CHAPTER 2

# Rising Employment, Productivity, and Income

"MAXIMUM EMPLOYMENT, PRODUCTION, and purchasing power" are the fundamental goals of economic policy established by the Employment Act of 1946. These goals are among the most important criteria by which the success of the Administration's economic policies must be assessed. The overall record of the last 7 years is good. Since the longest peacetime expansion began in November 1982, 15 million new jobs have been created; production, as measured by real gross national product (GNP), has increased by almost 23 percent; living standards, as measured by real GNP per capita, have grown at an average annual rate of 3.2 percent; and inflation is down from double digits to a 4 percent annual rate.

Despite these accomplishments questions have been raised about the breadth of U.S. economic growth, the strength of the industrial base, and the rate at which incomes and productivity are rising. And as the unemployment rate recently approached its lowest levels in 15 years, people have wondered if further reductions in unemployment will accelerate inflation, as has happened in the past.

Many of these concerns are based on misconceptions about recent trends in employment, productivity, and income growth. These trends indicate that (1) most major demographic groups have shared in the employment and income gains realized during the current expansion; (2) employment growth has been strong particularly in high-paying occupations; (3) the U.S. industrial base remains strong and has not lost ground to other sectors of the economy; (4) incomes and productivity have rebounded after a period of slow growth in the 1970s; and (5) as U.S. economic growth continues, further reductions in the unemployment rate can be sustained without the damaging effects of accelerated wage and price inflation.

These features of the current expansion have not only ensured increased employment, production, and income; they also have improved the prospects for future growth. By virtue of its longevity and steadiness, the recent economic expansion has simultaneously improved both living standards, through increased employment and incomes, and competitiveness, through improved productivity. These

gains in competitiveness can be expected to generate further gains in employment and incomes in the future.

## EMPLOYMENT AND OUTPUT

Strong employment growth is one of the outstanding features of the current expansion. Since the expansion began in November 1982, total employment has increased by 15 million, and the unemployment rate has fallen by 4.9 percentage points to 5.7 percent. By December 1987 the proportion of the working-age population employed reached a record 62.3 percent, and the unemployment rate stood at its lowest level since July 1979, and within 0.2 percentage point of its lowest level since 1974.

These employment gains exceeded the average rate of growth experienced in other postwar expansions, and they far surpassed the growth rates of other major industrial countries. Employment has risen at a 2.7 percent annual rate as compared to a 2.5 percent rate in past expansions. The U.S. economy has added three times as many workers as the six other economic summit countries combined, as measured from either 1973 or 1982. This accomplishment is remarkable, considering that the combined working-age populations of these countries are more than one and one-half times the working-age population of the United States. This difference in growth reflects not only the rapidly growing U.S. labor force, but also the more than tripling of unemployment rates in France, Germany, and the United Kingdom since the mid-1970s.

These strong gains in U.S. employment have been associated with a brisk rate of growth in real output. The real value of goods and services produced in the U.S. economy has increased at an annual rate of 4.2 percent since the expansion began, a pace that is comparable to the average rate of growth in other U.S. postwar expansions, but exceeds the rate of growth experienced by many other major industrial countries. Only two other postwar expansions, the first beginning in 1949 and including the Korean war, and the second beginning in 1961 and including the Vietnam war, have had faster real output growth over a 5-year period.

The recent strength of GNP growth in the United States as compared to other industrial countries marks a break from past trends. Between 1960 and 1980 real GNP growth in the United States lagged behind output growth in the other six economic summit countries, except the United Kingdom. In contrast, since 1982 only output growth in Canada has exceeded growth in the United States.

Increases in employment and reductions in unemployment during the current expansion have affected all major demographic groups and virtually all areas of the country. During the current expansion unemployment rates for men and women have fallen by 5.4 and 4.3 percentage points, respectively, recording their largest declines of any expansion in the postwar era. This progress reflects both the depth of the 1981–82 recession, and the durability of the current expansion. Moreover, during this expansion, the unemployment rate for women has fallen to nearly the same level as the unemployment rate for men, in contrast to earlier periods when the rates for women were significantly higher than those for men.

Gains in employment and reductions in unemployment rates have been particularly large for minority groups. Employment of black workers has risen by 2.4 million since November 1982, with black female employment rising by 1.3 million and black male employment rising by 1.1 million. As shown in Table 2–1, these employment gains are significantly larger than those for other workers. As employment has risen, unemployment rates for black males and black females have fallen by 9.9 and 6.1 percentage points, respectively. Both the gains in employment and reductions in unemployment rates are substantially larger than those recorded during the 1975–80 expansion.

TABLE 2–1.—*Changes in Employment and Unemployment by Selected Demographic Groups, 1975–87*

| Demographic group[1] | Employment | | | Unemployment rate | | |
|---|---|---|---|---|---|---|
| | 1975 to 1980 | 1980 to 1982 | 1982 to 1987 | 1975 to 1980 | 1980 to 1982 | 1982 to 1987 |
| | Average annual percent change | | | Percentage point change | | |
| ALL CIVILIAN WORKERS | 3.3 | −0.3 | 2.7 | −2.3 | 4.5 | −5.0 |
| Females | 4.8 | .9 | 3.3 | −2.7 | 3.3 | −4.3 |
| Males | 2.3 | −1.2 | 2.3 | −2.1 | 5.3 | −5.4 |
| Both sexes 16–19 | 2.6 | −7.3 | 1.0 | −3.4 | 7.6 | −8.0 |
| Black | 3.8 | −.8 | 4.7 | −2.1 | 7.2 | −8.0 |
| Females | 4.9 | .1 | 5.1 | −2.3 | 5.6 | −6.1 |
| Males | 2.9 | −1.7 | 4.4 | −1.8 | 8.7 | −9.9 |
| Both sexes 16–19 | 2.3 | −9.3 | 8.2 | −2.9 | 11.2 | −16.1 |
| Hispanic | 9.3 | 1.2 | 6.8 | −3.4 | 6.5 | −7.1 |

[1] Persons 16 years of age and over, except as noted.

Note.—Changes are measured from business cycle trough in March 1975 to business cycle peak in January 1980, from peak in January 1980 to trough in November 1982, and from trough in November 1982 to December 1987.

Source: Department of Labor, Bureau of Labor Statistics.

Civilian employment of Hispanic workers has risen 2.3 million since the expansion began. In percentage terms the employment of Hispanics has risen much faster than the rest of the work force, although more slowly than the rapid pace set during the late 1970s.

The rapid pace of Hispanic employment growth during the 1970s was partially due to rapid growth in the Hispanic labor force, which between 1973 and 1980 grew by 8.6 percent per year. Since 1982 the rate of Hispanic labor force growth has fallen by about one-third, and this slowdown accounts for the difference in employment growth during these two expansions. In recent years the pace of Hispanic employment growth has exceeded the rate of growth in their labor force, thus allowing their unemployment rate to fall by 7.1 percentage points.

Youth employment has risen relatively slowly during the current expansion, reflecting slower growth of the population between 16 and 19 years of age than during the 1970s. Yet employment gains for black youths have been among the strongest of all demographic groups. During 1987 alone employment of black teenagers increased by nearly the same amount as it did during the entire 1975–80 expansion. At the same time unemployment rates, especially for black youths, have declined dramatically. For all youths the unemployment rate declined by 8.0 percentage points between November 1982 and December 1987 to reach its lowest level in 8 years. For black youths the unemployment rate declined by 16.1 percentage points to reach its lowest level in 13 years. Unemployment among black youths is, however, still unacceptably high.

Gains in employment and reductions in unemployment rates also have been widespread geographically. Between November 1982 and November 1987, total employment increased in all but three States. It increased by more than 5 percent in 43 States, and by more than 10 percent in 38 States. During this period unemployment rates decreased in all but 2 States, declining by at least 2 percentage points in 39 States, and by at least 4 percentage points in 27 States. Most States with small employment gains and small unemployment rate reductions were energy producers that were affected adversely by the decline in energy prices, especially during 1986.

The large and widespread gains in employment and reductions in unemployment rates during the past 5 years are primary benefits of a long and vigorous economic expansion. These gains demonstrate the principle that economic growth benefits all groups who participate in the economic system. And conversely, as shown in Table 2–1, virtually all groups are injured during periods without economic growth, as occurred between 1980 and 1982.

### CHANGES IN JOB QUALITY

Employment gains during the current expansion have been largest in higher paying occupations. Nearly two-thirds of the new employment growth has been in managerial, professional, technical, sales, or

precision production occupations. Within these broadly defined occupational categories, employment growth has been strong for a wide variety of jobs. It has been less vigorous in lower paying, low-skilled occupations and in part-time work.

