



MONTHLY LABOR REVIEW

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Bureau of Labor Statistics
March 1988

In this issue:
Women in the labor force
Productivity in four industries
Changes in Unemployment Insurance

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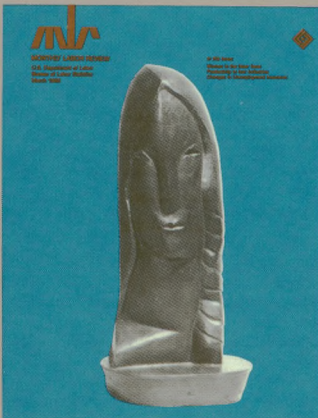
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MONTHLY LABOR REVIEW

MARCH 1988

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Labor Month In Review



REBASING. The Bureau of Labor Statistics' price indexes shifted to new reference bases. The shifts are in accordance with a longstanding government policy of periodically updating index bases because it is more relevant to compare changes with a more recent base period than with a more remote one.

Producer Price Indexes (PPI). Beginning with publication of the January 1988 data, many important Producer Price Indexes have been changed to a new reference base year: 1982=100. Previously, the standard index base was 1967=100.

Prior to rebasing, the December 1987 value of the Finished Goods Index on the 1967=100 base was 296.8. Thus, prices received by producers of finished goods in December 1987 were nearly three times higher than they were 20 years earlier. The value of this same index in 1967, converted to a 1982=100 base, is 35.6. In December 1987, this index was 105.7, also showing that prices received by producers have risen nearly three times since 1967. The conversion of the base year makes the numbers less cumbersome without altering the relationship between indexes for various periods. In January 1988, the index for finished goods was 106.2, indicating that these prices in January were only about 6 percent higher than they were in 1982.

The shift in the base period affects all indexes for stage-of-processing groupings, commodity groups, individual items, and durability-of-product groupings previously expressed on a base of 1967=100 or another base through December 1981. Indexes with a base later than December 1981, as well as

indexes for the net output of industries and their products, are not affected.

Tables of rebased historical data from January 1967 through December 1987 for most stage-of-processing groupings and some important commodity groupings appeared in the January 1988 issue of the monthly periodical, *Producer Price Indexes*. Tables of historical data for particular PPI series rebased to 1982=100 are available from the Bureau of Labor Statistics.

Consumer Price Indexes (CPI). As in the case of the PPI, Consumer Price Indexes for January 1988 (published in February 1988) shifted to a new reference base year. All indexes currently expressed on a base of 1967=100, or any other base through December 1981, were rebased to 1982-84=100. Only indexes with a base later than December 1981 have continued their current bases.

This base change was reviewed by the Office of Federal Statistical Policy and Standards, Office of Management and Budget, and is in keeping with the government's longstanding policy on updating index bases.

Selection of the 1982-84 period was made to coincide with the updated expenditure weights, which are based upon data tabulated from the Consumer Expenditure Survey for 1982, 1983, and 1984. The last previous rebasing of CPI data occurred in February 1971, when the current 1967 base was substituted for the former 1957-59 base.

Historical data for each CPI series on the new base are available from the Bureau of Labor Statistics. For the convenience of users, the Bureau will continue to publish all-items indexes for the U.S. city average, and for the individual local areas for which CPI's

are published, on their former official reference base (1967=100 in most cases) as well as on the new base.

Conversion factors and an accompanying Fact Sheet on rebasing are available from the Bureau. Dividing by one of these factors will rebase the related index series from its current 1982-84 base to its previous reference base. (Users should note that because of rounding effects, there may be occasional minor differences between the final rebased index and the result obtained using the conversion factor.)

International Price Indexes. Beginning with the release of the data for the first quarter of 1988, the weighting structure of import and export price indexes will be updated to reflect U.S. international trading patterns as of 1985. In addition, the official reference base will be changed from June 1977=100 to 1985=100.

Additional information. More detailed information on the rebasing of the price indexes is available in Press Release USDL 88-65 (PPI), USDL 88-92 (CPI), and the upcoming release on U.S. Import and Export Price Indexes scheduled for April 28, 1988. The monthly periodicals, *Producer Price Indexes* and the *CPI Detailed Report* also contain discussions of the rebasing and display the rebased indexes.

For \$60, payable in advance, the Bureau of Labor Statistics will provide an electronic data tape containing the complete PPI database for users requiring a large number of rebased historical tables. Order from the Bureau of Labor Statistics, Division of Planning and Financial Management, Room 1077, 441 G Street, NW., Washington, DC 20212. □

Women and the labor market: the link grows stronger

*Today, 7 of 10 women age 25 to 54
are members of the labor force,
as are the majority of mothers —
even mothers of very young children*

SUSAN E. SHANK

Women's attachment to the labor market has increased dramatically since the end of World War II—especially for those between age 25 and 54. More than 7 of 10 women in this age group are now in the labor force, up from about 3 of 10 four decades earlier. The rise in women's attachment to market work is clearly both a product and a cause of many profound social and economic changes that have occurred in the United States over the last 40 years.

One result of this surge has been a narrowing of the gap between male and female participation rates. Also, women today display a pattern of labor force participation by age group that is very different from that evident 15 years ago. Until the mid-1970's, female participation rates by age formed an "M" shape, dipping between the early twenties and the main child-bearing years of 25 to 34. That pattern has now shifted to an inverted "U" and thus is very similar to that for men. (See chart 1.)

Another result is that labor market activity has become the norm for most women today. This is true for women in each 10-year group in the 25 to 54 age bracket, for whites, for blacks, and for all marital status groups. Moreover, the majority of mothers are in the labor force today—even mothers of infants and toddlers. As recently as 1975, a Bureau of Labor Statistics study found sharp differences in participation rates of women by marital status and presence and age of children.¹ Such differences have been reduced very substantially over the ensuing decade.

Finally, women today work more hours per week and more weeks per year than they did 10 or 20 years ago. The

majority of 25- to 54-year-old women who worked in 1986 did so full time, year round.

This article focuses on women 25 to 54, the age group where job market links are especially strong. Most people in these "prime working ages" have completed school and not yet started to withdraw (permanently) from the labor force. Women in these ages increased their labor market participation throughout the post-World War II period, and the rate of increase accelerated in the mid-1960's. Labor force participation rates of women are projected to continue rising to the year 2000, although at a slower pace than during the past two decades.

Historical trends

Women in the United States have been entering the labor market in increasing numbers over the past century, but, until the advent of the Second World War, the changes were small and gradual. However, between 1940 and 1944, the number of women in the labor force jumped by 5 million—or more than one-third.² Over the same period, about 10 million men entered the Armed Forces and, as their number in the civilian work force plummeted, women moved in and took their places. This pattern was reversed in the following two years. As the GI's returned home, the number of men in the civilian labor force rebounded, while millions of women withdrew from the work force. However, fewer women left at the end of World War II than had entered during the war years, and many of those who exited in the 1944-46 period returned a few years later.

Age. Women in the 45 to 54 age group led the influx into the labor force in the postwar period. Participation rates for

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this older cohort soared from just over 30 percent in 1946 to 50 percent in 1960. (See chart 2.) In contrast, rates rose more moderately for the 35- to 44-year-olds and hardly increased at all for 25- to 34-year-olds. These were the postwar baby-boom years, and most married women remained outside the labor force because of their child and family responsibilities. The different timing of labor force increases by age mirrored public attitudes about women working outside the home. Attitudes shifted first for older women, who generally did not have young children at home.

In the early 1960's, however, women of childbearing age began to enter the labor market in large numbers. The rate of increase picked up in the mid-1960's and accelerated even more during the 1970's. (See chart 2.) A very sharp decline in the birth rate in the 1960's was a major contributing factor. At the same time, total employment was rising strongly, with much of the growth occurring in services and the public sector (especially education), where large numbers of women are employed. Increasing levels of education and rapidly changing views about the home and work roles of women were also factors in the tremendous jump in women's labor market activity during the 1960's and 1970's.³

The flood of 25- to 34-year-olds into the labor market during the last 20 years changed the long-standing pattern of female participation rates by age. The historical "M" shape was replaced by an inverted "U," as the dip in female participation that had been evident between the 20 to 24 and 25 to 34 age groups almost disappeared. Also, after the mid-1970's, women 45 to 54 no longer had the highest rates among the three groups within the prime working-age bracket. In 1987, the rate for the 45 to 54 age group averaged 67 percent, compared to 74 percent for 35- to 44-year-olds, and 72 percent for 25- to 34-year-olds.

The unprecedented changes discussed above can be seen clearly in the participation rates of women in the same birth cohort as they move from their early to late twenties. As the following tabulation shows, almost half of the women who were 20 to 24 in 1960 were in the labor force, but the proportion dropped substantially when these women entered the peak childbearing ages of 25 to 29:

	Age 20-24—	Age 25-29—
Year born:	<i>in 1960</i>	<i>in 1965</i>
1936-40	46.1	38.9
	<i>in 1970</i>	<i>in 1975</i>
1946-50	57.7	57.3
	<i>in 1980</i>	<i>in 1985</i>
1956-60	68.9	71.4

The first of the baby-boom generation, born only 10 years later, displayed markedly different patterns. Their participation rates were much higher than those of women born 10 years earlier, and participation rates did not drop between their early and late twenties. Women born in the latter part of the 1950's showed further remarkable changes. Not only were their participation rates higher again, but the rates actually rose as these women moved from their early to late twenties—a reversal of the pattern just 20 years earlier.

Race/ethnic group. Throughout most of the postwar period, black women had much higher activity rates than did white women.⁴ However, the gap has narrowed greatly, especially since the mid-1960's, when the rates for white

Chart 1. Civilian labor force participation rates by sex and age, selected years

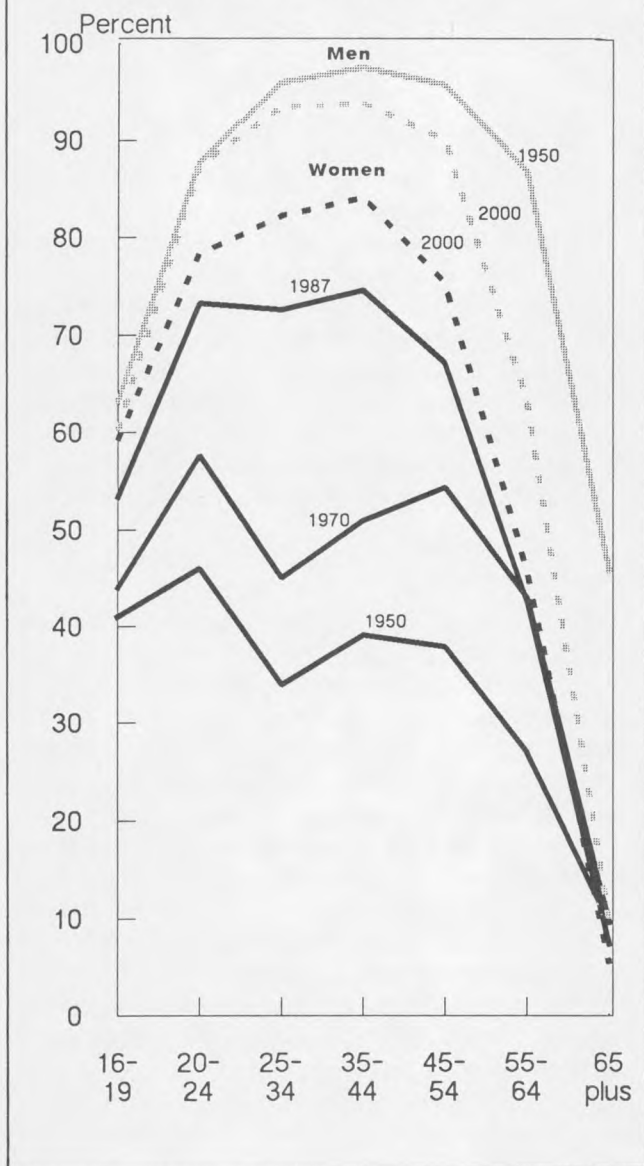
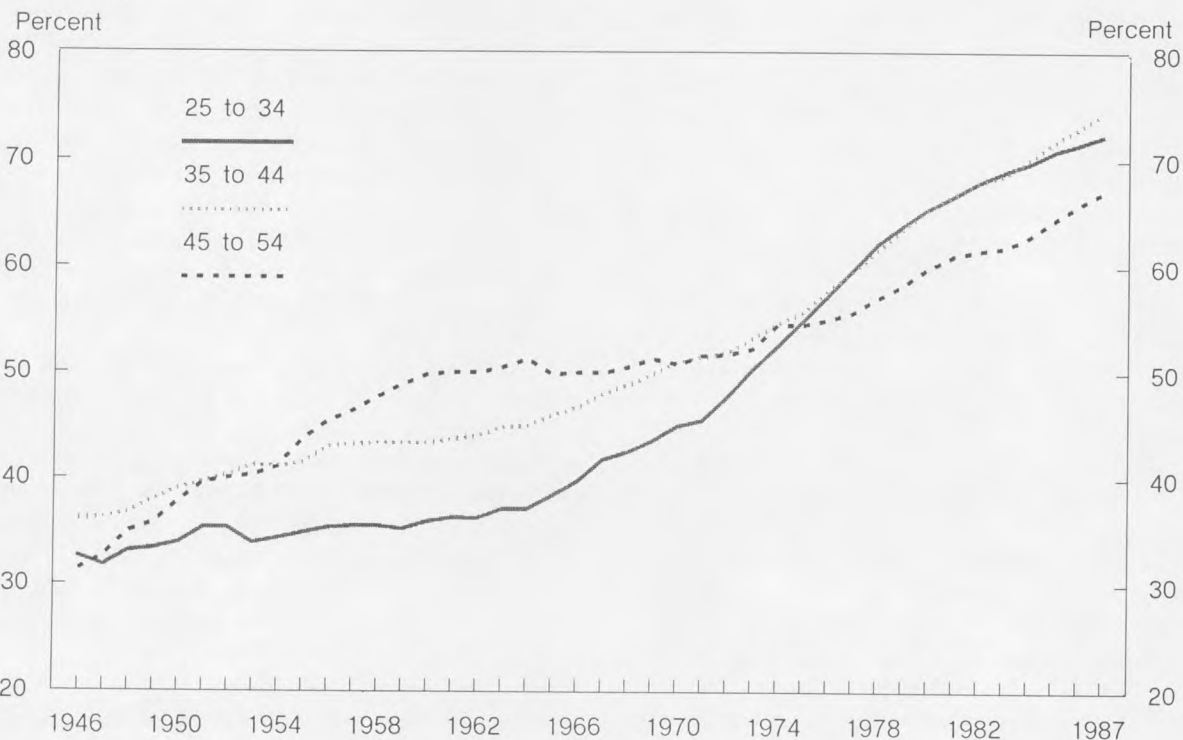


Chart 2. Civilian labor force participation rates for women, by age, 1946-87



women skyrocketed. As shown in the following tabulation, by 1987, participation rates for both white and black women in the 25 to 54 age group were similar:⁵

	White	Nonwhite	Black
1954	37.0	53.4	—
1967	45.7	59.3	—
1977	57.7	63.7	64.4
1987	71.8	72.1	73.6

Hispanic women, however, were much less likely than either white or black women to be in the labor force. Their lower participation rate (61 percent in 1987) is related to a number of factors, including a high birth rate, generally low educational attainment, and cultural factors that emphasize women's home and family roles.⁶

Marital status. Most married women did not work outside the home in the postwar years. In 1957, for example, only about 33 percent of married women 25 to 54 were in the labor force, compared with approximately 80 percent of single women and 65 percent of widowed, divorced, and separated women combined. These differences shrank dramatically in the following three decades. Between 1957 and 1987, married women entered the labor market in record numbers and their participation rate more than doubled—to 68 percent, while the rate for single women remained around 80 percent, and that for widowed, divorced, or separated women rose to 79 percent.

At the same time that differences in labor force activity rates narrowed across marital status groups, the number of single and divorced women rose substantially. The following tabulation shows that the proportion of divorced women in the prime working-age population increased fourfold, and the proportion of single women also jumped:

	1957	1987
Never married	7.5	12.9
Married, spouse present	80.5	68.2
Married, spouse absent	4.3	4.9
Widowed	4.6	2.2
Divorced	3.0	11.8

In 1987, divorced and never-married women together accounted for 1 of 4 prime working-age women—up from about 1 of 10 in 1957. The marked expansion in these groups, which have high labor force activity rates, was matched by contraction in the married and widowed groups, where rates are somewhat lower.

Work attachment

The phenomenal rise in female labor force activity has been accompanied by major changes in the nature and extent of women's connection to market work. Not only are most women currently in the labor market, but the vast majority are full-time, career-oriented workers. This applies across virtually all age, race, and marital status groups. It applies

whether or not women have children at home and even for those with very young children.

Only in the last few years have women decided to remain in the labor force for a large part of their adult years and to work even when they have young children at home. As recently as 20 years ago, it was more typical for women to work for a few years after they finished school and then leave the labor force when their first child was born. In many cases, these women did not return to market work at all or did so only after an absence of several years.

Marital status and children. Labor market activity is now the norm for women, and high participation rates are evident in nearly all demographic groups. For example, in March 1987, rates ranged from 85 percent among divorced women to 66 percent for widows. (See table 1.) Women 35 to 44 generally had the highest activity rates of the three 10-year groups of the prime working ages. However, this was not the case among the single women group, where 25- to 34-year-olds registered the highest participation rate. Moreover, the rate was nearly 90 percent for women in this younger age group who did not have children.

The presence of children, especially very young children, tends to moderate the labor force participation of women, but this effect is much less marked today than it was 20 years ago. In 1987, 79 percent of women with no children under age 18 were in the labor force, compared to 67 percent for women with children. Activity rates for mothers fell steadily in line with the age of their youngest child—from about 75 percent for mothers of high school age children (none younger) to 55 percent for mothers with children under the age of 3. The fact that more than half of all mothers with toddlers were in the labor market in 1987 indicates the magnitude of social and economic change in recent years. As recently as 1967, less than one-fourth of mothers with children under age 3 were in the labor force.

Hours per week. The number of hours worked per week or per year is a measure of the intensity of a person's connection to the labor market. Despite a common impression to the contrary, most employed women work full time, that is, 35 hours or more per week. In 1986, for example, 78 percent of all employed women ages 25 to 54 worked full time; an additional 5 percent worked fewer than 35 hours but wanted full-time jobs; and only 17 percent worked part time voluntarily. The proportion of women who work full time has been essentially stable for the past two decades. However, among those working part time, the proportion doing so voluntarily has declined, while the fraction wanting full-time jobs has increased.

Even though most women work full time, they tend to work fewer hours per week than do men. In 1986, prime working-age women employed in nonagricultural industries averaged about 37 hours per week, compared with 44 hours for men in the same age group. (See table 2.) Employed women are heavily concentrated in the retail trade and service industries in which part-time work is common. Approximately 6 of 10 prime working-age women were in these two industries in 1987, in contrast to only 3 of 10 prime working-age men.

As might be expected, differences in hours by gender are greatest at the extremes—the less than 30 hours or the more than 48 hours per week categories. (See table 2.) However, over the past two decades there has been some convergence in the work schedules of men and women, largely because the proportion of women working 49 hours or more rose substantially, and the proportion of men working fewer than 30 hours increased. As a result, the differences in the average workweek by gender shrank from 9 hours in 1968 to about 7 hours in 1987.

Weeks per year. In addition to hours per week, labor force attachment can also be viewed in terms of weeks worked per year. During 1986, 68 percent of women 25 to 54 who worked did so for a full year, and an additional 10 percent worked 40 to 49 weeks.⁷ At the other extreme, only about 15 percent of these women worked for less than half the year. (See table 3.) Women's year-round employment rose substantially between 1966 and 1986, especially in the 25 to 34 age group. Over these two decades, the fraction of these younger women who worked full year jumped from 45 to 65 percent, while the proportion who worked only 1 to 13 weeks dropped from 18 to 7½ percent.

Combining weeks worked per year with usual hours per week offers additional insights into the degree of workers' job attachment. Persons who work full time 50 to 52 weeks per year clearly have a strong work commitment. In 1986, 57 percent of all employed women 25 to 54 were in this year-round, full-time category; the comparable proportion for men was 78 percent. As was true of hours per week, work patterns over the calendar year have been converging for men and women of prime working age. Two decades

Table 1. Civilian labor force participation rates of women, by age, marital status, and presence and age of children, March 1987

Characteristic	Age 25-54	Age 25-34	Age 35-44	Age 45-54
Marital status				
Never married	81.5	82.9	81.8	68.5
Married, husband present	68.1	67.5	71.7	64.0
Married, husband absent	70.9	68.2	76.0	67.6
Widowed	65.7	52.7	68.7	66.5
Divorced	84.7	83.3	87.3	82.7
Presence and age of own children				
No own children under age 18	79.0	89.0	82.1	68.1
Own children under age 18	66.7	63.1	71.7	63.8
Age of youngest child:				
14 to 17	74.8	82.4	78.7	67.8
6 to 13	72.0	72.9	73.8	58.7
3 to 5	62.4	63.1	61.1	52.7
Under age 3	55.2	55.2	55.9	(1)

¹ Participation rate not shown where population is less than 75,000.

earlier, 46 percent of the employed women and about 84 percent of employed men were year-round, full-time workers.

Younger women have followed the lead of their older counterparts in moving toward year-round, full-time employment, as they did in entering the labor force. By 1986, fully 55 percent of employed women 25 to 34 were year-round, full-time workers, up from 39 percent in 1966. The proportion of women in this age group working full year but part time also rose considerably. This latter pattern—full-year work on a part-time basis—was the second most common schedule (after year round, full time) for women in the prime working-age group in 1986.

Future outlook

Will women continue to enter the labor force in greater numbers? How high will their participation rates go? How large will the proportion of women who work year round, full time become? While there are no definite answers to these and some other questions about women's labor market behavior in the future, BLS recently introduced projections to the year 2000 which describe some probable scenarios.⁸ The projections presume a continued increase in female labor force participation, but at a much slower rate than during the preceding two decades.

Slower increases. Between 1986 and 2000, the labor force participation rate for women in the prime working-age group is projected to increase 10 percentage points, from about 71 percent to 81 percent (assuming the "middle growth" scenario). While very large by most standards, this would be only half the size of the increase that took place in the previous 14 years, when the rate jumped from 51 percent to 71 percent.

The primary reason for the projected slower rate of increase is that the huge gains of the past have brought female participation rates to relatively high levels. There is simply much less room to grow from a 70-percent participation rate than there was from a 40- or 50-percent rate. A second reason is that the projections assume that participation rates for prime working-age women will not exceed those for

Table 3. Women with work experience in 1966 and 1986 by age, full-time or part-time job, and weeks worked
[Percent distribution]

Work experience	Age 25-34		Age 35-44		Age 45-54		
	1986	1966	1986	1966	1986	1966	
Worked at full-time job:							
50-52 weeks	57.1	45.5	55.1	38.6	57.8	45.2	59.8
40-49 weeks	6.5	8.3	7.2	8.8	6.0	8.2	6.0
27-39 weeks	4.2	6.5	4.6	7.6	4.2	6.2	3.3
14-26 weeks	4.2	6.5	5.1	9.2	3.8	6.3	3.4
1-13 weeks	2.8	6.1	3.3	9.6	2.5	5.4	2.2
Worked at part-time job:							
50-52 weeks	11.4	9.8	10.3	6.8	12.0	10.9	12.7
40-49 weeks	3.3	2.9	3.3	2.5	3.1	3.0	3.3
27-39 weeks	2.8	3.1	2.7	2.7	2.9	3.4	2.6
14-26 weeks	4.0	4.5	4.2	5.7	4.1	4.1	3.5
1-13 weeks	3.8	6.9	4.2	8.4	3.7	7.3	3.1

men. This constraining assumption is built into the projection methodology. A third reason for the projected slowing is that most of the population growth will take place in the oldest 10-year group in this study (45- to 54-year-olds), where participation is lower. During the 1990's, this group will account for virtually all of the population growth in the prime working-age group—as the first of the baby-boom generation moves into their mid-forties and early fifties.

While some slowing in the pace of women's labor force increases is almost inevitable in future years, the precise timing and extent of such slowing are matters of judgment. In this connection, it should be noted that BLS projections of women's labor force participation have come closer to the mark in recent years. Between 1959 and 1976, BLS produced six projections of the future size of the labor force, and all six underestimated actual growth in the female labor force.⁹ The phenomenal increases in participation rates for prime working-age women that started in the mid-1960's surprised almost all analysts. However, BLS projections introduced in 1978 and the early 1980's assumed that such growth will continue, although not necessarily at the same rapid pace.¹⁰

Gender differences shrink. While participation rates for women are expected to continue rising through the end of the century, those for men are projected to edge further down. As a result, the longstanding gap between male and female rates will shrink even more. The following tabulation shows that the difference in the prime working-age group, which was about 60 percentage points in 1950 (and 23 points in 1986), will narrow to 12 points by the year 2000. For 25- to 34-year-olds, the gender difference is expected to shrink to only 10 points.

Table 2. Hours at work for 25- to 54-year-old women and men in nonagricultural industries, annual averages, 1968 and 1986
[Percent distribution]

Hours of work	Women		Men	
	1986	1968	1986	1968
Average hours	36.8	35.7	43.9	44.7
Total hours	100.0	100.0	100.0	100.0
Under 30 hours	19.5	21.5	5.7	4.4
30-34 hours	9.4	9.6	4.8	4.7
35-39 hours	9.7	11.0	4.0	3.9
40 hours	42.1	42.0	44.4	43.4
41-48 hours	8.9	9.3	13.2	17.3
49 hours and over	10.4	6.5	27.7	26.3

	Actual, 1950		Projected, 2000	
	Women	Men	Women	Men
25 to 34 years	36.8	96.5	80.8	92.6
24-34 years	34.0	96.0	82.3	93.6
35-44 years	39.1	97.8	84.2	93.9
45-54 years	37.9	95.8	75.4	90.1

Moreover, as the gap between male and female rates continues to narrow, the outline traced by these rates over the life cycle is expected to become increasingly unisex. In the year 2000, activity rates of women are projected to rise steadily from the teen years to a peak in the 35 to 44 age group, then to decline in the 45 to 54 age group before dropping off sharply for those 55 and over. Chart 1 notes the similarity between this pattern and that for men in the year 2000.

The shift in the outline of women's participation rates from the "M" shape to an inverted "U," which started in the 1970's, will be even more prominent by 2000. In fact, women's participation rates (in terms of both level and pattern by age) are projected to be more similar to those for men than to women's rates in 1960 or 1970. Moreover, as male rates decline over time—especially in the older age

groups—the right side of their inverted "U" shifts to the left and thus becomes more like that for women.

DIFFERENCES BETWEEN LABOR MARKET BEHAVIOR of men and women shrank dramatically in the four decades following World War II. This was due largely to a tremendous increase in labor market activity by women. Over the past 40 years, the proportion of 25- to 54-year-old women in the labor force jumped from one-third to more than 70 percent. Furthermore, among employed women, 3 of 4 worked full time in 1986, and well over half of them worked year round and full time. BLS projections to the year 2000 call for continued increases in market activity of women, and as a result, further convergence in male and female labor force patterns over the life cycle. □

—FOOTNOTES—

¹ See Deborah Pisetznier Klein, "Women in the labor force: the middle years," *Monthly Labor Review*, November 1975, pp. 10–16.

² These are Current Population Survey (CPS) data for persons 14 years and over. When the lower age boundary for labor force statistics was raised to 16 years, historical data were revised, but only back to 1948. The CPS is a monthly household survey, conducted for the BLS by the Census Bureau.

³ For an excellent interpretation of changing work-leisure patterns for women, men, and teenagers in the 1950-75 period, see Robert W. Bednarzik and Deborah P. Klein, "Labor force trends: a synthesis and analysis," *Monthly Labor Review*, October 1977, pp. 3–15. When reprinted as Special Labor Force Report 208, this article included an annotated bibliography of selected literature on trends in labor force participation.

Also, see Lois B. Shaw, "Determinants of the Increasing Work Attachment of Married Women," *Work and Occupations*, May 1983.

⁴ Historically, the higher rates for nonwhite women reflected many factors, such as greater economic need, lower marriage and higher fertility rates, and a larger proportion of extended families, which meant additional relatives to assist with child care.

⁵ Labor force data for blacks only are not available prior to 1972; rates for nonwhites (persons of black and other races) are shown for earlier years.

The 1977 and 1987 data show that there is little difference between the participation rates of black women and nonwhite women age 25 to 54.

⁶ Rosemary Santana Cooney and Vilma Ortiz, "Nativity, National Origin, and Hispanic Female Participation in the Labor Force," *Social Science Quarterly*, September 1983, pp. 510–23.

⁷ These data are from the March 1987 work experience supplement to the Current Population Survey. This supplement (conducted in March of each year) obtains labor force information for each week of the previous calendar year.

⁸ Howard N Fullerton, Jr., "Labor force projections: 1986 to 2000," *Monthly Labor Review*, September 1987, pp. 19–29.

⁹ Paul M. Ryscavage, "BLS labor force projections: a review of methods and results," *Monthly Labor Review*, April 1979, pp. 15–22.

¹⁰ See Paul O. Flaim and Howard N Fullerton, Jr., "Labor force projections to 1990: three possible paths," *Monthly Labor Review*, December 1978, pp. 25–35; Howard N Fullerton, Jr., "The 1995 labor force: a first look," *Monthly Labor Review*, December 1980, pp. 11–21; and Howard N Fullerton, Jr. and John Tschetter, "The 1995 labor force: a second look," *Monthly Labor Review*, November 1983, pp. 1–8.

Changes in unemployment insurance legislation during 1987

Illinois, Minnesota, and Wisconsin made extensive modifications to their laws; among the States generally, changes involved raising tax rates, restricting eligibility, and increasing qualifying requirements

DIANA RUNNER

During 1987, State legislatures took very little action on unemployment insurance matters except in Illinois, Minnesota, and Wisconsin where extensive changes were made. Weekly benefit amounts were increased in seven States, and eight States amended their qualifying wage requirements.

Financing provisions were amended in several States and most raised the maximum tax rates or made provision for extra assessments, or both, to strengthen their trust funds. In

Louisiana, Texas, and West Virginia, the laws were amended to provide for the issuance of bonds for the financing and repayment of Federal advances to the State funds. Wyoming provided for State interfund borrowing for the payment of benefits or repayment of Federal advances.

Following is a summary of significant changes in State unemployment insurance laws during 1987.

Arkansas

Benefits. An individual will not be liable for repayment of benefits if he or she received a backpay award that was reduced by the amount of benefits received for the same period, if the director of the State agency is furnished a signed copy of the award. In this instance, the employer will be liable to pay the unemployment insurance fund the reduced amount of backpay and have his account credited with the amount paid. The term "week" was redefined in the law as a 7-consecutive-day period beginning on Sunday at 12:01 a.m. and ending at midnight the following Saturday. The percentage used in determining the minimum weekly benefit amount was lowered from 15 percent to 12 percent of the State average weekly wage.

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Disqualification. Payment of benefits during short-term layoffs is now prohibited under certain conditions. An individual will not be considered "unavailable for work" during a week if he or she has to withdraw from the labor market for less than 4 days in that week due to a compelling personal emergency. If an individual is suspended from work for misconduct connected with the work, he or she will be disqualified for the duration of the suspension or for 8 weeks, whichever is less. If an individual, while on layoff, voluntarily removes his or her name from a recall list maintained by the base-period employer, that individual will be disqualified unless he or she is employed elsewhere full time or has a compelling reason for removing the name.

California

Coverage. A new enactment excludes from coverage services performed by a full-time student in the employ of an organized camp, if certain conditions are met.

Financing. An employer's unemployment insurance account will not be charged with benefits paid to an individual who was discharged, or who quit, as a result of an irresistible compulsion to use or consume intoxicants.

Benefits. The retraining benefits program established in 1981 was extended to January 1, 1993.

Disqualification. A disqualification of 52 weeks for misrepresentation to obtain benefits will no longer apply to an individual convicted of the violation.

Colorado

Coverage. The exclusion from coverage of aliens performing agricultural labor was extended to January 1, 1993. The definition of political subdivision (local governmental entity) was amended to include an Indian tribe organized according to the Federal Indian Reorganization Act of 1934.

Benefits. For purposes of the extended benefits program, the weekly benefit amount and the total benefit amount will be reduced by the amount of any reduction mandated by the Balanced Budget and Emergency Deficit Control Act of 1985 (hereafter termed Gramm-Rudman-Hollings). Claimants in an internship program (as defined in the "Disqualification" section below) will receive stipends along with their benefits. In addition, internship stipends will not be considered wages for the purpose of calculating weekly benefit amounts.

Disqualification. Lump-sum retirement payments received by an individual will no longer be deductible from unemployment compensation if certain conditions are met. The law was changed so that training with the approval of the Colorado Department of Employment and Labor now includes participation in internship programs established by employment offices under contract with the State of Colorado in cooperation with service delivery areas established under the Job Training Partnership Act of 1983.

Connecticut

Financing. Taxable wages reported to the State agency on or before September 30 will be used in determining the employer's tax rate for a year.

Administration. An appeal now may be deemed timely if the filing party can show good cause for filing after the 21-day period otherwise mandated by the law. The State employment security board was given the responsibility for establishing a definition for good cause in relation to timeliness in the filing of motions or appeals.

Delaware

Financing. Regardless of the contribution rate established for the industry in which he or she operates, no new employer may have a contribution rate of less than 1.0 percent. Deleted was the requirement that no new employer could have a reduced rate if he or she had no employment for five or more consecutive calendar quarters. Therefore, an employer may have a reduced rate based on actual experience even if there has been a break in employment.

Until December 31, 1987, all employers are charged a 1.5-percent supplemental assessment, regardless of their basic rate. Beginning in calendar year 1988, an employer's tax rate will be increased whenever the trust fund balance is more than \$90 million. The supplemental assessment rate will be based on the employer's earned basic assessment. For example, if the basic

assessment ranges from 0.1 percent to 3.9 percent of taxable wages, the supplemental assessment will be 1.1 percent. If the basic assessment is 8.0 percent, the supplemental assessment will be 1.5 percent. If the trust fund balance is less than \$90 million, each employer's basic rate will be increased by a supplemental assessment of from 1.5 percent to 2.5 percent, depending on the basic rate.

Benefits. The maximum and minimum weekly benefit amounts (\$205 and \$20, respectively) were frozen for the period July 1 through December 31, 1987. The requirement for computing the maximum weekly benefit amount as $66\frac{2}{3}$ percent of the statewide average weekly wage was deleted. Beginning January 1, 1988, an individual's weekly benefit amount will be computed as $\frac{1}{46}$ of the wages in the two highest quarters of the base period if the trust fund balance is equal to or greater than \$90 million, or as $\frac{1}{52}$ of the wages in the two highest quarters of the base period if the trust fund balance is less than \$90 million. However, in both instances, the minimum weekly benefit amount may not be less than \$20, nor the maximum weekly benefit amount more than \$205.

