency board can help lend credibility to the policy environment by depriving the monetary authorities of the option of printing money to finance government deficits. Argentina, for example, has benefited from the credibility inspired by its currency board regime. Argentina was prompted to adopt such a regime, which it calls the Convertibility Plan, because of a dramatic hyperinflation in the 1980s and the absence of a credible monetary authority. Since 1991 the country has become a model of price stability and has achieved laudable growth rates, except during the recession brought on by the tequila crisis in 1995, from which it has rebounded. By most accounts, the currency board has worked for Argentina.

Characteristics that suit countries to be candidates for currency boards are the following: a small, open economy; a desire for further close integration with a particular neighbor or trading

**Box 7-1.—continued**

partner; a strong need to import monetary stability, because of a history of hyperinflation or an absence of credible public institutions; access to adequate foreign exchange reserves; and a strong, well-supervised, and well-regulated financial system. Advocates of currency boards have pushed for their wider use—in particular, for Indonesia, Russia, and Ukraine. However, proclaiming a currency board does not automatically guarantee the credibility of the fixed rate peg. A currency board is unlikely to be successful without the solid fundamentals of adequate reserves, fiscal discipline, and a strong and well-supervised financial system, in addition to the rule of law.

*Benefits of Exchange Rate Flexibility*

Exchange rate flexibility offers several benefits. Most succinctly, as already noted, it allows greater monetary independence. Flexible exchange rate regimes allow a country to pursue a different monetary policy from that of its neighbors, as it might want to do, for example, when it is at a different stage of its business cycle. In addition, a flexible rate regime can facilitate a country's adjustment to external shocks, such as the swings in capital flows and the terms-of-trade shocks that have been factors in recent crises. Finally, flexible exchange rates make the risk of foreign currency-denominated borrowing by banks and firms explicit. This may help discourage the accumulation of unhedged foreign currency liabilities.

Many episodes of currency crisis in the 1990s, discussed in Chapter 6, occurred under regimes where exchange rates were either fixed or kept in a narrow band. Semi-fixed exchange rate regimes and policies of exchange rate-based stabilization have at times led to real currency appreciations that worsened a current account deficit and helped trigger a crisis. Maintaining fixed rates long into the aftermath of an exchange rate-based stabilization can lead to a real appreciation (due to residual inflation) and a deteriorating trade balance, which can eventually undermine the fixed rate regime if it is not supported by consistent policy regimes. Some countries have made strong institutional commitments to a rigidly fixed regime; others could benefit from increasing flexibility during periods of macroeconomic and financial stability, when the move to flexibility may be less disruptive.

One form of fixed exchange rates that is even more extreme than a currency board is a monetary union, which solves the problems of credibility and speculation automatically. The next section discusses the prospects of European Monetary Union and whether Europe represents an "optimum currency area."

## EUROPEAN ECONOMIC AND MONETARY UNION

The European response during the 1990s to the challenges presented by financial globalization has been to continue the process of economic and financial integration of the continent. As part of this process, 11 members of the European Union embarked on a project of monetary unification, which took effect on January 1, 1999, with the third stage of European Economic and Monetary Union (EMU). European integration raises some of the same analytical issues and policy challenges as the integration of the emerging market countries into the world financial system.

### THE EMU SCHEDULE

In a summit meeting in the spring of 1998, the heads of the EU governments decided that EMU should proceed as envisioned in the Maastricht Treaty of 1991 to its third stage, monetary unification. The founding members of EMU were selected on the basis of assessments, made by the European Monetary Institute (the forerunner of the European Central Bank) and the European Commission, as to whether they had met the Maastricht Treaty's economic convergence criteria in 1997. Members were required to have had government deficits and total debt that were no greater than 3 percent and 60 percent of gross domestic product (GDP), respectively. In addition, their inflation rates and long-term interest rates had to have been within 1.5 and 2 percentage points, respectively, of the average of the three EU countries with the lowest inflation and interest rates. Finally, members' currencies must also have stayed within the EU Exchange Rate Mechanism bands for 2 years.

