

CHAPTER 2

Macroeconomic Policy and Performance

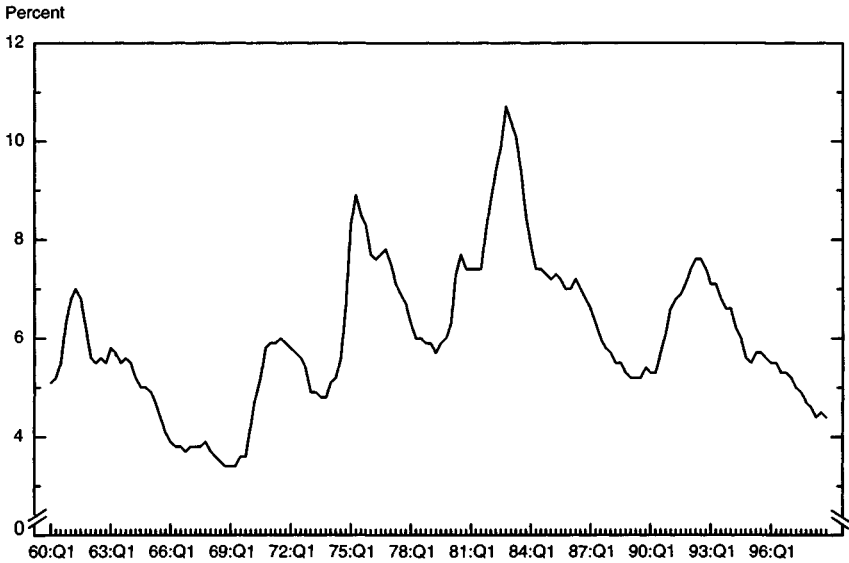
THE U.S. ECONOMY PERFORMED very well in 1998. Real output increased 3.7 percent at an annual rate over the first three quarters of the year, once again exceeding the predictions of most forecasters. Nonagricultural jobs increased by about 2.9 million during the year, and the average unemployment rate 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.

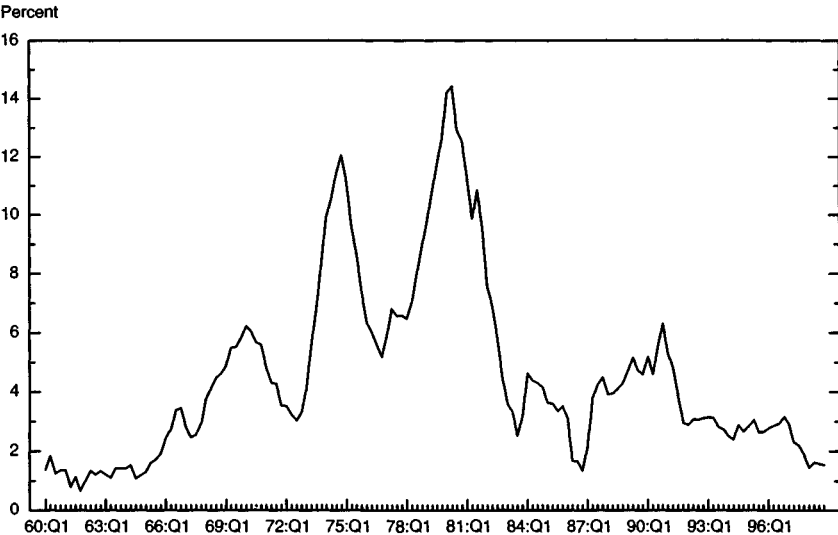
The first section of this chapter reviews the course of the U.S. economy during 1998. The next section focuses on developments in domestic financial markets, which were exceptionally turbulent last year.

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 (percent) | | Contribution to GDP growth (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 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