Disqualification. All dismissal payments will be considered wages, and therefore deductible from the weekly benefit amount.

Florida

Coverage. The exclusion from coverage of aliens performing agricultural labor was extended to December 31, 1992. Beginning January 1, 1988, coverage of agricultural labor will pertain to all employers with at least 5 (currently 10) employees in each of 20 weeks, or with at least \$10,000 (currently \$20,000) in payrolls in any calendar quarter.

Benefits. The maximum weekly benefit amount was increased from \$175 to \$200.

Georgia

Financing. For the period April 1, 1987, through March 31, 1992, there will be an administrative assessment equal to 0.06 percent of taxable wages for all employers except: (1) nonprofit organizations and governmental entities that are authorized to either pay contributions or elect to make payments in lieu of contributions; or (2) employers assigned either the minimum rate of 0.06 percent or the maximum rate of 8.64 percent. New employers also will be subject to the assessment. For the same period, new employers will pay 2.64 percent and experience-rated employers will pay rates ranging from 0.04 percent to 5.4 per-

cent, reflecting a reduction of the otherwise mandated tax rates by the 0.06-percent administrative assessment.

Benefits. The maximum weekly benefit amount was increased from \$145 to \$155, and the minimum amount from \$27 to \$37. Effective July 2, 1988, the maximum weekly benefit will increase to \$165. However, the \$115 maximum will still apply if the program trust fund level is less than \$175 million.

Disqualification. The discharge for misconduct disqualification was changed from a variable 4 to 11 weeks to a duration disqualification or until the individual earns eight times the weekly benefit amount. An individual will be disqualified for gross misconduct until he or she earns insured wages equal to at least 12 times the weekly benefit amount if the discharge was for (1) intentional conduct on the job that results in injury to the employer, fellow employees, customers, patients, bystanders, or the eventual consumer of products; or (2) intentional conduct that results in the employee being discharged for theft valued at \$100 or less. Also, an individual may be disqualified for gross misconduct until he or she earns 16 times the weekly benefit amount when the discharge was for intentional conduct resulting in property loss or damages of at least \$2,000; theft of property, goods, or money valued at over \$100; sabotage; or embezzlement. An individual will not be disqualified for misconduct if (1) the individual made a good faith effort to perform the duties for which hired, but was simply unable to do so; (2) the individual did not intentionally fail or consciously neglect to perform the duties; (3) the discharge occurred because of absenteeism caused by illness of the claimant or a family member, unless the claimant failed, without justification, to notify the employer; (4) the discharge occurred as the result of the violation of an employer rule of which the claimant was not informed; or (5) except for activity requiring disqualification because of a labor dispute, the employee was exercising a protected right to protest against wages, hours, working conditions, or job safety under the National Labor Relations Act or other laws.

Hawaii

Financing. For calendar year 1988, wages, for tax purposes, will not include remuneration paid which exceeds (1) 100 percent of the State average annual wage, if the ratio of the current reserve fund to the adequate reserve fund is equal to or less than 0.8; or (2) 75 percent, if the ratio is greater than 0.8 but less than 1.2; or (3) 50

percent, if the ratio is equal to or more than 1.2. A special unemployment insurance administration fund was created which will consist of all fines, interests, and penalties collected.

Idaho

Financing. For calendar years 1987 and 1988, positive-balance employers will pay contributions ranging from 1.7 percent to 3.5 percent of taxable wages, and negative-balance employers will pay from 4.0 percent to 5.6 percent. New employers will pay 3.7 percent.

Benefits. The base-period qualifying wages were changed from $1\frac{1}{2}$ to $1\frac{1}{4}$ times the wages earned in the high quarter of the base period. The minimum high-quarter wage requirement of \$1,144.01 still applies. The ratio of base-period wages to high-quarter wages for determining duration of benefits was changed from 1.25 for a minimum of 10 weeks to 3.25 for a maximum of 26 weeks.

Illinois

Coverage. A new enactment excludes from coverage services performed by an individual as a direct seller, if certain conditions are met.

Financing. The taxable wage base for calendar years 1988 through 1992 will be \$9,000 and, beginning January 1, 1993, \$8,500. Provisions of law requiring a new employer to pay contributions equal to the greatest of 2.7 percent, 2.7 percent multiplied by the current State adjusted experience factor, or the average contribution rate for the employer's major industry classification, which were to expire at the end of 1987, were permanently extended. Special contribution conditions will apply in calendar years 1989 and 1990 to new employers who have had experience with the risk of unemployment for at least 13 consecutive months ending June 30 of the preceding year. For benefit years beginning on and after July 1, 1989, benefits will be charged to the last employer for whom the individual worked in covered employment and earned wages on each of 30 days. (Currently, benefits are charged proportionately to the base-period employers.)

The tax system will be converted from a benefit-wage ratio (proportion of employer payroll paid to workers receiving unemployment benefits) system to a benefit ratio (ratio of benefits paid to total employer payroll) system over calendar years 1988-92. In calendar year 1988, the State experience factor will be the sum of all regular benefits paid plus the benefit reserve for fund building during the 3-year period end-

ing on June 30 of the year immediately preceding the year for which a rate is being determined, divided by the net revenues for the 3-year period ending on September 30 of the same year, adjusted to the nearest multiple of 1 percent. The adjusted State experience factor will be 111 percent for 1988; not less than 75 percent or more than 135 percent for 1989 through 1992, during which period it may not be lowered by more than 5 percent (absolute) from the State experience factor for the preceding year; and 123 percent beginning in calendar year 1993.

Beginning July 1, 1989, an employer's experience rate will depend, in part, on benefit charges rather than on benefit wages. Beginning in 1991, the benefit ratio of each eligible employer will be a percentage computed using a benefit conversion factor that takes into account previously paid benefit wages and benefit charges. An employer's maximum contribution rate for 1988 through 1992 will be the greater of 6.4 percent or the product of 6.4 percent and the adjusted State experience factor for the year. An employer's maximum contribution rate for 1993 and subsequent years will be 6.7 percent. The minimum rate will continue to be the greater of 0.2 percent or the product obtained by multiplying 0.2 percent by the adjusted State experience factor. No employer with total wages in any quarter (during 1988 and thereafter) of less than \$50,000 shall pay contributions which exceed 5 percent in 1988 and 5.4 percent in 1989 and thereafter.

Beginning in 1989 and ending December 31, 1992, a surcharge of 0.2 percent will be added to each employer's tax rate when the trust fund on May 15 is less than \$80 million. This surcharge is increased by 0.2 percent for each subsequent year in which the trust fund balance is below \$80 million. For calendar years 1988 through 1992, a fund-building rate equal to 0.4 percent will be added to each employer's basic rate. The fund-building rate will increase to 0.6 percent in 1993 and subsequent years. The provision for an emergency contribution rate when the State's account in the Federal unemployment trust fund was less than \$100 million was repealed.

Benefits. For the period January 3, 1988, to January 1, 1993, a weekly benefit amount will be computed as 49 percent of the claimant's average weekly wage, up to 49 percent of the State average weekly wage. For the same period, the formula for dependents' allowances shall be 8 percent of the claimant's prior average weekly wage (not to exceed 57 percent of the State average weekly wage) for a nonworking spouse, or 15 percent of the claimant's prior average weekly wage (not to exceed

64 percent of the State average weekly wage) for other dependents. Beginning January 1, 1993, a weekly benefit amount will be computed as 48 percent of the claimant's average weekly wage up to 48 percent of the State average weekly wage; dependents' allowances will be 7 percent of the claimant's prior average weekly wage (not to exceed 55 percent of the State average weekly wage) for a nonworking spouse, or 14.4 percent (not to exceed 62.4 percent of the State average weekly wage) for dependents.

For calendar years 1988, 1989, and 1990, the statewide average weekly wage will be \$359, \$381, and \$406, respectively. Beginning with calendar year 1993, the average weekly wage will be \$350. For calendar years 1991 and 1992, the average weekly wage will be the previous calendar year's average weekly wage plus (or minus) an amount equal to the percentage change in the average weekly wage between the two immediately preceding benefit periods, multiplied by the previous calendar year's statewide average weekly wage. For benefit periods between January 1, 1991, and December 31, 1992, the statewide average weekly wage will be the average weekly wage in effect for the previous benefit period if two of the following three factors occur: (1) the average contribution rate of employers for the calendar year 2 years prior to the base period as a ratio of total contributions to total wages was 0.2 percent greater than the national average of this ratio; or (2) the trust fund balance was less than \$250 million on March 31 of the prior year; or (3) the number of first payments of initial claims on June 30 of the prior year had increased more than 25 percent over the average during a 5-year period ending on the same June 30. Also, if *all* the conditions above occur, the statewide average weekly wage shall decrease 10 percent. The base period may be extended after receipt of temporary total disability benefits under any workers' compensation or occupational disease act.

Disqualification. A labor dispute disqualification will exclude individuals affected by a lockout if (1) an employer refuses to meet under reasonable conditions with the union representative to discuss the lockout; or (2) there is a final adjudication under the National Labor Relations Act that, during the lockout, the employer refused to bargain in good faith with the union representative over the lockout issues; or (3) the lockout violated the existing union agreement. Also, an individual's total or partial unemployment resulting from any reduction in operations, reduction in force, or layoff of employees by an employer in anticipation of collective bargain-

ing negotiations will not be considered as being due to a stoppage of work which exists because of a labor dispute until the actual commencement of a strike or lockout.

A definition of misconduct was added to cover the deliberate and willful violation of an employer's reasonable rule or policy governing the individual's behavior in the performance of work, provided the violation has harmed the employer or employee or has been repeated despite a warning or other explicit instruction from the employer. Also, if an individual disqualified for misconduct is reinstated by the employer, the requalifying requirement will be deemed satisfied.

Administration. A \$2 million program was established to pay lawyers to represent small businesses and claimants at unemployment insurance hearings. The program will be funded from the existing Special Administrative Account.

Indiana

Administration. The State Employment Security Division was replaced with the Department of Employment and Training Services, which shall be administered by an executive director. The Indiana Unemployment Insurance Board was established to replace the employment security board, which was responsible for the unemployment insurance program. The employment security advisory council has been abolished and its duties have been transferred to the Indiana State Job Training Coordinating Council.

Benefits. The definition of dependent was amended to include a person who is less than 23 years old (formerly 18) and is enrolled in and regularly attending a secondary school or who is a full-time student at an accredited college or university.

Iowa

Financing. Beginning in 1988, the taxable wage base will be $66\frac{2}{3}$ percent of the statewide average weekly wage multiplied by 52, and rounded to the next higher multiple of \$100. The provision increasing the wage base by \$1,600 for 1986 and subsequent calendar years was repealed. The provision allowing noncharging to former employer(s) of benefits to be paid to an individual who failed without good cause to return to his or her customary self-employment was repealed. Employers (excluding governmental entities and nonprofit organizations) will be required to pay an administrative contribution surcharge equal to 0.1 percent of Federal taxable wages. The surcharge will be deposited in the newly created Administrative Contribu-

tion Surcharge Fund. Money in the fund will be used only for personnel and nonpersonnel costs of rural and satellite job service offices in population centers of less than 20,000. This provision will be repealed July 1, 1990, and thus will not affect contribution rates for calendar year 1991.

The following provisions will apply for calendar year 1988 only. Eight new rate tables have been established based on the relationship of the reserve fund ratio to the highest benefit-cost ratio. The least favorable schedule of rates ranges from 0.0 percent to 9.0 percent (in 1989, it reverts to 0.5 percent to 7.0 percent), and the most favorable schedule ranges from 0.0 percent to 5.4 percent (in 1989, it reverts to 0.0 percent to 4.0 percent). Negative-balance employers are not required to pay the additional 1.0-percent surcharge, which is cumulative from year to year and which is required for other years. The following were suspended: (1) the provision allowing an employer to avoid payment of contributions for a year if the employer's percentage of excess (total employer contributions divided by total benefits charged) is 7.5 percent or greater; and (2) provisions allowing such an employer to qualify for a reduced rate in the year after that in which he or she paid no contributions because of a percentage of excess of 7.5 percent or more. Also suspended were provisions allowing an employer to make voluntary contributions in an amount sufficient to lower his or her rate to that for the next lower percentage-of-excess rank. A new contributing employer who is not in the construction industry will pay contributions at a rate specified at the 12th benefit-ratio rank (0.3 percent to 3.1 percent), but not less than 1.0 percent.

Beginning in 1989, a new nonconstruction contributing employer will pay at the 9th percentage-of-excess rank (0.2 percent to 2.3 percent), but not less than 1.8 percent. A new contributing employer in the construction industry will pay contributions at a rate specified in the 21st benefit-ratio rank (5.4 percent to 9.0 percent) for 1988. Beginning in 1989, a new construction contributing employer will pay at a rate in the 21st benefit-ratio rank (4.0 percent to 7.0 percent), depending on the rate schedule in effect.

Benefits. The provision for a 1-week waiting period before benefits are paid was repealed.

Kansas

Coverage. Services performed for less than 14 days in a calendar year by an extra for a motion picture or television production will be excluded from coverage.

Disqualification. The between-terms denial of benefits was amended to apply to services performed as driver of a schoolbus or other motor vehicle while employed by a private contractor to transport pupils, students, and school personnel to or from school-related functions or activities for an educational institution. However, an individual will not be disqualified if the services as a bus driver are performed for a nonschool-related function or activity. Also added was a between-terms disqualification based on services for an educational institution in any capacity while in the employ of a governmental entity or nonprofit organization.

Louisiana

Coverage. A new enactment excludes from coverage services performed by an individual as a direct seller, if certain conditions are met.

Financing. A new enactment provided for the issuance of State bonds for financing and payment of Federal advances to the State fund, the restructuring and funding of unemployment benefits, and the financing of the State's account in the Federal Unemployment Trust Fund. A special assessment on taxable employers was added to service the bonds. For the period July 1 to December 31, 1987, the special assessment will be 1.4 percent of the first \$7,500 in taxable wages paid to each employee. The taxable wage base was increased from \$7,000 to \$8,500. The provision for the noncharging of benefits paid to an individual who performs services for a temporary help service on an on-call basis and who earns less than \$350 was repealed.

The period needed for an employer to qualify for experience rating was reduced from 3 to 2 years. The contribution rate for new employers will be the average rate for employers in the same 2-digit industrial classification, but not less than 1.0 percent. A solvency tax, not to exceed 30 percent of the employer's contributions for the quarter, will be assessed if the State fund administrator projects that the balance of the fund is expected to fall below \$100 million.

Benefits. The weekly benefit amount will be decreased by 7 percent beginning January 4, 1988. This means that the maximum weekly benefit amount will be reduced from \$205 to \$191. The minimum weekly benefit amount will remain \$10.

Disqualification. An individual who is discharged for the use of illegal drugs will be disqualified for the duration of unemployment and until he or she is reemployed and earns wages of 10 times the weekly benefit amount.

Maine

Coverage. A new enactment excludes from coverage services performed by a full-time student in the employ of an organized camp, if certain conditions are met.

Benefits. Employment with a variety store or trading post which operates for a period of less than 26 weeks per year will be considered seasonal employment.

Maryland

Benefits. The weekly dependency allowance was increased from \$4 to \$6 per dependent, up to four dependents.

Financing. An employer's account will not be charged for benefits paid to an individual who left work voluntarily with good cause to enter approved training.

Administration. The State Department of Economic and Employment Development was established to administer the unemployment insurance program under the direction of the Secretary of Economic and Employment Development.

Minnesota

Financing. The special taxable wage base of \$8,000 for employers paying the minimum rate of 0.1 percent was repealed. The least favorable schedule, which applies when the fund level is less than \$200 million, calls for a minimum employer contribution rate of 0.8 percent for 1988, 0.7 percent for 1989, and 0.6 percent for 1990. The most favorable schedule calls for a fund level of \$300 million with a minimum employer contribution rate of 0.1 percent. The maximum rate in both schedules will be 8.0 percent in 1988, 8.5 percent in 1989, and 9.0 percent in 1990 and thereafter.

All contributing employers will pay a solvency assessment based on State unemployment insurance trust fund balances. Benefits may be noncharged to the employer if an individual refused an offer of reemployment while in approved training.

Benefits. The base period will be the first four of the last five completed calendar quarters. However, if an individual has insufficient wage credits to establish a valid claim, the alternate base period will be the last four completed calendar quarters. The base period may be extended up to four quarters depending on the length of time an individual receives workers' compensation for temporary disability or receives compensation due to an illness from another source. An individual's benefit year will be 53 weeks, beginning with the week a valid claim is filed.

To qualify for benefits, an individual must have (1) wage credits in two or more quarters of the base period; (2) minimum total base-period wage credits equal to wages earned in the high quarter of the base period multiplied by 1.25; (3) high-quarter wage credits of \$1,000; and (4) effective July 1, 1989, base-period wage credits in 15 or more weeks. Previously, the qualifying requirement was at least 15 weeks of employment with wages equal to 30 percent of the State average weekly wage.

To qualify for benefits in a second benefit year, an individual must have earned 10 times the weekly benefit amount. An individual's weekly benefit amount will be computed as $\frac{1}{26}$ of high-quarter wages. The maximum weekly benefit amount will be computed as a percentage of the State average weekly wage, ranging from 60 percent to $66\frac{2}{3}$ percent, depending on the balance in the State fund. An individual's duration of benefits will be determined as $\frac{1}{3}$ of total base-period wages, up to 26 weeks. The earnings disregarded in computing the weekly benefit amount for partial unemployment have been changed from \$25 to the greater of \$25 or 25 percent of the earnings from work other than service in the National Guard.

To qualify for benefits on the basis of seasonal employment, an individual must have wage credits in 15 or more weeks equal to or in excess of 30 times the weekly benefit amount from nonseasonal work, in addition to any seasonal wage credits. An additional benefits program was added to the State law, whereby claimants may receive up to 6 weeks of additional benefits if they meet certain eligibility conditions.

Disqualification. The disqualification for voluntary leaving, discharge for misconduct, and refusal of suitable work has been changed to the duration of unemployment and until the individual has 4 weeks of work and wages equal to eight (previously four) times the weekly benefit amount. An individual will not be disqualified for voluntary leaving or discharge for misconduct if separated from employment due to a collective bargaining agreement under which the individual has vested discretionary authority in another to act on his or her behalf. Holiday pay in excess of \$25 will be disqualifying income. If an individual is awarded backpay which has been reduced by benefits paid, the amount withheld must be paid by the employer into the State unemployment fund.

Penalties. The penalty for an individual's fraudulent misrepresentation to obtain or increase benefits was changed from a misdemeanor to theft. A gross misdemeanor penalty for an individual's fraudu-

lent misrepresentation to prevent or reduce benefit payments will not apply if the underpayment of benefits, contributions, or other payment(s) involved exceeds \$250, in which case the person will be guilty of a felony.

Missouri

Benefits. A temporary worksharing program, under which individuals working shortened schedules to avert layoffs may collect benefits, was established, to expire January 1, 1991.

Montana

Coverage. An individual will be considered an independent contractor if he or she is free from direction and control and is engaged in an independently established trade, occupation, profession, or business.

Benefits. To qualify for benefits, an individual's total base-period wages must be equal to or greater than 7 percent of the State average annual wage, in addition to being \$1,000 or more. The requirement that the individual have 20 weeks of work at \$50 a week still applies.

Disqualification. The disqualification for failure to apply for or to accept suitable work was changed to a duration disqualification or until the individual earns wages equal to six times the weekly benefit amount. The change also calls for an equal reduction of benefits.

Administration. The period during which an individual may appeal a referee decision, or apply for reconsideration of or appeal from an initial claim determination was changed to 10 days after mailing of the notification to the individual's last known address.

Penalty. If an individual fraudulently receives benefits, he or she must pay 18-percent interest on the amount fraudulently obtained.

Nebraska

Benefits. The minimum and maximum weekly benefit amounts were increased to \$20 and \$134, respectively. The qualifying wages were doubled to \$1,200 in the base period, of which \$400 must have been earned in each of two quarters. To qualify for benefits in a second benefit year, an individual must earn at least four times the weekly benefit amount.

Nevada

Disqualification. The special disqualification for an individual who voluntarily

leaves work to enter self-employment has been repealed.

New Hampshire

Benefits. The minimum and maximum weekly benefit amounts were increased to \$39 and \$156, respectively. Annual earnings required to qualify for the minimum and maximum weekly benefit amounts were increased to \$2,800 and \$23,500, respectively.

Disqualification. The requalifying requirement for purging a disqualification for voluntary leaving, discharge for misconduct, leaving self-employment, or failing to apply for or accept suitable work was amended to require the individual to earn at least 120 percent of the weekly benefit amount in any 5 weeks. The pension offset requirement was amended to provide that no offset will apply if the base-period or chargeable employer does not contribute to the fund from which the retirement payments are made. Also, no offset will apply if an individual contributed 50 percent or more to the retirement pay.

Administration. The "sunset" provision reauthorizing the Department of Employment Security was extended to July 1, 1993. The period during which a program-related decision may be appealed to the State supreme court was increased to 30 days.

New Jersey

Benefits. To qualify for benefits in a second benefit year, an individual must earn at least six times the weekly benefit amount and have 4 weeks of employment since the beginning of the preceding benefit year.

New Mexico

Financing. A nonprofit organization electing to reimburse the State fund for benefits paid must execute and file a bond within 30 days of the election.

Disqualification. An individual will be considered available for work and actively seeking work if he or she is temporarily laid off for no more than 4 weeks or if he or she has an offer in writing for full-time work that will begin within 4 weeks. Individuals, other than those in approved training, who are attending classes during the hours of 8 a.m. to 6 p.m. are disqualified from benefits. An individual's extended benefit amount and total benefit amount will be reduced by the percentage of the Gramm-Rudman-Hollings reduction in the Federal share of extended benefits.

Administration. The name of the second-stage appeals body was changed from the Board of Review to the Secretary of Employment Security.

New York

Disqualification. A disqualification for voluntary leaving for marital obligations will only apply if the separation was due to the claimant's marriage. Previously, the disqualification also applied to individuals who follow a spouse to a new locality.

Benefits. New York has established a 3-year demonstration project (expires in 1990) which allows claimants in approved training to receive additional benefits.

North Carolina

Coverage. The exclusion from coverage of aliens performing agricultural labor was extended to January 1, 1993.

Financing. A special tax will be imposed on employers if the State reserve fund is less than 1 percent of total taxable wages. The tax will be used for repayment of loans from the Federal trust fund and to pay interest on Federal advances, and will be deposited in the State's Employment Security Commission Reserve Fund. The new-employer contribution rate was decreased to 2.25 percent. Repealed was the additional increase of up to 40 percent of the employer's rate when the fund ratio was less than 5.5 percent.

Benefits. The maximum weekly benefit amount will be computed as 63 percent of the average weekly insured wage and, beginning August 1, 1988, as 66 $\frac{2}{3}$ percent of the average weekly insured wage. Deleted was the requirement that the benefit be calculated as 60 percent of the average weekly wage when the fund ratio falls below 5.5 percent.

North Dakota

Financing. The standard rate of contributions will be the maximum rate in effect for a year. New employers will pay 3.25 percent, except that new employers in an industry with a negative reserve balance will pay the maximum rate.

Benefits. The weekly benefit amount will be computed at $\frac{1}{5}$ of total wages in the two highest quarters of the base period and one-half of the total wages during the third highest quarter. The maximum weekly benefit amount will be computed as 60 percent (currently 67 percent) of the State average weekly wage.

However, if, on October 1, 1989, or any succeeding October 1, the trust fund re-

serve is equal to or greater than the required amount, then, as of July 1 of the next year, the maximum weekly benefit amount will be computed as 62 percent of the State average weekly wage. If, on October 1, 1989, or any succeeding October 1, the trust fund reserve is equal to or greater than the required amount and the State's average contribution rate is below the nationwide average for the preceding calendar year, the maximum weekly benefit amount will be computed as 65 percent of the average weekly wage. The ratio of base-period wages to high-quarter wages used for determining the duration of benefits was changed to 1.5 to 3.2 or more. The extended benefit weekly benefit amount and total benefit amount will be decreased to reflect any Gramm-Rudman-Hollings reduction. The minimum weekly benefit amount is \$43, and the provision for the annual automatic computation of the minimum weekly benefit amount is deleted.

Disqualification. An individual will not be disqualified for voluntary leaving if he or she left the most recent employment upon a physician's advice because of an injury or illness caused or aggravated by the employment. If an individual leaves employment in anticipation of a discharge or layoff, the individual will be considered to have left employment voluntarily without good cause attributable to the employer.

Ohio

Financing. The \$8,000 taxable wage base was made permanent. The range of rates for the least favorable schedule will be 0.1 percent to 5.4 percent. In addition to the computed rate based on the employer's experience, his or her contribution rate will be increased by 0.2 percent if the State fund falls below minimum safe levels. The special 0.5-percent tax on employers used to repay outstanding interest-bearing advances from the Federal Government was deleted.

Benefits. Ohio extended until October 1, 1988, the qualifying requirement of 20 weeks of work at 37 times the State minimum hourly wage. An individual will not be paid benefits for a waiting week.

Disqualification. Until October 1, 1988, a duration disqualification may be purged by 6 weeks of work and earnings of six times the amount required to establish a credit week. Beginning October 1, 1988, a duration disqualification may be purged by 6 weeks of work and earnings at an average weekly wage of not less than 37 times the State minimum hourly wage.

Oklahoma

Financing. The limitation on a rate increase for employers with rates of 3.4 percent or more will be 2 percent in any year. For employers with rates below 3.4 percent, the rate may not be increased to more than 5.4 percent in any year.

Disqualification. The length of the disqualification for refusal of suitable work was changed from the week of occurrence to a period of reemployment with earnings equal to 10 times the weekly benefit amount. However, an individual who refuses an offer of work due to illness, death of a family member, or other circumstances beyond his or her control will be disqualified only for the week of occurrence.

Oregon

Coverage. The exclusion from coverage of aliens performing agricultural labor was extended to January 1, 1993. The "age 22" limitation for the exclusion from coverage of services performed by students in a work-study program was deleted; therefore, such services are excluded, regardless of the individual's age. A new enactment excludes from coverage services performed by a full-time student in the employ of an organized camp, if certain conditions are met.

Benefits. The temporary State additional benefits program which was due to expire on June 27, 1987, has been extended until July 1, 1989. The pension offset provision was amended to provide that no offset will apply if an individual receives Social Security pension benefits to which he or she has contributed.

Rhode Island

Financing. The fund balance requirements for the most favorable schedule have been reduced to 11.5 percent (previously 14 percent) of payrolls, and for the least favorable schedule to less than 5.0 percent (previously 6.5 percent) of payrolls.

Benefits. The computation of the weekly benefit amount was changed to 60 percent of the claimant's average weekly wage, up to 67 percent of the State average weekly wage. The weekly dependents' allowance was increased to \$10 per dependent or 5 percent of the individual's benefit rate for each dependent, up to five dependents.

South Dakota

Financing. Benefits paid to an individual taking approved training will not be charged to the liable employer's account. The contribution rate for the most favorable

schedule will range from 0.05 percent to 8.25 percent. New employers will pay a contribution rate of 2.75 percent for the first year and 1.95 percent for subsequent years until they qualify for experience rating.

Benefits. The maximum weekly benefit amount will increase from \$129 to \$140. If the amount of extended benefits reimbursed by the Federal Government is reduced or increased, the State's share of the weekly extended benefit amount will be reduced or increased on an equal basis.

Disqualification. An individual will be considered to have good cause for leaving if employment presents a hazard to his or her health and if it has been medically advised and certified by a practitioner that continued employment presents a health hazard.

Tennessee

Coverage. The exclusion from coverage of aliens performing agricultural labor was extended to January 1, 1993. Also excluded from coverage are services performed by real estate agents, direct sellers, full-time students in the employ of organized camps, and individuals on fishing boats, if certain conditions are met.

Benefits. The maximum weekly benefit amount was increased from \$130 to \$145.

Disqualification. A disqualification for participation in a labor dispute will be for the duration of the dispute. However, lock-outs are excluded from the labor dispute disqualification.

Texas

Coverage. A new enactment excludes from coverage services performed by a full-time student in the employ of an organized camp, if certain conditions are met.

Financing. The taxable wage base was increased to \$8,000 for 1988 and will increase to \$9,000 in 1989. The Texas Employment Commission is authorized to issue bonds and to levy a surtax on employers of no more than 0.2 percent to fund interest payments due for any indebtedness.

Benefits. The maximum weekly benefit amount will be frozen at \$210 until October 1, 1989. To qualify for benefits, an individual must earn 37 times the weekly benefit amount and have wage credits in two quarters of the base period. To qualify for benefits in a second benefit year, an individual must have earned wages of six times the weekly benefit amount.

Administration. The period for appealing an appeal tribunal decision was increased to 14 days after the mailing of the determination to the concerned party.

Utah

Financing. Beginning January 1, 1988, the taxable wage base will be computed as 75 percent of the insured average wage for the fiscal year. The standard rate of contributions will be the average overall contribution rate and, for new employers, it will be the maximum overall contribution rate. An employer's account will not be charged for benefits paid to a worker who was discharged for nonperformance due to medical reasons.

Benefits. Beginning January 3, 1988, the base-period wages needed to qualify for benefits will be 8 percent of the insured average wage for the preceding fiscal year, rounded to the next higher multiple of \$100. The maximum weekly benefit amount will be 60 percent of the insured average weekly wage during the preceding fiscal year.

Penalties. No benefits will be paid until an earlier overpayment resulting from misrepresentation is repaid. In cases of fraud, the claimant will be required to repay benefits and, as a civil penalty, an amount equal to the benefits received fraudulently.

Vermont

Coverage. A new enactment excludes from coverage services performed by a full-time student in the employ of an organized camp, if certain conditions are met. Vermont provides for automatic coverage of aliens performing agricultural labor if the Federal Unemployment Tax Act is amended to provide for such coverage.

Financing. New employers will pay contributions at the lower of the average industry tax rate or the percent represented by rate class 11 (2.6 percent to 4.8 percent, depending on the rate schedule in effect), but not less than 1.0 percent.

Virginia

Coverage. The exclusion from coverage of aliens performing agricultural labor was extended to January 1, 1993. Also excluded from coverage are services performed by a full-time student in the employ of an organized camp and by an individual on a fishing boat, if certain conditions are met.

Financing. The minimum contribution rate for the most favorable schedule was

reduced to 0.0 percent, and for the least favorable schedule, to 0.53 percent.

Disqualification. The pension offset provision was amended to provide that the offset will apply to pension payments made under a plan maintained or contributed to by a base-period or chargeable employer.

Washington

Financing. The contribution rates under the most favorable schedule will range from 0.48 percent to 5.4 percent, and for the least favorable schedule, from 2.48 percent to 5.4 percent.

Benefits. The base period may be defined as the last four quarters if the first four out of the last five quarters are not used.

Administration. The period during which one may appeal a benefit determination to the appeal tribunal and to the State commissioner was increased from 10 to 30 days.

West Virginia

Coverage. Any services performed by a student enrolled at a nonprofit or public school in a work-study program will be excluded from coverage. Also, the exclusion from coverage of aliens performing agricultural labor was extended to January 1, 1988.

Financing. If the State commissioner determines that regular employer contributions will be insufficient to finance the payment of benefits during the quarter, both employers and employees will pay an assessment not to exceed 0.15 percent of the employee's gross wages. Bonds or notes may be issued in amounts sufficient to provide money to repay Federal advances to the State fund.

Benefits. The definition of wages was amended to include tips totaling \$20 or more each month, which are required to be reported to the employer.

Disqualification. If a discharged employee is reinstated and receives backpay, the individual will be required to repay benefits received during the time for which backpay is received. Also, if an individual receives unemployment benefits and an award of backpay for the same period, the employer must withhold backpay in an amount equal to the unemployment benefits, and repay the amount to the unemployment trust fund.

Wisconsin

Coverage. The requirement for automatic coverage of work not previously covered by the State of Wisconsin if subject to the Federal Unemployment Tax Act was deleted.

Financing. For 1988, the State department may assess a tax to pay all interest due on Federal advances to the State fund for calendar years 1988 and 1989. The rates for the least and most favorable schedules will range from 0.27 percent to 8.90 percent. Also, solvency contributions by employers will range from 0.0 to 0.9 percent, depending on the State's basic rate and total payrolls. Beginning April 2, 1989, benefits will be charged proportionately to base-period employers.

Benefits. The following will be effective January 1, 1988: The minimum and maximum weekly benefit amounts will increase to \$38 and \$200, respectively. The qualifying requirement will be 17 weeks of employment in the base period. For benefit purposes, each employer will be required to file a quarterly wage report on each employee.

The following will be effective April 2, 1989: To be eligible for benefits, an individual must have base-period wages of 40 times the weekly benefit amount, including combined wages outside the high quarter of at least 13 times the weekly benefit amount. The base period will be the first four of the last five completed calendar quarters preceding the benefit year. The benefit year may be extended to 53 weeks for an individual who files consecutive claims. Services performed by an individual for a seasonal employer engaged in canning will be excluded if the individual earns less than 40 times the weekly benefit amount, unless the individual earned wages of \$200 in other covered employment in the four most recent calendar quarters preceding the seasonal employment. An individual's weekly benefit amount will be computed as 4 percent of base-period wages in the high quarter. The maximum number of weeks an individual may receive benefits is the lesser of 26 weeks or until the individual has received an amount equal to 40 percent of his or her base-period wages.

Disqualification. Ineligibility due to inability to work or unavailability for work no longer depends strictly on physical inability or substantial unavailability. An individual will not be disqualified for volun-

tary leaving if he or she accepted work which should have been refused because of labor standards provisions and terminated the work within 10 weeks.

The following will become effective April 2, 1989: The duration disqualifications for voluntary leaving, discharge for misconduct, and refusal of suitable work will apply until 7 weeks have elapsed since the end of the week of occurrence and the individual has earned wages equal to at least 14 times the weekly benefit amount. The disqualification for a disciplinary suspension will apply until 5 weeks have elapsed since the end of the week of suspension or until the suspension is terminated. A monetary requirement will be added to the good-cause exception for voluntary leaving when accepting other work, to require an individual to earn wages equal to eight times the weekly benefit amount. An individual in a licensed occupation will be ineligible for benefits if suspended or terminated because the license was suspended, revoked, or not renewed. The ineligibility will apply until the license is reinstated or renewed. Also, the individual will not be eligible for benefits based on employment with other employers until 5 weeks have elapsed since the week of suspension or termination or until the license is reinstated or renewed. In addition, all wages earned with the employer that discharged or suspended the employee are excluded when determining future benefits to which the employee is entitled while the suspension, revocation, or nonrenewal of the license is in effect.