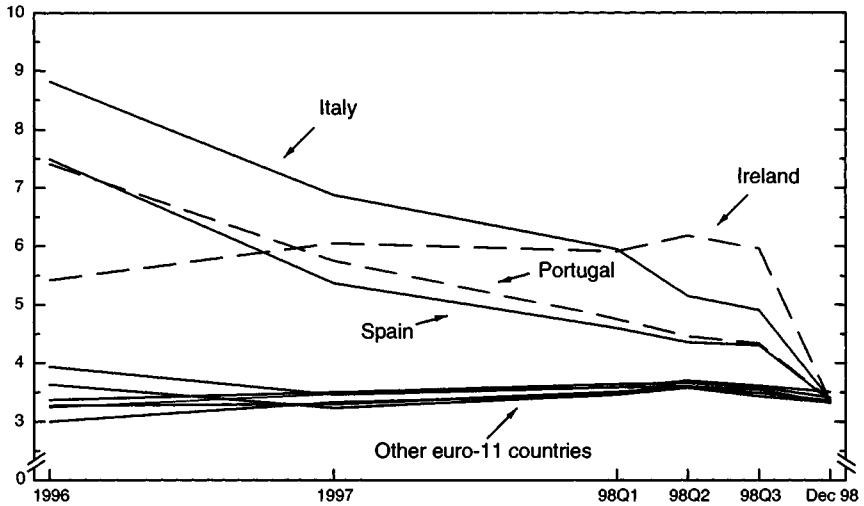
Twelve of the 15 EU members wished to participate in EMU from its inception, and 11 of these were found to satisfy the criteria (only Greece was not). This, in part, reflected remarkable progress toward fiscal consolidation, since the targets had seemed out of reach for members such as Italy a mere year or two before. Of the other three EU countries, Denmark and the United Kingdom had opted not to join EMU for the time being, whereas Sweden had chosen not to qualify by remaining out of the Exchange Rate Mechanism.

The remarkable convergence of financial conditions in the European countries is clear from data on the 11 EMU countries' short-term and long-term interest rates (Charts 7-1 and 7-2), which show a sharp convergence after 1996. Differences in interest rates across countries can be due to two major factors: a currency premium related to the risk of devaluation, and a country premium related to the possibility of default on the public debt. With monetary union to start in January 1999, short-term interest rates had converged by late 1998, as currency risk was eliminated (default risk is already close to zero for very

**Chart 7-1 European Short-Term Interest Rates**

As European Monetary Union approached, short-term interest rates in the euro-11 area fully converged.

Percent



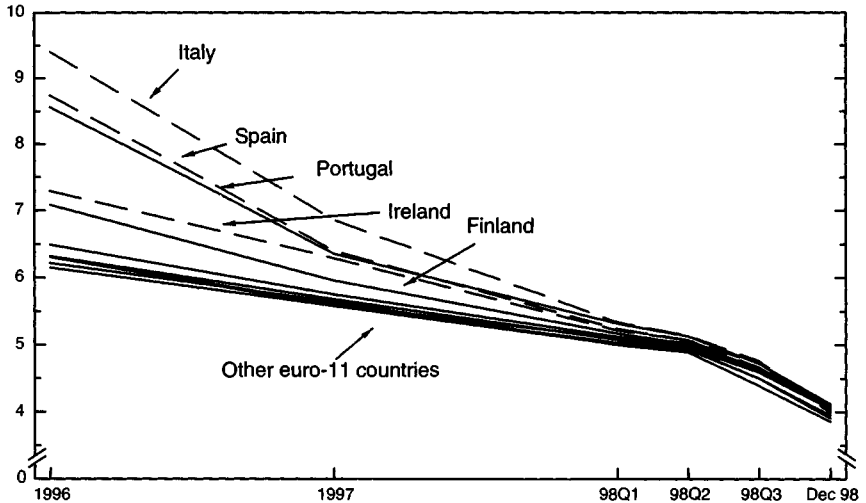
Note: Other euro-11 countries include Austria, Belgium, Finland, France, Germany, and the Netherlands.

Source: European Central Bank.

**Chart 7-2 European Long-Term Interest Rates**

Long-term interest rates have sharply converged with the approach of European Monetary Union.

Percent



Note: Other euro-11 countries are Austria, Belgium, France, Germany, Luxembourg, and the Netherlands.

Source: European Central Bank.

short-term public debt). Even after monetary union, differences among long-term interest rates may remain, as different EMU countries with different stocks of public debt may be perceived as having different default probabilities. However, long-term interest rates among the 11 countries (collectively called the euro-11 area) had converged quite sharply by the fall of 1998 as well.

In July 1998 the European Central Bank came into existence. On January 1, 1999, a single currency, the euro, was created as the currency of the 11 EMU countries. On the same date the European Central Bank took control of monetary policy in these countries. Existing national notes and coins will continue to circulate until euro cash is introduced, but the mark, the franc, the lira, and the rest are no longer separate currencies. Rather they are "nondecimal denominations" of the euro, locked in to it at permanent conversion rates. (By analogy, U.S. dollar bills are issued in the 12 Federal Reserve districts around the country and carry a circular seal with a letter inside denoting the district from which they come. However, Europeans will continue for some time to be far more aware of the geographic origin of the currency they carry than Americans are.) Only in 2002 will euro cash enter into circulation and national currencies be phased out. This transition period is necessary because authorities need time to print the banknotes and mint coins. Retailers and banks also want time to prepare, and governments have to consider how to change their services over to the use of the euro.