For full-time workers, data recently available on employment and earnings in nearly 500 occupations show that about 50 percent of the increase in full-time employment between 1983 and 1986 occurred in occupations with real median earnings of at least $20,000 per year. The median earnings of these occupations were at least 10 percent above the median earnings of all full-time workers. Managerial and administrative jobs, which tend to pay the highest wages and salaries and employ the most educated workers, accounted for 21 percent of the gains in employment, even though these occupations accounted for only 11 percent of all existing jobs in 1983.

In contrast, in low-paying occupations such as food preparation and services, janitorial services, and retail sales, where new job growth is commonly thought to be strong, the share of new employment growth was almost the same as the share of existing jobs. Employment growth was smallest, relative to its share of all jobs, for machine operators and other semiskilled blue-collar occupations.

Moreover, studies have indicated that the share of total full-time employment accounted for by the lowest paying occupations declined during the 1970s and has continued to fall during the current expansion, while the share accounted for by mid- and high-paying occupations has increased. Thus the growth in employment during the current expansion has not occurred solely in higher or lower paying occupations with fewer employed in the occupations in between.

The shift in employment toward higher paying occupations among full-time workers does not mask a shift from full-time to part-time employment. More than 90 percent of the increase in employment during the current expansion has been in full-time work. This share exceeds the share of full-time employment in the civilian workforce. For those employees who work part time, the vast majority, nearly 80 percent, work part time voluntarily, according to surveys conducted by the Bureau of Labor Statistics (BLS). The fraction of part-time workers who report that they would prefer to work full time rose in the late 1970s. After increasing substantially during the 1980 and 1981–82 recessions, it has fallen steadily during the current expansion.

### SHIFTS IN SECTORAL OUTPUT AND EMPLOYMENT

During the current expansion real manufacturing output has increased more rapidly than real GNP, offsetting the effects of the recession and pushing the share of manufacturing output in real GNP

very close to its peak for the postwar period. The share of final goods (as distinct from services and structures) has also risen and approached its highest level since 1960. In fact, except for business cycle movements, the shares of real manufacturing output and real final goods output have been remarkably stable for 25 years. In contrast, there has been a long and relatively steady decline in the fraction of all workers who are employed in manufacturing or in goods-producing industries, and a consistent upward trend of the fraction employed in service-producing industries. More rapid gains in productivity in manufacturing and in goods-producing industries than in the rest of the economy have allowed declining shares of workers in these sectors to produce roughly constant shares of real GNP.

*Shifts in Final Product*

The value of the economy's total final product, as measured by real GNP, is divided officially into three broad categories: goods, services, and structures. The value of these products includes the contribution of intermediate goods and services from many different industries. For example, the price of an automobile includes the value of the transportation provided by the railroad industry, the value of the electricity provided by the utility industry, and the value of the salesperson's time provided by the retail industry. These particular services are not included as final services, since their value is already embodied in the output of the goods sector.

Final goods and structures account for more than one-half of total output. These products' share of real GNP has fallen slowly during the postwar era, while the share of final services has risen gradually. However, since 1960 final goods' share of GNP has remained roughly unchanged. In 1987 final goods represented 43 percent of GNP, the same share as in 1965 and only 0.7 percentage point below its level in 1960. During the last two decades the slight gains in final services have coincided with a declining share of output in structures. The relative stability of the shares of final goods, services, and structures in total GNP demonstrates that the United States is not becoming primarily a service economy.

While final goods' share of GNP has remained stable over the last two decades, there have been dramatic changes in the types of final goods produced and consumed. Since 1948 production of durable goods has risen substantially relative to nondurable goods. Even within these product categories, there have been changes in the goods demanded by consumers. In durables, consumption of books and kitchen appliances has fallen relative to motor vehicles and electronic equipment. Similarly, in nondurables, consumption of basic food stuffs has fallen relative to processed foods. These changes in

the distribution of production across final products reflect the responses of the economy to changes in consumer demand.

*Shifts in Value Added*

GNP also can be partitioned based on the contributions that particular industries or sectors make to the value of the final product. Value added (or GNP originating) in an industry is the difference between the value of its output and the value of inputs purchased from other industries. For example, the measure of value added in the motor vehicle industry removes the contribution of the railroad, public utility, and retail industries from the total value of an automobile. The remaining portion, the value added, represents the industry's contribution to GNP.

Therefore the value added of the goods-producing sector (which includes agriculture, mining, construction, and manufacturing) is not equal to the final value of goods and structures. In 1986 real value added by the goods-producing sectors accounted for 32 percent of GNP, whereas the share accounted for by final goods and structures was 53 percent. The share of value added for the goods-producing industries has declined throughout the postwar period. The economy's goods-producing sector accounted for 42 percent of GNP in 1948, 40 percent in 1960, and 36 percent in 1973. The declining share in this sector has occurred entirely as a result of declining shares of value added in agriculture, mining, and construction.

The share of value added in manufacturing has remained remarkably stable throughout the postwar years, fluctuating in a narrow range between 19 and 23 percent. The manufacturing sector's share of value added has risen since the last business cycle peak in 1981. In 1986 manufacturing accounted for 22 percent of GNP, about 1 percentage point above its share in 1981, and only 0.7 percentage point below its peak share in 1973.

Manufacturing's share of GNP has remained stable despite substantial changes in the types of final goods, services, and structures produced in the economy. These changes reflect the shifting demands for final goods by consumers and for intermediate goods by producers. To accommodate the shifting demand for new products, capital and labor have been reemployed in new tasks in the manufacturing sector. This sector has maintained its share of total output because it has adapted to the changing demand for final goods, and because it continues to be an important supplier of intermediate products for final services.

*Shifts in Employment*

Large shifts in employment of labor across industrial sectors have occurred during the postwar period. The share of employment in

service-producing industries has risen steadily. In 1948 these industries (which include transportation, communications, public utilities, wholesale and retail trade, finance, insurance, and real estate, and other business and personal services) accounted for nearly 58 percent of all nonfarm payroll employees, and they contributed more than 59 percent of total GNP. Over the years the share of employment in the service-producing sector increased faster than its share of GNP. Recently the share of employed individuals working in this sector has exceeded 75 percent, while the share of total value added in this sector has topped 67 percent.

Movements in the share of employment in goods-producing industries are roughly the opposite of such movements in the share for service-producing industries. The share of goods-producing employment and manufacturing employment has declined throughout the postwar era. Currently there are 1.6 million fewer nonfarm jobs in the goods-producing sector and more than 1.9 million fewer jobs in manufacturing than in 1979. The share of total employment in manufacturing has declined from 35 percent in 1948 to 26 percent in 1973 to 19 percent in 1987. Moreover, this trend is not confined to the United States. In all the major industrial countries, shares of employment in manufacturing have been declining since at least 1960, and in all except Japan the absolute level of employment in manufacturing has been declining since 1979.

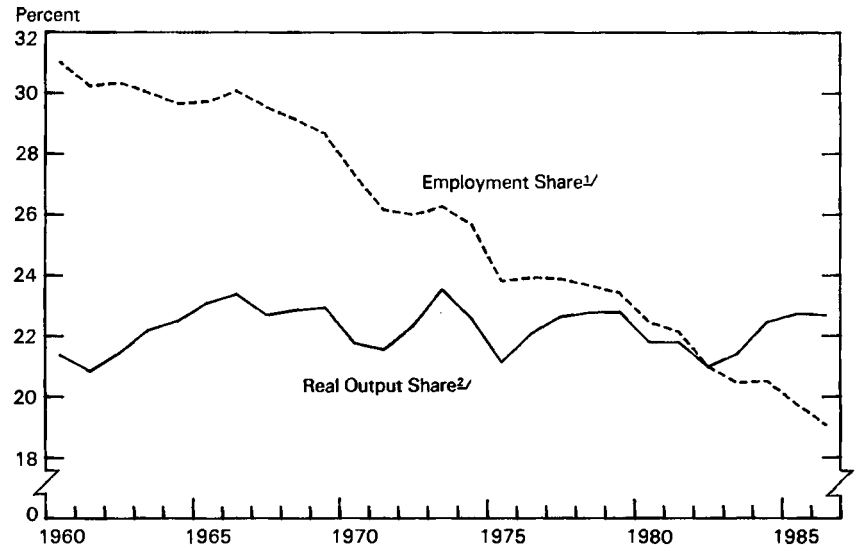
### CHANGING PATTERNS OF DEMAND AND PRODUCTIVITY

While manufacturing's share of employment has declined, its share of value added has remained roughly constant. These trends are illustrated by Chart 2–1, which compares the ratio of manufacturing employment to total nonfarm employment with the ratio of value added in manufacturing to real nonagricultural gross domestic product (GDP). In 1960 about 31 percent of all nonfarm workers were employed in manufacturing and produced approximately 21 percent of total output. By 1986 a slightly larger proportion of total output was produced by 19 percent of nonfarm workers. This trend does not suggest any long-term weakness in the manufacturing sector. Instead, it reflects stronger productivity growth in manufacturing than in other sectors of the economy.