Wyoming

Financing. For the period July 1, 1987, through January 1, 1989, State interfund borrowing of up to \$20 million for the payment of benefits or to repay Federal advances is authorized when the trust fund is certified inadequate. An employer's account will not be charged with benefits paid as a result of a major disaster if the benefit recipient would otherwise have been eligible for disaster benefits.

Benefits. The benefit year was redefined as the 52-consecutive-calendar-week period beginning with the first week of filing a valid claim, or the 53-consecutive-week period beginning the first week if filing a valid claim results in the overlapping of a quarter in the base period of a previously filed claim. Previously, the benefit year was the 1-year period beginning the first day of filing a valid claim. □

Productivity trends in department stores, 1967-86

The domination of large chains and accompanying increased use of computers, led to above-average productivity in the department store industry

BRIAN L. FRIEDMAN

As measured by output per employee hour, productivity in the department store industry increased at a 2.8-percent average annual rate between 1967 and 1986.¹ In comparison, the rate was 1.0 percent for the nonfarm business sector of the economy during the same period. The gain in department store productivity over the 19-year period reflects average annual increases of 3.6 percent in output and 0.8 percent in employee hours. (See table 1.)

The industry's productivity growth has been influenced by broad trends in general retailing. These trends include greater firm concentration and the resulting growth in the number of chain stores² which invested heavily in expansion; movement to better locations in shopping centers; and the use of computers in store operations. Improvements in store layout and design were also used to increase consumer service by helping salespersons serve customers more efficiently.³

The productivity trend can be divided into three periods: 1967-73, 1973-80, and 1980-86. During the first period, productivity rose at a 1.8-percent average annual rate. The rate increased to 2.9 percent in the middle period, and to 4.5 percent during the 1980-86 period.

Types of department stores

There are three basic types of department stores. *National chains* are very large firms, sometimes operating more than

1,000 stores. These chains enjoy substantial economies of scale. Management is fairly centralized, and computer technology is well diffused. Checkout registers are available in each department. These stores use computer technology to reduce unit labor requirements. In 1982, the most recent year for which data are available, national chains accounted for 29 percent of industry sales.

Discount department stores also are highly concentrated and consist of very large chains. They use their enormous buying power to offer goods at lower prices than other department stores. These stores use centralized checkout. Here, too, labor requirements are reduced through the extensive use of advanced technology.⁴ Discount department stores accounted for 39 percent of industry sales in 1982.

The conventional store is the third type of department store. Some of these stores are single-unit independents (although their number has dwindled during the period of this study), others are organized into relatively small corporately owned regional chains. Many regional chains are owned by a national holding company. The holding company allows for regional chain management, yet retains control of capital for expansion and technology. The conventional stores typically offer more service than the other types of department stores. Nevertheless, even this segment of the industry (especially chains owned by holding companies) has followed industry trends toward part-time labor and more electronic data processing in their need to reduce costs and compete with the discounters. Conventional stores accounted for about 22 percent of industry sales in 1982.

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Trends in three distinct periods

1967–73. The 1967–73 period represents the end of a trend in the department store industry which began in the 1950's. With large segments of the population moving to suburban locations, department stores grew strongly in terms of number of stores and sales, as they followed population growth. In response to competition from apparel stores, variety stores, and other retail establishments offering general merchandise, the industry also expanded in an attempt to obtain as many prime retail locations as possible.

The 1967–73 period saw the greatest increase in the number of department stores during the entire 1967–86 period. The number of outlets grew by nearly 2,000 between 1967 and 1972. Industry output posted its largest gains, averaging 5.6 percent per year. The strong growth in the number of stores was accompanied by an employment gain of 4.2 percent per year and an hours gain of 3.7 percent, with a modest 1.8-percent average annual growth in productivity. Output during this period increased every year, with large gains in 1971 (9.2 percent) and 1972 (8 percent). Productivity increased by 6.1 percent in 1971, and declined by -1.3 percent in 1969.

1973–80. Another distinct phase began in 1973. Spurred by the oil crisis beginning in late 1973, inflation began to accelerate; in 1974 and 1975, the U.S. economy experienced a recession. Higher interest rates, soaring energy costs, and slowed consumer spending braked the expansion of the previous period. Department store companies began to change strategies and modify or cancel expansion plans.⁵

During the 1973–80 period, the growth in the number of stores slowed markedly. Much of the growth that did occur was in the discount sector of the industry, which increased sales mainly by competing with lower prices. Sales during this period were hampered by shrinking disposable income available for general merchandise.⁶ The proportion of current consumption expenditures used for food, shelter, utilities, transportation, and health care increased during this period.⁷ Sales of the more discretionary items sold in department stores slowed. Output which had grown at the annual rate of 5.6 percent between 1967 and 1973, slowed to a 3-percent annual rate. The industry now instituted policies aimed at fighting costs, especially labor costs.⁸ Employment grew only 1.3 percent a year, and hours, hardly at all (0.1 percent). Overall productivity growth of 2.9 percent per year during the 1973–80 period was marked by declines only in 1974 and 1980. Productivity advanced strongly in 1975 (5.4 percent), 1976 (5.2 percent), and 1977 (5.7 percent).

1980–86. During the 1980–86 period, the productivity rate rose to 4.5 percent per year, as output increased 4.8 percent and hours, 0.4 percent. The slowdown in store additions continued. More resources were expended on store

remodeling and redecorating which, studies showed, increased shopper traffic and sales.⁹ Strong growth in retail spending¹⁰ during the period spurred industry output, which posted gains of 5.1 percent in 1981, 6.4 percent in 1983, and 9.6 percent in 1984. Output increases were boosted by the use of information gathered with point-of-sale technology to eliminate slow moving items and bolster products that sold well.¹¹ Output was also aided by income tax reductions, declining inflation, and the growing acceptance of third-party credit cards.¹² There was only one small output decline (-0.2 percent) in 1982. An industry very focused on costs and productivity¹³—as reflected in the trade press—saw either very small gains or declines in hours every year, except 1984 when the gain was 3.2 percent. Productivity did not decline in any year during this period, and advanced strongly in 1981, 1983, and 1984.

Industry structure highly concentrated

The department store industry is the most highly concentrated U.S. retail industry. It was already mostly organized into chains by 1967; however, an increasing proportion of stores became part of chains over the study period. The chains continued to grow by adding new stores or by purchasing existing chains and single stores. In 1967, 84 percent of all department stores were part of chains, with 74 percent belonging to chains having 11 stores or more, and 58 percent belonging to chains having 50 stores or more. By 1982, 96 percent of stores were part of chains, of which 92 percent were in chains consisting of 10 stores or more, and 82 percent were part of chains of 50 stores or more.

Table 1. Output per employee hour and related indexes in the department store industry, 1967–86
[1977=100]

Year	Output per employee hour	Output per employee	Output	Employee hours	Employees
1967	77.9	84.6	64.6	82.9	76.4
1968	79.3	85.1	69.1	87.1	81.2
1969	78.3	83.1	71.1	90.8	85.6
1970	78.2	82.3	71.9	91.9	87.4
1971	83.0	87.3	78.5	94.6	89.9
1972	84.0	88.8	84.8	100.9	95.5
1973	87.1	91.6	90.7	104.1	99.0
1974	85.3	88.9	87.5	102.6	98.4
1975	89.9	92.6	87.9	97.8	94.9
1976	94.6	96.2	93.3	98.6	97.0
1977	100.0	100.0	100.0	100.0	100.0
1978	101.9	99.8	105.6	103.6	105.8
1979	102.5	100.8	106.0	103.4	105.2
1980	101.0	98.4	103.1	102.1	104.8
1981	106.0	103.4	108.4	102.3	104.8
1982	107.4	105.0	108.2	100.7	103.0
1983	114.9	112.3	115.1	100.2	102.5
1984	122.1	117.5	126.2	103.4	107.4
1985	125.0	118.7	129.5	103.6	109.1
1986	130.3	121.9	135.1	103.7	110.8
Average annual rates of change (percent)					
1967–86	2.8	2.0	3.6	.8	1.6
1967–73	1.8	1.3	5.6	3.7	4.2
1973–80	2.9	1.7	3.0	.1	1.3
1980–86	4.5	3.8	4.8	.4	1.0

By their great size, the large chains can take advantage of economies of scale in distribution systems, buying practices, and the utilization of advertising and computer technology.¹⁴ In 1967, stores that were not part of a chain had sales of only \$23,600 per paid employee, while chains consisting of 4 stores or more had sales of \$28,000 per paid employee, and chains of 11 stores or more had sales of \$28,800 per paid employee. In 1982, stores not part of a chain had sales of \$55,800 per paid employee, while chain stores had sales of \$65,700 and chains of 10 stores or more had sales of \$66,100.

The strong expansion policies of firms in the 1960's and 1970's led to periods of overexpansion, followed by "shake-outs" when large numbers of marginal stores went out of business.¹⁵ This was especially true in the discount sector of the industry. The lower levels of capacity utilization which accompanied overexpansion caused downward pressures on short-term productivity. At the same time, the elimination of marginal stores boosted productivity.

Store location. Accessibility and exposure to shopper traffic is a prime determinant of how well a store's capacity and labor force are utilized. The rapid expansion in the number of malls and shopping centers in suburban locations between 1967 and 1986 probably had a positive influence on productivity growth. Between 1972 and 1984 alone, the number of shopping centers increased 93 percent.¹⁶ Shopping centers, more than any other type of location offer greater sales exposure for a retailer.¹⁷ Although there are no data pinpointing the type of department store by location, industry experts believe that mostly major conventional chains and national chains are the anchor stores for malls and larger shopping centers. Discount department stores often anchor smaller shopping centers.¹⁸

Technology

The major technological change within the department store industry has been the widespread and increasing use of computers. Electronic data processing is used in conjunction with point-of-sale technology. Through coding of merchandise, marketing information is gathered as a byproduct of merchandise sales. Data obtained at the point-of-sale is used for inventory control, sales audits, automatic computer-generated stock purchasing, personnel planning, sales forecasts, interstore transfers, accounts receivable, and credit verification.¹⁹ Computer technology provides accurate, useful, and readily available information for use in both the operational and merchandising aspects of the industry. According to surveys, retailers who use point-of-sale technology report that it allows their stores to operate with reduced inventory while preventing out-of-stock situations. Product mix can be better targeted to customer needs with better marketing information. It also saves employee hours in marking down merchandise prices because of overstocked or slow-moving inventory.²⁰

Large electronic data processing systems are used primarily by large national, discount, and regional chains. Electronic data processing is an important aid to the vast operations of major chains, especially in conjunction with their regional distribution centers and central warehousing. Single-unit independent stores and smaller chains are often unable to afford such equipment, and cannot make cost-effective use of it.²¹ In the warehouse, computer driven electronic data processing has resulted in "significant reductions in staff requirements."²² Higher levels of sales per person in chains are probably linked, to some extent, to electronic data processing.

Automated accounts receivable is another technological innovation that is used in the industry. The riskiest delinquent accounts are flagged and computer-typed collection notices are sent automatically. The system reduces employee hours in the accounts collection department.²³ Other technological advances include marking systems and security surveillance systems that aid in the prevention of shoplifting.

Employment

The number of employees in the department store industry has increased 45 percent, from 1.4 million in 1967 to 2.0 million in 1986, an average annual increase of 1.6 percent. Employee hours rose at the slower rate of 0.8 percent, as average weekly hours declined. Average weekly hours of nonsupervisory workers declined from 32.6 in 1967 to 28.2 in 1986, a result of an increase in part-time workers (often of school age) who work during weekends and evenings.

While the number of nonsupervisory workers has grown at an average annual rate of 1.8 percent from 1967 to 1986, the number of supervisory workers has declined 0.6 percent per year. (This trend accelerated after 1973, with the annual decline averaging 2.2 percent.) The decline in the supervisory work force is related, in part, to the large number of mergers and acquisitions among existing chains in which some managerial staff became redundant. The decline also results from the replacement of skilled supervisory sales staff with lower skilled workers.

Retaining experienced personnel remains a problem for all retail stores. Some studies show that retail employee turnover is as high as 60 percent per year.²⁴ The high turnover rate among nonsupervisory workers hinders gains in industry output per hour because new employees must undergo training and are not as productive during their breaking-in period.

A factor contributing to high employee turnover is the industry's low hourly earnings. Even though average hourly earnings of nonsupervisory employees were 9 percent above the total retailing average in 1986, earnings still were 48 percent below average hourly earnings of production workers in manufacturing industries. In addition, the trend toward more centralized management has clustered most managerial jobs at centralized corporate headquarters, so there

are fewer career opportunities within the stores themselves. The occupational mix is dominated by low-paying cashier, sales, and stock jobs (62 percent in 1986). For many employees, working in department stores is their first job, or it supplements income from other full-time employment.²⁵

The trend to reduce the work force is not universal in the industry. Some firms are using outside and in-house training to increase transaction size. There are also firms returning to commission sales.²⁶

A look ahead

Department store productivity increases in the near future will probably continue to reflect use of computer technology and electronic data processing. Automatic scanning devices in conjunction with point-of-sale technology are beginning to be used in the industry and are expected to become more widespread among larger chains.²⁷ The information obtained from electronic data processing is expected to be used further to refine product mix, and contribute to a trend toward new smaller stores. Such smaller stores have exhibited productivity improvement in terms of sales per square foot and, most likely, sales per employee hour.²⁸

The strong demand that spurred productivity growth in the last few years is not expected to be sustained. This is especially true in the all important apparel departments as, demographically, the number of teenagers, who drive fashion trends, is declining.²⁹ Demand for department stores may also be limited by increased competition from apparel specialty stores, "off-price" apparel stores, wholesale warehouse stores, and home shopping catalog stores.

Choice new locations of department stores, which spurred productivity gains in the past, are becoming scarce because of market saturation and the slowdown in the building of new shopping centers.³⁰ Department store chains are, therefore, becoming more conservative in terms of expansion and instead are using their resources to consolidate regional markets and upgrade and remodel to increase shopper traffic in existing stores.³¹

Recent trends toward more service in some segments of the industry are expected to continue. These services appeal to the more affluent consumers whose income have been boosted by increases in the number of working women and the number of two-worker households.³² This trend could exert downward pressure on measured productivity. □

FOOTNOTES

¹ All average annual rates of change are based on the linear least squares trends of the logarithms of the index numbers. The department store industry is designated as Standard Industrial Classification 5311. It includes retail stores carrying a general line of apparel, home furnishings, and housewares. These and other merchandise lines are normally arranged in separate sections or departments with accounting on a departmentalized basis. The departments and functions are integrated under a single management. The stores usually provide their own charge accounts, deliver merchandise, and maintain open stocks.

² A chain consists of four or more retail stores in a firm. Larger chains consist of 11 or more stores. In the department store industry, virtually all chains are corporately owned.

³ *U.S. Industrial Outlook* (U.S. Department of Commerce, 1980), p. 457.

⁴ Barry Bluestone, Patricia Hanna, Sarah Kuhn, and Laura Moore, *The Retail Revolution* (Boston, MA, Auburn House Publishing Co., 1981), p. 4.

⁵ Bluestone and others, *Retail Revolution*, p. 67.

⁶ "Retailing," *Standard and Poor's Industry Survey*, sec. 2, July 4, 1985, p. R115.

⁷ Based on family expenditure data from the BLS Consumer Expenditure Survey.

⁸ *U.S. Industrial Outlook* (U.S. Department of Commerce, 1975), p. 168.

⁹ *U.S. Industrial Outlook* (U.S. Department of Commerce, 1980), p. 459.

¹⁰ Total retail sales grew at an annual rate of 2.7 percent from 1980 to 1986, compared with 1 percent from 1973 to 1980. Real sales actually declined in 1981 and 1982, but grew strongly in the 1983-86 period.

¹¹ *U.S. Industrial Outlook* (U.S. Department of Commerce, 1984), pp. 48-49.

¹² "Third Party," *Stores*, September 1981, pp. 41-44.

¹³ A number of articles on cost and productivity appear in *Stores*, a magazine published by the National Retail Merchants Association. The

Association also published a series of articles in *Productivity in General Merchandise Retailing* in 1980 stressing the importance of productivity increases.

¹⁴ Bluestone and others, *Retail Revolution*, p. 64.

¹⁵ Bluestone and others, *Retail Revolution*, p. 29.

¹⁶ "Retailing," p. R116.

¹⁷ *U.S. Industrial Outlook* (U.S. Department of Commerce, 1972), p. 358.

¹⁸ Based on discussion with industry experts.

¹⁹ "Making it Work—Retail Technology," *Stores*, November 1980, p. 35; and "Retail Office," *Stores*, July 1980, pp. 49-54.

²⁰ Randy L. Allan, *POS Trends in the 80's* (New York, Touche Ross and Co., 1982).

²¹ Bluestone and others, *Retail Revolution*, p. 84.

²² Bluestone and others, *Retail Revolution*, p. 113.

²³ "Managing Receivables," *Stores*, April 1982, p. 72.

²⁴ "People Business," *Stores*, March 1981, p. 42.

²⁵ Bluestone and others, *Retail Revolution*, p. 84.

²⁶ "People Business;" and "Push for Productivity," *Stores*, January 1981.

²⁷ Discussion with industry experts.

²⁸ "An Introduction to Productivity in Retailing," in Robert E. Dewer, *Productivity in General Merchandise Retailing* (New York, National Retail Merchants Association, 1980), p. 9.

²⁹ "Retailing," pp. R115-R116.

³⁰ "Retailing," p. R121.

³¹ *U.S. Industrial Outlook* (U.S. Department of Commerce, 1987), p. 56-6.

³² "Retailing," p. R115.

APPENDIX: Measurement techniques and limitations

Indexes of output per employee hour measure changes in the relationship between the output of an industry and hours expended on that output. An index of output per hour is derived by dividing an index of output by an index of industry hours.

The preferred output index for retail trade industries would be obtained from data on quantities of the various goods sold by the industry, each weighted (multiplied) by the employee hours required to sell one unit of each good in some specified base period. This concept also embodies the services associated with moving the goods from the retail establishment to the consumer. Thus, those goods which require more retail labor are given more importance in the index.

Data on the quantities of goods sold usually are not available for trade industries, including department stores. Therefore, real output was measured by removing the effects of changing price levels from the current-dollar value of sales for the line items. Because an adjustment for changing price levels usually lowers the dollar value, such a series is usually referred to as a deflated value measure. Output measures based on deflated value have two major characteristics. First, shifts in sales within product lines can occur among products of different value which have the same unit labor requirements. Thus, a change can occur in the output per hour index even if the labor utilized to sell the merchandise does not change. Second, the sales level, both in current and constant dollars, reflects differences in unit values for identical products sold in different types of establishments. For example, the unit values associated with a product sold in a discount department store may be lower than the unit value associated with the same product sold in a conventional department store that provides a number of sales clerks as well as delivery service. The output measure, therefore, reflects changes in the level of service provided to customers, insofar as differences in unit values reflect

the difference in service among the various types of establishment.

In addition to the deflated value technique, the output measure for department stores was compiled by combining output from the various store departments using weights relating to labor importance (employee hours). This procedure results in an industry output index that is closer, conceptually, to the preferred output measure.

The index of hours for the department store industry is for all employees. As in all of the output per hour measures published by the Bureau of Labor Statistics, hours and employment are each considered homogeneous and additive. Adequate data are not available to weight the various types of labor separately.

The indexes of output per hour relate total output to one input—labor time. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effect of many factors such as changes in technology, capital investment, capacity utilization, store design and layout, skill and effort of the work force, managerial ability, and labor-management relations.

No explicit adjustments were made to the measures to take into account increases or decreases in some services provided to the consumer. With the growth of discount department stores, there has been a trend toward more self-service operations. This shifted some of the hours in retailing from employee to consumer. However, data are not available to measure the effect of this change. Adjustments for changes in product quality are made to the extent that changes in quality have been accounted for in the price indexes used to deflate the current-dollar value of sales.

The basic sources for the output series for this measure consist of the total sales data and sales by merchandise line reported by the U.S. Department of Commerce. The deflators were developed using Consumer Price Indexes published by BLS. The basic source for the all employee series consists of data on employment and hours published by BLS.

Productivity shows a decline in automotive repair shops

Output per hour of persons employed in these shops fell at an annual rate of 1.2 percent between 1972 and 1986, reflecting a larger increase in employee hours than in output

JOHN G. OLSEN AND RICHARD B. CARNES

Output per hour of all persons¹ in the automotive repair shop industry² decreased at an average annual rate of 1.2 percent between 1972 and 1986. During this period, productivity in the private nonfarm business sector rose at an annual rate of 0.8 percent. The overall productivity decline reflects a 3.0-percent average annual increase in output and a corresponding larger growth in all person hours of 4.3 percent. (See table 1.)

Despite increased efficiency in some specialty repair shops, overall productivity for the automotive repair shop industry has declined since 1972. Factors contributing to this decline include a large influx of new establishments and workers in the industry, a shortage of adequately trained mechanics, the introduction of more complex cars and trucks, as well as the effect of several recessions in the U.S. economy during the 1972-86 period.

The output per hour rates for automotive repair shops varied substantially from year to year. Since 1972, annual increases in productivity have occurred in 6 years, ranging from 0.5 to 8.7 percent. Declines in productivity occurred in 8 years, the largest in 1982 when output per hour dropped 6.3 percent.

The auto repair shop industry is affected by cyclical changes in the economy. During periods of economic contraction, output in the automotive repair shop industry slows

or falls, and productivity tends to decline. During an economic downturn, industry output may grow because of maintenance and repair expenditures on older motor vehicles, but be offset by declines in disposable income and new motor vehicle sales. This would slow the rate of growth in industry output or lead to a decline in output. Cyclical influences on the automotive repair shop industry can be seen by examining subperiod trends.

From 1972 to 1974, productivity in the automotive repair shop industry increased at an annual rate of 2.1 percent, as output rose 5.8 percent and all employee hours grew 3.7 percent. Reflecting a general downturn in the economy, productivity declined 5.6 percent in 1975, as output dropped 0.2 percent. Between 1975 and 1979, output per hour fell slightly, 0.6 percent per year, as hours (5.3 percent) grew faster than output (4.6 percent). The recession of 1980 and 1981-82 had a more adverse effect on the industry than the previous recession. From 1979 to 1982, productivity experienced its largest decline, dropping 4.2 percent per year, as output fell at an annual rate of 3.1 percent. Automotive repair shops shared in the economic recovery that began in 1983. Productivity grew 2.5 percent per year between 1982 and 1986, as output rebounded at a 9.0-percent annual rate and hours increased 6.3 percent per year.

Industry structure

The automotive repair shop industry consists of establishments primarily engaged in the repair of automotive tops,

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bodies, and interiors; repairing and retreading automotive tires; automotive painting and refinishing; general automotive repair; and specialized automotive repair, not elsewhere classified, such as fuel service (carburetor repair), brake relining, front-end and wheel alignment, exhaust system (muffler) repair, radiator repair, and glass replacement and repair. Automotive repair shops compete in a broad service and parts market. The automotive service market is heterogeneous in its structure, ranging from new car and truck dealers and self-service fleets to gasoline service stations and independent repair shops. In addition, a large number of motor vehicle owners perform some or all of their own repairs. Automotive repair departments maintained by establishments engaged in the sale of new automobiles are classified in retail trade, as are gasoline service stations (where sales of merchandise, including fuel, exceed repair receipts).

The automotive repair shop industry is characterized by a large number of small firms. In 1972, there were an estimated 127,203 establishments operating in the industry. By 1982, the industry had grown to 179,093 establishments. Almost half of these establishments had payroll in 1982. The number of paid employees in establishments with payrolls averaged 3.6 in 1972, 3.9 in 1977, and 4.1 in 1982. Many of these establishments are owned or operated by partners or sole proprietors. In 1982, partners and proprietors made up almost 80 percent of the ownership of all establishments and accounted for more than 60 percent of all persons in the industry.

In 1986, the industry generated \$32.0 billion in receipts with a work force of about 780,000. Small establishments accounted for the majority of industry receipts. More than 75 percent of all automotive repair shops with payrolls had sales of less than \$250,000 in 1982.

Output and demand

In spite of several economic downturns, overall output of the automotive repair shop industry increased 3.0 percent per year between 1972 and 1986. In comparison, over the same period, output for the private nonfarm business sector increased an average of 2.5 percent per year.

Industry output growth reflects, in part, increases in the number of motor vehicles in operation. Passenger cars in operation increased at an average annual rate of 2.0 percent between 1972 and 1986. The number of trucks in operation also increased over this period, growing 5.8 percent per year.³ An increase in the average age of cars and trucks also has contributed to the growth in output. The median age of passenger cars has grown steadily from 5.1 years in 1972 to 6.9 years in 1985. The median age of trucks grew from 6.0 years in 1972 to 7.6 years in 1985.⁴

The industry's output growth generally paralleled the trend for the overall economy. Between 1972 and 1979, the industry's output rose at an average annual rate of 3.9 percent. Output increased in 6 of the 7 years over this period,

Table 1. Indexes of output per hour of all persons and related data, automotive repair shops, 1972-86
[1977=100]

Year	Output per hour of all persons	Output per person	Output	Hours of all persons	All persons
1972	103.5	104.7	83.1	80.3	79.4
1973	104.0	107.5	88.6	85.2	82.4
1974	107.9	111.0	93.1	86.3	83.9
1975	101.9	103.0	92.9	91.2	90.2
1976	104.3	105.4	98.0	94.0	93.0
1977	100.0	100.0	100.0	100.0	100.0
1978	100.9	100.5	106.0	105.1	105.5
1979	100.4	101.2	111.9	111.4	110.6
1980	96.0	96.1	106.8	111.2	111.1
1981	93.6	92.2	103.0	110.0	111.7
1982	87.7	86.6	102.0	116.3	117.8
1983	86.2	85.8	108.4	125.8	126.4
1984	88.5	87.6	119.5	135.1	136.4
1985	96.2	95.1	138.6	144.1	145.7
1986	94.1	93.3	139.1	147.8	149.1
Average annual rates of change (in percent)					
1972-86	-1.2	-1.5	3.0	4.3	4.6
1981-86	0.9	1.0	7.5	6.5	6.4

falling only in 1975 with the downturn in the economy. In 1979-82, output declined an average of 3.1 percent per year. Recessionary conditions in 1980 and 1981-82 contributed to the weak demand experienced during this period. Reflecting the general economic recovery since 1982, output experienced a sharp turnaround, rising at a 9.0-percent annual rate from 1982 to 1986.

Auto repair shops have boosted their share of the automotive service and parts market during the last 10 years, increasing from 25 percent in 1976 to nearly 28 percent in 1985.⁵ New car dealers, who have enjoyed the largest share of the service and parts market, and gasoline service stations declined during this period. The percentage of sales of the automotive service and parts market (including tire sales) during 1985 was as follows: franchised new car dealers, 33 percent; automotive repair shops, 28 percent; gasoline service stations, 8 percent; tire, battery, and accessory dealers, 22 percent; mass merchandisers, 7 percent; and all others, 3 percent.

Between 1972 and 1986, the number of full service gasoline stations fell from 226,459 to 120,150, a 47-percent decline.⁶ Self-service stations have taken their place. Large corporations, chain organizations, and franchise operations are claiming some of the business that the full-service stations are giving up. Specialized auto repair shops have taken a large part of the muffler and brake repair businesses. In addition, "quick lube" shops are increasing their share of the oil change market.

The distribution of industry receipts by type of automotive repair shop showed little change between 1972 and 1982. In 1982, about 44 percent of all industry receipts were generated by general automotive repair shops, more than 26 percent by top and body repair shops, and almost 30 percent by other automotive repair shops. The distribution of establishments by type of operation, however, experienced a

slight change over this period. General automotive repair shops accounted for 61 percent of all establishments in the industry in 1982, compared with 56 percent in 1972. However, this group's share of total industry receipts declined slightly over this period, falling from 45 percent in 1972 to 44 percent in 1982. This trend reflects the continuing entry of small establishments into general automotive repair. Although top and body repair shops and all other automotive repair shops' share of total industry establishments dropped between 1972 and 1982, their proportion of total industry receipts increased slightly over this period. These trends reflect the growth of franchised operations among specialized auto repair shops.

Employment

Total employment in the automotive repair shop industry grew steadily from 415,700 in 1972 to 780,300 in 1986, at an average annual rate of 4.6 percent. In comparison, the private nonfarm business sector experienced a 2.1-percent rise in employment over the same period. The hours of all persons in the industry increased at a slightly lower annual rate of 4.3 percent because of a small drop in average weekly hours. The hours of nonsupervisory workers, for example, declined slightly from 39.9 in 1972 to 38.6 per week in 1986. Hourly earnings of nonsupervisory workers in automotive repair shops averaged \$8.17 in 1986, compared with \$8.76 for the total private economy and \$8.16 for the total service sector.

While the number of self-employed workers remains very high, establishments with paid employees have increased since 1972. Employees accounted for almost 60 percent of all persons in the industry in 1982, compared with 59 percent in 1977 and 56 percent in 1972. Self-employed workers dropped slightly, from more than 40 percent of all persons in 1972 to less than 38 percent in 1982. There was little change in the number of unpaid family workers; they accounted for about 3 percent of all persons in 1972, 1977, and 1982.

The decline in the number of full service gasoline stations has contributed to the large growth of employment in the industry between 1972 and 1986. Since the early 1970's, full service stations have declined in number, as oil companies have consolidated small stations into larger self-service facilities. As a result, the number of automotive repair shops has increased to absorb the former service station operators and repair services.

The industry's work force is dominated by persons in mechanic, installer, and repairer occupations, who made up almost 51 percent of total employment in 1984 (the latest year for which data are available).⁷ Within this occupational group, automotive and motorcycle mechanics represented the largest category, accounting for 27 percent of employment in the industry. Automotive body and related repairers, the next largest category, accounted for more than 16 percent of the industry work force. Bus and truck mechanics

and diesel engine specialists made up another 3 percent of employment.

Factors affecting productivity

One factor affecting productivity growth in the automotive repair shop industry is the small size of many of the shops. Small firms have limited resources in capital, personnel, and materials. Although there are little data on capital investment for this industry, it is clear that the small average size of establishments in the industry makes it difficult for the average firm to invest in new capital equipment, such as computerized diagnostic equipment. Automotive repair shops also have limited access to manufacturers training programs and data services.

The addition of more than 50,000 establishments and 200,000 workers to the industry between 1972 and 1982 has also influenced the movement of productivity over the period studied. The apparent ease of entry and exit from the industry has led to increases in the number of establishments and workers in the industry, even during periods of general economic recession. The large growth in employment, together with high separation rates for some occupations, has affected the overall experience level of workers in the industry. Garage- and service station-related occupations, which include some workers in the automotive repair shop industry, had high separation rates, as measured by the percent of workers leaving these jobs in 1981 and 1983.⁸ This influx of new firms and less experienced workers has contributed to the small, average size of industry establishments and the decline in output per hour during this period.

Another factor affecting productivity between 1972 and 1986 has been the introduction of more complex engineering in the design of cars and trucks. Automotive technology has changed significantly since the early 1970's. During the 1970's, advances in automotive engineering were concentrated in the areas of safety, emissions, and fuel economy. Although these changes included some improvements in serviceability, such as longer intervals between oil changes and ignition system tuneups, they have increased the complexity of many repair jobs. The downsizing of cars to reduce fuel consumption, along with the addition of numerous electronic components, has turned some routine maintenance jobs into major operations.

In the 1980's, the general trend has been toward the introduction of more subsystems of increasing sophistication and complexity. The increasing use of computer microprocessors in newer vehicles to control engine performance, transmission, and the suspension systems has also changed the complexity of repair work. According to a recent industry study, 83 percent of the mechanics surveyed indicated that newer cars are more difficult to repair than 10 years ago because their complexity makes it more difficult to pinpoint problems.⁹ The skill and equipment mix generally found in small automotive repair shops often are ill suited for such sophisticated diagnosis and repair work.

According to some automotive service industry analysts, a shortage of adequately trained mechanics also has affected industry productivity. Technological innovations have occurred so rapidly, particularly in automotive electronics, that it is difficult or impossible for many small repair shops to keep up with these changes. Small and medium sized repair shops often cannot afford to let mechanics take time off to learn the latest technology. As a result, worker skills are not keeping pace with new automotive technology.

Outlook for productivity

Long term prospects for demand in the overall automotive service industry should be good, as the automobile continues to play a key role in transportation. Future output growth will reflect further increases in the number of vehicles in operation and a modest rise in vehicle miles traveled. It is unclear, however, what share of the market will belong to the automotive repair shop industry. A smaller market share will reduce any opportunity for future productivity gain, especially for smaller operations unable to purchase needed capital equipment.

New automobiles are expected to continue to incorporate even more complex technology. Auto manufacturers, for example, plan to use onboard computers to chemically analyze oil, fuel, and radiator coolant, detect wear and tear in mechanical parts, and electronically readjust the engine to compensate. With the growth of computerized and fuel injected motor vehicles, new cars will require more sophisticated electronic diagnostic service.

Because of the shortage of mechanics with advanced training and the need to keep up with rapid technological innovations, some industry analysts foresee a decline in the

percentage of service work performed by auto repair shops and a growth in business for new car dealers and large chain stores. Some new computerized diagnostic equipment developed by auto manufacturers, for example, will only be available to authorized dealers. Another trend affecting industry output has been the lengthening of service contracts by new car dealers on new cars and trucks. These extended warranties may lower demand for some specialized auto repair shops, such as engine rebuilders. To improve productivity and to remain competitive, automotive repair shops need to invest in new equipment, and provide advanced training.

The occupational composition of the work force for the automotive repair shop industry is not expected to change significantly during the next decade. Based on projections by the Bureau of Labor Statistics, the proportion of mechanics, installers, and repairers is expected to increase from almost 51 percent of industry employment in 1984 to about 52 percent of industry employment in 1995. Within this occupational group, automotive and motorcycle mechanics are expected to grow from about 27 percent of industry employment in 1984 to nearly 29 percent in 1995. The share of employment among automotive body and related repairers is expected to fall slightly during this period. Administrative support occupations, including clerical, are projected to decline from 10 percent of industry employment in 1984, to about 9 percent of industry employment in 1995. This trend reflects, in part, a greater use of computers in the industry in the future. The availability of more affordable and more powerful personal computers has made the technology feasible for small shopowners. Among other functions, computers will be used to perform recordkeeping and administrative functions formerly done manually. □

FOOTNOTES

¹ All average rates of change are based on the linear least squares trends of the logarithms of the index numbers.

² The automotive repair shop industry is classified as SIC 753 in the 1972 Standard Industrial Classification Manual and its 1977 supplement issued by the U.S. Office of Management and Budget.