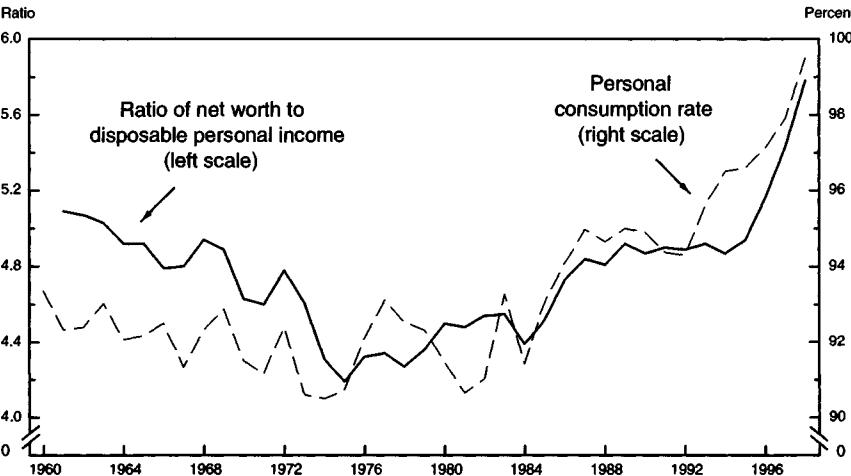
Real personal consumption expenditures (PCE) surged during the first half of 1998, increasing at roughly a 6 percent annual rate. PCE growth downshifted during the third quarter to about a 4 percent pace (which still exceeded its growth rate for the four quarters of 1997) and remained strong in the fourth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

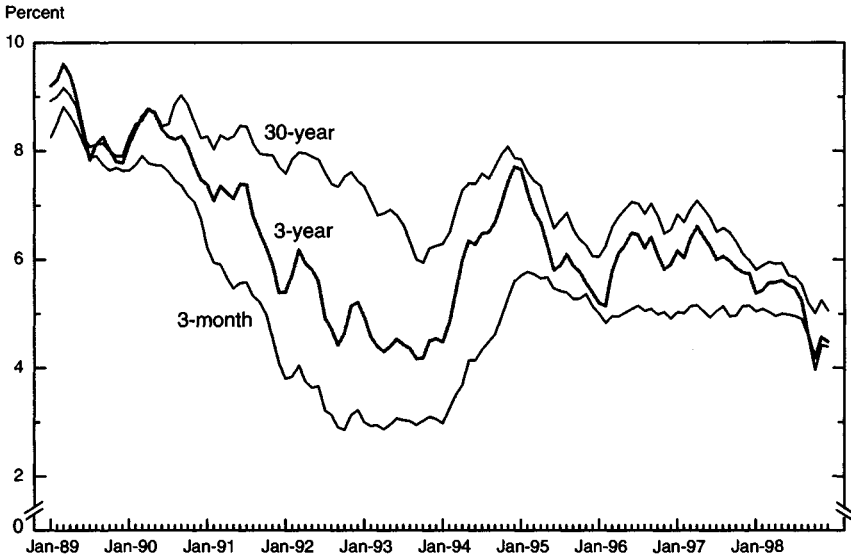
The flight to quality intensified dramatically during the late summer and fall of last year. The effective default on Russian government debt in August made clear that the dangers of financial turmoil—and the limited ability of international efforts to control that turmoil—were not confined to East Asia. 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

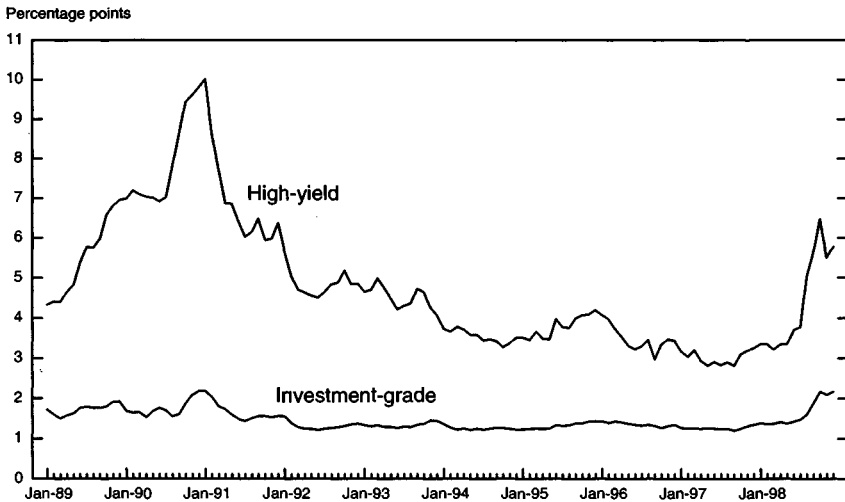
Long- and intermediate-term Treasury yields declined in 1997 and then fell in the summer and fall of 1998. Short-term yields also fell sharply in the second half of 1998.



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.