More generally, the rise in the share of employment in the service-producing sector and the corresponding decline in the manufacturing sector reflect expected responses to changing patterns of demand for goods and services as well as differential rates of productivity growth among various sectors of the economy. For most of the past 40 years the output of services has risen faster than real GNP, because households have wanted to spend a larger fraction of their rising incomes

Chart 2-1

## Real Output and Employment Shares in Manufacturing




1/ Manufacturing as percent of nonfarm payroll employment.
2/ Manufacturing as percent of real gross domestic product less agriculture, forestry, and fisheries.

Sources: Department of Commerce and Department of Labor.

on services. The output of services can rise faster than GNP when productivity growth is more rapid in the service-producing sector than in the rest of the economy, or when employment expands more quickly in services than in goods. However, productivity growth in much of the service-producing sector lagged somewhat behind productivity growth in the goods-producing sector until 1973, and it has stagnated since then. The large gains in output of services have been fueled not by productivity advances but by relatively large increases in employment. Thus the increase in the share of employment in the service sector is the result of growing demand and lagging measured productivity.

Like manufacturing, the agricultural sector's share of total employment has exhibited a downward trend for some time. Productivity growth in agriculture has been quite strong, while its share of national output has been falling. As discussed in Chapter 5, it is estimated that in 1810 approximately 80 percent of the U.S. labor force was employed in agriculture. In 1910 agriculture's share was approximately 30 percent; in 1987 it had fallen to 3 percent. During this

long period the share of agricultural output declined less rapidly than the share of agricultural employment, reflecting rapid increases in productivity.

Even though agricultural employment as a share of total employment and agricultural output as a share of total output have decreased, Americans today are significantly better fed and spend a smaller fraction of their incomes on agricultural products than they did during the 19th century. Because of rapid and sustained increases in agricultural productivity, the small fraction of the U.S. labor force working in agriculture is able to produce all the food required for domestic consumption, plus a substantial surplus available for export. Forestalling the downward trends in the shares of agricultural employment and output would have been counterproductive. Despite the interference of many agricultural policies, resources have moved into and out of agriculture in response to changes in consumer demand, agricultural productivity, and nonfarm opportunities.

Similarly, it would be a serious policy error to attempt to maintain the share of output or employment in manufacturing, or in any other industry. The relative constancy of the share of U.S. manufacturing output for the past 40 years is a consequence of particular circumstances. It is not an appropriate objective for economic policy. The declining share of employment in manufacturing in the United States and other industrial countries is not a sign of economic weakness. Indeed, even though it has contributed to a decline in the share of employment in manufacturing, the acceleration of productivity growth in U.S. manufacturing during the 1980s is unambiguously a source of economic strength.

## INCOME AND PRODUCTIVITY

By the broadest available measure, American living standards have resumed a steady rate of increase during the 1980s, after a period of sluggish growth in the 1970s. To a large extent, these gains reflect improved productivity growth. During the 1970s, gains in real GNP per capita resulted primarily from an increasing proportion of working-age persons in the population and signified little gain for individual workers. During the 1980s, by contrast, improved productivity growth has allowed more rapid growth in compensation per worker. These gains in labor compensation are broad-based, benefiting all major demographic groups. Furthermore, the upswing in productivity growth will sustain gains in both per capita income and labor compensation in the coming years.

Another beneficial effect of improved productivity growth has been its impact on the competitiveness of the manufacturing sector. Com-

bined with slower compensation growth, higher productivity growth in manufacturing has reduced the real cost of producing manufactured goods. The benefits of these cost savings have been realized broadly across the economy through lower consumer prices. Together with the recent depreciation of the dollar, lower real costs and lower relative prices of manufactured products have enhanced the competitiveness of U.S. manufacturers in world markets, thereby contributing to recent strong growth of exports.

These gains would have been impossible, however, had labor and management failed to take advantage of opportunities for productivity improvement, or if they had failed to meet the challenges posed by foreign competition. The many collective bargaining agreements that have called for wage freezes or concessions, and that have addressed labor's concerns about job security and management's concerns about work rules, reflect the cooperation of labor and management. As a result, the manufacturing sector has corrected many of the important problems that plagued it a decade ago, and it stands well-positioned for the future.

## INCREASES IN LIVING STANDARDS

The broadest measure of the economy's ability to support the living standards of the American people is the real value of all goods and services produced in the economy each year, divided by the total population, i.e., real GNP per capita. As indicated in Table 2–2, real GNP per capita has grown at an annual rate of 1.8 percent since the last business cycle peak in 1981. This rate of growth has approached the rapid rate recorded between 1948 and 1973, has exceeded the rate experienced between the business cycle peaks in 1973 and 1981, and has equaled the average rate achieved in the United States since 1900.

TABLE 2–2.—*Growth in Real GNP per Capita and Productivity, 1948–87*

[Average annual percent change]

| Period | Real GNP per capita | Contribution to real GNP per capita | | | Business sector productivity[1] |
|---|---|---|---|---|---|
| | | Real GNP per worker | Employment-population ratio | Working-age population as share of total | |
| 1948 IV to 1966 IV | 2.2 | 2.6 | 0.1 | −0.4 | 3.2 |
| 1966 IV to 1973 IV | 2.0 | .8 | .2 | 1.0 | 2.0 |
| 1973 IV to 1981 III | 1.1 | .2 | .2 | .8 | .7 |
| 1981 III to 1987 IV[2] | 1.8 | .8 | .8 | .2 | 1.5 |

[1] Output per hour, all persons.
[2] Preliminary.

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

Real GNP per capita rises when a larger fraction of the population works or when those who work produce more. As indicated in Table 2–2, the importance of these two factors in generating higher living standards has differed over time. Between 1948 and 1966 real GNP per worker grew rapidly and more than offset the decline in the proportion of the population at work. The high birth rates of the 1950s increased the share of children in the population, thus causing a decline in the share of working-age persons. Between the mid-1960s and the early 1980s productivity growth declined significantly, but an increase in the fraction of the population at work partially offset these losses and helped to maintain a steady rate of growth in real GNP per capita.

Productivity growth slowed during the mid-1960s, just as the baby-boom generation began to enter the labor force. This influx of inexperienced workers slowed productivity growth but did not entirely account for the slowdown. From 1966 to 1973 growth in real GNP per worker averaged only one-third of its earlier postwar rate, and it nearly ground to a halt between 1973 and 1981. Yet living standards continued to rise during these periods, because the fraction of the population employed increased dramatically. As the baby-boom generation matured, the proportion of children in the population fell, and the potential pool of workers increased. During the middle and late 1970s nearly all gains in living standards resulted from an increase in the share of the population at work.

In contrast, living standards have risen faster since 1981 because of accelerated productivity growth. While the rate of growth of real GNP per worker remains well below that achieved during the early postwar era, these gains represent a substantial improvement over the 1970s. In addition to the encouraging gains in productivity growth, increases in the fraction of the population working continue to contribute to rising living standards. During the current decade, as women have entered the labor force in increasing numbers, the employment to population ratio has grown rapidly. This effect has been offset by slower growth in the share of the population 16 years of age and older. The decline in the birth rate since 1960 ensured that during the 1980s the share of adults in the population would grow more slowly and that increases in this share would play a lesser role in raising living standards than they did in earlier decades.

In the longer term, strong growth in living standards at rates comparable to those of the early postwar era will require continued steady growth in productivity. Increases in the fraction of the population at work are likely to slow to about 0.8 percent per year; the share of working-age persons in the population is forecast to grow at 0.1 percent, and the employment-population ratio is forecast to grow

at 0.7 percent over the next 5 years (Chapter 1). Thus in the years ahead further gains in real GNP per worker will be the key to continuing rapid increases in living standards.

Gains in real GNP per worker are closely related to standard measures of productivity growth. These measures differ because labor productivity usually refers to output per hour in the business sector of the economy, rather than output per worker for the whole economy. If the second and last columns of Table 2–2 are compared, it is apparent that labor productivity growth is generally somewhat higher, but follows the same general pattern, as growth of real GNP per worker. This difference reflects both a decline in the number of hours worked per worker during the postwar period and slower measured productivity growth in the nonbusiness sector, which constitutes one-seventh of the economy. Nonetheless, the implication from these two productivity measures is that recent gains in living standards are the consequence of recent increases in labor productivity growth, and that future gains in living standards depend critically on continued labor productivity growth.