Although euro cash will be introduced only in 2002, many changes will occur in the 3 years between now and then. Government bonds issued after 1999 will be denominated in euros. Almost all outstanding issues of marketable government debt by the participating countries were redenominated in euros at the end of 1998. Moreover, several large European companies plan to begin accounting in euros in 1999. Such a move may lead smaller firms to follow. Even businesses that do not switch their internal accounting to euros may quote prices in euros for trading before 2002. Consumers and the public sector are likely to be using national currency units until 2002. In general, European governments agreed that there will be no compulsion and no prohibition in the use of the euro between 1999 and 2002.

## THE BENEFITS AND POTENTIAL COSTS OF EMU

EMU offers several potential benefits. Transactions costs in trade among the members will be lowered, as exchange rate risk and currency transactions within Europe will both be eliminated; the ensuing goods market integration and enhanced price competition will be beneficial to consumers. Integrated European financial markets will be broadened and deepened. Price discipline will be preserved by the independent European Central Bank, which is committed to price stability. It is hoped that fiscal discipline will also result, since, as the

members agreed in a separate Growth and Stability Pact, membership requires maintenance of a disciplined fiscal policy. (According to the pact, fines may be imposed on countries found to be running excessive deficits.) Participation in EMU thus eliminates national monetary policy and limits the scope of fiscal policy as a stabilization tool. This loss of macroeconomic tools to address cyclical unemployment makes more urgent the need for European structural reforms, for example to increase flexibility in the labor market. In this sense it is hoped that EMU might serve as discipline to nudge European countries to implement structural reforms more rapidly and eliminate impediments to sustained growth.

The creation of a large region of monetary stability is a commendable culmination of the 50-year process of economic, social, and political integration that has taken place in Europe. Indeed, the original motivation for economic integration in Europe was to ensure that the countries in the heart of Europe, which had fought three major wars over the preceding 100 years, never do so again. This is one reason why, in historical perspective, European integration has always been in the political interest of the United States. But the United States will also benefit in an economic sense, as a trading partner with Europe, from strong economic performance there, which the single-currency project may enhance in the long run. As long as Europe remains open to trade, what is good for Europe economically is good for Americans.

However, EMU also entails some potential costs. Most important, the loss of monetary autonomy deprives countries of a tool to respond to asymmetric national shocks —unexpected economic developments that affect some countries differently than others. Similarly, exchange rate changes are another instrument for coping with such shocks, but with EMU this tool will also no longer be available. Without these tools, flexibility of wages and labor mobility across regions and industries are the major mechanisms of adjustment. But labor mobility is much lower among the nations of Europe than, for example, among the American States. Fiscal policy can also play a stabilization role, but again, the rules for EMU membership constrain countries' ability to use that tool. Finally, Europe also lacks a centralized system of taxes and transfers comparable to that of the United States to cushion against regional and national shocks. Limited labor mobility, structural labor market rigidities, and decentralized and constrained fiscal policies could imply that Europe does not satisfy the criteria for an optimum currency area (Box 7-2) as clearly as do the States of the United States.

Although these potential costs of EMU have some relevance, some of the objections to EMU have been exaggerated. For example, although monetary policy is a potent policy tool for mitigating cyclical unemployment (that caused by shocks affecting aggregate demand for a country's goods and services), it has little long-run impact on

### **Box 7-2.—Is Europe an Optimum Currency Area?**

The theory of optimum currency areas provides a set of criteria by which to identify groups of countries that are likely to benefit from membership in a common monetary union. Some research suggests that the nations of the European Union are less well suited to a common currency than are, for example, the States of the United States. Yet Europe is becoming increasingly integrated over time, and this may tip the balance in the direction of satisfying these criteria in the future.

*Common rather than national shocks.* Why do countries ever need independent currencies? If a country (or other geographic region) suffers an adverse shock, such as a fall in demand for its products, it may want to follow a more expansionary monetary policy, to stimulate demand and head off unemployment. Yet it cannot do so if it does not have an independent currency. Conversely, only common shocks can be properly addressed by a unionwide change in monetary policy.

For example, in the early 1990s Germany experienced a sudden increase in interest rates, as a result of unification, which led to an increase in western German spending in the eastern *länder*. It was difficult for other European countries to accept this increase in German interest rates, because it did not suit their own economic conditions. The resultant strains broke apart Europe's Exchange Rate Mechanism in 1992-93, although it was later restored.