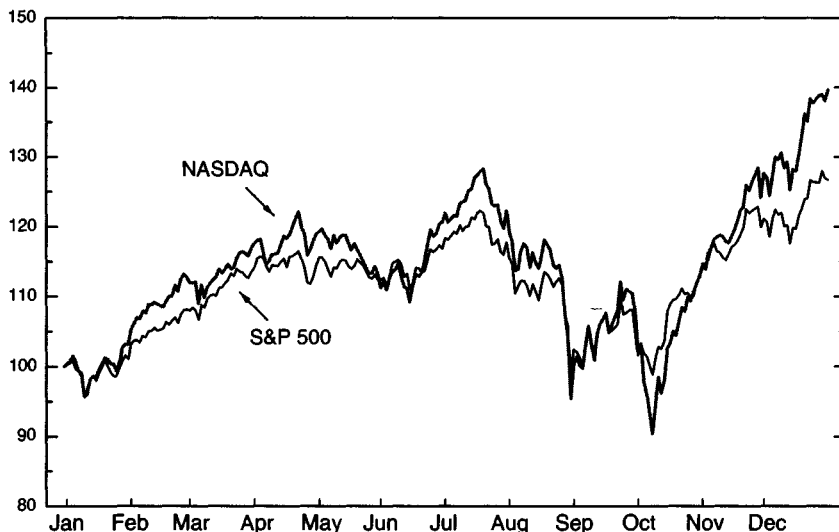
Financial market conditions stabilized further during the remainder of the year, and growth in bank loans eased as borrowers returned to the capital markets. Nevertheless, risk spreads remained significantly wider than when the year began, and Treasury yields stayed low. The yield on Baa-rated corporate 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.

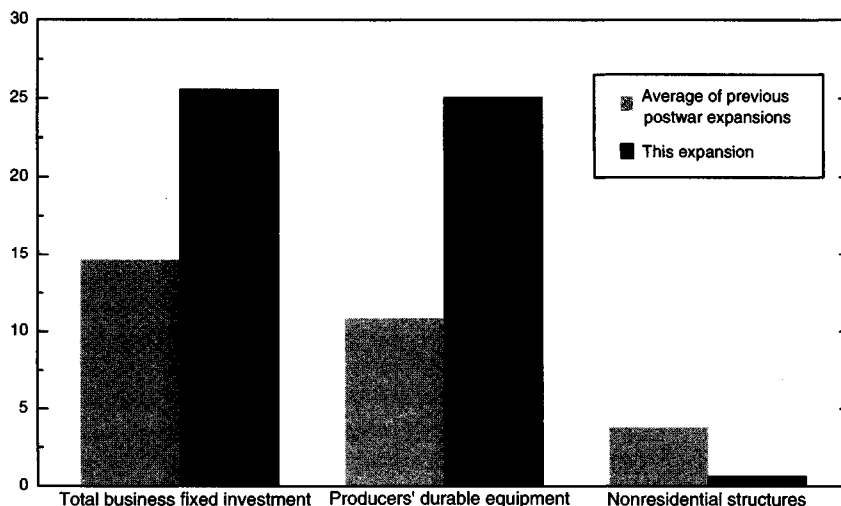
THE INVESTMENT BOOM

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.