### LABOR COMPENSATION AND PER CAPITA INCOME

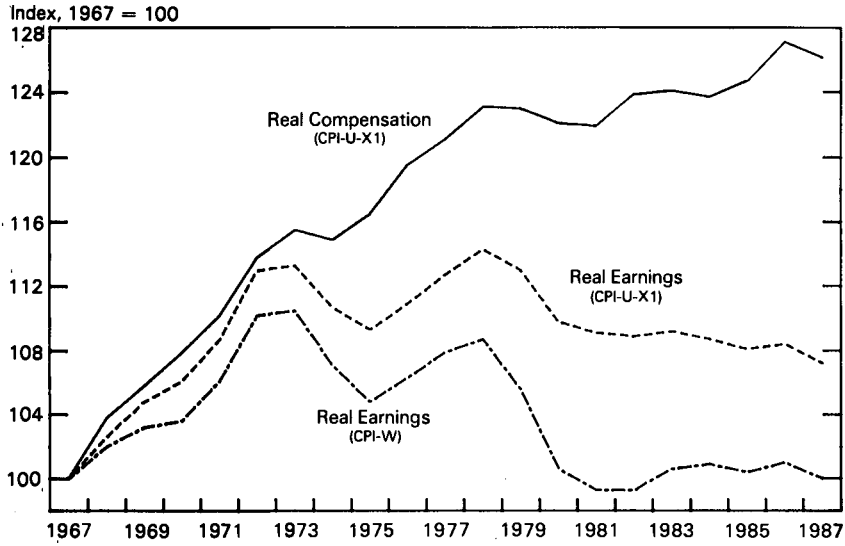
The growth of labor productivity exerts a powerful influence on the compensation earned by workers. Payments to workers, either in the form of wages and salaries or nonwage benefits, cannot consistently outstrip labor productivity growth without diminishing incentives for investment. Over time, slower investment is likely to mean slower growth in labor demand, labor productivity, and labor compensation. Conversely, strong labor productivity growth means that firms can increase their workers' pay and benefits without impairing profits.

The experience of the United States and other major industrial countries is broadly consistent with this linkage between hourly compensation and labor productivity growth. After a period of sluggish or declining growth during the 1970s, U.S. productivity and compensation growth rebounded after 1981. Recent rates of growth, however, remain below the levels attained between 1948 and 1973, when compensation and nonfarm business sector productivity grew by 2.7 percent and 2.3 percent, respectively. After 1973 the rates of productivity growth slowed considerably, and real compensation actually declined slightly. Since 1981 productivity growth has averaged 1.4 percent per year, up from 0.6 percent during the previous decade, while compensation growth has resumed its upward trend, averaging 0.7 percent per year. Similarly, in the other leading industrial countries there has been a significant slowdown in labor productivity and compensation growth since the early 1970s.

After the early 1970s measures of real labor earnings in the United States showed an even more pronounced slowdown in growth than real labor compensation. As shown in Chart 2-2, real hourly earnings (for production and nonsupervisory workers) grew rapidly during the late 1960s, reaching a peak in 1973. They then fell by 10.1 percent between 1973 and 1981, and in 1987 real hourly earnings remained 9.5 percent below their peak level. Other measures of earnings, such as real weekly earnings of usual full-time workers, are similar and were lower in 1986 than in 1973.

Chart 2-2

Real Hourly Earnings and Compensation
(Deflated by CPI-W and CPI-U-X1)




Note.—Data relate to average hourly earnings of production workers or nonsupervisory employees on nonfarm payrolls and to average hourly compensation in the nonfarm business sector (all persons). CPI-U-X1 is the consumer price index for all urban consumers incorporating a rental equivalence measure for homeownership costs. Data for 1987 are preliminary.

Sources: Department of Labor and Council of Economic Advisers.

The pattern exhibited by the real earnings data is broadly consistent with movements in labor productivity, but it significantly distorts the impression of what has been happening to the level of real payments to labor. The consumer price index (CPI), used to correct for inflation in constructing real earnings series, overstated increases in homeowner costs before 1982. This distortion caused the rate of inflation to be overstated and measures of real earnings to be too low. Furthermore, data on earnings do not include employer-provided benefits (such as most pensions and health insurance) and employer

contributions to social security. The share of such employer-provided benefits and contributions is estimated to have risen from 10 percent of labor earnings in 1967 to 16 percent in 1987.

Real labor compensation growth slowed during the 1970s, but nevertheless maintained an upward trend and is substantially above its levels of the early 1970s. The second line in Chart 2–2 shows the effect of using an alternative price index to correct for inflation when calculating real earnings. The BLS devised this index, the CPI-U-X1, to correct for the biases in the CPI during the 1970s. As seen in the chart, real earnings deflated by the CPI-U-X1 do not exhibit a substantial decline after 1973. If the measure of earnings is broadened to include other nonwage and nonsalary income, real hourly labor compensation of all workers is even higher. The third line in Chart 2–2 shows that real compensation grew between 1973 and 1981, and that it is presently 9 percent higher than in 1973.

In general, the real incomes of American families also have risen since 1973, with most of these gains recorded after 1981. Real family income measures the total labor compensation and nonlabor money income of households with two or more related persons. Real income for the median family, measured in 1986 dollars, declined from $29,730 in 1973 to $26,990 in 1981, and rose to only $29,460 in 1986. As with measures of real earnings for workers, measures of real family incomes suffer from the bias in the CPI, which overestimates inflation during the 1970s. After correcting for this bias by using the CPI-U-X1, real family income still shows a $790 decline between 1973 and 1981. However, the adjusted real median family income in 1986 was the highest in U.S. history, and $1,430 higher than in 1973.

Changes in the composition of families account for part of the trend in real family income. Over time, an increasing number of people have set up households separate from their parents or children. Thus the number of separate households (made up of either families or unrelated individuals) has grown relative to the size of the population, and average family size has decreased.

Data on income per capita confirm that the trend toward lower family incomes during the 1970s was mainly due to smaller family sizes, not lower compensation. When the standard CPI is used to correct for inflation, real income per capita, measured in 1986 dollars, was unchanged at $10,220 between 1973 and 1981, and then rose $1,450 to $11,670 in 1986. When the CPI-U-X1 is used to correct for inflation, income per capita rose $680 between 1973 and 1981, and $1,360 between 1981 and 1986.

Gains in real per capita income have been widespread across major demographic groups. When the CPI-U-X1 is used to adjust for infla-

tion, real per capita income for whites rose 7.7 percent between 1973 and 1981, and 13.1 percent between 1981 and 1986. For blacks, real per capita income rose 6.4 percent between 1973 and 1981, and 15.5 percent between 1981 and 1986. For Hispanics, real per capita income was up 14.0 percent between 1973 and 1981, and 7.6 percent between 1981 and 1986. These gains in real per capita income for major demographic groups, and the gains for the total population, are broadly consistent with movements in real GNP per capita and productivity.

### DETERMINANTS OF PRODUCTIVITY GROWTH

Productivity growth, which contributes to gains in living standards and compensation, results from the combined effects of many factors. The productivity of labor is increased by human capital (such as education and work experience), by physical capital, by research and development, and by energy and other inputs that cooperate with labor in production. Studies that have sought to identify the total contribution of these factors generally have been able to account for about one-half of the productivity gains during the postwar period. In most studies a significant fraction of productivity growth remains ascribed to general "technological advance" that is not observed directly.

Nevertheless, there is some consensus concerning the factors that contributed to the slowing of productivity growth during the middle and late 1970s, and its subsequent reversal during the 1980s. These factors include a growing proportion of persons in the labor force with little work experience, a proliferation of new government regulations, a lower level of research and development (R&D) expenditures relative to GNP, and higher energy prices. The impact of these factors was reversed during the 1980s, yielding higher productivity growth, which seems likely to continue into the future.

In the coming years the increasing work experience of a maturing labor force and higher levels of educational attainment should yield significant gains in productivity. In addition, the policies and investments of the current decade should also contribute substantially to productivity growth. In the years ahead, the effects of tax reform, higher R&D spending, and the removal of burdensome regulation will improve productivity by encouraging greater efficiency in production.

### SECTORAL DIFFERENCES IN PRODUCTIVITY GROWTH

The increase in productivity growth since 1981 has not occurred evenly across different sectors of the economy. Productivity in manufacturing rose at a rapid 4.2 percent annual rate between 1981 and 1987. These considerable productivity gains represent a substantial

improvement over the rates of growth achieved during the rest of the postwar era. From 1973 to 1981 productivity growth in this sector slowed to a 1.3 percent annual rate, after growing by 2.8 percent per year between 1948 and 1973. By comparison, the productivity performance of the nonmanufacturing sector during the last 20 years has been poor. In this sector unofficial measures of productivity growth slowed starting in the mid-1960s, remained unchanged between 1973 and 1981, and began to creep upward once again at a 0.4 percent annual rate during the current decade. Not only are these rates of growth substantially lower than those in the manufacturing sector, but they are also considerably lower than the 2.6 percent annual rate of growth realized in the nonmanufacturing sector between 1948 and 1966.