*A high degree of labor mobility.* Labor mobility is an important criterion for an optimum currency area: a region that has this means of adjustment available has less need for monetary independence. In the event of an adverse shock in one country, workers can simply move to other countries or regions with stronger economies. Although this might not appear to be an attractive solution, it turns out that interstate migration is the most rapid means of adjustment (more rapid than changes in wage levels, for example) to economic downturns within the United States. Labor mobility among the European countries is much lower than in the United States. Thus, by the labor mobility criterion, European countries are less well suited to a common currency than are the American States.

*The existence of a federal system of fiscal transfers.* When disparities in income do arise in the United States, Federal fiscal policy helps narrow them. One recent estimate suggests that when a region's income per capita falls by \$1, the final reduction in its disposable income is only 70 cents. The difference, a 30 percent Federal cushioning effect, comes about both through an automatic decrease in Federal tax receipts and

**Box 7-2.—continued**

through an automatic increase in unemployment compensation and other transfers. The cushioning effect has been estimated at a lower 17 percent in the case of the Canadian provinces. European countries have greater scope for domestic fiscal stabilization than do American States. There are also some cross-country fiscal transfer mechanisms. But neither the fiscal transfer mechanisms already in place within the European Union nor those contemplated under EMU (the so-called cohesion funds) are as large as those in the U.S. or the Canadian fiscal system.

At least by the theoretical criteria of labor mobility and availability of fiscal transfers, then, the European Union is not as good a candidate for a monetary union as the United States. European countries may be less adaptable to adverse shocks than American States. This suggests that, if shocks occur in the coming decade that affect EU members as differently as did the German unification shock of the early 1990s, governments in those countries adversely affected could experience popular resentment against what for them will be the insufficiently expansionary monetary policies of the rest.

*The prospects for EMU.* There is good hope, however, for a successful EMU. The degree of integration among the EU countries is increasing decade by decade. International labor mobility, for example, is likely to be higher in the future than in the past. The Schengen convention now allows free movement of citizens among a subset of European countries. Thus, the European countries may come to satisfy the textbook criteria of an optimum currency area in the future, even if they do not do so fully now.

unemployment caused by such structural rigidities as labor market inflexibility or real wage rigidity. Such conditions result in high levels of the full-employment unemployment rate (the lowest rate of unemployment consistent with stable inflation—also called the nonaccelerating-inflation rate of unemployment, or NAIRU) in many European countries and in such chronically depressed regions as southern Italy. These problems must be addressed through structural reform, with or without monetary union.

Second, the scope for fiscal expansion is also limited in Europe, because fiscal deficits and debt-to-GDP ratios remain high in a number of countries. Fiscal consolidation must therefore continue with or without EMU; in this sense, EMU may not be a strong constraint.

Third, asymmetric shocks and limited factor mobility may diminish over time as EMU itself leads to greater real integration among the European economies (see Box 7-2). For example, as intra-European trade continues to grow in response to European integration and EMU, the creation of a common free market for goods, services, and factors of production could make idiosyncratic national shocks less prevalent, if it reduces the geographical concentration of industries in certain countries.

Finally, it has been argued that EMU is likely to exert discipline in favor of structural reform. As there will be no national monetary and exchange rate policies, and fiscal policy autonomy will be constrained, the ability to use instruments of macroeconomic policy to delay structural market reforms will be reduced; governments will then have stronger incentives to pursue policies that further long-run economic growth. Critics of this view contend, however, that EMU could actually slow the drive for structural reforms: because reforms are socially costly, the flexibility deriving from monetary, exchange rate, and fiscal discretion could ease the transition costs as resources are reallocated. With EMU, the absence of these social shock absorbers may slow structural reform.

## THE EURO AS AN INTERNATIONAL CURRENCY AND THE IMPLICATIONS FOR THE DOLLAR

Monetary union in Europe is a positive development that could simultaneously benefit the continent itself, the United States, and the world economy. Some have expressed concern, however, that a strong European economy and the emergence of the euro as an alternative international currency, rivaling the dollar, are likely to harm the United States. Such concerns are largely misguided. The United States has long benefited from a prosperous, growing Europe, and ever since the Marshall Plan, U.S. policy has supported the development of strong market economies on that continent. The United States will benefit from an open and integrated economic area in Europe. American producers will be able to export to a large, integrated European market with no cross-national restrictions on trade. U.S. firms producing in Europe will benefit from the lack of exchange rate volatility, common standards for goods and services, and a large, open market. Indeed, U.S. corporations have more experience selling into a large, unified market than do their European counterparts. American financial institutions, in particular, are already quite competitive in commercial and investment banking services and securities products and can benefit from the opportunities provided by the broadening and deepening of integrated European financial markets.