³ Based on statistics published in *Ward's Automotive Yearbook* (Detroit, MI, Ward's Communications, Inc., 1987).

⁴ *Motor Vehicle Facts and Figures, 1986* (Detroit, MI, Motor Vehicle Manufacturers Association, 1986).

⁵ *NADA Data for 1986* (McLean, VA, National Automobile Dealers Association, 1986), p. 10.

⁶ Based on statistics published in *National Petroleum News Factbook, 1987*, p. 123.

⁷ Bureau of Labor Statistics, data for 1984-95, National Industry Occupational Matrix.

⁸ *Occupational Projections and Training Data*, Bulletin 2206 (Bureau of Labor Statistics, 1984), p. 10; and *Occupational Projections and Training Data*, Bulletin 2251 (Bureau of Labor Statistics, 1986), p. 18.

⁹ "Mechanics Struggle to Keep Up With Engineering Advances," *The Washington Post*, June 14, 1987, p. D7.

APPENDIX: Measurement techniques and limitations

Indexes of output per hour of all persons measure the change in the relation between the output of an industry and the hours expended on that output. An index of output per hour is derived by dividing an index of output by an index of hours.

The preferred output index for personal service industries would be obtained from data on the quantities of services provided by the industry. The quantity of each type of service provided would be weighted (multiplied) by the time required to provide one unit of each type of service in some

specified base period. Thus, services that require more labor time would be given more importance in the output index than services that require less.

Such data, however, are not available for the automotive repair shop industry. Real output was estimated by removing the effects of changing prices from the current-dollar value of industry receipts. Because an adjustment for price changes usually lowers the dollar value, such a series is referred to as a deflated value measure.

The index of hours for automotive repair shops is for all persons—that is, the index represents hours for paid employees, partners and proprietors, and unpaid family workers. As in all of the output-per-hour measures published by the Bureau of Labor Statistics, hours and employment are considered homogeneous and additive. Adequate informa-

tion for weighting the various types of labor separately are not available.

The indexes of output per hour do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect many interrelated influences such as changes in technology, capital investment, design and layout of workplaces, skill and effort of the work force, and managerial ability.

The output measure is derived from data on annual receipts published by the Bureau of the Census. The all-persons-hour measures are derived from data on employment and hours originated by the Bureau of Labor Statistics and supplemented by data reported by the Internal Revenue Service, and from special tabulations compiled for the Bureau of Labor Statistics by the Bureau of the Census.

Exploding a myth

The first specialized works on occupational disease based on the methods of modern science and medicine appeared in the 1500s, written by Philippus Aureolus Theophrastus Bombastus von Hohenheim, called Paracelsus, and Georg Bauer, known as Agricola. Paracelsus, the Basel town physician, wrote a treatise on miners' diseases, published 27 years after his death, in which he described cases of job-related tuberculosis and the effects of "choke damp," excessive amounts of carbon dioxide. He was one of the first to recognize clearly that certain maladies were associated with certain occupations. He should have. His own life was shortened by the heavy metal poisoning he sustained while investigating mines and metal refineries.

Agricola was a town doctor in the heart of the mining center of Central Europe. He knew of mining communities in the Carpathian Mountains where women expected to be widowed half-a-dozen times during their lifetimes. Immersed in the everyday problem of staying alive in the mines, he advised workers to wear protective clothing and devised a practical ventilation system that many mines adopted. His contribution is best appreciated by remembering that at the time, death from mine gases was still generally attributed to "a blast of breath from a subterranean demon."

—U.S. DEPARTMENT OF LABOR

Protecting People at Work: A Reader in Occupational Safety and Health
(Washington, Superintendent of Documents, 1980), pp. 18–19.

Productivity gains lukewarm for makers of nonelectric heating equipment

Increase in output per hour, aided by new technology in metalworking but moderated by stagnant demand, averaged only 1.6 percent a year over the 1972-85 period

JOHN W. FERRIS AND VIRGINIA L. KLARQUIST

Productivity, or output per employee hour, in the nonelectric heating equipment industry rose at an average annual rate of 1.6 percent from 1972 to 1985.¹ For all manufacturing, the rate of increase was 2.2 percent. The growth in productivity reflected a negligible decline in output of 0.1 percent per year and a decline in employee hours of 1.7 percent. (See table 1.) Contributing to the rise in productivity for the industry were advances in metalworking, improved plant layout, and increases in capital expenditures per employee.

The productivity trend for the 13-year period examined here was marked by much volatility, rising in 7 years and falling in 6. In general, productivity movements have been influenced by changes in output. For the 1972-76 period, productivity declined at a rate of 0.8 percent, as output dropped 7.2 percent annually. During the 1976-80 period, productivity increased dramatically, rising 2.9 percent a year, as output rebounded to a 10.8-percent annual rate of growth. Since 1980, productivity has varied with underlying movements in output while registering a slight increase of 0.1 percent per year. The following tabulation shows average annual rates, in percent, for periods between 1972 and 1985.

	<i>Output per employee hour</i>	<i>Output</i>
1972-85	1.6	-0.1
1972-76	-.8	-7.2
1976-80	2.9	10.8
1980-85 .....	.1	-4.3

Industry description

The nonelectric heating equipment industry comprises establishments primarily engaged in the manufacture of heating equipment, including gas, oil, and stoker coal-fired equipment for the automatic use of gaseous, liquid, and solid fuels. Included in the products of this industry are domestic heating stoves, boilers, floor and wall furnaces, solar energy collectors, and oil burners. Production is capital intensive and basically involves the cutting and forming of metal, as well as the welding, brazing, and soldering of components.

The nonelectric heating equipment industry is made up of more than 900 establishments generally characterized as small to medium in size. In recent years, the small to medium establishments have grown in number and relative importance.

In 1982, companies with fewer than 50 employees accounted for 86 percent of all establishments, 29 percent of employment, and 25 percent of sales. In 1972, by compari-

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son, these small companies had accounted for only 70 percent of establishments, 11 percent of employment, and 12 percent of shipments.

For establishments with more than 249 employees, declines were dramatic. From 1972 to 1982, the share of these large establishments dropped from 7 percent to 2 percent of all establishments, while employment fell from 51 to 23 percent and sales declined 49 to 30 percent. Although nonelectric heating establishments could be found in every region of the United States, the leading States in employment were Pennsylvania, California, New York, and Illinois. These States accounted for approximately 35 percent of the industry's employment.

Output and demand

The growth in output over the entire 1972-85 period has been negligible in the nonelectric heating equipment industry, although output movements have varied significantly from time to time. Industry production has been primarily influenced by residential construction.²

From 1972 to 1976, output of the nonelectric heating equipment industry declined at an average annual rate of 7.2 percent. The decrease in demand in this industry was largely a result of a slump in the homebuilding industry as a downturn in housing starts led to a subsequent reduction in the demand for new heating units. Housing starts fell from 2.4 million units in 1972 to 1.5 million units in 1976. The deepest slump occurred in the multifamily homebuilding industry. Rising costs of land, labor, materials, and money, together with high equity requirements and the prospects of low returns in rents discouraged builders from adequately attempting to meet the demand for rental housing.³

The late 1970's were years of expansion for the nonelectric heating equipment industry. From 1976 to 1980, output grew 10.8 percent annually as the industry responded to the heating needs of newly built homes. Although failing to reach the peak level of 1972, housing starts increased in the late 1970's and leveled off at 2.0 million units.

Since 1980, production in the nonelectric heating equipment industry has fluctuated with decreases in output in 1981, 1983, and 1985, and increases in output in 1982 and 1984. The underlying causes of the volatility in demand for heating units has been the slowdown in the homebuilding industry in the 1978-82 period, the heating needs created by a 12-percent rise in the value of new construction of nonresidential buildings in 1979 (in constant dollars), and a sharp 60-percent advance in housing starts in 1983. However, with more than three-fourths of the recent addition to the Nation's housing stock occurring in the warm climates of the South and West, the demand for heating equipment has been weak.⁴

Product mix and relative fuel prices

In addition to residential construction, changes in relative fuel costs and replacement demand have also influenced the

demand for heating equipment.⁵ Although demand varied widely for the products of the nonelectric heating equipment industry during the 13 years covered by this study, the middle 1970's were years of growth for the industry. Rising sales of gas-fired products, the introduction of new products, and increased spending on new plant and equipment occurred at the same time that productivity was improving.

The Arab oil embargo led to a sharp rise in the price of oil in the early 1970's. Manufacturers of floor and wall furnaces felt the change in the relative prices of oil and gas when the number of gas-fired floor and wall furnaces shipped in 1976 rose 21.8 percent over 1975, while shipments of oil-fired floor and wall furnaces dropped 22 percent. Although there were some conversions from oil to other fuels, it was not until 1978 and the wide availability of natural gas after a decade of curtailment that the mass conversions began.⁶ The market for domestic heating stoves boomed in 1979 with the shipments of gas stoves, 55.4 percent higher than the number of units delivered a year earlier. From 1977 to 1982, gas-fired cast iron boiler shipments grew by 73.8 percent, while boilers fired by other fuels fell 30.3 percent. Depressed by high oil prices and few housing starts in the Northeast, shipments of residential oil burners tumbled 39.7 percent between 1978 and 1982.

By the late 1970's and early 1980's, inflationary activity in oil prices was joined by rapidly rising gas and electric prices, causing consumers to look at alternative fuels such as wood, kerosene, and solar power, as ways to conserve energy. In 1972, 1.3 million domestic heating stoves (representing 8 percent of industry receipts) were shipped, of which 68 percent burned gas. By comparison, in 1985, manufacturers shipped 1 million stoves (representing 15

Table 1. Productivity and related indexes for the nonelectric heating equipment industry, 1972-85
[1977=100]

Year	Output per employee-hour				Employee-hours		
	All employees	Production workers	Nonproduction workers	Output	All employees	Production workers	Nonproduction workers
1972	85.5	86.3	83.7	103.5	121.0	120.0	123.7
1973	85.0	85.0	85.1	109.1	128.3	128.3	128.2
1974	78.9	81.2	73.3	94.5	119.8	116.4	129.0
1975	80.4	85.4	69.2	86.6	107.7	101.4	125.2
1976	84.5	88.3	75.4	80.0	94.7	90.6	106.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	101.6	101.6	101.5	113.2	111.4	111.4	111.5
1979	95.8	96.8	93.2	115.9	121.0	119.7	124.4
1980	99.7	102.6	92.4	124.2	124.6	121.1	134.4
1981	94.6	103.7	76.2	96.5	102.0	93.1	126.7
1982	102.3	114.0	79.9	100.7	98.4	88.3	126.0
1983	93.2	100.6	77.4	93.4	100.2	92.8	120.6
1984	102.0	110.3	84.6	95.6	93.7	86.7	113.0
1985	97.7	102.9	85.7	92.9	95.1	90.3	108.4
Average annual rates of change							
1972-85	1.6	2.2	.3	-.1	-1.7	-2.2	-.4
1972-76	-.8	.5	-4.1	-7.2	-6.4	-7.7	-3.3
1976-80	2.9	2.7	3.4	10.8	7.7	7.9	7.2
1980-85	.1	.2	-.3	-4.3	-4.4	-4.6	-4.1

percent of industry receipts), of which 62 percent burned wood, while only 17 percent used gas.

Although used in Florida as early as the 1920's, solar energy caught the interest of consumers in the middle 1970's. In 1974, the first year for which data are available, manufacturers shipped 1.3 million square feet of solar paneling. Increasing at an impressive average annual rate of 43.4 percent for 7 years, sales peaked at 20.1 million square feet of paneling in 1981. From 1981 to 1984, solar paneling shipments declined 6.9 percent per year.

Costly repairs of heating equipment and high utility bills opened up a whole new market for the nonelectric heating equipment industry in the early 1980's. Consumers developed a willingness to pay more for higher efficiency, beginning with heating units using less energy in new homes, and subsequently, using more efficient units to replace inefficient ones in good working order. In recent years, an estimated 80 percent of residential oil burners shipped have been retention head or other energy efficient units installed to replace burners using excessive amounts of energy. Much of the boiler market is also for replacement units.⁷

Employment and hours

Employment in the nonelectric heating equipment industry numbered 24,000 in 1985, having fallen at a rate of 1.6 percent per year, from the 1972 level of 30,900. Employee hours declined at a slightly faster 1.7-percent average annual rate. The decrease in industry employment was larger for production workers than for nonproduction workers. Between 1972 and 1985, production worker jobs declined 25.9 percent, while nonproduction worker jobs fell 13.5 percent.

Over the period studied, trends in employee hours displayed patterns of expansion and contraction similar to those noted for output. From 1972 to 1976, employee hours fell at an average annual rate of 6.4 percent. They rose sharply from 1976 to 1980, but between 1980 and 1985, employee hours again declined at an annual rate of 4.4 percent.

Production workers accounted for 68 percent of the nonelectric heating equipment industry work force in 1985, compared with 71 percent in 1972. Although data on the employment of women, and the skill composition of the work force are not available for the industry, data are available for the plumbing and heating equipment industry to which the nonelectric heating equipment industry belongs. (The nonelectric heating equipment industry represents about one-half of the work force of the plumbing and heating equipment industry.)⁸ In the plumbing and heating equipment industry, women composed 25 percent of the industry employment in 1985, compared with 18 percent of industry employment in 1972. The proportion of female employees found in the plumbing and heating equipment industry is similar to that in the total durable goods industry.

Skill composition of the work force of the plumbing and heating equipment industry differs from that for manufactur-

ing as a whole. In 1984, operatives and assemblers accounted for 42 percent of industry employment, compared with 35 percent for all manufacturing. Managerial, technical, and professional personnel composed 18 percent of the industry work force, versus 21 percent of all manufacturing employment. Craft and related workers made up 13 percent of industry employment, compared with 15 percent for all manufacturing. However, administrative, sales, and support staff accounted for 17 percent of both industry and all manufacturing employment.

Average hourly earnings in the nonelectric heating equipment industry rose from \$3.61 in 1972 to \$8.52 in 1985. Hourly wages were somewhat higher in durable goods manufacturing, registering \$4.07 in 1972 and \$10.10 in 1985.

Investment in plant and equipment

Measured in constant dollars,⁹ the nonelectric heating equipment industry's capital expenditures declined slightly at an average annual rate of 0.2 percent from 1972 to 1985. In contrast, real capital spending of all manufacturing industries rose 2.4 percent annually between 1972 and 1985.

The largest decline occurred from 1972 to 1976 when investments in plant and equipment by firms in this industry fell at an average annual rate of 17.9 percent. During the same years, all manufacturing industries increased their capital expenditures 4.8 percent per year. From 1976 to 1980, however, capital spending rebounded in the industry, growing 15.4 percent annually. After 1980, capital spending slowed throughout the manufacturing segment of the economy and fell 0.3 percent per year in the nonelectric heating equipment industry.

While real capital expenditures declined slightly in the nonelectric heating equipment industry, there was an increase in real capital spending per employee. Real capital expenditures per employee in the industry rose 1.4 percent per year from 1972 to 1985. For all manufacturing establishments, the comparable figure was 2.4 percent. From 1972 to 1976, capital spending per employee by the nonelectric heating equipment industry fell at an average annual rate of 12.5 percent. From 1976 to 1980, industry capital expenditures per employee grew at an average annual rate of 6.7 percent, faster than the 3.2-percent growth rate registered by all manufacturing industries. This was also the period of greatest productivity growth experienced by the industry. Capital spending per employee continued to rise in the 1980's.

Technology

Productivity has been aided by improvements in metalworking equipment which have taken place in the sheet metal operations of the nonelectric heating equipment industry.¹⁰ The broadest improvement has occurred in metal fabrication. The straightening, cutting, and bending of rolled steel previously performed by manual labor is increasingly being done by machinery. The basic metalworking equip-

ment is the production press which makes use of power-operated clamps to close one or more dies at a proper speed and pressure. The dies with which a press is equipped shear or bend the sheet metal forming the desired shape. The metal is generally worked cold. The die may be single purpose, as when a workpiece is simply cut or shaped, or it may be progressive. Progressive dies, consisting of multiple work stations, subject the workpiece to several sequential strokes or punches. In such operations, the steel is usually fed automatically from coils through the multiple work stations as a continuous ribbon of material up to the last station of the die, where the part is sheared off. The installation of labor-saving progressive dies is just beginning to take place in the more advanced and larger shops in the industry. Manual feeding of steel remains prevalent in the smaller shops.¹¹

However, the nonelectric heating equipment industry is characterized by a large number of small establishments, utilizing a sizable inventory of older dies.¹² These older dies must be bolted into the press and transported by crane or forklift. While the small shops in the industry may not have had the resources to install progressive dies in the production process, they have been able to raise labor productivity by taking advantage of more modest improvements in metalworking.

Some shops have raised productivity by improving the punching of sheet metal. Previously, templates were conventionally affixed to the punch press. Presently, computer taped instructions are fed to the press, speeding production and ensuring greater quality control in the finished shape. Another improvement has been the adoption of a multiple spindle drill by some shops. This high capacity drill is able to bore multiple holes through several planes of sheet metal in one operation. Productivity in many shops has been increased by replacing stick welding with automatic wire-feed welding. In addition to improvements in metalworking technology, reorganization of floor space has boosted productivity in some of the establishments of the nonelectric heating equipment industry.

Age of equipment

Despite the technological advances described here, the nonelectric heating equipment industry retains a large investment in older machinery that has been rebuilt many times. According to the most recent *American Machinist* inventory of metalworking equipment, taken in 1983, 28 percent of the metalcutting and 16 percent of the metalforming tools used in the plumbing and heating equipment industry were less than 10 years old.¹³ In 1973, the proportion of tools under 10 years of age was 24 percent for metalcutting tools and 23 percent for metalforming tools.¹⁴ The industry has reduced the age of its metalworking equipment, increasing the proportion of newer metalcutting tools between 1973 and 1983. Although the proportion of newer metalforming equipment has declined, two observations should be noted.

First of all, industry metalcutting tools outnumbered metalforming tools by more than 2 to 1 in 1973, and continued to do so in 1983. Secondly, metalforming tools tend to have a longer life than metalcutting tools. Thus, they need to be replaced less often.

Included in the metalworking equipment under 10 years of age are increased numbers of numerically controlled machine tools. The efficiency of the plumbing and heating equipment industry's metalworking equipment has been augmented by the rise in the number of numerically controlled machine tools. In 1983, numerically controlled machine tools accounted for 7 percent of the metalcutting tools and 9 percent of the metalforming tools that were under 10 years old. In 1973, the corresponding figures were 2 percent and 2.5 percent. The percentage increase in numerically controlled tools understates the increase in the output capabilities of these machine tools. The *American Machinist* cites the "vastly increased productivity of NC [numerically controlled] machines as compared with their manually controlled equivalents."¹⁵

The higher end of the age distribution of metalworking equipment shows almost no change in the proportion of older metalworking equipment in the industry. The share of metalcutting machine tools 20 years or older rose from 41 percent in 1973 to 42 percent in 1983. The proportion of metalforming equipment 20 years or older remained unchanged at 43 percent between 1973 and 1983. Furthermore, the older tools cannot be readily judged inefficient, because the *American Machinist* inventory does not take into account the retrofitting of older machines with up-to-date components and control devices.¹⁶

The number of machine tools in all metalworking industries declined from more than 15 per 1,000 persons in the U.S. population in 1973 to less than 10 per 1,000 persons in 1983. The *American Machinist* states that "this represents in part the greater productivity of machine tools, in part the simplification of design of many products, so that less machining is required."¹⁷ This statement also applies to the industry studied here. Between 1973 and 1983, the number of machine tools in the industry fell by more than a third, and capacity utilization rates in the nonelectric heating equipment industry delined. During this same period, the output of the nonelectric heating equipment industry remained virtually unchanged, indicating a substantial rise in the output capability of its metalworking equipment.

Outlook

Equipment. Moderate improvement in productivity is indicated for the nonelectric heating equipment industry.¹⁸ Diffusion of the more efficient metalworking machinery and metal fabrication techniques throughout the industry is far from complete. Furthermore, competition with foreign manufacturers may force domestic producers of heating equipment to look for ways to improve productivity. In 1972, less than 1 percent of the new supply (domestic production plus

imports) of nonelectric heating equipment in the United States was imported. By 1981, the latest year for which data are available, imports had risen to more than 7 percent of the new supply of nonelectric heating equipment. During the same years, the percent of domestic production exported changed little, hovering around 6 percent.¹⁹

Numerically controlled machine tools are expected to become more widely used in the nonelectric heating equipment industry, either as replacements of obsolete equipment or through retrofitting of older equipment. Numerical control enhances managerial control by predetermining and coding every stage of machining onto a control tape. Managers can plan more accurately such operations as machine loading and shop scheduling. Numerically controlled tools can produce parts with greater precision and uniformity, saving machine time and minimizing scrap losses.

Further into the future of the industry may be the installation of computer numerical control machine tools. Software advances make it possible for a computer to convey numerical data directly to a machine control unit, eliminating the problem of constant redoing of the control tape of numerically controlled tools.

Going beyond computer numerical control tools are computer-aided design and computer-aided manufacture systems. These systems use computer-controlled methods to unite several technologies. Computers are used in developing designs of products, guiding workpieces among machines on computer controlled material handling systems, and directing numerically controlled machine tools.²⁰

The major reason for the lack of diffusion of the newer technologies throughout the nonelectric heating equipment industry is expected to be the low level of demand for many of the industry's products. The overall weakness and volatility of demand for the industry's products may make the risk of investment too great, particularly for the many small shops.

Employment. The skill composition of the work force of the plumbing and heating equipment industry is not expected to change much over the next decade. Based on Bureau of Labor Statistics projections, the proportion of craft and related workers and the proportion of operatives and assemblers are expected to remain unchanged. Managerial, technical, and professional personnel are projected to grow from 18 percent of industry employment in 1984 to 19 percent of industry employment in 1995. The proportion of the industry work force employed as administrative, sales, and support staff is expected to fall from 17 percent in 1984 to 16 percent in 1995.

Average labor costs in the industry have fallen from 33 to 27 percent of total costs during the period of this study, and this trend is expected to continue. Projections indicate that the plumbing and heating equipment industry will have an increased reliance on managers and engineers in designing and monitoring more efficient production processes.²¹ One industry source predicts that the machine operator of today will become a manager of several machines in the future. □

— FOOTNOTES —

¹ The nonelectric heating equipment industry is designated by the Office of Management and Budget as SIC 3433 in the *Standard Industrial Classification Manual, 1972*. This industry comprises establishments primarily engaged in the manufacturing of heating equipment including gas, oil, and stoker coal fired equipment for the automatic utilization of gaseous, liquid, and solid fuels. Products include cast iron heating boilers, cast iron radiators, cast iron convectors, domestic heating stoves, steel heating boilers, floor furnaces, wall furnaces, and solar energy collectors. Also found among the primary products of the industry are duct furnaces, unit heaters, infrared heaters, mechanical stokers, oil burners, gas burners, heat transfer coils, range boilers, expansion tanks, hot water storage tanks supplied by separate heaters, unit ventilators, and nonelectric prefabricated metal fireplaces. Excluded from this industry are establishments primarily engaged in the manufacturing of electric heating equipment, warm air furnaces, cooking stoves, industrial process furnaces, industrial process ovens, industrial, power and marine boilers.

Average annual rates shown in the text and tables are based on the linear least squares trend of the logarithms of the index numbers. The indexes for productivity and related variables are updated annually, and published in *Productivity Measures for Selected Industries and Government Services*, Bulletin 2296 (Bureau of Labor Statistics, November 1987).

² "Statistical Panorama," published each April by the *The Air Conditioning, Heating, and Refrigeration News*.

³ "The Homebuilders Clutch at Hope," *Business Week*, February 2, 1976, pp. 14-15.

⁴ U.S. Department of Commerce, Bureau of the Census, Construction Reports, Series C20 and C30.

⁵ "Statistical Panorama".

⁶ *Ibid.*, and industry sources.

⁷ *Ibid.*, and industry sources.

⁸ Figures cited in this section are based on data developed by the Bureau of Labor Statistics.

⁹ Capital expenditures were deflated by the implicit price deflator for producers' durable equipment, as published in *The Economic Report to the President*, transmitted to the Congress, January 1987, p. 248, table B3.

¹⁰ Industry sources. See also Horst Brand and Clyde Huffstutler, "Productivity in making air conditioners, refrigeration equipment, and furnaces," *Monthly Labor Review*, December 1984, pp. 11-17.

¹¹ Industry sources. See also Horst Brand and Clyde Huffstutler, "Trends in labor productivity in metal stamping industries," *Monthly Labor Review*, May 1986, pp. 13-20.

¹² Industry sources.

¹³ "The 13th American Machinist Inventory of Metalworking Equipment 1983," *American Machinist*, November 1983, pp. 113-144.

¹⁴ "The 11th American Machinist Inventory of Metalworking Equipment 1973," *American Machinist*, October 29, 1973, pp. 143-166 and "Corrections to the 11th Inventory Summary," *American Machinist*, November 26, 1973, p. 58.

¹⁵ "The 11th . . . Inventory of Metalworking Equipment," p. 162.

¹⁶ Brand and Huffstutler, "Productivity in making air conditioners, refrigeration equipment, and furnaces," p. 14.

¹⁷ "The 13th . . . Inventory of Metalworking Equipment," p. 123.

¹⁸ The Office of Economic Growth and Employment Projections of the Bureau of Labor Statistics has projected a 2.6 percent annual growth rate for productivity in the plumbing and heating equipment industry for 1985–2000.

¹⁹ Figures cited in this section are based on data developed by the Bureau of Labor Statistics.

²⁰ Industry sources. See also A. Harvey Belitsky, "Technology and Labor in Metalworking Machinery," *Technology and Labor in Four Industries*, BLS Bulletin 2104 (Bureau of Labor Statistics, 1982) and "Adopting Factory Automation," *American Machinist*, December 1985, pp. 88–90.

²¹ Figures cited in this section are based on data developed by the Bureau of Labor Statistics.

APPENDIX: Measurement techniques and limitations

Indexes of output per employee hour measure changes in the relation between the output of an industry and the employee hours expended on that output. An index of output per employee hour is derived by dividing an index of output by an index of industry employee hours.

The preferred output index for manufacturing industries would be obtained from data on quantities of the various goods produced by the industry, each weighted (multiplied) by the employee hours required to produce one unit of each good in some specified base period. Thus, those goods which require more labor for production are given more importance in the index. Often, however, as an alternative, unit value weights are used when unit labor requirement weights are not available.

Because neither unit labor nor unit value weights are available for all of the industry's products, an alternative technique was used to derive the output index for this industry. Therefore, real output for the industry was estimated by a "deflated" value technique. Changes in price levels were removed from current-dollar values of production by means of appropriate price indexes at various levels of subaggregation for a variety of products in the group. To combine segments of the output index into a total output measure, employee hour weights relating to the individual segments

were used, resulting in an output index that is conceptually close to the preferred output measure.

The annual output index series derived from the earlier discussed deflated value technique was then adjusted (by linear interpolation) to the index levels of the "benchmark" output series. This benchmark series (also utilizing the deflated value technique) incorporates more comprehensive but less frequently collected economic census data.

The indexes of output per employee hour relate total output to one input—labor. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effects of factors such as changes in technology, capital investment, capacity utilization, plant design and layout, skill and efforts of the the work force, managerial ability, and labor-management relations.

The average annual rates of change presented in the text are based on the linear least squares trend of the logarithms of the index numbers. Extensions of the indexes will appear annually in the BLS bulletin, *Productivity Measures for Selected Industries and Government Services*. A technical note describing the methods used to develop the indexes is available from the Office of Productivity and Technology, Division of Industry Productivity and Technology Studies.

Productivity in industrial inorganic chemicals

Output per hour improvements were retarded by slack demand; economies of scale could not be fully exploited, but cutbacks of less efficient plants, together with technical advances, bolstered productivity levels

HORST BRAND AND ZIAUL Z. AHMED

As measured by output per hour, productivity in the inorganic chemicals industry remained virtually unchanged between 1972 and 1986.¹ By comparison, output per hour in manufacturing, as a whole, rose at an average annual rate of 2.7 percent over the period. Neither output of the industry nor employee hours changed significantly over the 1972–86 timespan—the long-term trends were essentially flat.

The absence of any long-term improvement in productivity did not characterize all of the industry's components. In the manufacture of alkalis (mostly caustic soda) and chlorine, productivity rose 3.2 percent a year, reflecting a decline in output and an even greater decline in employee hours. In the manufacture of inorganic pigments, productivity improved at an 0.9-percent annual rate; here, too, the long-term gain resulted from receding output and hours. In the largest group of inorganic chemicals—including most basic or commodity and large numbers of miscellaneous chemicals—productivity declined slightly, by 0.2 percent a year. Here, output rose, as did employee hours, if at a somewhat higher rate than output.

The inorganic chemicals industry converts certain nonfuel minerals and gaseous fluids found in the atmosphere into specifically formulated mixtures, generally used as intermediates in the production of final goods. One characteristic, particularly of large plants, is continuous processing, and relatively “very little direct labor (is) used” in the industry.³ Value added per production worker has been roughly twice

that for all manufacturing, and the ratio of fixed assets to employment has been 3 to 4 times as high, bespeaking the capital intensity of the industry.⁴

The longer term trend in the industry's productivity exhibited two phases. Between 1972 and 1979, productivity grew at an average annual rate of 1.2 percent, with output rising at a rate 2½ times that of employee hours. Capacity utilization rose, hitting a high of 84 percent in 1979. However, from 1979 to 1986, productivity, although marked by sharp year-to-year swings, slowed to 0.9 percent a year with both output and employee hours falling slightly. Capacity utilization receded to as low as 62 percent.⁵

The following tabulation indicates the productivity trend and its phases for the industry as a whole and for its components (see also tables 1 to 4):

	<i>Average annual rates (percent)</i>		
	1972–86	1972–79	1979–86
Inorganic chemicals	0.3	1.2	0.9
Alkalies and chlorine . .	3.2	.4	7.8
Inorganic pigments . . . .	.9	-1.7	4.4
Other basic and miscellaneous inorganic chemicals	-2	2.0	-1.8
All manufacturing	2.7	1.9	3.5

NOTE: In this and the following tabulations, inorganic chemicals exclude government-owned plants and include industrial gases, not shown separately. “Other” inorganic chemicals is a category “not elsewhere classified” by the Bureau of the Census.

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As the tabulation suggests, the productivity performance of the industry was dominated by the "other basic and miscellaneous inorganic chemicals" group, which accounted for two-thirds of total industry employment. During the 1972-79 period, the comparatively weak showing of the alkalis and chlorine and of the industrial pigments industries contrasted with the improvement in that larger group; the reverse occurred during the subsequent timespan.

Year-to-year swings in output per hour in the industry ranged widely, between a drop of 17 percent (in 1972) and a spurt of nearly 13 percent in 1984. Year-to-year losses in productivity were related to output declines accompanied by lesser declines, or even increases, in hours. This pattern was especially marked by the "other basic and miscellaneous inorganic chemicals" group, whose volatility exceeded the overall industry average. Here, year-to-year movements ranged from a drop of 21 percent (in 1980) to a gain of 12 percent (in 1984).

In 1986, the industry's productivity ran 12 percent above 1972, but had not regained the peak of 112.2 attained in 1979. The "other" group's productivity still ran 12 percent below its 1979 high. By contrast, output per hour in inorganic pigments had climbed 16 percent above its previous high in 1974; in alkalis and chlorine, the 1986 productivity level had soared 56 percent above the earlier (1980) peak.

Demand and output

Inorganic chemicals "embrace all substances, except hydrocarbons and their derivatives" (that is, petroleum, coal, and natural gas.) Petroleum and natural gas are the fundamental feedstocks of organic chemicals and of such products as plastics. Inorganic chemicals often enter as intermediates in the production of organic chemicals.⁶ The inorganic chemicals industry generally obtains its raw materials from minerals other than fuels, and from fluids (including the atmosphere and its gases). Together with many organic chemicals, inorganic chemicals are used throughout manufacturing as intermediates, the total value of their intermediate use being exceeded only by petroleum and natural gas, and petroleum refining.⁷ The end uses of the more important inorganic chemicals are listed in exhibit 1.

Between 1972 and 1986, there was little change in output of inorganic chemicals, but its long-term trend, like that of productivity, displayed two distinct patterns. Between 1972 and 1979, output rose at an average annual rate of 2 percent; thereafter it declined by 0.3 percent a year, reflecting the cyclical downswing of the early 1980's. Toward the mid-1980's, output recovered but did not reach the high levels of the late 1970's. The "other basic and miscellaneous inorganic chemicals" group grew strongly between 1972 and 1979 (6.4 percent annually), but their output trend reversed subsequently, with the 1979-86 span witnessing a 1.8-percent annual drop. The findings are summarized in the following tabulation:

Average annual rates (percent)

	1972-86	1972-79	1979-86
Inorganic chemicals	-0.1	2.0	-0.3
Alkalis and chlorine ..	-2.7	-6.0	7.9
Inorganic pigments	-2.0	-4.2	1.0
Other basic and miscellaneous inor- ganic chemicals	1.4	6.4	-1.8

The break in the industry's output trend in 1979 parallels a break in the output measures for some major selected industries which are users of inorganic chemicals, and for which the BLS calculates the measures.⁸ For example, output of steel, a large-scale user of such industrial gases as oxygen, and which had been stable during the earlier (1972-79) period, declined by 6 percent annually over the later one (1979-85). Soap and detergent production, an important outlet for phosphates, having risen at close to 2.0 percent per year earlier, receded by 1.6 percent later. (Phosphates in detergents were banned in some States during the survey period, which together with a shift to liquid detergents also reduced phosphate consumption.)⁹ Glass containers, primary aluminum, and organic chemicals, all heavy users of certain bulk inorganics, showed the same pattern of expanding, then contracting output rates over the survey period. Following a similar break in the output rate for agricultural crops—from an average annual rate of 3.5 percent for 1972-79 to 0.0 percent for 1979-85—production of the intermediates providing feedstocks for fertilizers dropped from 4.9 percent a year to -0.8 percent.