The BLS does not report official estimates of labor productivity growth for the nonmanufacturing sector or for the major components of this sector. However, the Department of Commerce's measures of real value added, together with BLS's measures of hours paid, can be used to estimate labor productivity growth for each industry between 1948 and 1986. These measures of the growth of real value added per hour are shown in Table 2–3. The data suggest that labor productivity has failed to grow in several nonmanufacturing industries since 1981, in contrast to the strong growth that has occurred in manufacturing.

TABLE 2–3.—*Growth in Value Added per Hour Paid, 1948–86*

[Average annual percent change, except as noted]

| Sector | 1986 output share (percent)[1] | 1948 to 1973 | 1973 to 1981 | 1981 to 1986 |
|---|---|---|---|---|
| Goods-producing: | | | | |
| Farm | 2.6 | 4.6 | 5.2 | 6.4 |
| Mining | 4.0 | 4.0 | −6.8 | 4.8 |
| Construction | 5.7 | .6 | −2.7 | −1.1 |
| Manufacturing | 27.3 | 2.8 | 1.3 | 4.5 |
| Durable manufacturing | 17.4 | 2.4 | 1.1 | 6.0 |
| Nondurable manufacturing | 9.9 | 3.4 | 1.7 | 2.1 |
| Service-producing: | | | | |
| Transportation | 4.3 | 2.3 | −.2 | .7 |
| Communication | 3.2 | 5.2 | 4.3 | 3.8 |
| Utilities | 3.5 | 5.9 | .4 | 1.2 |
| Trade | 21.7 | 2.7 | .5 | 3.0 |
| Wholesale | 9.5 | 3.1 | −.1 | 4.0 |
| Retail | 12.2 | 2.4 | .5 | 2.5 |
| Finance, insurance, and real estate | 11.0 | 1.4 | −.4 | −.3 |
| Services | 15.4 | 2.2 | .3 | −.1 |
| Government enterprises | 1.5 | −.1 | 1.2 | −.8 |
| BUSINESS | 100.0 | 2.9 | .6 | 1.7 |

[1] Detail does not add to total because of rounding.

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

By these value-added measures of productivity growth, productivity gains in agriculture and communications have been strong throughout the postwar period. In manufacturing, mining, and wholesale and retail trade, productivity grew rapidly until the early 1970s, slowed after 1973, and has accelerated since 1981 to match or exceed its early postwar performance. In transportation and public utilities, the pattern is similar to manufacturing, but productivity growth since 1981 has not returned to early postwar levels. In construction, in finance, insurance, and real estate (FIRE), and in services (including business services and personal services such as health care), value added per hour grew steadily until the mid-1960s and very little thereafter. Since 1981 productivity in these areas actually has fallen. In construction, for example, real value added per hour peaked in 1965 and now has fallen to its 1948 level. Given the strong recovery of productivity growth in manufacturing, and the apparent gains in mining and in wholesale and retail trade, it appears that the failure of total business sector productivity to regain its early postwar growth rate can be attributed largely to the continued sagging productivity in construction, FIRE, and service industries.

Alternative measures of productivity developed by the BLS confirm these differing patterns of productivity growth across industries. The BLS's productivity measures use gross output, instead of value added, to measure product. They are available on a selective basis for 150 industries for which the BLS has been able to quantify final output with reasonable reliability. For manufacturing industries, coverage is quite broad but not complete. The available data for manufacturing industries generally show a slowdown of productivity growth between 1973 and 1981, and an acceleration after 1981. The same holds true for most specific industries in mining and in wholesale and retail trade, though coverage is less extensive than for manufacturing.

In the transportation sector, airlines, railroads, and petroleum pipelines show a dramatic resurgence of productivity growth after a significant slowdown between 1973 and 1981. Only the series for bus carriers indicates continued sluggish productivity growth after 1981. Data on telephone productivity confirm the pattern of rapid growth in value added per hour in the communications industry indicated in Table 2-3. For FIRE, the only series available is for commercial banks; it shows a significant acceleration of productivity growth after 1981. For other service industries, coverage is limited; the available series for hotels and motels, laundry and cleaning, and beauty and barber shops cover about 7 percent of total employment in this sector. These data show declining or much slower growth in produc-

tivity since 1981. For construction, there is no available measure of productivity growth based on final output.

## PROBLEMS OF PRODUCTIVITY MEASUREMENT

Based on measures of both value added and gross output per hour, productivity growth appears strong in agriculture, mining, manufacturing, communications, and wholesale and retail trade. In transportation and FIRE, the data show mixed results on the strength of productivity growth. In construction and services, measured productivity has stagnated or even fallen. The recent decline in value added per hour in construction, FIRE, and services occurred despite the introduction of new communication and information processing systems and many advances in health care technology. For these sectors, not only does the pattern of growth in value added per hour diverge from that seen in manufacturing, it also appears inconsistent with observed improvements in technology.

The forces behind the apparent deterioration of productivity in construction, FIRE, and services are not well understood. Problems in measuring value added and in apportioning output across sectors may partly explain the apparent poor productivity performance in these sectors. For example, measures of real value added are derived by deflating the nominal value of outputs and inputs by appropriate price deflators. Constructing price indexes that correctly account for changes in the quality of outputs and inputs can be difficult, especially when there is no physical output, or when changes in quality are hard to measure or even observe. The limited coverage of productivity measures based on gross output in construction, FIRE, and services indicates the problems faced in these sectors. The BLS currently is expanding the coverage of these productivity measures. In the meantime, however, they recommend that productivity measures based on value added should not be used as reliable measures of productivity in construction, FIRE, and services.

The quality of productivity measures in these sectors does not necessarily affect the reliability of measures for the business sector as a whole. Business sector productivity is not a weighted average of productivity in each industry, but is the real value of final goods, services, and structures produced per hour worked. However, since value added can be hard to measure both because of problems in measuring real output and real input, the potential for mismeasurement of business sector productivity exists as long as industries with poor measures of value added also produce final products. The final sales of construction, FIRE, and services account for about one-third of the final product in the business sector. Thus distortions of these sectors' valued added increases the possibility of mismeasuring busi-

ness sector productivity. If the price index used to deflate the nominal value of final services understates the impact of quality changes, real output and business sector productivity also will be understated.

The possibility that problems of measurement may be the cause of apparently slower productivity growth in the business sector should not be overstated. For one thing, some studies indicate that only about 5 percent of final product is measured poorly. For another thing, the same procedures measured significant gains in valued added per hour in construction, FIRE, and services before the mid-1960s. Thus there is nothing inherent in these measurement procedures that would cause productivity growth in these sectors to appear to worsen in recent years. The disparity between measures of value added per hour in construction, FIRE, and services before and after the mid-1960s could be explained either by workers becoming less productive, or by increasingly severe problems of measurement. Currently, however, there is insufficient evidence to support either hypothesis.

In sum, there is clear evidence of a substantial improvement in the rate of productivity growth in manufacturing and several other sectors of the economy. These gains seem likely to continue. In contrast, there is no compelling explanation for the apparent decline in productivity in construction, FIRE, and services. It may be due partly to measurement problems. However, until improved output measures are developed, it is unlikely that productivity growth in these sectors will be better understood than it is now.

## COMPETITION AND ADJUSTMENT IN MANUFACTURING

The increase in productivity growth in the business sector, and the increase in living standards since 1981, are explained largely by the dramatic strengthening of productivity growth in U.S. manufacturing. However, the benefits of stronger productivity growth in manufacturing have not been realized primarily in the real wages of manufacturing workers or in the profits of manufacturing enterprises. Instead, they have resulted in lower prices for manufactured products and greater purchasing power for consumers. This result reflects the normal operation of a competitive economy, supplemented by intense international competition in manufactured products.

In a competitive economy, relatively strong productivity growth in one sector generally will not translate into relatively faster real wage growth for that sector's workers or strong profit growth for that sector's enterprises. Price competition and the mobility of labor and capital ensure that sectoral differences in wage growth and profit growth will not persist. Instead, sectoral differences in productivity growth tend to result in lower costs in sectors with faster growing productivity, and these lower costs are passed on to consumers in the

form of lower product prices. Over the long run, wage growth in different sectors generally reflects average labor productivity growth in the whole economy. And since higher rates of return attract additional capital investment, profit rates in different sectors also tend over time to reflect the rate of return for the economy as a whole.

This process has been apparent in U.S. agriculture for many decades. Labor productivity in agriculture typically has increased two or three times faster than productivity in the U.S. economy as a whole. However, the earnings of agricultural workers and the profits of farm owners have not risen relative to comparable earnings and profits in the rest of the economy. Instead, consumers have been the primary beneficiaries of strong productivity growth in agriculture through declining relative prices of agricultural products.