The emergence of the euro as an international currency should not be viewed with alarm, for a number of reasons. Even if the euro emerges as a strong international currency, the negative effects on U.S. economic welfare are likely to be small and outweighed by the

advantages of EMU to U.S. residents, as already described. And in any case the euro is unlikely to rapidly displace the dollar as a major international currency, given that the foundations of the successful performance of the U.S. economy remain intact. International currency status does not automatically follow from a currency's possession of a large home base.

### *The Functions of an International Currency*

What does it mean to be a major international currency, and is it likely that the euro will become one? A currency has three main uses: it can be used as a means of payment, as a unit of account, and as a store of value. An international currency is simply one that is also used outside its home country for these three purposes. Within each of the three functions, an international currency has both official and private uses.

In money's *store-of-value* function, investors decide how much of their wealth to hold in the form of assets denominated in various currencies. Will public and private investors hold a fraction of their portfolios in assets denominated in euros? If they hold a fraction that exceeds the sum of the fractions previously occupied by the German mark and the other disappearing European currencies, a portfolio shift would occur, leading to greater demand for euros. This, in turn, could cause an appreciation of the euro. However, whether euro-denominated assets do acquire a higher share of portfolios will depend on various economic factors. These include the inflation rate in the euro area, confidence in the value of the euro relative to the dollar and the yen, the rate of return on euro-denominated assets, and economic growth in Europe, as well as political factors.

The official side of the store-of-value use is that central banks hold currencies as foreign reserves. The euro's emergence raises the possibility of greater diversification of these reserves away from the dollar toward the euro. In the 1970s and 1980s, the dollar's share of reserve currency holdings gradually shrank to make room for the mark and the yen. This trend was suspended, or even reversed, in the 1990s. But it could resume in the 2000s to make room for the euro. Such diversification away from the dollar would depend in part on the same risk-reward considerations as matter for private use. Countries with strong economic fundamentals, sound currencies, and low inflation are more likely to have their currency used as an international currency. As long as the United States maintains a strong economy, international demand for dollars will remain strong.

A *unit of account* is a reference scale for quoting prices, which is distinguishable from the actual currency in which assets are held or payments made. For the private sector an international currency functions as a unit of account through its use in invoicing imports and exports. Presently, the dollar plays a dominant role in invoicing around the world, especially for primary commodities like oil. Invoicing within Western

Europe will henceforth be mostly in euros, but the euro may also come to be used even more widely in Central and Eastern Europe, the Middle East, and Africa, areas of substantial and increasing trade with Europe.

One official use of international currencies that can be classified under the unit-of-account function is as a major currency to which smaller countries can peg their exchange rates. Non-EMU European countries, particularly those in Central and Eastern Europe, are likely to consider pegging their currencies to the euro for two reasons: because they undertake more of their trade and finance with the EU countries than with the United States, and because they aspire to eventual membership in EMU. If this happens, greater use of the euro by these countries as an intervention currency will increase official demand for euros. The unit-of-account, store-of-value, and means-of-payment functions are thus interrelated.

Currently, the dollar is the primary vehicle currency in foreign exchange trading, which is one example of the use of a currency as a *means of payment*. A trader who wishes to exchange one minor currency for another usually has to exchange the first currency for one of the major currencies, and then exchange that currency for the currency he or she ultimately wants to buy. Traders today are more likely to use the dollar as the intermediate, or vehicle, currency than to go through some other major currency or to be able to find a counterparty for a direct cross trade. (See Box 7-3 on the role of different international vehicle currencies.)

The use of a currency by the private sector as a means of payment in international trade and finance depends on economies of scale in payments systems. As in the case of a domestic currency, increasing returns to scale in payments are significant: it is easier and cheaper to use the same currency that everyone else uses. In this regard the advantages of incumbency and inertia favor the dollar even as the euro's natural home grows to be as large as that of the dollar.

In short, although it is likely that the euro will become an international currency, it is unlikely that the dollar will be replaced anytime soon in its role as the leading international currency.

### *Is it Good or Bad to Be an International Currency?*

Does it matter whether the dollar remains the leading international currency? One should not overemphasize the decidedly modest benefits that having an international currency provides to a country.