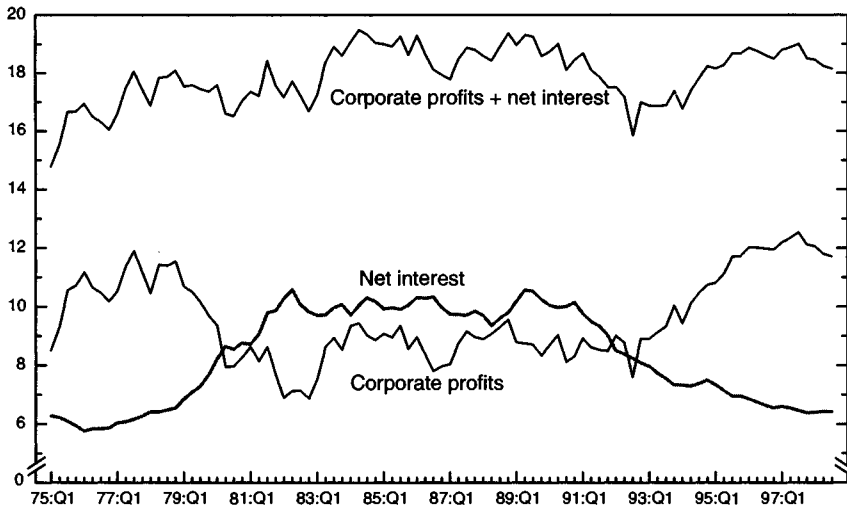
Robust Profits

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

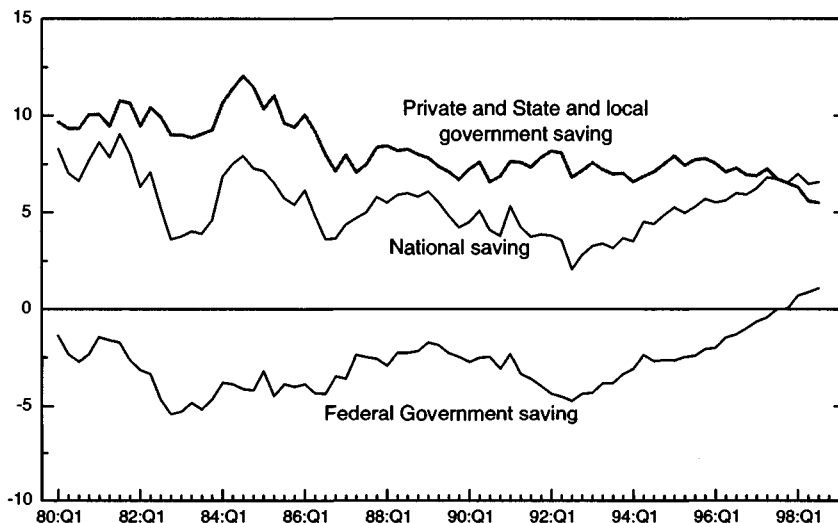
A third reason for the impressive recent pace of investment has been the ready availability of external funding. In particular, the dramatic reduction in Federal Government borrowing has left more resources available for private use. The domestic source of new loanable funds in the economy is national 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) ¹ |
| 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 | } 17.8 |
| Hurricane Hugo | North and South Carolina | 1989: III | |
| 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 |

¹ 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

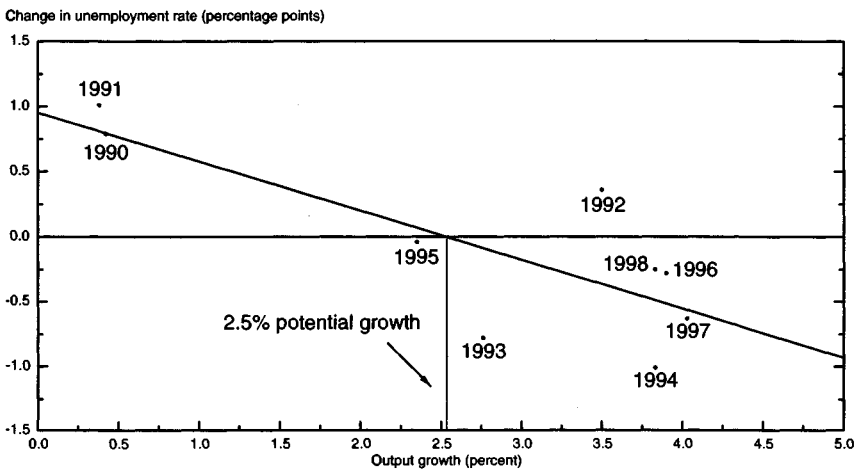
is estimated as the location where the fitted line in Chart 2-10 crosses the horizontal axis—in this case around 2.5 percent.

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 to 1973 IV | 1973 IV to 1990 III | 1990 III to 1998 III | 1998 III to 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 ¹ | .2 | .5 | .0 | .1 |
| 3) EQUALS: Civilian labor force ¹ | 2.0 | 2.0 | 1.0 | 1.1 |
| 4) PLUS: Civilian employment rate ¹ | .0 | -.1 | .2 | -.1 |
| 5) EQUALS: Civilian employment ¹ | 2.0 | 1.9 | 1.2 | 1.1 |
| 6) PLUS: Nonfarm business employment as a share of civilian employment ^{1 2} | .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 | ³ (1.6) |
| 11) EQUALS: Nonfarm business output | 4.5 | 2.8 | 3.1 | ³ (3.3) |
| 12) PLUS: Ratio of real GDP to nonfarm business output ⁴ | -.3 | -.1 | -.4 | ³ (-.5) |
| 13) EQUALS: Real GDP | 4.2 | 2.7 | 2.6 | ³ (2.8) ⁵ 2.3 |

¹ Adjusted for 1994 revision of the Current Population Survey.