Similarly, in U.S. manufacturing since 1981 the real hourly compensation of manufacturing workers has risen by 0.3 percent per year, while labor productivity growth has surged ahead at a 4.1 percent annual rate. Profits of manufacturing corporations generally leveled off during the 1980s but rose sharply in 1987. Relative to net sales, real after-tax profits of manufacturing corporations were still 10 percent below their 1978–79 averages through the first three quarters of 1987. The primary benefit from stronger productivity growth in U.S. manufacturing has been lower unit labor costs relative to the total private business sector. This reduction in costs has translated into substantial reductions in prices of manufactured products. Between 1981 and 1986 the relative unit labor costs for manufactured products have fallen by 13 percent, and the relative prices of manufacturing output have fallen by 10 percent.

Intense international competition enhanced productivity growth and influenced the allocation of its benefits among consumers, workers, and firms. The relative price of foreign manufactured products sold in U.S. markets fell sharply between 1980 and 1985. This decline in import prices was caused in large part by the strong appreciation of the U.S. dollar between 1980 and early 1985 (Chapter 3). Intense competition from foreign producers put pressure on U.S. manufacturers to keep their costs and prices down by limiting wage and profit growth and by enhancing productivity growth. The consumers of manufactured products thus were the primary beneficiaries of foreign competition and stronger productivity growth in U.S. manufacturing.

The adjustment of U.S manufacturing to increased international competition was facilitated by the cooperation of labor and management. In manufacturing, where more than one-third of the wage and salary workers were union members in 1979, these adjustments required a break from the customary patterns of collective bargaining

agreements, in which wage increases often reflected trends in productivity growth and inflation. During the 1970s union real wage growth slowed just as productivity growth slowed, but the wages of comparable nonunion workers tended to grow even more slowly. As a consequence, the difference between the earnings of union and nonunion workers widened during the decade, implying higher relative costs for unionized firms. The combination of higher relative costs and increased foreign competition threatened the competitiveness of many U.S. industries. Manufacturing was particularly sensitive to these problems because of the relatively high levels of unionization and import competition in this sector. Continued growth of this sector required adjustments in wage demands and improvements in labor productivity.

The adjustment of U.S. workers and manufacturing firms in many cases has been especially difficult and costly. Some workers have been displaced, the real earnings of others have declined, and profits have fallen. Partially as a result of these changes, the level of unionization dropped to about 25 percent of wage and salary workers in manufacturing. Since 1984 the compensation of private nonfarm union workers has grown more slowly than for nonunion workers. As illustrated in Table 2-4, pay increases have been smaller for unionized workers in manufacturing than elsewhere in the economy. Effective nominal average wage increases in major collective bargaining settlements (agreements affecting more than 1,000 workers) in manufacturing have ranged between 1.5 percent and 5.2 percent from 1982 through 1987. Moreover, because inflation has averaged roughly 4 percent per year, many of these settlements have reduced workers' real wages.

This downward trend in real wages is due partly to the relatively large fraction of collective bargaining agreements negotiated during the 1980s that froze or cut wages. Before 1980 widespread negotiated wage freezes or outright cuts in pay were unusual, even during periods of low inflation. However, since 1981, particularly in the manufacturing sector, these agreements have become common. Even in 1987, after 5 years of economic growth, 15 percent of manufacturing workers covered by new major collective bargaining agreements accepted wage freezes or pay cuts over the life of their contracts. Moreover, the recent decline in the real compensation of union members has continued even when taking into account noncontingent lump-sum payments, which have appeared in many recent agreements.

By recognizing the challenges posed by foreign competitors, labor and management cooperated to improve the international competitiveness of U.S. manufacturing. The U.S. economy benefited substan-

TABLE 2–4.—*Measures of Changes in Compensation and Wages, 1981–87*

[Private nonfarm industries]

| Sector | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987[1] |
|---|---|---|---|---|---|---|---|
| | Percent change[2] | | | | | | |
| Compensation: | | | | | | | |
| All industries | 9.8 | 6.4 | 5.7 | 4.9 | 3.9 | 3.2 | 3.3 |
| Union workers | 10.7 | 7.2 | 5.8 | 4.3 | 2.6 | 2.1 | 2.8 |
| Nonunion workers | 9.4 | 6.0 | 5.7 | 5.2 | 4.6 | 3.6 | 3.6 |
| | Percent | | | | | | |
| Average effective wage adjustment:[3] | | | | | | | |
| All industries | 9.5 | 6.8 | 4.0 | 3.7 | 3.3 | 2.3 | 3.1 |
| Manufacturing | 9.4 | 5.2 | 2.7 | 4.3 | 2.8 | 1.5 | 3.4 |
| Nonmanufacturing | 9.5 | 7.9 | 4.8 | 3.3 | 3.6 | 2.9 | 2.9 |
| | Percent of workers affected | | | | | | |
| Settlements with no wage increase:[4] | | | | | | | |
| All industries | 6 | 36 | 27 | 16 | 15 | 21 | 14 |
| Manufacturing | 10 | 48 | 44 | 7 | 18 | 43 | 15 |
| Nonmanufacturing | 3 | 23 | 18 | 22 | 13 | 14 | 14 |

[1] Preliminary.
[2] Percent change from December to December.
[3] Average effective wage adjustment in collective bargaining settlements covering 1,000 workers or more. Includes increases, decreases, and no changes in wages stemming from current settlements, agreements reached in a prior period, and cost-of-living adjustment clauses.
[4] Annual wage adjustments over the life of the contract for settlements covering 1,000 workers or more reached in year.
Source: Department of Labor, Bureau of Labor Statistics.

tially through increased productivity growth and improved living standards. Now that the foreign exchange value of the U.S. dollar has fallen back to the level of the early 1980s, U.S. manufacturing is exceptionally well positioned to expand sales in both domestic and foreign markets—a process that has been under way at a rapid pace for more than a year and that is likely to provide the key to continued growth for the U.S. economy in the years immediately ahead.

## UNEMPLOYMENT AND INFLATION

After hovering close to 7.0 percent for nearly 2 years, the unemployment rate fell by nearly 1 percentage point during 1987 to its lowest level since 1979. This sudden drop in the unemployment rate has raised concerns that labor markets may be tightening to the point where wage inflation may begin to accelerate. In 1978, when the unemployment rate was 6.0 percent and before the second oil shock, there were already clear signs of increases in the rates of wage and price inflation. In the present situation, however, there is little evidence of an acceleration of inflation, and there are signs that further gradual reductions in the unemployment rate can be achieved without an increase in inflationary pressures.

Even at full employment, there is some "frictional unemployment" associated with job changes by current workers and entry of new workers into the labor force. Matching workers to jobs is costly and time consuming. Firms and workers seek employment relationships that best match the skills of the worker with the production requirements of the firm. Workers do not necessarily accept their first job offer, nor do employers fill vacancies with the first job applicant. Even when job opportunities are relatively abundant, workers who lose their jobs at one firm, workers who quit voluntarily to seek better jobs, and workers who enter or reenter the labor force often take some time to find suitable employment. Consequently, even when the supply of and demand for labor are evenly balanced in the aggregate, there will be some unemployment in the economy associated with job transitions.

Since demographic groups differ in their job turnover rates and in the frequency with which they leave and reenter the labor force, changes in the demographic composition of the labor force affect the level of unemployment. During the 1970s the composition of the labor force changed as increasing numbers of young persons, single persons, and married women entered the workforce. Since these groups have higher unemployment rates, the overall level of unemployment would have risen. This upward pressure on the unemployment rate was mitigated, however, by the growing fraction of workers with either higher levels of education or with white-collar and service sector jobs. These groups have lower unemployment rates relative to other labor force participants. Studies differ as to the combined effect of these changes in the labor force, but by the late 1970s they may have increased the unemployment rate by as much as a percentage point.

The growing number of two-earner families and the effects of unemployment insurance do not appear to have contributed to increases in frictional unemployment. The available evidence suggests that husbands with working wives do not remain unemployed for longer periods of time than husbands whose wives do not work. In fact the unemployment rates for married men with working wives are slightly lower than those for married men whose wives remain at home. Although studies show that unemployment compensation increases the duration of unemployment, the fraction of wages replaced by unemployment benefits has not risen significantly since the late 1960s. Moreover, the share of unemployed workers who receive unemployment benefits has fallen since the early 1970s, especially in recent years.