*Advantages of having a key currency.* At least five advantages accrue to a country from having its currency used internationally. The first is convenience for the country's residents. It is certainly more convenient for a country's exporters, importers, borrowers, and lenders to be able to deal in their own currency rather than in foreign currencies. The global use of the dollar, like the increasingly global use of the English language, is a natural advantage that American businesses may take

### **Box 7-3.—How Does the Dollar Rank Today Against Other International Currencies?**

Most measures show a gradual decline in international use of the dollar in recent decades. Reserve currency use, perhaps the best measure, is shown in Chart 7-3. The dollar's share of central bank reserve holdings declined from 76 percent in 1973 to 49 percent in 1990. This reflects a gradual shift of central bank portfolio shares into marks and yen. However, the dollar's share in reserve holdings has been relatively flat in the 1990s, amounting to 57 percent in 1997.

Other major measures of international currency status, as of the eve of the birth of the euro, are shown in Table 7-1. They tend to present the same picture: the dollar still leads, despite a gradual decline in its use versus the mark and the yen over the last 30 years. The dollar is still more important than its three or four closest rivals combined.

The first column in Table 7-1 reports the popularity of major currencies among smaller countries choosing a peg for their currencies. The dollar is the choice of 39 percent of these countries. Three currencies (those of Bosnia, Bulgaria, and Estonia) were pegged to the mark last year, however. Elsewhere, the French franc was, after the dollar, still the most common choice as a peg, accounting for 29 percent of countries using pegs; these countries are principally in Africa, owing to a special set of arrangements with the French treasury. The euro is inheriting this role of the mark and the franc. It is still the case that no currencies anywhere are pegged to the yen. The dollar was the currency either bought or sold in fully 87 percent of trades in global foreign exchange markets in April 1998. This figure (like the share of reserves held in dollars) should automatically go up in 1999, as EMU eliminates intra-European transactions among member currencies.

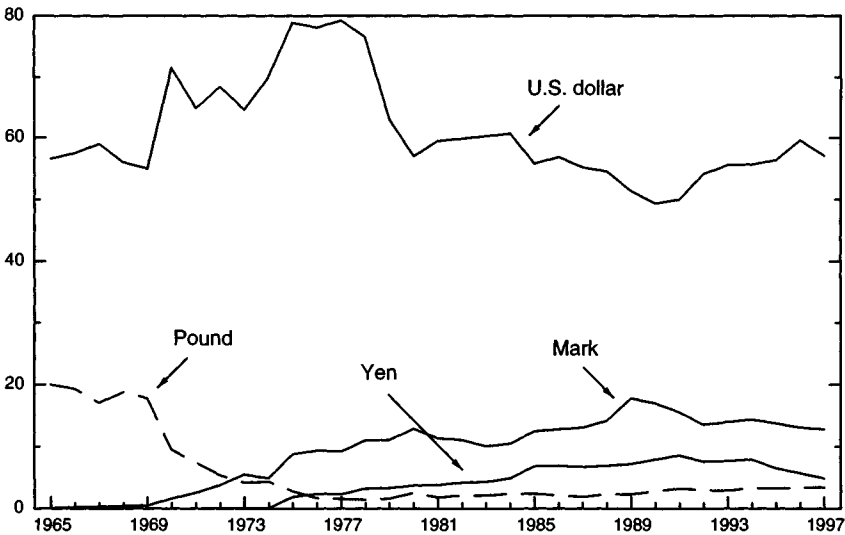
The various measures of the use of currencies to denominate private international financial transactions—loans, bonds, and deposits—also still showed the dollar as the dominant currency, with a 54 percent share.

Figures on the use of international currencies as substitutes in local cash transactions are not generally available. According to estimates, however, the leader has been the dollar, for which internationally circulating cash has been estimated by the Federal Reserve at 60 percent of currency outstanding. International circulation of the mark has been estimated by the Bundesbank (Germany's central bank) at 35 to 40 percent of the German currency outstanding, but because the outstanding stock of marks is much smaller than that of dollars, the mark's share of total currency in international circulation is smaller than this figure would suggest.

**Chart 7-3 International Use of Major Currencies**

Although official use of the dollar is below its peak in the mid-1970s, it remains much more widely used than the other major currencies.

Percent of official holdings of foreign exchange (end of year)



Source: International Monetary Fund.