Table 1. Productivity and related indexes for industrial inorganic chemicals, 1972-86
[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972 ...	97.3	94.7	103.5	90.6	93.1	95.7	87.5
1973 ...	102.1	97.3	113.8	96.5	94.5	99.2	84.8
1974 ...	104.1	101.2	110.7	105.1	101.0	103.9	94.9
1975 ...	86.5	88.3	82.8	87.0	100.6	98.5	105.1
1976 ...	94.4	96.9	89.7	95.0	100.6	98.0	105.9
1977 ...	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978 ...	102.6	102.9	101.9	105.6	102.9	102.6	103.6
1979 ...	112.2	112.3	112.1	108.5	96.7	96.8	96.8
1980 ...	94.3	98.0	87.4	95.9	101.7	97.9	109.7
1981 ...	91.4	96.0	82.8	93.7	102.5	97.6	113.1
1982 ...	86.3	91.8	76.6	82.7	95.8	90.1	107.9
1983 ...	94.2	101.0	82.4	87.8	93.2	86.9	106.5
1984 ...	106.0	113.5	93.1	98.4	92.8	86.7	105.7
1985 ...	102.6	111.0	88.2	97.5	95.0	87.8	110.5
1986 ...	109.1	117.2	95.4	100.3	91.9	85.6	105.1
Average annual rates of change (percent)							
1972-86	0.3	1.1	-1.4	-0.1	-0.3	-1.2	1.4
1980-86	4.4	4.9	3.6	2.7	-1.6	-2.1	-0.9

Table 2. Productivity and related indexes for alkalis and chlorine, 1972-86
[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972 ...	102.1	96.7	117.6	114.2	111.8	118.1	97.1
1973 ...	102.0	95.4	121.5	116.3	114.0	121.9	95.7
1974 ...	113.3	107.4	129.8	133.6	117.9	124.4	102.9
1975 ...	90.0	87.8	95.4	109.2	121.4	124.4	114.5
1976 ...	98.0	100.2	93.2	112.1	114.4	111.9	120.3
1977 ...	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978 ...	106.6	105.7	108.5	99.1	93.0	93.8	91.3
1979 ...	107.3	109.3	104.8	68.3	63.3	62.5	65.2
1980 ...	115.4	119.9	105.8	67.5	58.5	56.3	63.8
1981 ...	95.3	97.9	89.9	61.2	64.2	62.5	68.1
1982 ...	100.8	104.2	93.7	63.8	63.3	61.2	68.1
1983 ...	127.1	129.6	121.6	79.3	62.4	61.2	65.2
1984 ...	146.3	142.7	155.2	94.5	64.6	66.2	60.9
1985 ...	147.4	146.1	150.2	102.3	69.4	70.0	68.1
1986 ...	179.9	182.2	174.7	101.3	56.3	55.6	58.0
Average annual rates of change (percent)							
1972-86	3.2	3.7	2.1	-2.7	-5.7	-6.2	-4.7
1980-86	13.6	12.8	15.3	12.5	-1.0	-0.3	-2.5

Employment

Workers employed in the inorganic chemicals industry (excluding Federal Government plants) numbered about 73,000 in 1986, 3 percent below the 1972 level, and 11 percent lower than in 1980, the last peak employment year. Employment tended to decline at an average annual rate of 0.3 percent over the study period, but all of the decline occurred over the 1979-86 span (at a 1.2-percent annual rate). Employee-hours evidenced rate-of-change patterns closely akin to employment.

The proportion of production workers in the industry fell from 68 percent of total employment in 1972 to 62 percent in 1982.¹⁰ In 1986, the number of production workers ran 13 percent below the 1972 count, and 17 percent below its 1980 peak. By contrast, nonproduction worker employment, which had expanded by 20 percent between 1972 and 1986, barely retreated only 7 percent from its earlier peak. The high proportion of nonproduction workers in the industry has resulted from higher-than-average proportions of jobs in managerial and management-related positions, and in engineering and technician occupations. According to BLS data, these three categories accounted for 24 percent of the industry's total employment in 1984, compared to 15 percent for manufacturing as a whole.

Blue-collar occupations in the industry appear to be more highly skilled than in manufacturing generally. In 1984, 30 percent of the employees in inorganic chemicals worked as blue-collar supervisors, construction trades workers, mechanics, installers and repairers, precision production workers, and in plant and systems occupations. The comparable proportion for manufacturing was 20 percent. Twenty percent of all employees worked in less skilled occupations—

chemical equipment controllers, operators and tenders, welders, and helpers and laborers; the corresponding figure for manufacturing was 43 percent.¹¹

Average hourly earnings in the industry rose faster than the manufacturing average—running 20 percent above the average in 1972, and 34 percent in 1985. During the survey period, female employees' share of employment doubled, to 18 percent; in manufacturing, their employment share rose from 29 to 32 percent. Accession and separation rates per 100 workers, available only through 1981, indicate a fair degree of stability in the stability of the industry's work force. The rates were only about two-fifths as high as for total manufacturing, and point to the industry's ability to retain experienced workers. (Quits per 100 workers ran to only one-third of the manufacturing average.) Overtime schedules in the industry ranged within considerably narrower bounds than in all manufacturing, probably reflecting in part the continuous-process nature of production schedules.¹²

Capital investment

The fixed capital assets of the inorganic chemicals industry are high in relation to employment. As noted earlier, in 1982, the value of assets per employee ran four times higher than the comparable figure for manufacturing generally.¹³ In the "other and miscellaneous inorganic chemicals" group, the ratio was three times higher. However, the ratio for the industry as a whole as well as for its component industries had declined from 1972, when it had run 4 to 5 times the manufacturing average. The decline possibly reflected the considerably greater reduction in new capital expenditures by the industry than by manufacturers generally after 1977.

Table 3. Productivity and related indexes for industrial pigments, 1972-86

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972 ...	113.2	108.7	124.8	121.3	107.2	111.6	97.2
1973 ...	114.6	106.0	140.4	130.6	114.0	123.2	93.0
1974 ...	115.4	110.3	129.2	154.7	134.0	140.2	119.7
1975 ...	104.2	105.5	101.6	108.7	104.3	103.0	107.0
1976 ...	100.9	102.2	98.0	109.1	108.1	106.7	111.3
1977 ...	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978 ...	104.8	104.1	106.6	106.6	101.7	102.4	100.0
1979 ...	105.0	104.4	106.5	100.5	95.7	96.3	94.4
1980 ...	102.2	108.6	89.9	101.3	99.1	93.3	112.7
1981 ...	105.1	113.0	90.4	101.9	97.0	90.2	112.7
1982 ...	96.7	108.0	77.7	87.6	90.6	81.1	112.7
1983 ...	104.0	113.8	86.9	93.0	89.4	81.7	107.0
1984 ...	125.7	134.8	108.7	97.9	77.9	72.6	90.1
1985 ...	132.7	144.3	111.9	105.6	79.6	73.2	94.4
1986 ...	133.5	147.1	110.3	110.3	82.6	75.0	100.0
Average annual rates of change (percent)							
1972-86	0.9	2.1	-1.7	-2.0	-2.8	-3.9	-0.3
1980-86	6.9	7.0	6.8	2.9	-3.7	-3.8	-3.6

The comparison, derived from constant-dollar data, reads as follows¹⁴:

	Average annual rates (percent)	
	Inorganic chemicals	Manufacturing
1972-85	0.2	2.6
1972-77	16.0	5.1
1977-85	-5.4	0.0

Levels of real capital outlays—which in this industry are overwhelmingly for equipment, rather than for structures—peaked in 1977, then fell precipitously; in 1983, they stood 47 percent below their 1977 high. They recovered thereafter, but in 1985, capital outlays still were less than in 8 of the 13 years reviewed here. As the tabulation shows, the amplitudes of the swings in outlays by far exceeded those for all manufacturing.

The large increase in the industry's real capital expenditures during much of the 1970's was to an extent fueled by relatively high capacity utilization rates; their subsequent retreat was occasioned in large part by contracting utilization. Between 1975 and 1980, the ratio of actual to "preferred" or full capacity utilization averaged 77 percent; between 1981 and 1985, it averaged 65 percent.¹⁵ (The pattern was similar but much less accentuated for manufacturing as a whole.) However, the earlier increases in the industry's real capital outlays have been said also to have arisen from erroneous assumptions about longer term demand growth, leading to overexpansion in productive capacity. According to a Brookings Institution study, "Because of the several year-long planning and construction periods for new chemical plants, large scale state-of-the-art plants, designed to achieve economies of scale and maintain or increase market share, continued to be brought on line even when company officials recognized that demand had fallen. These plants were then operated below capacity and thus very inefficiently, production worker requirements in such plants being almost independent of output levels."¹⁶

Research and development

The National Science Foundation has categorized the inorganic chemicals industry as technology-intensive on the basis of the high ratio of its R&D to value added.¹⁷ That ratio fluctuated between 2.6 and 3.5 percent annually over the survey period.¹⁸ (The all-manufacturing average ranged from 1.9 to 2.6 percent.)

It is difficult to evaluate the focus of the industry's R&D effort, largely because existing survey data encompass the entire chemical industry, except pharmaceuticals.¹⁹ The data are nonetheless suggestive. According to the survey, the annual number of productivity-enhancing process innovations of "major importance" or representing "significant improvement" doubled between the two periods, 1974-79 and 1980-82. Energy-related process innovations rose 34 percent between the two periods. Environment-related pro-

cess innovations, whose number was lower than those for the two other innovation categories combined, increased by 14 percent. It is noteworthy that when compared with 1967-73, for which the survey also features data, figures for the 1974-79 span represent declines while the 1980-82 period witnessed a recovery in the average annual data (even though the *levels* remained well below 1967-73).

The innovations were linked to new chemical products, whose annual number rose substantially between 1974-79 and 1980-82; and they were embodied in new equipment and instrumentation. The annual number of pertinent innovations nearly doubled for the former, and tripled for the latter.²⁰ That these improvements occurred in the face of lagging demand for industrial chemicals may be partially ascribed to such factors as the large component of scientists and engineers employed in industrial chemicals, whose efforts focus on problem-solving, including problems generated by the imbalances brought about by the new product and process innovations.²¹ The intensity of R&D may also be gauged by the annual rate of chemistry articles published in scientific and technical periodicals, which rose 21 percent between the two periods, 1973-80 and 1981-82;²² the rise in the so-called citation ratios for these articles;²³ and by the high proportion of articles published in the chemical engineering field (the United States accounted for 50 percent of the world's total, although U.S. employment in the chemical industry represents but one-third of the total of major chemicals-producing countries outside the Soviet bloc).²⁴ However, the number of patents granted by the United States to resident inventors in the area of inorganic and organic chemistry dropped 19 percent between 1975 and 1981 (yet the number of patents in this area granted to foreign inventors dropped by nearly one-half).²⁵

Table 4. Productivity and related indexes for industrial inorganic chemicals, not elsewhere classified, 1972-86
(1977=100)

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972 ...	92.9	89.2	101.9	74.9	80.6	84.0	73.5
1973 ...	90.5	96.1	104.0	80.7	81.9	84.0	77.6
1974 ...	102.1	100.2	106.1	88.8	87.0	88.6	83.7
1975 ...	84.0	86.7	78.9	77.6	94.4	89.5	98.4
1976 ...	93.9	97.0	87.8	88.7	94.5	91.4	101.0
1977 ...	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978 ...	101.4	101.9	100.4	106.8	105.3	104.8	106.4
1979 ...	114.6	114.7	114.5	120.3	105.0	104.9	105.1
1980 ...	90.3	93.8	83.7	101.1	112.0	107.8	120.8
1981 ...	89.3	93.8	81.2	99.1	111.0	105.7	122.0
1982 ...	80.8	85.7	72.1	83.6	103.5	97.5	116.0
1983 ...	86.9	93.0	76.4	87.2	100.4	93.8	114.1
1984 ...	97.5	105.5	84.3	98.3	100.8	93.2	116.6
1985 ...	95.3	104.0	81.3	96.3	101.0	92.6	118.5
1986 ...	101.4	107.1	91.6	100.1	98.7	93.5	109.3
	Average annual rates of change (percent)						
1972-86	-0.2	.6	-1.7	1.4	1.5	0.8	3.1
1980-86	3.6	4.0	3.1	1.7	-1.9	-2.2	-1.3

Exhibit 1. Selected inorganic chemicals and their chief end uses

Chemical	End use	Chemical	End use
Aluminum oxide	Abrasives Refractories Ceramics Electrical insulators Fluxes Spark plugs	Lime	Pollution control Stack gas scrubbers Sewage treatment Acid neutralizer Water treatment
Aluminum sulfate	Pulp and papermaking Treatment of water	Phosphates	Insecticidal chemicals Scouring soaps and powders water softeners
Ammonia, anhydrous	Fertilizers Refrigerant Fuel cells and rocket fuel Synthetic fibers Explosives Chemical intermediate	Phosphoric acid	Fertilizers Soap and detergents Rust-proofing
Calcium chloride	Dust control Highway deicing Industrial processing Concrete treatment	Phosphorus	Detergents Beverages Food additives
Calcium phosphate	Animal feed supplements Food supplements Dough conditioner Fertilizers Dyeing of textiles	Potash	Fertilizers
Caustic soda	Acid neutralizer Pulp and paper making Petroleum refining Soaps and detergents	Silicates	Impregnation of wood and porous metals Oil reclamation Synthetic detergents Textile processing Water treatment
Chlorine	Chemical intermediate Water purification Food processing	Soda ash	Glassmaking Pulp and papermaking Water and sewage
Hydrochloric acid	Activation of petroleum wells Boiler scale removal Pickling and metal cleaning Acidizing Ore reduction	Sulfuric acid	Fertilizers Petroleum refining Pigments Iron and steel pickling
		Titanium oxide	Surface coatings Plastics Paper coatings and fillings

SOURCES: *The Condensed Chemical Dictionary*, 10th ed. (New York, Van Nostrand-Reinhold Co., 1981); *Chemical Origins and Markets*, 5th ed. Stanford Research Institute, 1977; and Bureau of Labor Statistics.

Technological advances

Technological advancement in the inorganic chemicals industry has to an extent been identified with increases in the scale of operations. Scale enlargement reduces capital costs as well as labor and utility costs per unit of output. Quintupling of sulfuric acid production, for example, by simply increasing the size of pressure vessels, pipes, storage tanks, and so forth, can reduce operating costs by 33 percent.²⁶

Although effluent problems intensified during the 1970's, and costs of losing business from breakdowns or other interruptions are said to have become less tolerable,²⁷ there is evidence, in addition to the capital spending boosts already noted for the 1970's, that the scale of operations of chemical plants increased then. Between 1972 and 1982, the number of plants with 1,000 employees or more in the "other basic and miscellaneous inorganic chemicals" group rose 27 percent, and the proportion of employment in the group that these plants accounted for rose from 41 to 48 percent. (The number of small establishments nearly doubled in 1982, accounting for 80 percent of all establishments in the industry. But their share of employment, 14 percent that year, had barely changed from 13 percent a decade earlier.) Further-

more, the average number of employees per large plant rose by 19 percent, to 2,821 in 1982, indicating that existing large plants added to their employment as they expanded their scale of production.²⁸

The industry also modernized existing facilities by retrofitting with updated, largely computerized equipment and instrumentation.²⁹ Computers, programmable controls, computerized sensors for temperature, pressure, flow rate, liquid levels, materials analyzers, and other process variables have been increasingly diffused. Pneumatic controls have been more and more replaced by electronic signals and their apparatus (except in the processing of flammable materials). Reasons for installing computers in chemical processing are succinctly stated in the following passage:

Sensitive reactions, novel equipment arrangements, or usually complex control schemes represent systems so complex that it is essentially impossible for the human mind to conceive or calculate the process behavior during startup or after disturbance away from steady state. The ease with which the computer can be programmed by the engineer, its speed and accuracy in solving differential equations, and the insight it pro-

vides as to the nature of process behavior are three main reasons for the success of the analog computer in the processing industries.³⁰

In the mid-1970's, chemical process firms began to use minicomputers and placed less emphasis on mainframe computers.³¹ Prices of computers continued to decline. Microprocessors for "small" control problems and for batch sequencing spread through processing installations. Pertinent software and laboratory management systems became more widely available. Computers in laboratories—a working part of all the larger processing facilities—not only aided in making experiments but also suggested them (for example, in modeling molecular constellations). Also, so-called audit trails have been greatly facilitated by computers, making it possible to trace efficiently, and to record, when, how, and by whom test samples were drawn, thus helping to satisfy government and company regulations.³²

Computers have also become indispensable in chemical engineering. They enable the prediction of the properties of chemicals with new molecular structures. They are vital in designing process equipment. They permit the simulation of process control. And they help in managing resources.³³ Large amounts of engineering time are thus economized. Some complex problems which reportedly required up to 500 hours for their solution can now be tackled in less than half an hour.³⁴

Gradual improvements in older technologies relating to established engineering practices have of course also continued. One such practice is "de-bottlenecking." The retrofitting of existing plants with updated equipment and instruments, noted already, often creates imbalances or bottlenecks in chemical processing. Hence, the importance of "de-bottlenecking" appears to have increased over the review period.³⁵ One technique of coping with bottlenecks has been to install better pumps and valves. That usually spells improved flow, less corrosion, thus also reducing maintenance labor. Among higher speed pumps innovated during the 1970's have been drum pumps that would empty 55-gallon drums within 2 minutes.³⁶

Relatively few important innovations or technological changes occurred during the survey period that were specific to the products manufactured by the industry, while at the same time significantly reducing labor requirements per unit of output. Here, two developments may be cited in the chlor-alkali segment of the industry, which probably contributed to this segment's productivity improvement between 1972 and 1985. (See table 2). One was the replacement of older plants operating at an electrical capacity of 20,000 to 50,000 amperes, with plants capable of 100,000 amperes. (Chlorine is produced by electrolysis, usually of sodium chloride brine.) The increase in electrolytical capacity barely changed in unit labor requirements.³⁷ The other development was a switch in production technology from (electrolytical) mercury cells—entailing the risk of escaping

mercury polluting streams—to one based on diaphragms and, subsequently, membranes. The switch saved between 20 and 35 percent in electrical (electrolytical) energy.³⁸

A shift from synthetically produced soda ash to natural soda ash mined in open pits (mostly in Wyoming and California) and treated by the so-called Trona process was hastened during the 1970's. This stepped-up activity solved the problem of disposing of the calcium chloride generated by the Solvay process of manufacturing soda ash, and the brine that process generates which would be discharged into—and pollute—streams. Labor requirements per unit of output are lower with Trona mining than with the Solvay process (transport costs may partially offset the savings).³⁹

Outlook

It is likely that, beyond cyclical swings, there will be improvement in the productivity of the inorganic chemicals industry over the long term. Such long-term gains may well be associated with continued small overall increases in output being accompanied by still smaller increases—or losses—in employment. Among technological or organizational factors likely to spur productivity are more centralized technical controls of plant complexes, facilitated by comparatively low-cost computer networks. Also probable is the more closely and efficiently scheduled use of processing equipment, and the growing versatility in the processing of cognate chemical products of which such equipment would be capable.⁴⁰

Following steep cuts in the productive capacity of such basic chemicals as sulfuric acid—estimated by some observers to one-third of 1981 levels,⁴¹ and as much as 25 percent of that of phosphoric acid⁴²—older equipment has evidently been rapidly phased out in recent years, and it seems probable that such phasing-out will continue for some time. This alone would gradually improve capacity utilization rates, and therefore labor productivity, as more up-to-date processing equipment and instrumentation supplant obsolescent facilities.

The question of whether pollution abatement technology can be increasingly adapted to enhance the efficiency of chemical processing technologies—or whether it will continue to be embodied in the pollution abatement efforts and services of the industry (many of which, however, are conducted outside the industry proper although it bears the costs)—cannot be assayed here. Only a relatively small portion of the industry's pollution abatement costs appear to have been recaptured by merging processing and abatement technologies. It remains, however, that "Every major chemical company has a formidable array of environmental engineers committed to (a) retrofitting existing facilities to meet pollution abatement requirements; and (b) designing new facilities that incorporate the most cost-effective pollution control equipment, usually in anticipation of future requirements."⁴³

According to BLS projections, employment in the inorganic chemicals industry will rise 6 percent between 1984 and 1995 if it follows a "moderate" (rather than a "low" or "high") path. Among the industry's major occupational groups, those of engineers, chemists, and engineering and science technicians are anticipated to expand more rapidly than other groups. Although these three groups together accounted for but 14 percent of the industry's total employment in 1984, their share of employment growth will be 37

percent. Likewise, the growth and share of managerial and management related occupations will be roughly twice their 1984 employment proportion of 12 percent. Much slower increases are expected for blue-collar jobs. These jobs accounted for almost one-half of total industry employment in 1984, but will make up little more than two-fifths of employment growth by 1995. Large job losses are projected to occur in administrative support occupations, particularly among clerical personnel.⁴⁴ □

—FOOTNOTES—

¹ Industrial inorganic chemicals are classified as No. 281 in the *Standard Industrial Classification Manual* of the Office of Management and Budget. sic 281 is composed of four 4-digit industries—sic 2812, Alkalies and Chlorine, consisting of establishments manufacturing these two chemicals and such other related chemicals as soda ash and caustic soda; sic 2813, Industrial Gases, with establishments manufacturing such gases as acetylene, carbon dioxide, oxygen, and others; sic 2816, Inorganic Pigments, with establishments manufacturing pigments destined mostly for industrial paints, such as used for automobiles and household appliances; and sic 2819, Industrial Inorganic Chemicals, not elsewhere classified, with establishments manufacturing a wide variety of bulk or commodity chemicals, such as acids, phosphates, potassiums, sulfurs, sodiums (salts), metallic compounds, and catalysts.

sic 2819 includes government-owned establishments; the output and employment of this part of the industry are excluded from the productivity and related measures offered here. The productivity and related measures for sic 2813, Industrial Gases, are not published separately but are included in the measured for sic 281.

Average annual rates of change presented in this article are based on linear least squares of the logarithms of the index numbers. The indexes will be updated annually and will appear in the annual BLS Bulletin, *Productivity Measures for Selected Industries*.

² R. Norris Shreve and Joseph A. Brink, Jr., *Chemical Process Industries* (New York, McGraw-Hill Book Co., 1977), ch. 1.

³ Martin Neil Baily and Alok K. Chakrabarti. "Innovation and Productivity in U.S. Industry," *Brookings Papers on Economic Activity*, 2:1985, p. 624.

⁴ Bureau of the Census data. The data for government-owned establishments are excluded here.

⁵ Baily and Chakrabarti write that excess capacity in the industry "brings about a substantial drop in productivity performance," p. 615.

⁶ *The Condensed Chemical Dictionary* (New York, Van Nostrand-Reinhold Co. 1981).

⁷ U.S. Department of Commerce, Bureau of Economic Analysis, *The Detailed Input-Output Structure of the U.S. Economy*, 1977, Vol. I (Washington, U.S. Government Printing Office, 1984).

⁸ Output of selected industries using inorganic chemicals on a large scale are shown below:

	Average annual rates of change (percent)		
	1972-85	1972-79	1979-85
Steel	-3.3	0.0	-6.1
Paints and allied products .....	.7	1.9	.4
Paper, paperboard, and pulp	1.8	1.7	1.8
Soap and detergents	1.2	1.8	-1.1
Miscellaneous plastics	5.7	6.6	6.2
Glass containers	-1.1	1.1	-3.2
Primary nonferrous metals	-4.2	-2.7	-6.2
Primary aluminum	-.3	2.5	-4.7
Aluminum rolling and drawing .....	.9	2.6	.1
Agricultural chemicals	3.5	4.9	-.8
Prepared feeds	2.6	2.4	2.5
Motor vehicles	1.4	4.4	5.2

Organic chemicals	1.8	5.8	-2.1
Petroleum refining .....	.0	-3.2	-2.2

⁹ *Chemical and Engineering News*, Jan. 26, 1987.

¹⁰ Refers to production workers in the industry's privately owned establishment as do all other employment as well as output and productivity data in this article.

¹¹ The high skill composition of labor in the industry is emphasized in the following:

"The conduct of chemical plants requires, as a rule, skilled labor, with a limited requirement for ordinary backbreaking work. Most of the help needed is for workers who can repair, maintain, and control the various pieces of equipment and instruments necessary to carry out chemical conversions and physical operations. ... (The) chemical industry, by virtue of a wider use of instruments and a greater complexity of equipment, requires more and more skilled labor," *Chemical Process Industries*, p. 20.

¹² Following are overtime hours in industrial inorganic chemicals and manufacturing, 1972-85.

Year	Industrial inorganic chemicals	Manufacturing
1972	94	95
1973	106	103
1974	111	89
1975	86	70
1976	103	84
1977	100	100
1978	94	103
1979	97	95
1980	86	76
1981	91	76
1982	86	59
1983	83	81
1984	94	92
1985	94	89

¹³ Data and discussion exclude government-owned establishments.

¹⁴ Deflator from table B-3, *Economic Report of the President*, January 1987 (implicit price deflator, total nonresidential gross private domestic investment).

¹⁵ U.S. Department of Commerce, Bureau of the Census, *Survey of Plant Capacity*, 1985 and earlier years.

¹⁶ Baily and Chakrabarti, p. 624.

¹⁷ National Science Board, *Science Indicators - The 1985 Report* (Washington, U.S. Government Printing Office, 1985), p. 197.

¹⁸ National Science Foundation, *Research and Development in Industry*, 1984 (Washington, U.S. Government Printing Office, 1985), p. 34.

¹⁹ However, "other" chemical industries, including sic 284,5 and 287-9 are much less research-intensive than industrial chemicals. See footnote 18.

²⁰ Baily and Chakrabarti, p. 616.

²¹ See Richard C. Levin, "Technical Change and Optimal Scale: Some Evidence and Implications," *Southern Economic Journal*, October 1977,

p. 208. The author also writes: "The technology itself generates concrete identifiable problems upon which engineers and applied scientists focus their innovative efforts" (p. 219). Also: "Efforts to reduce machine 'downtime' focus upon design considerations to hasten servicing when necessary, and to lengthen the intervals between servicing.

²² *Science Indicators*, p. 193.

²³ *Science Indicators*, p. 195.

²⁴ Eurostat, *Employment and Unemployment: Yearbook of Labor Statistics, 1982*. (Tokyo, Japan, Ministry of Labor, 1985).

²⁵ *Science Indicators*, p. 25.

²⁶ Levin, p. 213.

²⁷ *Chemical and Engineering News*, Mar. 6, 1978, p. 24.

²⁸ The data do not indicate enlargement of scale of government-owned establishments in the industry.

²⁹ *Chemical and Engineering News*, Dec. 7, 1981, p. 15ff.

³⁰ Quoted in *Chemical Process Industries*, p. 12.

³¹ *Chemical Engineering News*, Sept. 16, 1974, p. 52ff.

³² *Chemical Engineering News*, Aug. 19, 1985, p. 21ff.

³³ *Chemical Engineering News*, Oct. 1, 1983, p. 31.

³⁴ *Chemical Engineering News*, Aug. 12, 1985, p. 7ff.

³⁵ Industry information and *Chemical Engineering News*, May 14, 1987.

³⁶ *Chemical Engineering*, Apr. 1, 1985, p. 14.

³⁷ Industry information.

³⁸ *Chemical and Engineering News*, Mar. 20, 1978, p. 20ff.; February 8, 1982, p. 105; Oct. 29, 1984.

³⁹ Industry information; *Chemical and Engineering News*, Sept. 8, 1986, p. 17; p. 211.

⁴⁰ *Chemical and Engineering News*, Dec. 7, 1981, p. 19.

⁴¹ Industry information.

⁴² *Chemical and Engineering News*, Oct. 11, 1982, p. 16.

⁴³ U.S. Environmental Protection Agency, *Voluntary Environmental Activities of Large Chemical Companies to Assess and Control Industrial Chemicals*, Sept. 1976, p. 7.

⁴⁴ See *Occupational Outlook Handbook, 1986-87*, Bulletin 2250 (Bureau of Labor Statistics, 1987), p. 269ff.

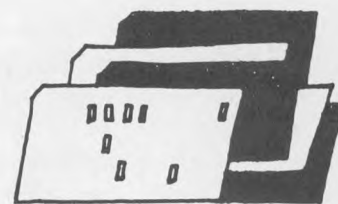
APPENDIX: Measurement techniques and limitations

Indexes of output per employee hour measure changes in the relation between the output of an industry and the employee hours expended on that output. An index of output per employee hour is derived by dividing an index of output by an index of industry employee hours.

Real output was calculated in terms of the deflated value of shipments (adjusted for inventory change) for each product group. Changes in prices were removed from the current-dollar values by means of appropriate price indexes at various levels of subaggregation for a variety of products in each group. In order to combine the output segments to a total output index, employee hour weights relating to the individual segments were applied.

Complete output data are available only in years for which a Census of Manufactures is taken (such as 1972, 1977, 1982). For the intercensal years, the data are based on samples, and are not quite so complete. Therefore, these data are benchmarked to census year data.

The indexes of output per employee hour relate total output to one input—labor. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effects of factors such as changes in technology, capital investment, capacity utilization, plant design and layout, skill and efforts of the work force, managerial ability, and other factors.



Expenditures of urban and rural consumers, 1972-73 to 1985

JOHN M. ROGERS

Social and economic comparisons of urban and rural populations have long been of interest to public policymakers. The migration of families between urban and rural areas, the financial problems of the American farmer, and the incidence of poverty by type of area are but a few of the urban versus rural topics that have received much attention.¹ This report focuses on another socioeconomic aspect of the urban and rural populations, namely, how the expenditure patterns of the two populations compare.² Expenditures, income, and family characteristics are compared for 1985, and changes in expenditure levels and expenditure shares between 1972-73 and 1985 are discussed using data from the Bureau of Labor Statistics Consumer Expenditure (CE) Survey.

Method of the expenditure survey. Both urban and rural consumer units were sampled when the current, ongoing CE Survey began in 1980.³ However, because of Federal budget reductions, the rural portion of the sample was dropped in 1981-83. In January 1984, the Bureau reintroduced the rural portion of the population in the survey sample. Now that data for both the urban and rural populations are again available, it is possible to compare the expenditures, income, and family characteristics of the two population groups. It also affords the opportunity of comparing recent urban versus rural data with earlier data.

The CE Survey consists of two separate components, each with its own questionnaire and sample: 1) a quarterly Interview survey in which expenditures and income of consumer units are obtained in five interviews conducted every 3 months and, 2) a Diary or recordkeeping survey completed by consumer units for two consecutive 1-week periods. The Interview survey is designed to obtain data on the types of expenditures which respondents can recall for a period of 3 months or longer. In general, these include relatively large expenditures, such as automobile purchases, and those that occur on a regular basis, such as rent or utility payments. Including "global estimates" of spending for food, about 95

percent of expenditures are covered in the Interview survey. The Diary survey obtains data on small, frequently purchased items which normally are difficult for respondents to recall, such as detailed food expenses. Data cited in this report are from the Interview survey. Differences in expenditures and expenditure shares discussed here are based on population estimates rather than sample estimates.

Urban versus rural, 1985. Income and demographic data collected in the expenditure survey show differences between the urban and rural populations that help explain some of the differences in expenditures of the two groups. Table 1 shows estimates for 1985, the most recent period for which data are available from the current survey, and for 1972-73, the reference period of the last expenditure survey prior to the start of the current, continuing survey. Percent changes in expenditures between the two periods are presented, and a column showing changes in the BLS Consumer Price Index for All Urban Consumers (CPI-U) also is included so that changes in expenditures and prices can be compared. Comparisons for 1985 are discussed below while changes from 1972-73 to 1985 are examined in the following sections.

Rural consumer units accounted for about 16 percent of the total in 1985. However, the portion of the consumer units classified as rural varied substantially by region of the country. Almost 22 percent of the units in the South were rural, compared with only 9 percent of the units in the West. About 19 percent of units in the Midwest region and 12 percent in the Northeast were in rural areas. The data also show that urban consumer units averaged higher incomes in 1985 than did their rural counterparts. Urban consumer units had slightly fewer members and were headed by persons about 2 years younger than heads of rural units. The numbers of earners, children under age 18, and persons over 65 were about the same for the two groups. Rural consumer units owned more vehicles per unit and were more likely to own their own homes. Total expenditures accounted for a larger proportion of total income of rural units than of urban units.

Expenditure levels of the two population groups showed substantial differences across expenditure components. As might be expected from their higher average incomes, urban consumer units had higher levels of total expenditures—they spent about \$3,600 more on average than did rural units in 1985. Higher food, housing, and apparel expenditures accounted for much of the difference. However, despite

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lower average incomes, rural consumer units spent more for transportation, health care, tobacco, and life and other personal insurance than did urban units.

Results show that, in 1985, urban consumer units spent more for housing than did their rural counterparts, and the amount spent accounted for a larger share of total expenditures than that of rural units. Expenditure shares, the percent of total expenditures spent on each component, are shown in table 2. Urban consumer units spent an average of \$7,005, or 31 percent of their total expenditures, on housing compared to an average of \$5,064, or 26 percent of the total, spent by rural units. A higher percentage of rural consumer units were homeowners and rural homeowners were more likely to have paid off their mortgages—38 percent having done so versus 21 percent of urban units. Despite lower total housing expenditures, rural units spent almost as much on fuels and utilities as urban units, \$1,579 compared to \$1,661. These costs accounted for a larger share of rural consumers' housing costs than of urban consumers'—31 percent versus 24 percent. The higher share spent by rural consumer units may be partially explained by the fact that

renter families frequently do not pay directly for fuels and utilities—payments are included in the rent—and a higher proportion of urban families are renter families.

Rural consumers spent a larger share of their total unit expenditures on transportation, 25 percent versus 20 percent spent by urban consumers, due largely to higher expenditures for vehicles and gasoline. This is as expected, because rural consumers own more vehicles than do urban consumers—2.4 per consumer unit compared to 1.8 owned by urban consumers. Also, rural consumers probably drive longer distances than do urban consumers.

Rural consumers also spent more per unit on health care than did urban consumers—\$1,168 versus \$1,011. This accounted for about 6 percent of rural consumers' total unit expenditures versus 4 percent of urban consumers' total. Higher health care expenditures by rural consumers can be attributed to their being older, on average, than urban consumers. Also, data from the survey show that rural consumer units more frequently paid the full cost of their health insurance policies while employers more frequently paid the costs of policies for urban consumers.