The factors that have caused frictional unemployment to increase since the early 1970s explain only a fraction of the total increase in unemployment rates since that time. Overall, U.S. unemployment rates have been substantially higher since 1973 than they were in the early postwar period. Between 1948 and 1973 the civilian unemployment rate averaged 4.8 percent; it averaged more than 6.0 percent in only 2 recession years, 1958 and 1961. Since 1973 the civilian unemployment rate has averaged 7.3 percent, and it has averaged less than 6.0 percent in only 2 years, 1974 and 1979. Furthermore, unemployment rates have risen for all demographic groups. Even adult married men, a group with traditionally low unemployment rates, have experienced the same proportional increase in their unemployment rates as teenagers, a group with traditionally high unemployment rates. Increases in frictional unemployment associated with shifting demographic patterns cannot explain these broad increases in unemployment rates since the early 1970s.

The deep recessions of 1974–75 and 1981–82 and the brief recession in 1980 partly explain higher average unemployment after 1973. During these years unemployment rates rose to their highest levels since the Great Depression; thus they have influenced the average level of unemployment during the last 15 years. The depth of these recessions, and limits on the feasible speed of securing reductions in the unemployment rate, especially in the face of a rapidly expanding labor force, also partly may explain the high average level of unemployment. However, there is no evidence that increases in frictional unemployment can account for unemployment rates in 1979 or 1987 that are higher than in the later years of expansions during the 1950s and 1960s. Moreover, demographic shifts that tended to increase unemployment during the 1970s more recently have been pushing down the frictional unemployment rate, reversing perhaps one-half of the earlier rise. Further downward movement in frictional unemployment from anticipated demographic shifts, especially the continuing decline in the share of younger workers, suggests that further reductions in unemployment are feasible in the coming years.

## INFLATION AND UNEMPLOYMENT TRADEOFF

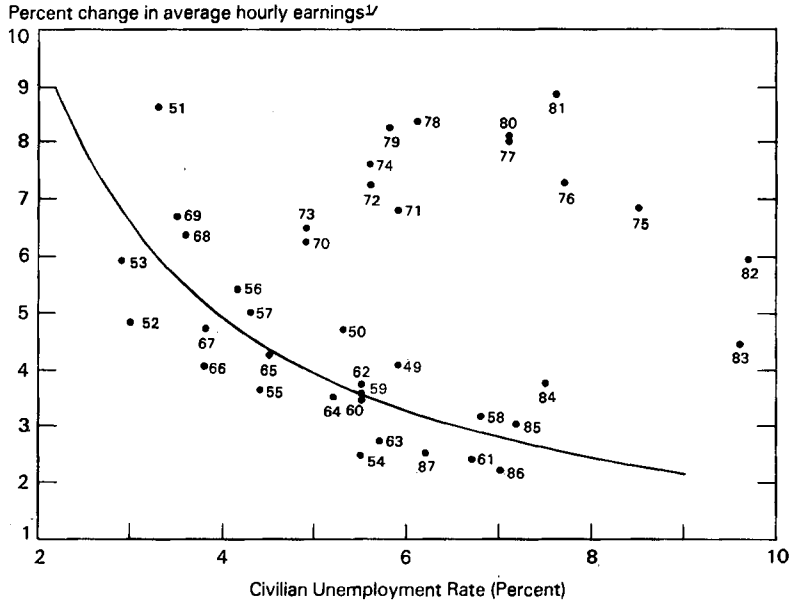
With the unemployment rate below 6.0 percent during the second half of 1987, some people have been concerned that further reductions in unemployment may not be possible without serious risk of accelerating inflation. The belief that further reductions in the unemployment rate may not be feasible is based on the view that there is a systematic tradeoff between lower unemployment and higher inflation, and that the unemployment rate has fallen to a level where inflation is likely to accelerate. This view states that when the unem-

ployment rate is low and labor markets are tight, firms will face increased pressures to raise wages in order to attract and maintain a qualified and stable work force. Thus without a corresponding increase in productivity, unit labor costs also will rise, and these increased costs will be reflected in higher product prices.

The performance of the U.S. economy during the 1950s and 1960s, as illustrated in Chart 2-3, was consistent with the notion of a stable tradeoff between inflation and unemployment. Unemployment tended to be low in the years when inflation rates were high.

Chart 2-3

Wage Inflation and Unemployment




1/ For production workers or nonsupervisory employees on nonfarm payrolls.
Sources: Department of Labor and Council of Economic Advisers.

During the stagflation of the 1970s, however, this empirical relationship ceased to hold. Years of high inflation often were associated with high unemployment rates. In the absence of a stable tradeoff between inflation and unemployment, some studies postulated that the tradeoff shifted over time due to changes in inflationary expectations. Support for this view came from the observation that during each of the prior postwar expansions, wage inflation tended to rise as the unemployment rate fell. However, the observation of a shifting relationship between inflation and unemployment explains little, if most of

the actual behavior of inflation and unemployment is attributed to unexplained shifts rather than to the purported relationship.

Recent data provide little evidence of a tradeoff between inflation and unemployment. In the United States the inflation rate as measured by the CPI has been running close to 4 percent per year since the end of 1981. The inflation rate fell temporarily to 1.1 percent in 1986, and then it rose temporarily to more than 5 percent in early 1987, mainly due to swings in energy prices. However, when energy prices are excluded from the CPI, inflation has been approximately 4 percent for 6 years (Chapter 1). During this 6-year period, the inflation rate has been essentially constant, while the unemployment rate has fallen almost 5 full percentage points—from 10.6 percent at its peak in November 1982 to 5.7 percent in December 1987.

Wages and earnings also have shown little evidence of accelerating as the unemployment rate has declined during the current expansion. The average unemployment rate fell from 6.9 percent in 1986 to 6.1 percent in 1987—below the level at which inflation was beginning to accelerate during the 1975–80 expansion. Unemployment rates fell in every region of the country during 1987, with especially sharp reductions in the Northeast and in the energy-producing States. Yet this substantial reduction in unemployment during 1987 was not accompanied by a sharp increase in nominal wage rates. For the year the wages of production and nonsupervisory workers increased by 2.5 percent, compared with an average annual rate of increase of 3.3 percent during the previous 4 years of the expansion.

Recent experience in other countries also appears to contradict the notion of a stable tradeoff between inflation and unemployment. In many Western European countries unemployment rates generally have been rising since the early 1970s, and they have risen throughout most of the current expansion. In contrast, rates of wage and price inflation in these countries generally have fallen since 1982, and they are now typically lower than they were in the middle and late 1970s. Based on the experience of the 1950s and 1960s, these reductions in inflation rates have been much smaller than would have been expected given the increases in unemployment rates. Comparisons of inflation rates with unemployment rates for Western European countries for the 1950s through the 1980s show no consistent relationship.

Evidence concerning a possible relationship between inflation and unemployment suggests that the U.S. economy can reduce unemployment rates further without suffering from accelerating inflation. Perhaps, as recent experience appears to show, there is no meaningful tradeoff. Over wide ranges, inflation and unemployment can move largely independently. Further reductions in unemployment that are

the result of natural economic adjustments, as opposed to monetary or fiscal stimulation, can occur without increased risk of accelerating inflation. Alternatively, if there is a shifting tradeoff between inflation and unemployment, the evidence in Chart 2-3 would suggest that the U.S. economy has returned to the relationship that existed in the 1950s and 1960s. If this is the situation, then it would also appear that further reductions of unemployment can occur without a serious risk of significant increases in inflation.

### PROSPECTS FOR REDUCING UNEMPLOYMENT

In assessing the potential for further reductions in the unemployment rate, and the problems in securing such reductions, it is helpful to examine the distribution of unemployment by geographic region and by duration of unemployment. Regional data point to the promise of reducing the national unemployment rate toward the low levels now prevailing in some regions, and securing this reduction in regions where unemployment remains high. Data on the duration of unemployment point to the significance of long-term unemployment associated with job displacements of more experienced workers, and to the benefits of avoiding deep recessions and massive economic disruptions that tend to generate long-term unemployment on a broad scale.

While employment gains have been widespread across regions during the current expansion, substantial regional differences in unemployment rates continued to exist in 1987. As shown in Table 2-5, the unemployment rate in New England was 3.4 percent in 1987, well below the national average of 6.2 percent, and down 4.4 percentage points from the unemployment rate in this region during the recession year of 1982. In contrast, unemployment in 1987 in the West South Central region (Louisiana, Oklahoma, Texas, and Arkansas) was 8.9 percent, well above the national average, and 1.4 percentage points above the unemployment rate in this region during 1982. This energy-producing region was sheltered somewhat from the effects of the 1981–82 recession by continued high energy prices, but it suffered significantly from the sharp decline of energy prices in 1986.