**TABLE 7-1.— The Importance of Major Currencies on the Eve of the Introduction of the Euro**  
[Shares in international use]

| Currency                   | Pegging of minor currencies | Foreign exchange reserves held by central banks | Foreign exchange trading in world markets <sup>1</sup> | International capital markets | International trade | Cash held outside home country |
|----------------------------|-----------------------------|---|--|-------------------------------|---------------------|--------------------------------|
| U.S. Dollar .....          | 0.39                        | 0.57  | 0.87   | 0.54                          | 0.48                | 0.78                           |
| Deutsche mark .....        | .06                         | .13   | .30  | .11                           | .16                 | .22                            |
| Japanese yen .....         | .00                         | .05   | .21  | .08                           | .05                 | (2)                            |
| Pound sterling .....       | .00                         | .03   | .11  | .08                           |                     | .00                            |
| French franc .....         | .29                         | .01   | .05  | .06                           | }.15                | .00                            |
| Other EMS currencies ..... | .04                         | (2)   |  | (2)                           |                     | .00                            |
| ECU .....                  | .00                         | .05   | }.17   | .01                           | .00                 | .00                            |
| Other/unspecified .....    | .22                         | .15   |  | .29                           | .12                 | .16                            |

<sup>1</sup> Shares add to 2.00 because in each currency transaction there are two currencies traded.

<sup>2</sup> Not available.

Sources: Various international agencies (including International Monetary Fund, Bank for International Settlements, and Organization for Economic Cooperation and Development) and other sources.

for granted. But the benefits from having one's country's currency used as a unit of account should not be overemphasized. Invoicing U.S. imports in dollars does not necessarily shift the currency risk from the buyer to the seller, as the dollar price sometimes can change quickly when the exchange rate changes.

A second possible advantage is increased business for the country's banks and other financial institutions. However, there need be no firm

connection between the currency in which banking is conducted and the nationality of the banks conducting it (or between the nationalities of savers and borrowers and the nationality of the intermediating bank). British banks, for example, continued to do well in the Eurodollar market long after the pound's international role had waned. Nevertheless, it stands to reason that U.S. banks have comparative advantage in dealing in dollars.

Having an international currency may confer power and prestige, but the benefits therefrom are somewhat nebulous. Nevertheless, historians and political scientists have sometimes regarded key currency status and international creditor status, along with such noneconomic factors as colonies and military power, as among the trappings of a great power.

Some view seigniorage as perhaps the most important advantage of having other countries hold one's currency. Seigniorage derives from the fact that the United States effectively gets a zero-interest loan when dollar bills are held abroad. Just as a travelers' check issuer reaps profits whenever people hold its travelers' checks, which they are willing to do without receiving interest, so the United States profits whenever people in other countries hold dollars that do not pay them interest. International seigniorage is possible wherever hyperinflation or social disorder undermine the public's faith in the local currency, leading them to prefer to hold a sound foreign currency instead. And today the dollar is the preferred alternative. (Illegal activities are another source of demand for cash, of course.)

How much does the United States gain from seigniorage? One way to compute cumulative seigniorage is to estimate the stock of dollars held abroad and calculate the interest that would otherwise have to be paid on this "loan" to the United States. Foreign holdings of U.S. currency are conservatively estimated at 60 percent of the total in circulation. With total currency outstanding in mid-1998 at \$441 billion, foreign holdings are about \$265 billion. Multiplying this figure by the interest rate on Treasury bills yields an estimate for seigniorage of about \$13 billion a year.

A final advantage is the ability to borrow in international capital markets in one's own currency. Some have argued that the United States' financing of its current account deficit through foreign borrowing has been facilitated by the ability to issue dollar-denominated liabilities, and the concern has been expressed that this ability may be hampered by a loss of reserve currency status. This concern is probably overdone, however. First, many industrial countries whose currency is not a key currency are able to borrow in domestic currency. Second, countries with larger current account deficits than the United States (as a share of their GDP) have regularly and persistently financed such imbalances with borrowing in foreign currency rather than their own. Countries become unable to borrow to finance current account imbal-

ances when such imbalances become unsustainable. The fact that borrowing may occur in domestic or foreign currency has little to do with such sustainability.

*Disadvantages of having a key currency.* Having an international currency confers at least two disadvantages on a country. These drawbacks explain why Germany, Japan, and Switzerland have in earlier decades been reluctant to have their currencies held and used widely outside their borders.

The threat of large fluctuations in demand for the currency is one disadvantage. It might be that the more people around the world hold an international currency, the more demand for that currency will vary. Such instability of demand, however, is more likely to follow from the increase in capital mobility than from key currency status per se. In any case, central banks are particularly concerned that internationalization of their currencies will make it more difficult to control their money stocks. This problem need not arise if they do not intervene in the foreign exchange market. But the central bank may view letting fluctuations in demand for the currency be reflected in the exchange rate as just as undesirable as letting them be reflected in the money supply.

The second disadvantage is an increase in average demand for the currency. This is the other side of seigniorage. In the 1960s and 1970s the Japanese and German governments were particularly worried that, if domestic assets were made available to foreign residents, an inflow of capital might cause the currency to appreciate and render the country's exporters uncompetitive on world markets. Some Europeans today express the same concern about the euro.