Table 1. Trends in selected characteristics and average annual expenditures of urban and rural consumer units and in the CPI-U, 1972-73 to 1985

Item	Urban			Rural			CPI-U percent change ²
	1972-73	1985	Percent change	1972-73	1985	Percent change	
Number of consumer units (thousands)	58,948	76,524	29.8	12,272	15,040	22.6	—
Consumer unit characteristics:							
Income before taxes ¹	\$12,349	\$26,241	112.5	\$10,039	\$19,708	96.3	—
Persons in consumer unit	2.8	2.5	—	3.1	2.8	—	—
Age of reference person	47.1	46.4	—	50.3	48.5	—	—
Housing tenure (percent):							
Homeowner	56	59	—	73	76	—	—
Renter	44	41	—	27	24	—	—
Average annual expenditures	\$ 9,420	\$22,810	142.1	\$ 7,760	\$19,197	147.4	—
Food	1,675	3,473	107.3	1,513	2,996	98.0	133.8
Alcoholic beverages	89	297	233.7	49	215	338.8	89.5
Housing	2,638	7,005	165.5	1,902	5,064	166.2	—
Shelter	1,507	4,083	170.9	890	2,602	192.4	—
Owned dwellings	746	2,352	215.3	555	1,830	229.7	—
Rented dwellings	651	1,308	100.9	251	540	115.1	117.2
Other lodging	117	423	261.5	86	232	169.8	211.9
Fuels and utilities	581	1,661	185.9	586	1,579	169.5	218.7
Household operations	138	366	165.2	85	242	184.7	143.8
Housefurnishings and equipment	411	895	117.8	341	641	88.0	74.5
Apparel and services	732	1,224	67.2	529	839	58.6	65.3
Transportation	1,762	4,508	155.8	1,706	4,794	181.0	163.3
Vehicles	709	1,969	177.7	746	2,418	224.1	167.3
Gasoline and motor oil	404	1,010	150.0	446	1,157	159.4	224.7
Other vehicle expenses	540	1,227	127.2	482	1,127	133.8	132.0
Public transportation	110	302	174.5	31	92	196.8	179.5
Health care	432	1,011	134.0	448	1,168	160.7	198.4
Entertainment	389	1,122	188.4	299	895	199.3	96.4
Personal care	106	209	97.2	80	142	77.5	125.6
Reading	50	145	190.0	40	120	200.0	—
Education	126	323	156.3	76	208	173.7	183.4
Tobacco	131	210	60.3	118	241	104.2	143.0
Miscellaneous	100	360	260.0	74	217	193.2	—
Cash contributions	372	857	130.4	293	542	85.0	—
Personal insurance and pensions	818	2,067	152.7	633	1,755	177.3	—
Life and other personal insurance	367	270	-26.4	283	320	13.1	—
Retirement, pensions, and Social Security	451	1,797	298.4	350	1,435	310.0	—

¹ Income values are derived from "complete income reporters" only. The distinction between complete and incomplete income reporters is based in general on whether the respondent provided values of major sources of income, such as wages and salaries, self-employment income, and Social Security income.

² CPI's for some components are not conceptually comparable to the CE data and are not shown. For some components, there may not be a direct correspondence between the CE and CPI, and for those components the change for the most comparable component, or a weighted average change of more than one component, is shown.

Table 2. Expenditure shares of urban and rural consumer units, Interview Survey, 1972-73, 1980, and 1985¹

[In percent]

Item	Urban			Rural			Significance test ²
	1972-73	1980	1985	1972-73	1980	1985	
Total expenditures:							
Average (in dollars)	\$9,420	\$16,723	\$22,810	\$ 7,760	\$13,663	\$19,197	—
Percent of total	100.0	100.0	100.0	100.0	100.0	100.0	—
Food	17.8	19.0	15.2	19.5	20.4	15.6	—
Food at home	(3)	14.3	10.3	(3)	16.6	11.5	*
Food away	(3)	4.7	5.0	(3)	3.8	4.2	*
Alcoholic beverages .....	.9	1.7	1.3	.6	1.4	1.1	—
Housing	28.0	29.3	30.7	24.5	25.2	26.4	*
Shelter	16.0	16.3	17.9	11.5	11.8	13.6	*
Owned dwellings	7.9	9.5	10.3	7.2	8.4	9.5	*
Rented dwellings	6.9	5.3	5.7	3.2	2.1	2.8	*
Other lodging	1.2	1.5	1.9	1.1	1.2	1.2	*
Fuels and utilities	6.2	7.1	7.3	7.6	8.4	8.2	*
Household operations	1.5	1.6	1.6	1.1	1.2	1.3	*
Housefurnishings and equipment	4.4	4.3	3.9	4.4	3.2	3.3	*
Apparel and services	7.8	5.4	5.4	6.8	4.5	4.4	*
Transportation	18.7	20.4	19.8	22.0	24.7	25.0	*
Vehicles	7.5	7.0	8.6	9.6	9.4	12.6	*
Gasoline and motor oil	4.3	7.1	4.4	5.7	9.4	6.0	*
Other vehicle expenses	5.7	5.1	5.4	6.2	5.7	5.9	*
Public transportation	1.2	1.3	1.3	.4	.5	.5	*
Health care	4.6	4.4	4.4	5.8	5.2	6.1	*
Entertainment	4.1	4.3	4.9	3.9	4.1	4.7	—
Personal care	1.1	.9	.9	1.0	.8	.7	*
Reading .....	.5	.7	.6	.5	.6	.6	—
Education	1.3	1.2	1.4	1.0	.7	1.1	*
Tobacco	1.4	1.0	.9	1.5	1.3	1.3	*
Miscellaneous	1.1	1.5	1.6	1.0	1.5	1.1	*
Cash contributions	3.9	2.9	3.8	3.8	2.5	2.8	*
Personal insurance and pensions	8.7	7.2	9.1	8.2	7.0	9.1	—
Life and other personal insurance	3.9	1.5	1.2	3.6	1.8	1.7	*
Retirement, pensions, and Social Security	4.8	5.7	7.9	4.5	5.2	7.5	—

¹ Expenditure shares are the percent of total expenditures spent on each component.

² A chi-square test of the significance of the difference between proportions was used to test whether the difference between urban and rural shares in 1985 was significant at the 5-percent

level. Those components for which the difference was significant are marked by an asterisk.

³ Data not available.

Changes from 1972-73 to 1985. There was little change between 1972-73 and 1985 in the proportion of the total population that was rural. The average size of the consumer unit and the average age of the consumer unit head decreased slightly for both urban and rural consumers over the period.

Increased expenditures for housing and transportation were primarily responsible for the overall increase in spending between 1972-73 and 1985 for both urban and rural consumer units. (See table 1.) Expenditures for some other components increased at a faster rate, but housing and transportation accounted for much of the increase because they were a larger share of consumers' total spending and they rose faster than the average. Among the housing subcomponents, expenditures on owned dwellings rose faster than average total expenditures for both urban and rural consumer units, while expenditures on rented dwellings rose at a slower rate than the total. Among the transportation subcomponents, expenditures on vehicles increased at a faster rate than total expenditures and somewhat more for rural than for urban units. Gasoline and motor oil expenditures increased at a slightly faster rate than total expenditures for both urban and rural consumers. Gasoline price increases that contributed to sharp increases in expenditures in the

1970's were offset by subsequent price decreases and by conservation measures. Prices for motor fuel, motor oil, coolant, and other products rose 241 percent between 1973 and 1981 as measured by the CPI, then dropped about 9 percent between 1981 and 1985; the net change from 1973 to 1985 was 211 percent. Also, average fuel consumption per automobile dropped by 24 percent from 1973 to 1984 while the average mileage per gallon for automobiles improved 28 percent over that period.⁴

Expenditures on some components, such as vehicles mentioned previously, rose at different rates for urban consumers than they did for rural consumers. Expenditures for alcoholic beverages rose at a faster rate for rural consumer units than for urban units between 1972-73 and 1985. However, this component is historically underreported so that changes may reflect better reporting rather than actual increases alone. Expenditures for other lodging (which include expenses for vacation homes and lodging while out of town) rose faster for urban than for rural units, as did expenditures for miscellaneous goods and services (which include bank fees, legal and accounting fees, funerals, cemetery lots, union dues, occupational expenses, and finance charges other than for mortgages and vehicles).

Changes in expenditure shares. Changes in the shares of total expenditures spent on different components are used to show how consumers' expenditure patterns change over time. Increases or decreases in shares show changes in the way consumer units allocate their expenditures on individual components relative to the change in total expenditures. Changes in shares can take place gradually over a period of years as consumers alter their expenditures in response to changes in tastes, preferences, or lifestyle, or in response to sudden economic changes. For example, the share of the food dollar spent on food at home has been declining over time and can be attributed in part to the increase in the number of two-earner households. Families have had to adjust their schedules to meet job requirements, which has resulted in multiple-earner families taking more meals outside the home. An example of a more sudden change was the sharp increase in expenditures on gasoline in the 1970's as a result of the 1973-74 oil embargo that depleted supplies and forced up prices.

Data in table 2 show how expenditure shares for urban and rural consumer units changed between 1972-73 and 1985. Shares are also shown for 1980 because, for some components such as food and gasoline, the shares over the entire period from 1972-73 to 1985 were not steadily increasing or decreasing. Food expenditure shares for urban and rural consumer units each increased about 1 percentage point between 1972-73 and 1980. Subsequently, food expenditure increases slowed relative to increases in expenditures for other goods and services, and this is reflected in the drop in food expenditure shares between 1980 and 1985:

*Food expenditure shares
(percent of total expenditures)*

	Urban			Rural		
	1972-73	1980	1985	1972-73	1980	1985
Food, total.	17.8	19.0	15.2	19.5	20.4	15.6
Food at home . . .	*	14.3	10.3	*	16.6	11.5
Food away.	*	4.7	5.0	*	3.8	4.2

*Data not available.

Food expenditure shares dropped for both urban and rural consumer units, but more for rural units than urban. In 1972-73, food accounted for a larger share of rural consumers' total unit expenditures than of urban consumers'—20 percent versus 18 percent—but, by 1985, this difference had almost disappeared. The decline in food expenditure shares from 1980 to 1985 was accounted for entirely by the drop in the food at home component, as expenditure shares for food away from home actually increased slightly over the period. As a result, food away from home accounted for an increasing portion of overall food expenditures. The drop in expenditure shares for food at home corresponds to the slower price rise of food at home items relative to the price increases of all goods and services. From 1980 to 1985, food at home prices as measured by the CPI-U rose only 18 percent compared to a 31-percent increase in the All-Items CPI-U.

Housing expenditure shares increased steadily from 1972-73 to 1985 for both urban and rural consumer units; the share that urban units spent on housing rose about 3 percentage points, from 28 percent in 1972-73 to 31 percent in 1985, while rural units' share rose about 2 percentage points, from 25 percent to 27 percent over the period. The percentage of units that were homeowners rose about 3 percentage points for both urban and rural consumers.

Transportation expenditure shares rose over the period 1972-73 to 1985, but more for rural than for urban consumer units. Shares rose from 22 to 25 percent for rural units compared to an increase from 19 to 20 percent for their urban counterparts. The sharp increase in gasoline prices contributed to a rise in gasoline expenditure shares from 1972-73 to 1980. However, the subsequent decline in prices, coupled with conservation measures, resulted in gasoline shares dropping to about the same level as in 1972-73 by 1985. Increases in expenditures on vehicles were responsible for the larger increases in the overall transportation component for rural consumers than for urban consumers. Vehicle shares dropped slightly from 1972-73 to 1980 for both urban and rural consumer units. However, they then rose sharply from 1980 to 1985 and more rapidly for rural than for urban units. Other transportation components accounted for about the same share of total expenditures in 1985 as in 1972-73.

Expenditure shares for retirement, pensions, and Social Security also increased from 1972-73 to 1985. Shares rose about 3 percentage points for both urban and rural consumer units, with much of the increase occurring between 1980 and 1985. Over that period, the annual maximum taxable earnings for Social Security rose from \$25,900 to \$39,600 and the employee contribution rate rose from 6.13 percent to 7.05 percent.⁵

THIS REPORT SHOWS that there are differences in the way that urban and rural consumers allocate their expenditure budgets. Also, the differences in expenditure shares between the two groups are not static, but rather fluctuate in response to socioeconomic changes. As more data become available, analysts will have the opportunity to compare and follow changes in expenditure patterns of the two groups. The data provided by the Consumer Expenditure Survey can be of help in developing economic programs specific to each of the two different population groups.

—FOOTNOTES—

¹ See Kathleen K. Scholl, "Income and Poverty Rates: Farm and Non-farm Residence," *Family Economics Review*, no. 1, 1983, pp. 16-19; and Kathleen K. Scholl, "Economic Outlook for Farm Families: 1986," in U.S. Department of Agriculture, *Outlook '86: Proceedings*, Agricultural Outlook Conference, Dec. 4, 1985, pp. 279-88.

² Urban, as defined in this survey, includes the rural population within metropolitan areas.

³ A consumer unit comprises: 1) all members of a particular household related by blood, marriage, adoption, or other legal arrangements; 2) a

person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel but who is financially independent; or 3) two or more persons living together who pool their income to make joint expenditure decisions. For the purposes of this report, consumers and consumer units may be used interchangeably.

⁴ Data on fuel consumption are from *Statistical Abstract of the United States, 1987* (Bureau of the Census, 1987), p. 590, table 1032, "Domestic Motor Fuel Consumption, By Type of Vehicle: 1970 to 1984."

⁵ Data are from *Statistical Abstract of the United States, 1987*, p. 348, table 586, "Social Security (OASDHI)—Contribution Rates: 1970 to 1990."

Glass container wage gains trail those in other glassware plants

A Bureau of Labor Statistics study of the pressed or blown glass and glassware industry in June 1986 found that wages in glass container manufacturing averaged \$9.89 an hour—a 29-percent increase over the \$7.66 average reported in May 1980.¹ Average straight-time earnings of workers in other types of glassware plants (for example, those making tableware) rose 48 percent—from \$6.40 an hour to \$9.47.² Because of smaller pay gains over the 6-year period, glass container workers saw their pay advantage over workers in the other glassware plants narrow from 20 percent in 1980 to 4 percent in 1986.³

Between 1980 and 1986, glass containers have met with strong competition from metal cans and plastic bottles, contributing to 6 straight years of declining shipments of glass containers.⁴ The industry has reacted, in part, through smaller wage settlements, closing marginal plants, and downsizing staff at the remaining locations. The Bureau's 1986 survey estimates that there were 91 glass container plants employing about 39,000 production workers—an average plant size of 425 workers; the 1980 survey reported 104 plants with 54,500 production workers—an average plant size of about 525 workers.⁵ The sharp employment declines have more than offset lowered container output, substantially raising the industry's productivity (output per hour) to an average annual rate of 4.8 percent between 1980 and 1985 (the latest year available).⁶

The narrowing pay gap affected a large majority of the production occupations covered in the 1980 and 1986 surveys. Table 1 presents average hourly earnings of surveyed jobs common to both industries. It shows that by 1986, little or no pay advantage was reported in glass container firms for batch mixers, mold polishers, final inspectors, selectors, pipefitters, assemblers, janitors, and material handling laborers. In fact, furnace operators had an 8-percent disadvantage relative to the same occupation in other glassware factories, whereas they had an 11-percent advantage in 1980. In contrast, forming-machine upkeepers and watchmen, respectively, the highest and lowest paying jobs studied for glass container workers, maintained a substantial pay ad-

Table 1. Average hourly earnings¹ in glass container and other pressed or blown glassware manufacturing, selected occupations, June 1986 and May 1980

Department and occupation	June 1986			May 1980		
	Glass containers	Other glassware industry	Containers as percent of other glassware average	Glass containers	Other glassware industry	Containers as percent of other glassware average
All production workers ²	\$ 9.89	\$ 9.47	104	\$ 7.66	\$ 6.40	120
Batch house and furnaces:						
Batch mixers	9.21	9.11	101	7.25	6.34	114
Batch-and-furnace operators	10.12	8.68	117	7.46	6.19	121
Cullet handlers	9.16	8.60	107	7.09	6.05	117
Furnace operators	9.70	10.53	92	7.54	6.79	111
Machine forming:						
Forming-machine operators	12.35	10.79	114	10.02	8.04	125
Forming-machine upkeepers	13.43	9.85	136	10.85	7.85	138
Mold polishers	9.90	9.86	100	7.19	5.83	123
Annealing:						
Lehr tenders	9.79	8.71	112	7.33	6.24	117
Decorating:						
Decorating-machine operators	9.64	8.43	114	7.25	5.83	124
Mold shop:						
Mold makers, metal	12.64	12.08	105	9.93	8.95	111
Selecting and inspecting:						
Inspectors, final	9.19	9.08	101	7.10	6.15	115
Selectors	8.75	8.80	99	6.74	5.78	117
Maintenance:						
Electricians	12.50	11.72	107	9.93	8.18	121
Machinists	12.69	12.09	105	10.06	8.62	117
Mechanics	12.40	11.55	107	9.90	8.12	122
Pipefitters	11.90	11.79	101	9.52	8.17	117
Miscellaneous:						
Assemblers, carton	8.94	8.90	100	6.87	5.86	117
Janitors	8.74	8.63	101	6.58	5.90	112
Laborers, material handling	9.14	9.07	101	6.99	5.62	124
Power truckers	9.49	9.03	105	7.22	6.23	116
Watchmen	8.50	6.25	136	6.76	5.25	129

¹ Earnings data exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, such as those resulting from piecework or production bonus systems, and cost-of-living pay increases (but not bonuses) were included as part of the workers' regular pay. Excluded are performance bonuses and lump-sum payments, as well as profit-sharing payments, attendance bonuses, Christmas or yearend bonuses, and other non-production bonuses.

² Includes data for workers in occupations in addition to those shown separately.

vantage (36 percent) over the 6-year period.

In addition to similar pay levels, the glassware industries also shared a broad mix of skill requirements which provided for substantial differences in pay between the highest and lowest paid occupational groups studied. For example, the top earners in glass container firms (forming-machine upkeepers at \$13.43 an hour) averaged 58 percent more than the lowest paid (watchmen at \$8.50 an hour). In other glassware plants, the corresponding differential was even

greater—a 93-percent spread between hourly pay levels for maintenance machinists (\$12.09) and watchmen (\$6.25).

About nine-tenths of the workers in the two industries were paid time rates, usually under formal systems providing single rates for specified occupations. Forming-machine operators and upkeepers, two exceptions, were commonly paid on an incentive basis; in glass containers, they typically averaged 15 to 20 percent more in hourly earnings than their time-rated counterparts.

Nearly all establishments in the survey operated under labor-management contracts covering all or a majority of their production workers. The American Flint Glass Workers Union of North America (AFL-CIO) usually represented workers in the mold-making departments in both industries and other production workers in the pressed or blown glassware (except containers) industry. The Glass, Pottery, Plastics, and Allied Workers International Union typically had contracts covering production workers outside the mold-making departments of glass container plants. Bargaining is generally conducted on a company-by-company basis.

Virtually all establishments in the 1986 survey provided paid holidays, usually 12 per year, and paid vacations, typically 1 to 6 weeks per year depending on years of service. Other widespread provisions for paid time off included sickness and accident insurance or sick leave, or both; funeral leave; and jury-duty leave. Retirement pension plans and various insurance plans—including life, accidental death and dismemberment, hospitalization, surgical, basic and major medical, and dental coverage—also were available to a large majority of the workers. Employers typically paid the entire cost of these benefits.

For each of the two industries, separate reports for regions of industry concentration are available from the Bureau of Labor Statistics or any of its regional offices. A comprehen-

sive report, *Industry Wage Survey: Pressed or Blown Glass and Glassware, June 1986*, Bulletin 2286, may be purchased from the Bureau of Labor Statistics, Publication Sales Center, P.O. Box 2145, Chicago, IL 60690, or the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. The bulletin provides additional information on occupational pay, by region and by size of establishment, and on the incidence of employee benefits, nationwide and by region. □

—FOOTNOTES—

¹ For an account of the 1980 study, see "Container plant workers win largest gains in glassware manufacturing," *Monthly Labor Review*, December 1981, pp. 54–55.

Earnings data exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, such as those resulting from piecework or production bonus systems, and cost-of-living pay increases (but not bonuses) were included as part of the workers' regular pay. Excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or yearend bonuses, and other nonproduction bonuses.

² The wage and salary component of the Bureau's Employment Cost Index for durable goods manufacturing rose 40 percent between the second quarter of 1980 and June 1986.

³ The gap narrowed in part because container employees gave up a 31-cent-per-hour scheduled increase in 1985 when their employers were experiencing financial problems. Still, even if one counts the 31 cents which was later restored by several companies in August 1986, the gap was less than half that reported in 1980.

⁴ For a discussion of the rigid containers industries, see *1987 U.S. Industrial Outlook* (International Trade Administration, 1987), ch. 6–1 through 6–6.

⁵ A minimum size for survey establishments was 100 workers in both the 1980 and 1986 studies.

⁶ See *Productivity Measures for Selected Industries, 1958–85*, Bulletin 2277 (Bureau of Labor Statistics, 1987), p. 139.

Major Agreements Expiring Next Month



This list of selected collective bargaining agreements expiring in April is based on information collected by the Bureau's Office of Compensation and Working Conditions. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification.

Industry or activity	Employer and location	Labor organization ¹	Number of workers
Private			
Construction	Builders Association of Missouri (Kansas City, MO)	Laborers	4,000
	Southern Illinois Builders Association (Illinois)	Laborers	1,900
	West Virginia Contractors Bargaining Association (West Virginia)	Steelworkers	2,000
Food products	Agripac, Inc. (Oregon)	Teamsters	3,500
Chemicals	Rockwell International Corp., Hanford Operations (Richland, WA)	Hanford Metal Trades Council	2,000
Rubber	Firestone Tire and Rubber Co. (Interstate)	Rubber Workers	8,500
	Firestone Tire and Rubber Co. (Oklahoma City, OK)	Rubber Workers	1,200
	B. F. Goodrich Co. (Interstate)	Rubber Workers	7,200
	Goodyear Tire and Rubber Co. (Interstate)	Rubber Workers	16,000
	Uniroyal, Inc. (Interstate)	Rubber Workers	4,200
Air transportation	United Airlines (Interstate)	Air Line Pilots Association	4,900
Communication	General Telephone Co. of Indiana (Indiana)	Communications Workers	1,300
Utilities	Cincinnati Gas and Electric Co. (Ohio)	Electrical Workers (IBEW)	1,900
Retail trade	Northern Minnesota and Northern Wisconsin food merchants (Minnesota and Wisconsin)	Food and Commercial Workers	1,300
	Giant Eagle Food Stores (Pittsburgh, PA)	Food and Commercial Workers	4,000
	Magruder's Food Stores (Interstate)	Food and Commercial Workers	1,000
Real estate	Realty Advisory Board on Labor Relations, apartment agreement (New York, NY)	Service Employees	30,000

¹ Affiliated with AFL-CIO except where noted as independent (Ind.).

Developments in Industrial Relations



New contract for gas and electric workers

About 13,000 operations and maintenance employees of Pacific Gas and Electric Co. in Northern California were covered by a 3-year agreement negotiated by Local 1245 of the International Brotherhood of Electrical Workers. Bargaining was continuing for 4,000 clerical employees represented by the same union. Another union, the Engineers and Scientists of California (an affiliate of the Marine Engineers), settled for 1,700 engineers, designers, and drafting employees.

The Electrical Workers' contract provided for 2.75-percent pay increases in January of 1988 and 1989, and for reopening wage bargaining in 1990.

In moves to control labor costs, the parties agreed to a 12.5-percent cut in starting pay rates for new employees, who will, however, continue to progress to the same top rates as other employees; to suspend certain work rules when the company is attempting to develop more efficient operating methods; and to study ways to broaden job duties to enable work crews to perform both gas and electric work.

The accord for the engineers, designers, and drafting employees provided for two 2.75-percent specified pay increases. Other terms included a reopening on wages and pensions in the third year; termination of an automatic cost-of-living pay adjustment provision (the Electrical Workers did not have such a provision); revision of the Blue Cross plan to include a substance abuse program and a requirement that employees use designated preferred organizations to be eligible for full payment of charges (employees using other service providers will be covered at 90 percent of the cost of usual, customary, and necessary care); and formation of committees to study cross-training of gas and electric personnel and ways to increase employee job satisfaction and productivity.

Unions to coordinate 1989 bargaining with AT&T

The first move toward the 1989 round of bargaining in telephone communications occurred when the Communications Workers and the International Brotherhood of Electrical Workers agreed to coordinate their national bargaining with American Telephone and Telegraph Co. (AT&T). Under

the new approach, the unions will hold joint meetings to formulate their bargaining goals, which presumably will result in more-or-less identical contract terms for the 155,000 employees represented by the Communications Workers, and the 41,000 represented by the Electrical Workers.

The move toward common bargaining would contrast with that in 1986 when the Electrical Workers settled peacefully with AT&T, but the Communications Workers' settlement was preceded by a work stoppage. Contract terms were, however, similar for both units.

Two-tier pay to merge for flight attendants

At American Airlines, members of the Association of Professional Flight Attendants were covered by a 5-year contract that begins to merge the two-tiered pay scale. Under the system, "B" scale employees hired in 1983 or later were paid at about half the rate of "A" scale employees hired earlier. Reportedly, about half of the 12,000 flight attendants were on the B scale, earning an average of \$12,000 a year, compared with \$25,000 to \$27,000 to those on the A scale.

Under the settlement, the pay scale for first-year employees was raised 15.7 percent, and B scale employees will move to the A scale in their eighth year of service. This shift will result in pay increases up to 45.8 percent for some employees over the contract term. Pay rates were not changed for A scale employees, but they will receive \$600 lump-sum payments in each contract year.

The settlement, which averted a planned 2-day work stoppage by the attendants, also provided for increased normal pensions and for a new early retirement option for attendants age 45 to 55 with 20 years' service; and for changes in pay rules for nonflight duty hours.

Graphics contract calls for rehiring strikers

One of the longest union-management disputes in U.S. history ended with a settlement between Arcata Graphics—formerly the Kingsport Press—and the Aluminum, Brick and Glass Workers. The dispute began in 1963, when the Kingsport Press and five printing unions reached a bargaining impasse, leading to a work stoppage, the hiring of replacement workers, and the ouster of the unions as bargaining representatives in a 1967 election. (See *Monthly Labor Review*, October 1987, p. 49.) Key issues in the dispute

"Developments in Industrial Relations" is prepared by George Ruben of the Division of Developments in Labor-Management Relations, Bureau of Labor Statistics, and is largely based on information from secondary sources.

were wages, vacations, equipment staffing, seniority, and subcontracting work to other companies.

Under the settlement, Arcata agreed to rehire 80 percent of the terminated employees as permanent workers or as extras to be utilized during peak production periods.

Other terms of the 3-year contract included—

- Lump-sum payments of \$600 in the first year and \$500 in the second year, and 2.5-percent pay increases in the second and third years.
- Company-financed health, life, and dental insurance.
- Sickness and accident benefits up to \$190 a week for up to 26 weeks.
- A defined benefit pension plan, with participants receiving past service credits.
- Ten paid holidays.
- A reduction in the paid-vacation requirement to 1,400 hours worked in a year.
- A 10-cent-an-hour increase in the shift differentials.

Pineapple workers get compensation increase

In Hawaii, a settlement between pineapple producers and Local 142 of the Longshoremen's and Warehousemen's union provided for three annual 1.5-percent pay increases and quarterly lump-sum payments. Each lump-sum payment will equal 1.5 percent of employee earnings, including overtime and premium pay, during the preceding 3 months. Prior to the settlement, pay rates ranged from \$7.42 to \$10.91 an hour.

Benefit terms for the 4,000 employees included a \$300 increase in the annual cap on dental benefits for a family and a \$1 increase in the basic pension rate, to \$9.50 a month for each year of credited service to 35 years. As before, each year of service beyond 35 years is rewarded at 50 percent of the basic monthly pension rate.

The companies involved in the settlement were Dole Co., Del Monte Corp., and Maui Land and Pineapple Co.

Columbus gives police officers wage increase

In Columbus, OH, 1,250 police officers were covered by a 3-year contract that called for wage increases, and for changes in other provisions intended to control labor costs.

The wage increases are 4.5 percent at the beginning of the second and third contract years. Under the prior contract, pay ranged from \$16,848 for new officers to \$27,788 after 2½ years' service. After the third-year increase in the new contract, pay will range from \$19,408 for new officers to \$32,014 after 3½ years' service.

In addition to the lengthening of the pay progression schedule, the union agreed that officers who report for a court case will now receive only 1 hour's pay if the case is dismissed or continued. As before, they will receive 3 hours' pay if the case is tried.

In addition to an expected \$600,000 annual cost savings

from the new court appearance rules, city officials expect \$300,000 annual savings from new health care cost-containment rules, such as higher deductibles and a second-opinion requirement before elective surgery. The settlement also called for increased longevity pay and uniform allowances. The city agreed to hire 105 officers a year, a net gain of 70 jobs because about 35 jobs must be filled each year due to attrition.

New Orleans teachers, related workers, settle

In Louisiana, the Orleans Parish School Board and the United Teachers of New Orleans negotiated a 3-year contract for 6,000 teachers, social workers, counselors, and clerical workers that provided no significant changes in wages or benefits. Union officials said they reluctantly accepted the terms because tax revenue was not available to finance increases in compensation, but they would work to get citizen approval of a property tax increase in New Orleans to finance future improvements. In September 1986, voters had rejected a property tax increase, influenced, to some extent, by the State's projected \$300 million budget deficit which stemmed, in part, from cutbacks in petroleum output.

In mid-1986, the University of New Orleans reported that the average teacher salary in New Orleans was between \$15,000 and \$17,000 a year.

Concessions allow steel plant to modernize

Armco Inc. began a \$100 million modernization of its steel slab casting plant in Ashland, KY, after the Steelworkers agreed to a cut in compensation totaling \$22.5 million over 3 years. The cuts, approved by the members of local union 1865 in July, were approved by the Steelworkers' national leaders in November, after Armco agreed to repay the cuts plus 7 percent interest in four installments. The first installment will be made when shipments of steel resulting from the improved process total one million tons.

The temporary aid from the 3,200 employees is composed of a 69-cent-an-hour cut in wages, which had averaged \$11.05; elimination of two paid holidays; and a cut to double-time pay, from double-time and one-half, for working holidays.

Local union president John Blankenship said the financial aid to Armco was considered an investment in the future of the plant, rather than a concession. He said the plant had lost money during 34 of the last 36 months and that the hourly paid work force would have been cut to 800 employees if the union had not agreed to aid in the modernization.

Stock workers improve early retirement benefits

Adoption of improvements in early retirement benefits ended a bargaining dispute between Local 153 of the Office and Professional Employees and the New York Stock Exchange and the Securities Industry Automation Corp.,

which is partly owned by the Exchange and operates its computer system. The settlement came a few days after the union had ended a 3-day work stoppage and resumed negotiations. The stoppage was the first at the exchange in 40 years.

Under the new pension provisions, employees retiring at age 55 will receive 86 percent of the normal benefit rate, compared with 75 percent under the agreement that expired on October 31. A union official said that the change was vital to employees because the stock exchange's trading floor is a "madhouse, and we have people who have been working there 25 to 30 years. They're burned out, but until now they couldn't afford to retire."

The 3-year accord, covering 1,400 employees, also provides for 5-percent salary increases in each year.

Master contract at Blue Cross-Blue Shield

A 3-month work stoppage involving Blue Cross-Blue Shield operations in various Michigan locations ended when four United Auto Workers local unions agreed to a 3-year master contract. In previous years, the locals had negotiated separate but essentially identical contracts for the 4,000 clerical employees.

The settlement provided for an immediate \$1,500 lump-sum payment and a 3-percent pay increase in the second year and a 4-percent increase in the final year. All workers meeting job performance requirements will also receive 3-percent merit pay increases in each year.

The accord also put all workers under a single seniority system; allowed workers to file grievances over classification of their jobs; increased health benefit options; expanded the counseling program to cover more than substance abuse; and expanded employee training in new technology.

The company, which continued to operate during the stoppage by assigning 2,000 supervisors and technicians to lengthened work schedules, also agreed to rehire workers it had fired during the stoppage.

New York issues guidelines for VDT operators

Employee concerns over possible adverse physical effects from operating video display terminals (VDT) were addressed in a new policy negotiated by the State of New York and the Civil Service Employees Association, a unit of the State, County and Municipal Employees. The new policy, which guides State agencies in improving working conditions, calls for—

- work-station furniture and layout to meet the requirements of individual employees;
- reduced noise and greater control of temperature and humidity;
- special lighting and use of hoods, screens, and proper window shades to reduce glare and eyestrain;
- breaks and job shifts for VDT operators; and
- training for employees and supervisors on ergonomic design and safe use of VDT's.

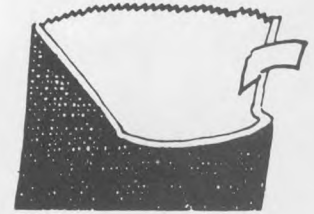
The new policy declares that "there is presently no conclusive scientific data to support" the union's demand for protective equipment and devices. The policy also does not require the State to finance eye examinations and glasses for VDT operators.

Elsewhere, the World Health Organization reported that visual discomfort is common among VDT operators, but there is no evidence of permanent vision impairment. To reduce the discomfort from VDT use, the report recommends that employers give extra attention to the design of equipment, workplace, work environment, and work practices.

According to the report, musculoskeletal discomfort is common among VDT operators, but further research is necessary to determine if this is an indicator or precursor of injury.

The report, prepared by Ulf Ove Bergqvist and Bergt Knave of the Swedish National Board of Occupational Health and Safety, is based on the 1985 findings of a Working Group on VDT's sponsored by the World Health Organization. □

Book Reviews



Two approaches to labor theory

Economics of Labor in Industrial Society. Edited by Clark Kerr and Paul D. Staudohar. San Francisco, CA, Jossey-Bass, Inc., Publishers, 1986. 420 pp. \$29.95.

Industrial Relations in a New Age: Economic, Social, and Managerial Perspectives. Edited by Clark Kerr and Paul D. Staudohar. San Francisco, CA, Jossey-Bass, Inc., Publishers, 1986. 417 pp. \$29.95.

Where conflicting interpretations of facts must be examined, two types of reading collections are in use. First are collections of chapters authored by individual experts who summarize the views of others. Second are those which allow the proponents of contrasting views to speak for themselves by presenting material from original sources. Commentaries and analysis are often provided in both types.

The quality of each type can vary, of course, depending on the objectivity of the editors and the breadth of their experience and scholarship. The volumes reviewed here demonstrate that the second type is preferable. Professors Clark Kerr and Paul D. Staudohar have extracted the essential meaning of complex concepts in a fashion permitting challenge and encouraging further study.

In these two volumes, readers may enjoy the product of two generations of expertise in labor economics and industrial relations. Both editors are undoubtedly acquainted with the entire scope of writings in, for example, the economic role of unions. But it is this splendid collaboration which guarantees that the reader will benefit from interpretations as varied as those of Henry Simons or Richard B. Freeman and James L. Medoff.

Two other features of these volumes enhance their value as texts for classroom use: each chapter closes with questions for discussion and additional relevant readings for students wishing to explore the subject further.

The economics text begins with segments devoted to economic history and the evolution from serfdom to the factory system. There is a discussion of the Wisconsin school's view of American exceptionalism as well as some of the revisionist interpretations of American labor history.

The authors discuss a series of economic issues which should be read by those interested in modern labor-management relations: the nature and role of the labor force and of management; productivity problems; the labor market; income, wages, and stagflation; the welfare state; and industrial policy.