² Line 6 translates the civilian employment growth rate into the nonfarm business employment growth rate.

³ Income-side definition.

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

⁵ 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.

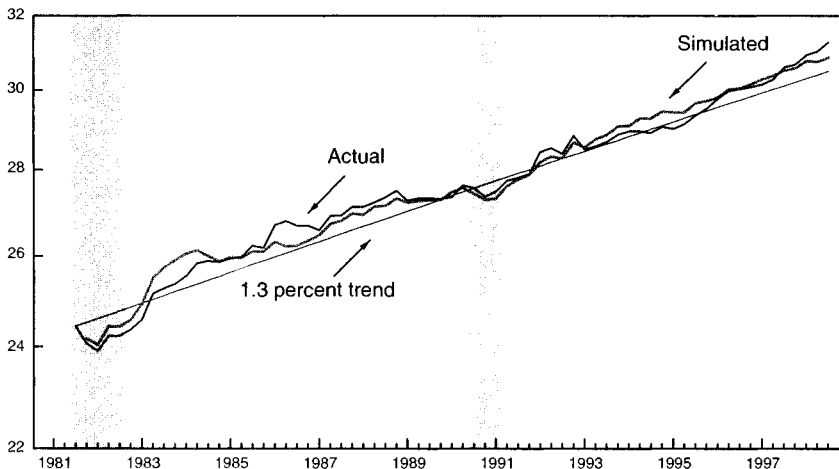
In the long term, productivity increases with training, technological innovation, and capital accumulation. But productivity growth also shows considerable variation over the business cycle, typically falling below its trend during recessions, then growing faster than trend during the middle of an expansion, 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.

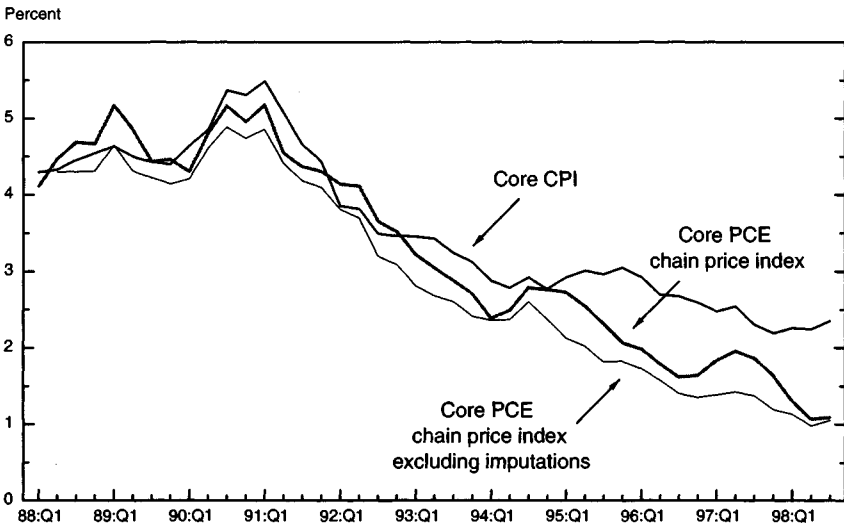
In addition to its importance for policy decisions, the level and direction of inflation are important variables in long-term economic and budget projections. In this context it is important to note the gap that has developed between inflation as measured by the CPI and the measures of inflation included 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.