### *What Factors Determine International Currency Status?*

Will the dollar maintain its global role in the foreseeable future? The answer depends on four major conditions that determine whether a currency is used internationally.

*Patterns of output and trade.* The currency of a country that has a large share in world output, trade, and finance has a natural advantage. The U.S. economy is still larger than the euro-11 economies combined. If the United Kingdom and the other remaining EU members (Denmark, Greece, and Sweden) join EMU in the future, however, the two currency areas will then be very close in size.

*History.* There is a strong inertial bias in favor of using whatever currency has been the vehicle currency in the past. Exporters, importers, borrowers, lenders, and currency traders are more likely to use a given currency in their transactions if everyone else is doing so. For this reason, the world's choice of international currency is characterized by multiple stable equilibria; that is, any of several currencies could fill that role under certain conditions. The pound remained an important international currency even after the United Kingdom lost its position

as an economic superpower early in this century. In the present context the inertial bias favors the continued central role of the dollar.

*The country's financial markets.* Capital and money markets must be not only open and free of controls, but also deep, well developed, and liquid. The large financial marketplaces of New York and London clearly benefit the dollar and the pound relative to the mark and the yen. It remains to be seen whether EMU will turn Frankfurt or Paris into one of the top few world financial centers.

*Confidence in the value of the currency.* Even if a key currency were used only as a unit of account, a necessary qualification would be that its value not fluctuate erratically. In fact, however, a key currency is also used as a form in which to hold assets (firms hold working balances of the currencies in which they invoice, investors hold bonds issued internationally, and central banks hold currency reserves). For these purposes, confidence that the value of the currency will be stable, and particularly that it will not at some point be inflated away, is critical.

In the 1970s the monetary authorities in Germany, Japan, and Switzerland established a better track record of low inflation than did the United States, which helped their currencies to achieve greater international currency status. Given the good U.S. inflation performance more recently, this is no longer such a concern.

### *What Is the Prognosis for the Dollar and the Euro?*

In light of these desiderata for a would-be international currency, is it likely that the euro will rival the dollar as the leading international currency? The euro automatically inherits the roles of the ecu, the mark, the French franc, and other currencies of the European Monetary System. Subsequently, the euro's share will probably gradually rise, moving in the direction of Europe's share of output.

The odds, however, are against the euro's rapidly supplanting the dollar as the world's premier currency. It is not that the dollar is ideally suited for the role of everyone's favorite currency. An international currency is one that people use because everyone else is using it. Two of the four determinants of reserve currency status—highly developed financial markets and historical inertia—support the dollar over the euro. The third, economic size, is a tie (or will be if the United Kingdom joins EMU). The fourth determinant is also a tie, as both Europe and the United States have pursued stable monetary policies aimed at keeping inflation low.

The widespread use of the U.S. dollar as an international currency—for holding reserves, pegging minor currencies, invoicing imports and exports, and denominating bonds and lending—is testimony to the strength of the U.S. economy and the confidence with which it is viewed around the world. But the direct economic benefits deriving from this international role are limited. The welfare of a country is measured by its ability to produce a large quantity of goods and ser-

vices in demand, and to provide its citizens with sustained increases in real income and consumption opportunities. Whether a country's currency is an international currency or not has little to do with such long-run well-being, as the experience of many successful economies whose currencies do not have international roles attests. An economically strong and healthy United States that is also a leader and champion of sound economic policies has led, as a by-product, to a strong international role for the U.S. dollar.

## CONCLUSION

Reforms are under way to create a strengthened international financial architecture for the global marketplace in the next millennium, one that captures the full benefits of international capital flows and global markets, minimizes the risk of disruption, and protects the most vulnerable.

The United States has worked intensively with key emerging markets, other industrial countries, and the relevant international organizations to put in place the building blocks of this new architecture. The reforms recommended by the G-22 and adopted by the G-7 are an important starting point. The United States and its G-7 partners have also agreed to do more to build a modern framework for the global markets of the 21st century and to limit the swings of boom and bust that destroy hope and diminish wealth. For these reasons they have also committed themselves to initiate new work on a number of other important areas, to identify additional steps to strengthen the international financial architecture. All these reforms will ensure that the unprecedented growth and the increase in welfare and opportunity experienced in the 50 years after the creation of the Bretton Woods system are maintained in the future.

Meanwhile the United States salutes the formation of the European Monetary Union. The United States has much to gain from the success of this momentous project. Now more than ever, America is well served by having an integrated and prosperous trading partner on the other side of the Atlantic. Europe should benefit from a single currency that supports these ends—and if Europe benefits, the United States gains as well.