Two final chapters serve as a more direct introduction to industrial relations: one on the economic role of unions and the other on alternative research perspectives. It is here that Kerr urges labor economists to concentrate their research on observation and understanding, rather than on that which can be quantified:

Much of the econometric work . . . has deteriorated into a study of trivia: into more and more analyses of smaller bits and pieces of data . . . little concern is paid to expanding the pools of information and little concern is expressed for the comparative intellectual value of the results. This can lead, if carried too far and too long, to creeping sterility.

The companion volume, *Industrial Relations in a New Age*, has a similar format and is just as successful in its coverage of this more modern field. It should be pointed out that this volume is not restricted to the nuts and bolts of collective bargaining. Rather, it focuses on the different perspectives of industrial relations and extends to the historical, philosophical, political, and sociological elements which go into the practice of industrial relations.

The collection begins by leading us from the basic matter dealt with in the first volume, to the newer area of industrial relations, with a historical overview of the meaning of work, beginning with Marx and Engels and carefully tracing the contributions of the sociologists. This is followed by an analysis of changes taking place in the work force.

Before embarking on the discussion of collective bargaining, the editors present the insights of a variety of experts on job satisfaction and dissatisfaction; quality of worklife; the various forms of workers' participation in management; and the public policies which establish the rules of the game.

The three chapters on collective bargaining, industrial conflict, and labor political action are among the best in these volumes. However, placing them between two separate chapters on comparative industrial relations systems may confuse the reader, especially because Great Britain, Japan, and West Germany are each covered in both comparative treatments.

The final two chapters present the entire range of opinion on the forces determining industrial societies in general as well as the essential nature of our own industrial relations system. The latter contains Kerr's analysis of the various forms of "convergence" which can be envisaged for future industrial societies. Each will determine its own industrial relations system, says Kerr, introducing the reader to his thoughtful closing contribution to this excellent compendium. Then, after describing the contrasting ideological

goals of East and West, he points to forces for convergence and diversity in these goals. He concludes:

. . . that the forces for convergence generally tend to become stronger and . . . those for continuing diversity become weaker.

. . . But there is no prospective solution to the conflict of irreconcilable sets of goals, each with its strong adherents. This, in my opinion, is the greatest barrier to full convergence. . . . Additionally, full convergence is greatly impeded by the ability of elites to perpetuate themselves and to continue in power.

A fitting close to a set of volumes designed to give readers the whole gamut of views on complex matters and to motivate them to thoughtful analysis before reaching firm conclusions.

—MORRIS WEISZ

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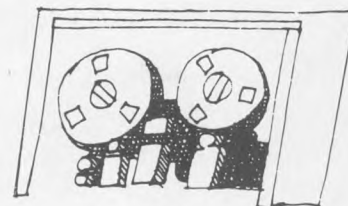
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Current Labor Statistics



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Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Productivity and costs: Nonfarm business and manufacturing					May 2	1st quarter	2; 42-44
Nonfinancial corporations	March 3	4th quarter					2; 42-44
Employment situation	March 4	February	April 1	March	May 6	April	1; 4-21
Producer Price Index	March 11	February	April 15	March	May 13	April	2; 33-35
Consumer Price Index	March 23	February	April 20	March	May 20	April	2; 30-32
Real earnings	March 23	February	April 20	March	May 20	April	14-17
Major collective bargaining settlements			April 26	1st quarter			3; 25-28
Employment Cost Index			April 26	1st quarter			1-3; 22-24
U.S. Import and Export Price Indexes			April 28	1st quarter			36-41

NOTES ON CURRENT LABOR STATISTICS

This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics: series on labor force, employment, unemployment, collective bargaining settlements, consumer, producer, and international prices, productivity, international comparisons, and injury and illness statistics. In the notes that follow, the data in each group of tables are briefly described, key definitions are given, notes on the data are set forth, and sources of additional information are cited.

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years. (Seasonally adjusted data appear in tables 1-3, 4-10, 13, 14, 17, and 18.) Beginning in January 1980, the BLS introduced two major modifications in the seasonal adjustment methodology for labor force data. First, the data are seasonally adjusted with a procedure called $X-11$ ARIMA, which was developed at Statistics Canada as an extension of the standard $X-11$ method previously used by BLS. A detailed description of the procedure appears in *The X-11 ARIMA Seasonal Adjustment Method* by Estela Bee Dagum (Statistics Canada, Catalogue No. 12-564E, February 1980). The second change is that seasonal factors are calculated for use during the first 6 months of the year, rather than for the entire year, and then are calculated at midyear for the July-December period. However, revisions of historical data continue to be made only at the end of each calendar year.

Seasonally adjusted labor force data in tables 1 and 4-10 were revised in the February 1988 issue of the *Review*, to reflect experience through 1987.

Annual revisions of the seasonally adjusted payroll data shown in tables 13, 14, and 18 were made in the July 1987 *Review* using the $X-11$ ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in table 42 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from quarter to quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the Hourly Earnings Index in table 17—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of \$3 and a current price index number of 150, where 1977 = 100, the hourly rate expressed in 1977 dollars is \$2 ($\$3/150 \times 100 = \2). The \$2 (or any other resulting values) are described as "real," "constant," or "1977" dollars.

Additional information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule preceding these general notes. More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in *Employment and Earnings*, a monthly publication of the Bureau. More data from the household survey are published in the two-volume data book—*Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2096. More data from the establishment survey appear in two data books—*Employment, Hours, and Earnings, United States*, and *Employment, Hours, and Earnings, States and Areas*, and the annual supplements to these data books. More detailed information on employee compensation and collective bargaining settlements is published in the monthly periodical, *Current Wage Developments*. More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report*, and *Producer Prices and Price Indexes*. Detailed data on all of the series in this section are provided in the *Handbook of Labor Statistics*, which is published biennially by the Bureau. BLS bulletins are issued covering productivity, injury and illness, and other data in this section. Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

p = preliminary. To increase the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.

r = revised. Generally, this revision reflects the availability of later data but may also reflect other adjustments.

n.e.c. = not elsewhere classified.

n.e.s. = not elsewhere specified.

COMPARATIVE INDICATORS (Tables 1-3)

Comparative indicators tables provide an overview and comparison of major BLS statistical series. Consequently, although many of the included series are available monthly, all measures in these comparative tables are presented quarterly and annually.

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-to-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonagricultural payroll data. The Employment Cost Index (compensation), by major sector and by

bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

Data on **changes in compensation, prices, and productivity** are presented in table 2. Measures of rates of change of compensation and wages from the Employment Cost Index program are provided for all civilian nonfarm workers (excluding Federal and household workers) and for all private nonfarm workers. Measures of changes in: consumer prices for all urban consumers; producer prices by stage of processing; and the overall export and import price indexes are given. Measures of productivity (output per hour of all persons) are provided for major sectors.

Alternative measures of wage and compensation rates of change, which reflect the overall trend in labor costs, are summarized in table 3. Differences in concepts and scope, related to the specific purposes of the series, contribute to the variation in changes among the individual measures.

Notes on the data

Definitions of each series and notes on the data are contained in later

sections of these notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Volumes I and II, Bulletins 2134-1 and 2134-2 (Bureau of Labor Statistics, 1982 and 1984, respectively), as well as the additional bulletins, articles, and other publications noted in the separate sections of the *Review's* "Current Labor Statistics Notes." Historical data for many series are provided in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). Users may also wish to consult *Major Programs, Bureau of Labor Statistics*, Report 718 (Bureau of Labor Statistics, 1985).

EMPLOYMENT AND UNEMPLOYMENT DATA

(Tables 1; 4-21)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 59,500 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

Employed persons include (1) all civilians who worked for pay any time during the week which includes the 12th day of the month or who worked unpaid for 15 hours or more in a family-operated enterprise and (2) those who were temporarily absent from their regular jobs because of illness, vacation, industrial dispute, or similar reasons. Members of the Armed Forces stationed in the United States are also included in the employed total. A person working at more than one job is counted only in the job at which he or she worked the greatest number of hours.

Unemployed persons are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff or waiting to start new jobs within the next 30 days are also counted among the unemployed. The **overall unemployment rate** represents the number unemployed as a percent of the labor force, including the resident Armed Forces. The **civilian unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **labor force** consists of all employed or unemployed civilians plus members of the Armed Forces stationed in the United States. Persons **not in the labor force** are those not classified as employed or unemployed; this group includes persons who are retired, those engaged in their own household work, those not working while attending school, those unable to work because of long-term illness, those discouraged from seeking work because of personal or job-market factors, and those who are voluntarily idle. The **noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy, and members of the Armed Forces stationed in the United States. The **labor force participation rate** is the proportion of the noninstitutional population that is in the labor force. The **employment-population ratio** is total employment (including the resident Armed Forces) as a percent of the noninstitutional population.

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the preceding years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on

the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Data in tables 4-10 are seasonally adjusted, based on the seasonal experience through December 1987.

Additional sources of information

For detailed explanations of the data, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 1, and for additional data, *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). A detailed description of the Current Population Survey as well as additional data are available in the monthly Bureau of Labor Statistics periodical, *Employment and Earnings*. Historical data from 1948 to 1981 are available in *Labor Force Statistics Derived from the Current Population Survey: A Databook*, Vols. I and II, Bulletin 2096 (Bureau of Labor Statistics, 1982).

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9-20.

Establishment survey data

Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by more than 290,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

An **establishment** is an economic unit which produces goods or services (such as a factory or store) at a single location and is engaged in one type of economic activity.

Employed persons are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th of the month. Persons holding more than one job (about 5 percent of all persons in the labor force) are counted in each establishment which reports them.

Production workers in manufacturing include working supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12-17 include production workers in manufacturing and mining; construction workers in construction; and non-supervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and

services. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). The **Hourly Earnings Index** is calculated from average hourly earnings data adjusted to exclude the effects of two types of changes that are unrelated to underlying wage-rate developments: fluctuations in overtime premiums in manufacturing (the only sector for which overtime data are available) and the effects of changes and seasonal factors in the proportion of workers in high-wage and low-wage industries.

Hours represent the average weekly hours of production or nonsupervisory workers for which pay was received and are different from standard or scheduled hours. **Overtime hours** represent the portion of average weekly hours which was in excess of regular hours and for which overtime premiums were paid.

The **Diffusion Index**, introduced in the May 1983 *Review*, represents the percent of 185 nonagricultural industries in which employment was rising over the indicated period. One-half of the industries with unchanged employment are counted as rising. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. The diffusion index is useful for measuring the dispersion of economic gains or losses and is also an economic indicator.

Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1987 data, published in the July 1987 issue of the *Review*. Consequently, data published in the *Review* prior to that issue are not necessarily comparable to current data. Unadjusted data have been revised back to April 1985; seasonally adjusted data have been revised back to January 1982. These revisions were published in the *Supplement to Employment and Earnings* (Bureau of Labor Statistics, 1987). Unadjusted data from April 1986 forward, and seasonally adjusted data from January 1983 forward are subject to revision in future benchmarks.

In the establishment survey, estimates for the 2 most recent months are based on incomplete returns and are published as preliminary in the tables (13 to 18 in the *Review*). When all returns have been received, the estimates are revised and published as final in the third month of their appearance. Thus, August data are published as preliminary in October and November and as final in December. For the same reason, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, second-quarter data are published as preliminary in August and September and as final in October.

COMPENSATION AND WAGE DATA

(Tables 1-3; 22-29)

COMPENSATION AND WAGE DATA are gathered by the Bureau from business establishments, State and local governments, labor unions, collective bargaining agreements on file with the Bureau, and secondary sources.

Employment Cost Index

Description of the series

The **Employment Cost Index** (ECI) is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of

Additional sources of information

Detailed national data from the establishment survey are published monthly in the BLS periodical, *Employment and Earnings*. Earlier comparable unadjusted and seasonally adjusted data are published in *Employment, Hours, and Earnings, United States, 1909-84*, Bulletin 1312-12 (Bureau of Labor Statistics, 1985) and its annual supplement. For a detailed discussion of the methodology of the survey, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 2. For additional data, see *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9-20.

Unemployment data by State

Description of the series

Data presented in this section are obtained from two major sources—the Current Population Survey (CPS) and the Local Area Unemployment Statistics (LAUS) program, which is conducted in cooperation with State employment security agencies.

Monthly estimates of the labor force, employment, and unemployment for States and sub-State areas are a key indicator of local economic conditions and form the basis for determining the eligibility of an area for benefits under Federal economic assistance programs such as the Job Training Partnership Act and the Public Works and Economic Development Act. Insofar as possible, the concepts and definitions underlying these data are those used in the national estimates obtained from the CPS.

Notes on the data

Data refer to State of residence. Monthly data for 11 States—California, Florida, Illinois, Massachusetts, Michigan, New York, New Jersey, North Carolina, Ohio, Pennsylvania, and Texas—are obtained directly from the CPS, because the size of the sample is large enough to meet BLS standards of reliability. Data for the remaining 39 States and the District of Columbia are derived using standardized procedures established by BLS. Once a year, estimates for the 11 States are revised to new population controls. For the remaining States and the District of Columbia, data are benchmarked to annual average CPS levels.

Additional sources of information

Information on the concepts, definitions, and technical procedures used to develop labor force data for States and sub-State areas as well as additional data on sub-States are provided in the monthly Bureau of Labor Statistics periodical, *Employment and Earnings*, and the annual report, *Geographic Profile of Employment and Unemployment* (Bureau of Labor Statistics). See also *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 4.

labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor. The index is not seasonally adjusted.

Statistical series on total compensation costs and on wages and salaries are available for private nonfarm workers excluding proprietors, the self-employed, and household workers. Both series are also available for State and local government workers and for the civilian nonfarm economy, which consists of private industry and State and local government workers combined. Federal workers are excluded.

The Employment Cost Index probability sample consists of about 2,200 private nonfarm establishments providing about 12,000 occupational observations and 700 State and local government establishments providing

3,500 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

Beginning with June 1986 data, fixed employment weights from the 1980 Census of Population are used each quarter to calculate the indexes for civilian, private, and State and local governments. (Prior to June 1986, the employment weights are from the 1970 Census of Population.) These fixed weights, also used to derive all of the industry and occupation series indexes, ensure that changes in these indexes reflect only changes in compensation, not employment shifts among industries or occupations with different levels of wages and compensation. For the bargaining status, region, and metropolitan/nonmetropolitan area series, however, employment data by industry and occupation are not available from the census. Instead, the 1980 employment weights are reallocated within these series each quarter based on the current sample. Therefore, these indexes are not strictly comparable to those for the aggregate, industry, and occupation series.

Definitions

Total compensation costs include wages, salaries, and the employer's costs for employee benefits.

Wages and salaries consist of earnings before payroll deductions, including production bonuses, incentive earnings, commissions, and cost-of-living adjustments.

Benefits include the cost to employers for paid leave, supplemental pay (including nonproduction bonuses), insurance, retirement and savings plans, and legally required benefits (such as Social Security, workers' compensation, and unemployment insurance).

Excluded from wages and salaries and employee benefits are such items as payment-in-kind, free room and board, and tips.

Notes on the data

The Employment Cost Index data series began in the fourth quarter of 1975, with the quarterly percent change in wages and salaries in the private nonfarm sector. Data on employer costs for employee benefits were included in 1980 to produce, when combined with the wages and salaries series, a measure of the percent change in employer costs for employee total compensation. State and local government units were added to the ECI coverage in 1981, providing a measure of total compensation change in the civilian nonfarm economy (excluding Federal employees). Historical indexes (June 1981=100) of the quarterly rates of change are presented in the May issue of the BLS monthly periodical, *Current Wage Developments*.

Additional sources of information

For a more detailed discussion of the Employment Cost Index, see the *Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 11, and the following *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor'," July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; "Estimation procedures for the Employment Cost Index," May 1982; and "Introducing new weights for the Employment Cost Index," June 1985.

Data on the ECI are also available in BLS quarterly press releases issued in the month following the reference months of March, June, September, and December; and from the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

Collective bargaining settlements

Description of the series

Collective bargaining settlements data provide statistical measures of negotiated adjustments (increases, decreases, and freezes) in compensation

(wage and benefit costs) and wages alone, quarterly for private industry and semiannually for State and local government. Compensation measures cover all collective bargaining situations involving 5,000 workers or more and wage measures cover all situations involving 1,000 workers or more. These data, covering private nonagricultural industries and State and local governments, are calculated using information obtained from bargaining agreements on file with the Bureau, parties to the agreements, and secondary sources, such as newspaper accounts. The data are not seasonally adjusted.

Settlement data are measured in terms of future specified adjustments: those that will occur within 12 months after contract ratification—first-year—and all adjustments that will occur over the life of the contract expressed as an average annual rate. Adjustments are worker weighted. Both first-year and over-the-life measures exclude wage changes that may occur under cost-of-living clauses that are triggered by future movements in the Consumer Price Index.

Effective wage adjustments measure all adjustments occurring in the reference period, regardless of the settlement date. Included are changes from settlements reached during the period, changes deferred from contracts negotiated in earlier periods, and changes under cost-of-living adjustment clauses. Each wage change is worker weighted. The changes are prorated over all workers under agreements during the reference period yielding the average adjustment.

Definitions

Wage rate changes are calculated by dividing newly negotiated wages by the average hourly earnings, excluding overtime, at the time the agreement is reached. Compensation changes are calculated by dividing the change in the value of the newly negotiated wage and benefit package by existing average hourly compensation, which includes the cost of previously negotiated benefits, legally required social insurance programs, and average hourly earnings.

Compensation changes are calculated by placing a value on the benefit portion of the settlements at the time they are reached. The cost estimates are based on the assumption that conditions existing at the time of settlement (for example, methods of financing pensions or composition of labor force) will remain constant. The data, therefore, are measures of negotiated changes and not of total changes in employer cost.

Contract duration runs from the effective date of the agreement to the expiration date or first wage reopening date, if applicable. Average annual percent changes over the contract term take account of the compounding of successive changes.

Notes on the data

Care should be exercised in comparing the size and nature of the settlements in State and local government with those in the private sector because of differences in bargaining practices and settlement characteristics. A principal difference is the incidence of cost-of-living adjustment (COLA) clauses which cover only about 2 percent of workers under a few local government settlements, but cover 50 percent of workers under private sector settlements. Agreements without COLA's tend to provide larger specified wage increases than those with COLA's. Another difference is that State and local government bargaining frequently excludes pension benefits which are often prescribed by law. In the private sector, in contrast, pensions are typically a bargaining issue.

Additional sources of information

For a more detailed discussion on the series, see the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 10. Comprehensive data are published in press releases issued quarterly (in January, April, July, and October) for private industry, and semi-

annually (in February and August) for State and local government. Historical data and additional detailed tabulations for the prior calendar year appear in the April issue of the BLS monthly periodical, *Current Wage Developments*.

Work stoppages

Description of the series

Data on **work stoppages** measure the number and duration of major strikes or lockouts (involving 1,000 workers or more) occurring during the month (or year), the number of workers involved, and the amount of time lost because of stoppage.

Data are largely from newspaper accounts and cover only establishments directly involved in a stoppage. They do not measure the indirect or secondary effect of stoppages on other establishments whose employees are idle owing to material shortages or lack of service.

Definitions

Number of stoppages: The number of strikes and lockouts involving 1,000 workers or more and lasting a full shift or longer.

Workers involved: The number of workers directly involved in the stoppage.

Number of days idle: The aggregate number of workdays lost by workers involved in the stoppages.

Days of idleness as a percent of estimated working time: Aggregate workdays lost as a percent of the aggregate number of standard workdays in the period multiplied by total employment in the period.

Notes on the data

This series is not comparable with the one terminated in 1981 that covered strikes involving six workers or more.

Additional sources of information

Data for each calendar year are reported in a BLS press release issued in the first quarter of the following year. Monthly data appear in the BLS

monthly periodical, *Current Wage Developments*. Historical data appear in the *BLS Handbook of Labor Statistics*.

Other compensation data

Other BLS data on pay and benefits, not included in the Current Labor Statistics section of the *Monthly Labor Review*, appear in and consist of the following:

Industry Wage Surveys provide data for specific occupations selected to represent an industry's wage structure and the types of activities performed by its workers. The Bureau collects information on weekly work schedules, shift operations and pay differentials, paid holiday and vacation practices, and information on incidence of health, insurance, and retirement plans. Reports are issued throughout the year as the surveys are completed. Summaries of the data and special analyses also appear in the *Monthly Labor Review*.

Area Wage Surveys annually provide data for selected office, clerical, professional, technical, maintenance, toolroom, powerplant, material movement, and custodial occupations common to a wide variety of industries in the areas (labor markets) surveyed. Reports are issued throughout the year as the surveys are completed. Summaries of the data and special analyses also appear in the *Review*.

The National Survey of Professional, Administrative, Technical, and Clerical Pay provides detailed information annually on salary levels and distributions for the types of jobs mentioned in the survey's title in private employment. Although the definitions of the jobs surveyed reflect the duties and responsibilities in private industry, they are designed to match specific pay grades of Federal white-collar employees under the General Schedule pay system. Accordingly, this survey provides the legally required information for comparing the pay of salaried employees in the Federal civil service with pay in private industry. (See Federal Pay Comparability Act of 1970, 5 U.S.C. 5305.) Data are published in a BLS news release issued in the summer and in a bulletin each fall; summaries and analytical articles also appear in the *Review*.

Employee Benefits Survey provides nationwide information on the incidence and characteristics of employee benefit plans in medium and large establishments in the United States, excluding Alaska and Hawaii. Data are published in an annual BLS news release and bulletin, as well as in special articles appearing in the *Review*.

PRICE DATA (Tables 2; 30-41)

PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period (1982=100 or 1982-84=100 unless otherwise noted).

Consumer Price Indexes

Description of the series

The **Consumer Price Index (CPI)** is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all urban consumer index (CPI-U), introduced in 1978, is representative of the 1982-84 buying habits of about 80 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners

and clerical workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items are kept essentially unchanged between major revisions so that only price changes will be measured. All taxes directly associated with the purchase and use of items are included in the index.

Data collected from more than 21,000 retail establishments and 60,000 housing units in 91 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 27 major urban centers are presented in table 31. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are measured for the CPI-U. A rental equivalence method replaced the

asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI-W. The central purpose of the change was to separate shelter costs from the investment component of homeownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes. An updated CPI-U and CPI-W were introduced with release of the January 1987 data.

Additional sources of information

For a discussion of the general method for computing the CPI, see *BLS Handbook of Methods, Volume II, The Consumer Price Index*, Bulletin 2134-2 (Bureau of Labor Statistics, 1984). The recent change in the measurement of homeownership costs is discussed in Robert Gillingham and Walter Lane, "Changing the treatment of shelter costs for homeowners in the CPI," *Monthly Labor Review*, July 1982, pp. 9-14. An overview of the recently introduced revised CPI, reflecting 1982-84 expenditure patterns, is contained in *The Consumer Price Index: 1987 Revision*, Report 736 (Bureau of Labor Statistics, 1987).

Additional detailed CPI data and regular analyses of consumer price changes are provided in the *CPI Detailed Report*, a monthly publication of the Bureau. Historical data for the overall CPI and for selected groupings may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received in primary markets of the United States by producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,100 commodities and about 75,000 quotations per month selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The stage of processing structure of Producer Price Indexes organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition.

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

Since January 1987, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1982. The detailed data are aggregated to obtain indexes for stage-of-processing groupings, commodity groupings, durability-of-product groupings, and a number of special composite groups. All Producer Price Index data are subject to revision 4 months after original publication.

Notes on the data

Beginning with the January 1986 issue, the *Review* is no longer presenting tables of Producer Price Indexes for commodity groupings, special composite groups, or SIC industries. However, these data will continue to be presented in the Bureau's monthly publication *Producer Price Indexes*.

The Bureau has completed the first major stage of its comprehensive overhaul of the theory, methods, and procedures used to construct the Producer Price Indexes. Changes include the replacement of judgment sampling with probability sampling techniques; expansion to systematic

coverage of the net output of virtually all industries in the mining and manufacturing sectors; a shift from a commodity to an industry orientation; the exclusion of imports from, and the inclusion of exports in, the survey universe; and the respecification of commodities priced to conform to Bureau of the Census definitions. These and other changes have been phased in gradually since 1978. The result is a system of indexes that is easier to use in conjunction with data on wages, productivity, and employment and other series that are organized in terms of the Standard Industrial Classification and the Census product class designations.

Additional sources of information

For a discussion of the methodology for computing Producer Price Indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 7.

Additional detailed data and analyses of price changes are provided monthly in *Producer Price Indexes*. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

International Price Indexes

Description of the series

The BLS **International Price Program** produces quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts: it includes corporations, businesses, and individuals but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents. With publication of an all-import index in February 1983 and an all-export index in February 1984, all U.S. merchandise imports and exports now are represented in these indexes. The reference period for the indexes is 1977 = 100, unless otherwise indicated.

The product universe for both the import and export indexes includes raw materials, agricultural products, semifinished manufactures, and finished manufactures, including both capital and consumer goods. Price data for these items are collected quarterly by mail questionnaire. In nearly all cases, the data are collected directly from the exporter or importer, although in a few cases, prices are obtained from other sources.

To the extent possible, the data gathered refer to prices at the U.S. border for exports and at either the foreign border or the U.S. border for imports. For nearly all products, the prices refer to transactions completed during the first 2 weeks of the third month of each calendar quarter—March, June, September, and December. Survey respondents are asked to indicate all discounts, allowances, and rebates applicable to the reported prices, so that the price used in the calculation of the indexes is the actual price for which the product was bought or sold.

In addition to general indexes of prices for U.S. exports and imports, indexes are also published for detailed product categories of exports and imports. These categories are defined by the 4- and 5-digit level of detail of the Standard Industrial Trade Classification System (SITC). The calculation of indexes by SITC category facilitates the comparison of U.S. price trends and sector production with similar data for other countries. Detailed indexes are also computed and published on a Standard Industrial Classification (SIC-based) basis, as well as by end-use class.

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each weight category and are then aggregated to the SITC level. The values assigned to each weight category are based on trade value figures compiled

by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1980.

Because a price index depends on the same items being priced from period to period, it is necessary to recognize when a product's specifications or terms of transaction have been modified. For this reason, the Bureau's quarterly questionnaire requests detailed descriptions of the physical and functional characteristics of the products being priced, as well as information on the number of units bought or sold, discounts, credit terms, packaging, class of buyer or seller, and so forth. When there are changes in either the specifications or terms of transaction of a product, the dollar value of each change is deleted from the total price change to obtain the "pure" change. Once this value is determined, a linking procedure is employed which allows for the continued repricing of the item.

For the export price indexes, the preferred pricing basis is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation.

PRODUCTIVITY DATA (Tables 2; 42-47)

U. S. productivity and related data

Description of the series

The productivity measures relate real physical output to real input. As such, they encompass a family of measures which include single factor input measures, such as output per unit of labor input (output per hour) or output per unit of capital input, as well as measures of multifactor productivity (output per unit of labor and capital inputs combined). The Bureau indexes show the change in output relative to changes in the various inputs. The measures cover the business, nonfarm business, manufacturing, and nonfinancial corporate sectors.

Corresponding indexes of hourly compensation, unit labor costs, unit nonlabor payments, and prices are also provided.

Definitions

Output per hour of all persons (labor productivity) is the value of goods and services in constant prices produced per hour of labor input. **Output per unit of capital services** (capital productivity) is the value of goods and services in constant dollars produced per unit of capital services input.

Multifactor productivity is the ratio output per unit of labor and capital inputs combined. Changes in this measure reflect changes in a number of factors which affect the production process such as changes in technology, shifts in the composition of the labor force, changes in capacity utilization, research and development, skill and efforts of the work force, management, and so forth. Changes in the output per hour measures reflect the impact of these factors as well as the substitution of capital for labor.

Compensation per hour is the wages and salaries of employees plus employers' contributions for social insurance and private benefit plans, and the wages, salaries, and supplementary payments for the self-employed (except for nonfinancial corporations in which there are no self-employed)—the sum divided by hours paid for. **Real compensation per hour** is compensation per hour deflated by the change in the Consumer Price Index for All Urban Consumers.

Unit labor costs are the labor compensation costs expended in the production of a unit of output and are derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current dollar value of output and dividing by output. **Unit nonlabor costs** contain all the components of unit nonlabor payments *except* unit profits.

An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f. (cost, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges.

Additional sources of information

For a discussion of the general method of computing International Price Indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 8.

Additional detailed data and analyses of international price developments are presented in the Bureau's quarterly publication *U.S. Import and Export Price Indexes* and in occasional *Monthly Labor Review* articles prepared by BLS analysts. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

Unit profits include corporate profits and the value of inventory adjustments per unit of output.

Hours of all persons are the total hours paid of payroll workers, self-employed persons, and unpaid family workers.

Capital services is the flow of services from the capital stock used in production. It is developed from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset.

Labor and capital inputs combined are derived by combining changes in labor and capital inputs with weights which represent each component's share of total output. The indexes for capital services and combined units of labor and capital are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

Notes on the data

Output measures for the business sector and the nonfarm business sector exclude the constant dollar value of owner-occupied housing, rest of world, households and institutions, and general government output from the constant dollar value of gross national product. The measures are derived from data supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are developed from data of the Bureau of Labor Statistics and the Bureau of Economic Analysis.

The productivity and associated cost measures in tables 42-44 describe the relationship between output in real terms and the labor time and capital services involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input. Although these measures relate output to hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; capital investment; level of output; utilization of capacity, energy, and materials; the organization of production; managerial skill; and the characteristics and efforts of the work force.

Additional sources of information

Descriptions of methodology underlying the measurement of output per hour and multifactor productivity are found in the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 13. Historical data for selected industries are provided in the Bureau's *Handbook of Labor Statistics*, 1985, Bulletin 2217.

INTERNATIONAL COMPARISONS (Tables 45–47)

Labor force and unemployment

Description of the series

Tables 45 and 46 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and six European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

Definitions

For the principal U.S. definitions of the **labor force**, **employment**, and **unemployment**, see the Notes section on EMPLOYMENT DATA: Household Survey Data.

Notes on the data

The adjusted statistics have been adapted to the age at which compulsory schooling ends in each country, rather than to the U.S. standard of 16 years of age and over. Therefore, the adjusted statistics relate to the population age 16 and over in France, Sweden, and from 1973 onward, the United Kingdom; 16 and over in Canada, Australia, Japan, Germany, the Netherlands, and prior to 1973, the United Kingdom; and 14 and over in Italy. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

In the U.S. labor force survey, persons on layoff who are awaiting recall to their job are classified as unemployed. European and Japanese layoff practices are quite different in nature from those in the United States; therefore, strict application of the U.S. definition has not been made on this point. For further information, see *Monthly Labor Review*, December 1981, pp. 8–11.

The figures for one or more recent years for France, Germany, Italy, the Netherlands, and the United Kingdom are calculated using adjustment factors based on labor force surveys for earlier years and are considered preliminary. The recent-year measures for these countries are, therefore, subject to revision whenever data from more current labor force surveys become available.

Additional sources of information

For further information, see *International Comparisons of Unemployment*, Bulletin 1979 (Bureau of Labor Statistics, 1978), Appendix B and unpublished Supplements to Appendix B available on request. The statistics are also analyzed periodically in the *Monthly Labor Review*. Additional historical data, generally beginning with 1959, are published in the *Handbook of Labor Statistics* and are available in unpublished statistical supplements to Bulletin 1979.

Manufacturing productivity and labor costs

Description of the series

Table 47 presents comparative measures of manufacturing labor productivity, hourly compensation costs, and unit labor costs for the United

States, Canada, Japan, and nine European countries. These measures are limited to trend comparisons—that is, intercountry series of changes over time—rather than level comparisons because reliable international comparisons of the levels of manufacturing output are unavailable.

Definitions

Output is constant value output (value added), generally taken from the national accounts of each country. While the national accounting methods for measuring real output differ considerably among the 12 countries, the use of different procedures does not, in itself, connote lack of comparability—rather, it reflects differences among countries in the availability and reliability of underlying data series.

Hours refer to all employed persons including the self-employed in the United States and Canada; to all wage and salary employees in the other countries. The U.S. hours measure is hours paid; the hours measures for the other countries are hours worked.

Compensation (labor cost) includes all payments in cash or kind made directly to employees plus employer expenditures for legally required insurance programs and contractual and private benefit plans. In addition, for some countries, compensation is adjusted for other significant taxes on payrolls or employment (or reduced to reflect subsidies), even if they are not for the direct benefit of workers, because such taxes are regarded as labor costs. However, compensation does not include all items of labor cost. The costs of recruitment, employee training, and plant facilities and services—such as cafeterias and medical clinics—are not covered because data are not available for most countries. Self-employed workers are included in the U.S. and Canadian compensation figures by assuming that their hourly compensation is equal to the average for wage and salary employees.

Notes on the data

For most of the countries, the measures refer to total manufacturing as defined by the International Standard Industrial Classification. However, the measures for France (beginning 1959), Italy (beginning 1970), and the United Kingdom (beginning 1971), refer to manufacturing and mining less energy-related products and the figures for the Netherlands exclude petroleum refining from 1969 to 1976. For all countries, manufacturing includes the activities of government enterprises.

The figures for one or more recent years are generally based on current indicators of manufacturing output, employment, hours, and hourly compensation and are considered preliminary until the national accounts and other statistics used for the long-term measures become available.

Additional sources of information

For additional information, see the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 16 and periodic *Monthly Labor Review* articles. Historical data are provided in the Bureau's *Handbook of Labor Statistics*, Bulletin 2217, 1985. The statistics are issued twice per year—in a news release (generally in May) and in a *Monthly Labor Review* article (generally in December).

OCCUPATIONAL INJURY AND ILLNESS DATA

(Table 48)

Description of the series

The Annual Survey of Occupational Injuries and Illnesses is designed to collect data on injuries and illnesses based on records which employers in the following industries maintain under the Occupational Safety and Health Act of 1970: agriculture, forestry, and fishing; oil and gas extraction; construction; manufacturing; transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. Excluded from the survey are self-employed individuals, farmers with fewer than 11 employees, employers regulated by other Federal safety and health laws, and Federal, State, and local government agencies.

Because the survey is a Federal-State cooperative program and the data must meet the needs of participating State agencies, an independent sample is selected for each State. The sample is selected to represent all private industries in the States and territories. The sample size for the survey is dependent upon (1) the characteristics for which estimates are needed; (2) the industries for which estimates are desired; (3) the characteristics of the population being sampled; (4) the target reliability of the estimates; and (5) the survey design employed.

While there are many characteristics upon which the sample design could be based, the total recorded case incidence rate is used because it is one of the most important characteristics and the least variable; therefore, it requires the smallest sample size.