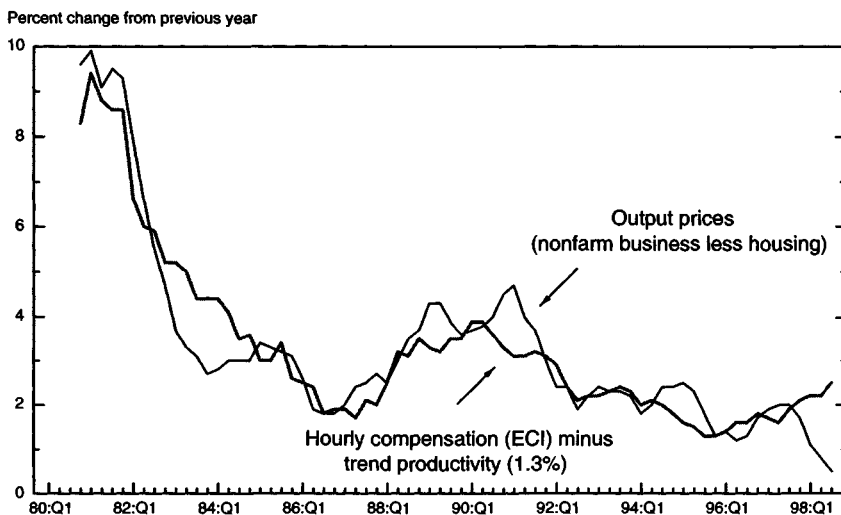
concept (3.5 percent). Although the increase in housing prices is similar in both indexes (because the PCE housing index uses CPI sources), housing is twice as important in the CPI as in the PCE price index. This difference in weight, together with an increase in the price of housing relative to the 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.

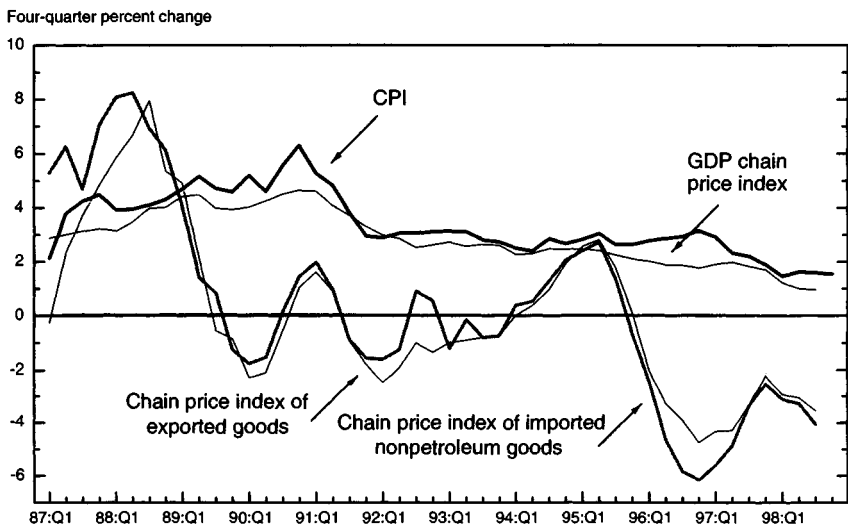
WHAT HAS HELD INFLATION IN CHECK?

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 |

¹ Not relevant for this index.

² 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.

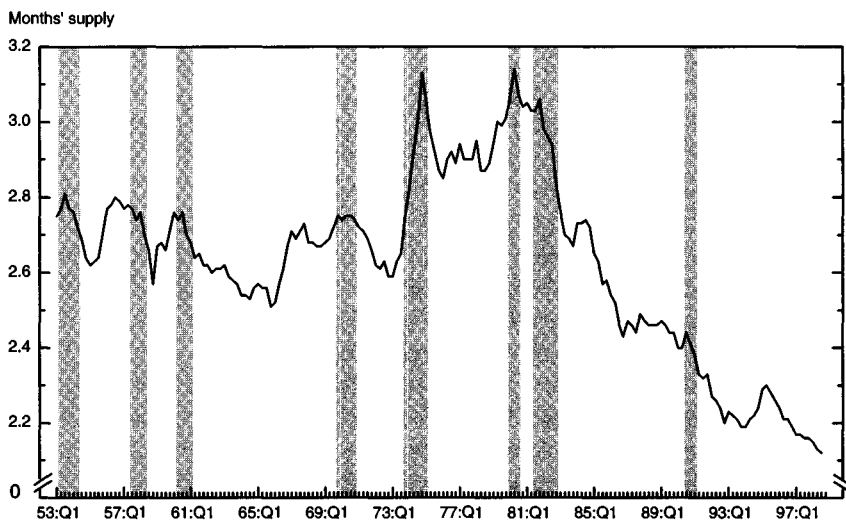
Business equipment investment grew at an extraordinary 26 percent annual rate in the first half of the year, the fifth consecutive year of double-digit growth. Business purchases of computers accounted for much of this growth; the rapid pace of innovation in the computer industry is driving new investment, 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 | ² 125.8 | 127.7 | 129.2 | 130.5 | 132.1 | 134.0 | 136.0 | 137.9 |

¹ Forecast.

² 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.