The relatively low rates of unemployment in the Middle Atlantic, South Atlantic, and especially the New England regions indicate that there is no inherent barrier that prevents the unemployment rate from falling below 5 percent. Studies have shown that the difference among regional unemployment rates is not explained by differences in the characteristics of the region's labor force and the composition of the region's industrial base. The data reported in Table 2-5 show that the regions with relatively high unemployment rates during the

TABLE 2–5.—*Regional Unemployment Rates, Selected Years, 1976–87*

[Percent[1]]

| Region | 1976 | 1979 | 1982 | 1984 | 1987[2] |
|---|---|---|---|---|---|
| New England | 9.1 | 5.4 | 7.8 | 4.9 | 3.4 |
| Middle Atlantic | 9.6 | 7.0 | 9.4 | 7.6 | 5.0 |
| South Atlantic | 7.4 | 5.5 | 8.7 | 6.5 | 5.2 |
| East North Central | 7.3 | 6.1 | 12.5 | 9.4 | 7.2 |
| West North Central | 5.0 | 4.0 | 7.8 | 6.2 | 5.3 |
| East South Central | 6.2 | 6.1 | 12.0 | 9.8 | 8.2 |
| West South Central | 6.0 | 4.7 | 7.5 | 7.0 | 8.9 |
| Mountain | 7.2 | 5.0 | 8.8 | 6.2 | 7.3 |
| Pacific | 9.1 | 6.4 | 10.2 | 8.1 | 6.1 |
| U.S. unemployment rate | 7.7 | 5.8 | 9.7 | 7.5 | 6.2 |

[1] Unemployment as percent of civilian labor force.
[2] January-November average.
Source: Department of Labor (Bureau of Labor Statistics) and Council of Economic Advisers.

1975–80 expansion were not the same as those which had relatively high unemployment rates in 1987. Thus for the most part, regional characteristics do not appear to cause unemployment rates to be permanently higher in some parts of the country than in others.

Recent data indicate somewhat higher rates of wage increase in regions where unemployment rates are relatively low. The rate of wage inflation, however, remains moderate even in New England, where the unemployment rate has been at or below 4 percent since mid-1986. Since the national unemployment rate is well above New England's rate, the data on regional unemployment and wage inflation certainly do not suggest that the economy is about to suffer from a general acceleration of inflation.

Moreover, higher rates of wage increases in regions with relatively low unemployment rates can play an important role in reducing overall unemployment. Since workers tend to move to areas with higher relative wage rates and lower unemployment rates, they reduce unemployment when they leave one place, and they relieve tight labor market conditions when they arrive at another. Furthermore, higher wage rates in areas with low unemployment induce firms to shift jobs to areas with lower wage rates and higher unemployment. Through this process of shifting workers and jobs, unemployment rates in different regions tend to be equalized over time, and the aggregate unemployment rate gradually is reduced.

When unemployment rates approach frictional levels in some regions, efforts to drive down aggregate unemployment through stimulative policies may be especially inappropriate and counterproductive.

...s time for workers to migrate to areas with rising wages and ...or firms to create new production capacity and new jobs in areas with high unemployment rates. These adjustments can occur naturally and gradually; they should not be forced. Resorting to stimulative macroeconomic policies could accelerate inflation without significantly affecting unemployment. Indeed, in a short time the need to combat inflation could lead to policies that would increase unemployment.

Reducing the unemployment rate further to the levels of the early 1970s requires reversing the effects of either or both of two trends: an increase in the proportion of workers who lose their jobs, and an increase in the length of time workers remain unemployed. Both of these trends have contributed to higher unemployment rates over the last 20 years. As indicated by the data in Table 2–6, an increase in the proportion of workers who lost their jobs accounts for almost all of the increase in unemployment rates between 1973 and 1987, although increases in the proportion of workers who quit their jobs or who entered the labor force were important contributors to rising unemployment rates between 1967 and 1973. Moreover, as indicated in Table 2–6, since 1973 there has been a significant increase in the portion of the unemployed who report that they have been out of work for 15 weeks or longer. Some studies have indicated that prolonged (and often repeated) spells of unemployment by experienced workers who lose their jobs are an important reason for the increase in the aggregate unemployment rate since the early 1970s.

TABLE 2–6.—*Unemployment by Reason and Duration, Selected Years, 1967–87*

[Percent]

| Year | All unemployed | Reason for unemployment | | | Duration of unemployment | | |
|---|---|---|---|---|---|---|---|
| | | Job losers | Job leavers | Entrants | Less than 5 weeks | 5–14 weeks | 15 weeks and over |
| | Percent of civilian labor force | | | | Percent distribution | | |
| 1967 | 3.8 | 1.6 | 0.6 | 1.7 | 54.9 | 30.0 | 15.1 |
| 1973 | 4.9 | 1.9 | .8 | 2.2 | 51.0 | 30.1 | 18.9 |
| 1979 | 5.8 | 2.5 | .8 | 2.5 | 48.1 | 31.7 | 20.2 |
| 1987 | 6.2 | 3.0 | .8 | 2.4 | 43.7 | 29.6 | 26.7 |

Source: Department of Labor, Bureau of Labor Statistics.

Comprehensive data that detail the reasons for job loss and prolonged unemployment are not available. However, it reasonably may be inferred that deep and prolonged recessions and sudden massive shifts in relative prices and in the structure of output are primary causes of job loss, particularly for experienced workers. Certainly the recessions of 1974–75 and 1981–82 generated job losses on a large

scale. The sudden decline of energy prices in 1986 clearly resulted in widespread job losses in energy-producing states.

Recessions are costly to the economy in terms of lost output, but more importantly to the workers who lose their jobs. These costs continue even after the recovery from a recession has begun, since a substantial amount of time is required to bring the level of unemployment down to its prerecession levels. Elimination of all fluctuations in the economy is, of course, neither feasible nor practical. Such fluctuations are an essential counterpart of economic progress. Changes in relative prices and in the structure of output are necessary if the economy is to adjust to changes in demand and technology. However, there is no need to repeat the destructive sequence of expansions, marked by progressively rising inflation rates and punctuated by deep recessions, that afflicted the U.S. economy in the 1970s and early 1980s. Moreover, as discussed in last year's *Report*, avoiding a resurgence of inflation and the subsequent need for disinflation probably would remove an important cause of large swings in relative prices and real interest rates like those that buffeted the U.S. economy during the last 20 years.

The U.S. economy today can continue economic expansion and gradual reduction of the unemployment rate without resorting to potentially inflationary policies. Reduction of the U.S. trade deficit is under way, and it is projected to continue in 1988 and beyond. Thus the tradable goods sector of the U.S. economy (predominantly manufacturing) should expand more rapidly than the rest of the economy, reversing the pattern of 1985 and 1986. These gains should aid in the further gradual reduction of unemployment.

## CONCLUSION

Since 1981 the United States has enjoyed large gains in employment and production, accelerated growth of productivity and real per capita income, and substantial reductions of unemployment without a resurgence of inflation. The gains during this extended period of economic growth have been shared widely by all major demographic groups. The achievements of the last 7 years did not result from specific government programs, but rather from a general approach to policy that emphasizes reliance on the private sector. The desire for economic gain, disciplined by the forces of competition in free and open markets, provided the essential incentives for the productive efforts, the physical and human investments, the technological innovations, and the entrepreneurial advances that form the foundation of prosperity and growth. Little progress generally results from governmental efforts to control, manage, or fine tune the processes that

generate growth. The proper role for government is to provide a stable economic environment in which private enterprise can flourish, to protect the rights of individuals so they can benefit from their labors, investments, and entrepreneurship, and to avoid the dulling or distortion of economic incentives through excessive taxation or burdensome regulation.

While private business has clearly been the direct source of the most important economic gains during the current expansion, government policy has played a critical role by shaping the economic environment for this success. The Administration's key priority was to enhance the stability of general economic conditions by avoiding a recurrence of the cycles of accelerating inflation, rising interest rates, and deep recessions that seriously impaired the performance of the economy during the 1970s and early 1980s. In pursuing these objectives, fiscal policy limited Federal spending, reduced marginal tax rates, and provided greater certainty about future tax policies. Monetary policy provided money growth that was sufficient to sustain economic expansion, while avoiding the resurgence of rapid inflation. And microeconomic policy promoted the efficient operation of markets and avoided intrusive regulation. The strong growth of the economy at low rates of inflation indicates that these policies have been very successful. Thus this Administration has made substantial progress toward the goals of "maximum employment, production, and purchasing power."

The Administration's economic program has become a blueprint for promoting and maintaining noninflationary growth worldwide. This approach to economic policy is especially important in today's highly interdependent world. The events of the 1970s and 1980s demonstrate that the U.S. economy is affected increasingly by events in the world economy and economic policies of other nations. The rapid growth of the U.S. economy has fostered growth in other countries as rising living standards have allowed Americans to buy more products from abroad. Likewise, rising living standards abroad will allow other nations to buy more products from the United States and enhance U.S. economic growth.