The survey is based on stratified random sampling with a Neyman allocation and a ratio estimator. The characteristics used to stratify the establishments are the Standard Industrial Classification (SIC) code and size of employment.

Definitions

Recordable occupational injuries and illnesses are: (1) occupational deaths, regardless of the time between injury and death, or the length of the illness; or (2) nonfatal occupational illnesses; or (3) nonfatal occupational injuries which involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid).

Occupational injury is any injury such as a cut, fracture, sprain, amputation, and so forth, which results from a work accident or from exposure involving a single incident in the work environment.

Occupational illness is an abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or disease which may be caused by inhalation, absorption, ingestion, or direct contact.

Lost workday cases are cases which involve days away from work, or days of restricted work activity, or both.

Lost workday cases involving restricted work activity are those cases which result in restricted work activity only.

Lost workdays away from work are the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness.

Lost workdays—restricted work activity are the number of workdays (consecutive or not) on which, because of injury or illness: (1) the employee was assigned to another job on a temporary basis; or (2) the em-

ployee worked at a permanent job less than full time; or (3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

The number of days away from work or days of restricted work activity does not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

Incidence rates represent the number of injuries and/or illnesses or lost workdays per 100 full-time workers.

Notes on the data

Estimates are made for industries and employment-size classes and for severity classification: fatalities, lost workday cases, and nonfatal cases without lost workdays. Lost workday cases are separated into those where the employee would have worked but could not and those in which work activity was restricted. Estimates of the number of cases and the number of days lost are made for both categories.

Most of the estimates are in the form of incidence rates, defined as the number of injuries and illnesses, or lost workdays, per 100 full-time employees. For this purpose, 200,000 employee hours represent 100 employee years (2,000 hours per employee). Only a few of the available measures are included in the *Handbook of Labor Statistics*. Full detail is presented in the annual bulletin, *Occupational Injuries and Illnesses in the United States, by Industry*.

Comparable data for individual States are available from the BLS Office of Occupational Safety and Health Statistics.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration, respectively. Data from these organizations are included in BLS and State publications. Federal employee experience is compiled and published by the Occupational Safety and Health Administration. Data on State and local government employees are collected by about half of the States and territories; these data are not compiled nationally.

Additional sources of information

The Supplementary Data System provides detailed information describing various factors associated with work-related injuries and illnesses. These data are obtained from information reported by employers to State workers' compensation agencies. The Work Injury Report program examines selected types of accidents through an employee survey which focuses on the circumstances surrounding the injury. These data are not included in the *Handbook of Labor Statistics* but are available from the BLS Office of Occupational Safety and Health Statistics.

The definitions of occupational injuries and illnesses and lost workdays are from *Recordkeeping Requirements under the Occupational Safety and Health Act of 1970*. For additional data, see *Occupational Injuries and Illnesses in the United States, by Industry*, annual Bureau of Labor Statistics bulletin; BLS *Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 17; *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985), pp. 411-14; annual reports in the *Monthly Labor Review*; and annual U.S. Department of Labor press releases.

1. Labor market indicators

Selected indicators	1986	1987	1986				1987			
			I	II	III	IV	I	II	III	IV
Employment data										
Employment status of the civilian noninstitutionalized population (household survey) ¹										
Labor force participation rate	65.3	65.6	65.0	65.2	65.4	65.4	65.5	65.5	65.6	65.7
Employment-population ratio	60.7	61.5	60.5	60.6	60.8	60.9	61.1	61.4	61.7	61.9
Unemployment rate	7.0	6.2	7.0	7.2	7.0	6.8	6.6	6.3	6.0	5.9
Men	6.9	6.2	6.8	7.0	7.0	6.9	6.6	6.3	5.9	5.8
16 to 24 years	13.7	12.6	13.4	14.1	13.9	13.4	13.3	12.9	12.2	11.9
25 years and over	5.4	4.8	5.3	5.4	5.4	5.4	5.1	4.9	4.6	4.4
Women	7.1	6.2	7.2	7.3	7.0	6.8	6.6	6.2	6.1	6.0
16 to 24 years	12.8	11.7	13.1	13.1	12.7	12.5	12.5	11.8	11.4	11.1
25 years and over	5.5	4.8	5.6	5.7	5.4	5.3	5.0	4.7	4.7	4.7
Unemployment rate, 15 weeks and over	1.9	1.7	1.9	1.9	1.9	1.9	1.8	1.7	1.6	1.5
Employment, nonagricultural (payroll data), in thousands: ¹										
Total	99,610	102,110	98,901	99,321	99,804	100,397	101,133	101,708	102,278	103,288
Private sector	82,900	85,047	82,299	82,670	83,119	83,498	84,183	84,675	85,240	86,063
Goods-producing	24,681	24,884	24,767	24,702	24,629	24,624	24,733	24,757	24,884	25,164
Manufacturing	18,994	19,112	19,086	19,003	18,939	18,953	18,979	19,015	19,134	19,320
Service-producing	74,930	77,226	74,134	74,619	75,175	75,773	76,399	76,951	77,394	78,124
Average hours:										
Private sector	34.8	34.8	34.9	34.8	34.7	34.7	34.8	34.8	34.8	34.8
Manufacturing	40.7	41.0	40.7	40.7	40.7	40.8	41.0	40.9	40.9	41.2
Overtime	3.4	3.7	3.4	3.4	3.5	3.5	3.6	3.7	3.7	3.9
Employment Cost Index										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers)	3.6	3.6	1.1	.7	1.1	.6	.9	.7	1.2	.8
Private industry workers	3.2	3.3	1.1	.8	.7	.6	1.0	.7	1.0	.7
Goods-producing ²	3.1	3.1	1.1	.9	.6	.5	.5	.7	.8	1.0
Service-producing ²	3.2	3.7	1.1	.6	.8	.6	1.3	.7	1.0	.5
State and local government workers	5.2	4.4	1.0	.6	2.8	.8	.8	.3	2.3	.9
Workers by bargaining status (private industry):										
Union	2.1	2.8	1.0	.2	.5	.3	.5	.5	.6	1.1
Nonunion	3.6	3.6	1.2	.9	.8	.7	1.1	.7	1.1	.6

¹ Quarterly data seasonally adjusted.

² Goods-producing industries include mining, construction, and manufacturing. Service-

producing industries include all other private sector industries.

2. Annual and quarterly percent changes in compensation, prices, and productivity

Selected measures	1986	1987	1986				1987			
			I	II	III	IV	I	II	III	IV
Compensation data^{1, 2}										
Employment Cost Index--compensation (wages, salaries, benefits):										
Civilian nonfarm	3.6	3.6	1.1	0.7	1.1	0.6	0.9	0.7	1.2	0.8
Private nonfarm	3.2	3.3	1.1	.8	.7	.6	1.0	.7	1.0	.7
Employment Cost Index--wages and salaries:										
Civilian nonfarm	3.5	3.5	1.0	.8	1.1	.6	1.0	.5	1.3	.7
Private nonfarm	3.1	3.3	1.0	.9	.7	.5	1.0	.7	1.0	.6
Price data¹										
Consumer Price Index (All urban consumers): All items	1.1	4.4	-5	.6	.6	.3	1.4	1.2	1.3	.3
Producer Price Index:										
Finished goods	-2.3	2.1	-3.1	.5	-.7	1.1	.8	1.2	.2	.0
Finished consumer goods	-3.5	2.5	-4.0	.4	-.7	.8	.9	1.6	.3	-.3
Capital equipment	2.1	1.3	.2	.6	-.8	2.1	.1	.3	-.2	1.1
Intermediate materials, supplies, components	-4.4	5.5	-3.0	-.9	-.2	-.3	1.3	1.9	1.2	1.0
Crude materials	-8.9	8.8	-7.6	-1.5	-.6	.6	4.2	5.3	.6	-1.5
Productivity data³										
Output per hour of all persons:										
Business sector	1.9	.9	2.8	2.3	1.3	1.5	.2	.4	1.6	1.4
Nonfarm business sector	1.6	.8	2.3	1.9	1.1	1.5	-.1	.3	1.5	1.4
Nonfinancial corporations ⁴	1.6	-	2.6	1.8	.7	1.5	0	.2	.8	-

¹ Annual changes are December-to-December change. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted and the price data are not compounded.

² Excludes Federal and private household workers.

³ Annual rates of change are computed by comparing annual averages.

Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

⁴ Output per hour of all employees.

- Data not available.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ended--					
	1986		1987				1986		1987			
	III	IV	I	II	III	IV	III	IV	I	II	III	IV
Average hourly compensation: ¹												
All persons, business sector	3.7	3.3	2.8	2.8	3.0	2.9	3.0	3.6	1.4	3.3	3.8	3.1
All employees, nonfarm business sector	3.6	3.4	2.7	2.7	2.9	2.8	2.8	4.0	1.1	3.0	3.6	3.4
Employment Cost Index--compensation:												
Civilian nonfarm ²	1.1	.6	.9	.7	1.2	.8	3.6	3.6	3.4	3.3	3.4	3.6
Private nonfarm .....	.7	.6	1.0	.7	1.0	.7	3.2	3.2	3.1	3.0	3.3	3.3
Union .....	.5	.3	.5	.5	.6	1.1	2.3	2.1	1.6	1.9	2.0	2.8
Nonunion .....	.8	.7	1.1	.7	1.1	.6	3.5	3.6	3.6	3.4	3.7	3.6
State and local governments	2.8	.8	.8	.3	2.3	.9	5.2	5.2	5.0	4.7	4.2	4.4
Employment Cost Index--wages and salaries:												
Civilian nonfarm ²	1.1	.6	1.0	.5	1.3	.7	3.5	3.5	3.5	3.2	3.4	3.5
Private nonfarm .....	.7	.5	1.0	.7	1.0	.6	3.1	3.1	3.2	3.0	3.3	3.3
Union .....	.6	.2	.4	.5	.6	1.1	2.3	2.0	1.7	1.7	1.7	2.6
Nonunion .....	.7	.7	1.2	.8	1.1	.5	3.4	3.5	3.5	3.3	3.8	3.6
State and local governments	3.2	.7	.8	.2	2.3	.9	5.4	5.4	5.2	5.0	4.1	4.2
Total effective wage adjustments ³ :												
From current settlements .....	.5	.5	.4	1.0	.9	.8	2.3	2.3	2.0	2.2	2.6	3.1
From prior settlements .....	.1	.2	(⁴)	.2	.2	.3	.5	.5	.4	.3	.5	.7
From cost-of-living provision .....	.5	.2	.3	.7	.6	.3	1.6	1.7	1.5	1.6	1.7	1.8
Negotiated wage adjustments from settlements: ³	(⁴)	.1	.1	.2	.1	.2	.2	.2	.1	.3	.4	.5
First-year adjustments .....	.8	2.0	1.2	2.6	2.1	2.4	1.2	1.2	1.2	1.5	2.1	2.2
Annual rate over life of contract	1.5	2.1	1.8	2.9	2.0	1.8	1.7	1.8	1.8	2.0	2.2	2.1
Negotiated wage and benefit adjustments from settlements: ⁵												
First-year adjustment .....	.7	2.7	1.7	4.1	2.5	3.4	.9	1.1	1.2	1.9	2.8	3.1
Annual rate over life of contract	1.2	2.4	2.4	3.9	2.1	2.4	1.4	1.6	1.7	2.1	2.6	2.6

¹ Seasonally adjusted.

² Excludes Federal and household workers.

³ Limited to major collective bargaining units of 1,000 workers or more. The most recent data are preliminary.

⁴ Data round to zero.

⁵ Limited to major collective bargaining units of 5,000 workers or more. The most recent data are preliminary.

4. Employment status of the total population, by sex, monthly data seasonally adjusted

(Numbers in thousands)

Employment status	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
TOTAL															
Noninstitutional population ^{1, 2}	182,293	184,490	183,575	183,738	183,915	184,079	184,259	184,421	184,605	184,738	184,904	185,052	185,225	185,370	185,571
Labor force ²	119,540	121,602	120,726	120,970	120,982	121,098	121,633	121,326	121,610	122,042	121,706	122,128	122,349	122,472	122,924
Participation rate ³	65.6	65.9	65.8	65.8	65.8	65.8	66.0	65.8	65.9	66.1	65.8	66.0	66.1	66.1	66.2
Total employed ²	111,303	114,177	112,762	113,084	113,191	113,541	114,060	114,018	114,359	114,786	114,615	114,951	115,259	115,494	115,878
Employment-population ratio ⁴	61.1	61.9	61.4	61.5	61.5	61.7	61.9	61.8	61.9	62.1	62.0	62.1	62.2	62.3	62.4
Resident Armed Forces ¹	1,706	1,737	1,748	1,740	1,736	1,735	1,726	1,718	1,720	1,736	1,743	1,741	1,755	1,750	1,749
Civilian employed	109,597	112,440	111,014	111,344	111,455	111,806	112,334	112,300	112,639	113,050	112,872	113,210	113,504	113,744	114,129
Agriculture	3,163	3,208	3,174	3,225	3,237	3,250	3,269	3,192	3,212	3,143	3,184	3,249	3,172	3,215	3,293
Nonagricultural industries	106,434	109,232	107,840	108,119	108,218	108,556	109,065	109,108	109,427	109,907	109,688	109,961	110,332	110,529	110,836
Unemployed	8,237	7,425	7,964	7,886	7,791	7,557	7,573	7,308	7,251	7,256	7,091	7,177	7,090	6,978	7,046
Unemployment rate ⁵	6.9	6.1	6.6	6.5	6.4	6.2	6.2	6.0	6.0	5.9	5.8	5.9	5.8	5.7	5.7
Not in labor force	62,752	62,888	62,849	62,768	62,933	62,981	62,626	63,095	62,995	62,696	63,198	62,924	62,876	62,898	62,647
Men, 16 years and over															
Noninstitutional population ^{1, 2}	87,349	88,476	88,020	88,099	88,186	88,271	88,361	88,442	88,534	88,598	88,683	88,756	88,849	88,924	89,033
Labor force ²	66,973	67,784	67,602	67,655	67,590	67,604	67,802	67,623	67,671	67,937	67,776	67,947	68,019	68,030	68,243
Participation rate ³	76.7	76.6	76.8	76.8	76.6	76.6	76.7	76.5	76.4	76.7	76.4	76.6	76.6	76.5	76.6
Total employed ²	62,443	63,684	63,153	63,281	63,263	63,390	63,543	63,543	63,711	63,916	63,949	64,048	64,174	64,245	64,396
Employment-population ratio ⁴	71.5	72.0	71.7	71.8	71.7	71.8	71.9	71.8	72.0	72.1	72.1	72.2	72.2	72.2	72.3
Resident Armed Forces ¹	1,551	1,577	1,591	1,584	1,575	1,575	1,566	1,559	1,561	1,575	1,581	1,580	1,593	1,589	1,588
Civilian employed	60,892	62,107	61,562	61,697	61,688	61,815	61,977	61,984	62,150	62,341	62,368	62,468	62,581	62,656	62,808
Unemployed	4,530	4,101	4,449	4,374	4,327	4,214	4,259	4,080	3,960	4,021	3,827	3,899	3,845	3,785	3,847
Unemployment rate ⁵	6.8	6.1	6.6	6.5	6.4	6.2	6.3	6.0	5.9	5.9	5.6	5.7	5.7	5.6	5.6
Women, 16 years and over															
Noninstitutional population ^{1, 2}	94,944	96,013	95,556	95,639	95,729	95,808	95,898	95,979	96,071	96,140	96,221	96,295	96,376	96,446	96,538
Labor force ²	52,568	53,818	53,124	53,315	53,392	53,494	53,831	53,703	53,939	54,105	53,930	54,181	54,330	54,442	54,681
Participation rate ³	55.4	56.1	55.6	55.7	55.8	55.8	56.1	56.0	56.1	56.3	56.0	56.3	56.4	56.4	56.6
Total employed ²	48,861	50,494	49,609	49,803	49,928	50,151	50,517	50,475	50,648	50,870	50,666	50,903	51,085	51,249	51,482
Employment-population ratio ⁴	51.5	52.6	51.9	52.1	52.2	52.3	52.7	52.6	52.7	52.9	52.7	52.9	53.0	53.1	53.3
Resident Armed Forces ¹	155	160	157	156	161	160	160	159	159	161	162	161	162	161	161
Civilian employed	48,706	50,334	49,452	49,647	49,767	49,991	50,357	50,316	50,489	50,709	50,504	50,742	50,923	51,088	51,321
Unemployed	3,707	3,324	3,515	3,512	3,464	3,343	3,314	3,228	3,291	3,235	3,264	3,278	3,245	3,193	3,200
Unemployment rate ⁵	7.1	6.2	6.6	6.6	6.5	6.2	6.2	6.0	6.1	6.0	6.1	6.1	6.0	5.9	5.9

¹ The population and Armed Forces figures are not adjusted for seasonal variation.

² Includes members of the Armed Forces stationed in the United States.

³ Labor force as a percent of the noninstitutional population.

⁴ Total employed as a percent of the noninstitutional population.

⁵ Unemployment as a percent of the labor force (including the resident Armed Forces).

5. Employment status of the civilian population, by sex, age, race and Hispanic origin, monthly data seasonally adjusted

(Numbers in thousands)

Employment status	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
TOTAL															
Civilian noninstitutional population ¹	180,587	182,753	181,827	181,998	182,179	182,344	182,533	182,703	182,885	183,002	183,161	183,311	183,470	183,620	183,822
Civilian labor force	117,834	119,865	118,978	119,230	119,246	119,363	119,907	119,608	119,890	120,306	119,963	120,387	120,594	120,722	121,175
Participation rate	65.3	65.6	65.4	65.5	65.5	65.5	65.7	65.5	65.6	65.7	65.5	65.7	65.7	65.7	65.9
Employed	109,597	112,440	111,014	111,344	111,455	111,806	112,334	112,300	112,639	113,050	112,872	113,210	113,504	113,744	114,129
Employment-population ratio ²	60.7	61.5	61.1	61.2	61.2	61.3	61.5	61.5	61.6	61.8	61.6	61.8	61.9	61.9	62.1
Unemployed	8,237	7,425	7,964	7,886	7,791	7,557	7,573	7,308	7,251	7,256	7,091	7,177	7,090	6,978	7,046
Unemployment rate	7.0	6.2	6.7	6.6	6.5	6.3	6.3	6.1	6.0	6.0	5.9	6.0	5.9	5.8	5.8
Not in labor force	62,752	62,888	62,849	62,768	62,933	62,981	62,626	63,095	62,995	62,696	63,198	62,924	62,876	62,898	62,647
Men, 20 years and over															
Civilian noninstitutional population ¹	78,523	79,565	79,132	79,216	79,303	79,387	79,474	79,536	79,625	79,668	79,740	79,807	79,885	80,002	80,120
Civilian labor force	61,320	62,095	61,911	61,930	61,933	61,970	62,129	62,054	62,106	62,083	62,085	62,211	62,299	62,248	62,440
Participation rate	78.1	78.0	78.2	78.2	78.1	78.1	78.2	78.0	78.0	77.9	77.9	78.0	78.0	77.8	77.9
Employed	57,569	58,726	58,220	58,324	58,380	58,516	58,673	58,632	58,783	58,825	58,967	59,037	59,164	59,185	59,287
Employment-population ratio ²	73.3	73.8	73.6	73.6	73.6	73.7	73.8	73.7	73.8	73.8	73.9	74.0	74.1	74.0	74.0
Agriculture	2,292	2,329	2,287	2,317	2,361	2,378	2,383	2,316	2,333	2,289	2,345	2,343	2,297	2,298	2,323
Nonagricultural industries	55,277	56,397	55,933	56,007	56,019	56,138	56,290	56,316	56,450	56,536	56,622	56,694	56,867	56,887	56,964
Unemployed	3,751	3,369	3,691	3,606	3,553	3,454	3,456	3,422	3,323	3,258	3,118	3,174	3,135	3,063	3,154
Unemployment rate	6.1	5.4	6.0	5.8	5.7	5.6	5.6	5.5	5.4	5.2	5.0	5.1	5.0	4.9	5.1
Women, 20 years and over															
Civilian noninstitutional population ¹	87,567	88,583	88,150	88,237	88,321	88,395	88,464	88,546	88,632	88,685	88,785	88,843	88,923	89,010	89,110
Civilian labor force	48,589	49,783	49,167	49,343	49,414	49,494	49,728	49,722	49,886	49,969	49,922	50,095	50,254	50,361	50,558
Participation rate	55.5	56.2	55.8	55.9	55.9	56.0	56.2	56.2	56.3	56.3	56.2	56.4	56.5	56.6	56.7
Employed	45,556	47,074	46,290	46,485	46,582	46,761	47,028	47,088	47,206	47,308	47,251	47,480	47,634	47,750	47,977
Employment-population ratio ²	52.0	53.1	52.5	52.7	52.7	52.9	53.2	53.2	53.3	53.3	53.2	53.4	53.6	53.6	53.8
Agriculture	614	622	625	634	602	603	629	619	620	609	600	636	636	643	646
Nonagricultural industries	44,943	46,453	45,665	45,851	45,980	46,158	46,399	46,469	46,586	46,699	46,651	46,844	46,998	47,107	47,331
Unemployed	3,032	2,709	2,877	2,858	2,832	2,733	2,700	2,634	2,680	2,661	2,671	2,615	2,620	2,611	2,581
Unemployment rate	6.2	5.4	5.9	5.8	5.7	5.5	5.4	5.3	5.4	5.3	5.4	5.2	5.2	5.2	5.1
Both sexes, 16 to 19 years															
Civilian noninstitutional population ¹	14,496	14,606	14,545	14,546	14,555	14,562	14,595	14,621	14,628	14,649	14,637	14,661	14,663	14,609	14,592
Civilian labor force	7,926	7,988	7,900	7,957	7,899	7,899	8,050	7,832	7,898	8,254	7,956	8,081	8,041	8,113	8,177
Participation rate	54.7	54.7	54.3	54.7	54.3	54.2	55.2	53.6	54.0	56.3	54.4	55.1	54.8	55.5	56.0
Employed	6,472	6,640	6,504	6,535	6,493	6,529	6,633	6,580	6,650	6,917	6,654	6,693	6,706	6,809	6,865
Employment-population ratio ²	44.6	45.5	44.7	44.9	44.6	44.8	45.4	45.0	45.5	47.2	45.5	45.7	45.7	46.6	47.0
Agriculture	258	258	262	274	274	269	257	257	259	245	239	270	239	274	323
Nonagricultural industries	6,215	6,382	6,242	6,261	6,219	6,260	6,376	6,323	6,391	6,672	6,415	6,423	6,467	6,535	6,542
Unemployed	1,454	1,347	1,396	1,422	1,406	1,370	1,417	1,252	1,248	1,337	1,302	1,388	1,335	1,304	1,312
Unemployment rate	18.3	16.9	17.7	17.9	17.8	17.3	17.6	16.0	15.8	16.2	16.4	17.2	16.6	16.1	16.0
White															
Civilian noninstitutional population ¹	155,432	156,958	156,313	156,431	156,561	156,676	156,811	156,930	157,058	157,134	157,242	157,342	157,449	157,552	157,676
Civilian labor force	101,801	103,290	102,669	102,825	102,836	102,972	103,416	103,150	103,248	103,516	103,357	103,669	103,731	103,907	104,252
Participation rate	65.5	65.8	65.7	65.7	65.7	65.7	65.9	65.7	65.7	65.9	65.7	65.9	65.9	66.0	66.1
Employed	95,660	97,789	96,749	97,001	97,074	97,338	97,829	97,698	97,917	98,181	98,069	98,317	98,492	98,779	99,044
Employment-population ratio ²	61.5	62.3	61.9	62.0	62.0	62.1	62.4	62.3	62.3	62.5	62.4	62.5	62.6	62.7	62.8
Unemployed	6,140	5,501	5,920	5,824	5,762	5,634	5,587	5,452	5,331	5,335	5,288	5,352	5,239	5,128	5,208
Unemployment rate	6.0	5.3	5.8	5.7	5.6	5.5	5.4	5.3	5.2	5.2	5.1	5.2	5.1	4.9	5.0
Black															
Civilian noninstitutional population ¹	19,989	20,352	20,187	20,218	20,249	20,279	20,312	20,341	20,373	20,396	20,426	20,453	20,482	20,508	20,539
Civilian labor force	12,654	12,993	12,807	12,894	12,853	12,778	12,889	12,892	13,039	13,150	13,028	13,152	13,193	13,215	13,222
Participation rate	63.3	63.8	63.4	63.8	63.5	63.0	63.5	63.4	64.0	64.5	63.8	64.3	64.4	64.4	64.4
Employed	10,814	11,309	10,995	11,086	11,072	11,114	11,129	11,238	11,381	11,513	11,421	11,556	11,589	11,605	11,608
Employment-population ratio ²	54.1	55.6	54.5	54.8	54.7	54.8	54.8	55.2	55.9	56.4	55.9	56.5	56.6	56.6	56.5
Unemployed	1,840	1,684	1,812	1,808	1,781	1,664	1,760	1,654	1,658	1,637	1,607	1,596	1,604	1,610	1,614
Unemployment rate	14.5	13.0	14.1	14.0	13.9	13.0	13.7	12.8	12.7	12.4	12.3	12.1	12.2	12.2	12.2

See footnotes at end of table.

5. Continued— Employment status of the civilian population, by sex, age, race and Hispanic origin, monthly data seasonally adjusted

(Numbers in thousands)

Employment status	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Hispanic origin															
Civilian noninstitutional population ¹	12,344	12,867	12,653	12,692	12,732	12,770	12,809	12,848	12,887	12,925	12,965	13,003	13,043	13,082	13,115
Civilian labor force	8,076	8,541	8,387	8,423	8,395	8,468	8,549	8,468	8,447	8,549	8,581	8,654	8,763	8,772	8,879
Participation rate	65.4	66.4	66.3	66.4	65.9	66.3	66.7	65.9	65.5	66.1	66.2	66.6	67.2	67.1	67.7
Employed	7,219	7,790	7,533	7,614	7,632	7,686	7,797	7,738	7,762	7,856	7,877	7,935	7,978	8,058	8,238
Employment-population ratio ²	58.5	60.5	59.5	60.0	59.9	60.2	60.9	60.2	60.2	60.8	60.8	61.0	61.2	61.6	62.8
Unemployed	857	751	854	809	763	782	752	730	685	693	704	719	785	714	642
Unemployment rate	10.6	8.8	10.2	9.6	9.1	9.2	8.8	8.6	8.1	8.1	8.2	8.3	9.0	8.1	7.2

¹ The population figures are not seasonally adjusted.

² Civilian employment as a percent of the civilian noninstitutional population.

because data for the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals

6. Selected employment indicators, monthly data seasonally adjusted

(In thousands)

Selected categories	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
CHARACTERISTIC															
Civilian employed, 16 years and over	109,597	112,440	111,014	111,344	111,455	111,806	112,334	112,300	112,639	113,050	112,872	113,210	113,504	113,744	114,129
Men	60,892	62,107	61,562	61,697	61,688	61,815	61,977	61,984	62,150	62,341	62,368	62,468	62,581	62,656	62,808
Women	48,706	50,334	49,452	49,647	49,767	49,991	50,357	50,316	50,489	50,709	50,504	50,742	50,923	51,088	51,321
Married men, spouse present ..	39,658	40,265	40,047	39,958	40,054	40,021	40,075	40,120	40,262	40,308	40,404	40,556	40,645	40,711	40,404
Married women, spouse present	27,144	28,107	27,713	27,837	27,966	28,130	28,314	28,282	28,283	28,189	28,069	28,099	28,175	28,249	28,441
Women who maintain families ..	5,837	6,060	5,958	5,925	5,946	5,971	5,963	6,011	6,033	6,107	6,151	6,178	6,237	6,227	6,168
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,547	1,632	1,635	1,640	1,689	1,599	1,672	1,622	1,625	1,591	1,624	1,705	1,595	1,599	1,666
Self-employed workers	1,447	1,423	1,392	1,440	1,416	1,488	1,429	1,403	1,424	1,393	1,415	1,430	1,407	1,450	1,454
Unpaid family workers	169	153	143	132	152	170	165	162	153	155	139	140	155	156	138
Nonagricultural industries:															
Wage and salary workers	98,299	100,771	99,557	99,772	99,863	100,106	100,634	100,510	100,825	101,241	101,282	101,522	101,943	101,997	102,507
Government	16,342	16,800	16,492	16,553	16,594	16,518	16,708	16,920	16,876	16,794	16,928	17,033	17,118	17,064	17,197
Private industries	81,957	83,970	83,065	83,219	83,269	83,588	83,926	83,590	83,949	84,447	84,354	84,489	84,825	84,933	85,310
Private households	1,235	1,208	1,245	1,213	1,227	1,234	1,240	1,163	1,212	1,175	1,100	1,222	1,286	1,200	1,147
Other	80,722	82,762	81,820	82,006	82,042	82,354	82,686	82,427	82,737	83,272	83,254	83,267	83,539	83,733	84,163
Self-employed workers	7,881	8,201	8,136	8,166	8,082	8,139	8,157	8,293	8,216	8,214	8,204	8,274	8,222	8,280	8,150
Unpaid family workers	255	260	245	254	270	268	276	274	266	248	297	242	235	248	237
PERSONS AT WORK PART TIME¹															
All industries:															
Part time for economic reasons ..	5,588	5,401	5,508	5,766	5,459	5,394	5,333	5,254	5,428	5,283	5,261	5,353	5,534	5,262	5,367
Slack work	2,456	2,385	2,467	2,501	2,438	2,345	2,292	2,345	2,429	2,468	2,213	2,377	2,408	2,284	2,396
Could only find part-time work ..	2,800	2,672	2,721	2,773	2,707	2,725	2,677	2,623	2,683	2,526	2,683	2,655	2,696	2,638	2,640
Voluntary part time	13,935	14,395	14,147	14,110	14,201	13,940	14,498	14,836	14,437	14,573	14,415	14,488	14,523	14,711	14,571
Nonagricultural industries:															
Part time for economic reasons ..	5,345	5,122	5,211	5,458	5,180	5,104	5,058	4,979	5,154	5,016	4,986	5,067	5,241	5,004	5,145
Slack work	2,305	2,201	2,279	2,315	2,234	2,163	2,126	2,176	2,261	2,265	2,034	2,196	2,209	2,111	2,260
Could only find part-time work ..	2,719	2,587	2,631	2,682	2,612	2,648	2,603	2,530	2,599	2,463	2,603	2,557	2,597	2,552	2,566
Voluntary part time	13,502	13,928	13,706	13,635	13,717	13,544	13,995	14,334	13,953	14,099	13,987	14,011	14,064	14,222	14,096

¹ Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

7. Selected unemployment indicators, monthly data seasonally adjusted

(Unemployment rates)

Selected categories	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
CHARACTERISTIC															
Total, all civilian workers	7.0	6.2	6.7	6.6	6.5	6.3	6.3	6.1	6.0	6.0	5.9	6.0	5.9	5.8	5.8
Both sexes, 16 to 19 years	18.3	16.9	17.7	17.9	17.8	17.3	17.6	16.0	15.8	16.2	16.4	17.2	16.6	16.1	16.0
Men, 20 years and over	6.1	5.4	6.0	5.8	5.7	5.6	5.6	5.5	5.4	5.2	5.0	5.1	5.0	4.9	5.1
Women, 20 years and over	6.2	5.4	5.9	5.8	5.7	5.5	5.4	5.3	5.4	5.3	5.4	5.2	5.2	5.2	5.1
White, total	6.0	5.3	5.8	5.7	5.6	5.5	5.4	5.3	5.2	5.2	5.1	5.2	5.1	4.9	5.0
Both sexes, 16 to 19 years	15.6	14.4	15.1	15.1	15.3	14.8	15.2	13.9	13.3	14.1	14.3	14.5	14.1	13.6	14.0
Men, 16 to 19 years	16.3	15.5	16.1	16.0	16.8	16.3	17.0	14.8	13.5	15.2	15.1	15.1	14.8	14.9	14.4
Women, 16 to 19 years	14.9	13.4	14.0	14.1	13.7	13.3	13.3	13.0	13.1	12.9	13.4	13.8	13.3	12.3	13.6
Men, 20 years and over	5.3	4.8	5.2	5.1	5.0	4.9	4.8	4.9	4.7	4.6	4.4	4.6	4.4	4.3	4.4
Women, 20 years and over	5.4	4.6	5.0	4.8	4.7	4.6	4.5	4.4	4.5	4.4	4.5	4.3	4.4	4.4	4.2
Black, total	14.5	13.0	14.1	14.0	13.9	13.0	13.7	12.8	12.7	12.4	12.3	12.1	12.2	12.2	12.2
Both sexes, 16 to 19 years	39.3	34.7	39.2	38.0	37.0	37.1	37.5	33.4	32.7	30.6	30.8	33.8	33.9	33.4	35.0
Men, 16 to 19 years	39.3	34.4	36.5	37.9	36.1	37.8	38.3	31.4	32.4	33.7	31.5	32.5	32.2	33.5	35.1
Women, 16 to 19 years	39.2	34.9	42.3	38.0	38.0	36.3	36.6	35.4	33.1	27.1	30.0	35.2	35.8	33.4	34.9
Men, 20 years and over	12.9	11.1	12.1	11.9	11.6	11.0	12.3	11.4	11.2	10.7	10.1	9.8	10.2	10.1	10.1
Women, 20 years and over	12.4	11.6	12.6	12.6	12.7	11.6	11.6	11.3	11.4	11.3	11.7	11.0	10.8	10.9	11.1
Hispanic origin, total	10.6	8.8	10.2	9.6	9.1	9.2	8.8	8.6	8.1	8.1	8.2	8.3	9.0	8.1	7.2
Married men, spouse present	4.4	3.9	4.2	4.1	4.1	4.1	4.0	4.0	3.8	3.7	3.7	3.7	3.5	3.4	3.6
Married women, spouse present	5.2	4.3	4.7	4.8	4.5	4.4	4.2	4.0	4.2	4.3	4.2	4.2	4.2	4.3	4.2
Women who maintain families	9.8	9.2	9.8	9.6	9.7	9.4	9.5	9.5	9.3	9.0	8.8	8.9	8.5	8.4	8.9
Full-time workers	6.6	5.8	6.3	6.2	6.1	5.9	5.9	5.9	5.7	5.6	5.5	5.6	5.5	5.4	5.4
Part-time workers	9.1	8.4	8.9	8.8	9.1	8.6	8.7	7.3	8.1	8.2	8.4	8.3	8.2	8.0	8.3
Unemployed 15 weeks and over	1.9	1.7	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4
Labor force time lost ¹	7.9	7.1	7.6	7.5	7.4	7.3	7.2	7.1	6.9	6.9	6.8	6.8	6.8	6.6	6.6
INDUSTRY															
Nonagricultural private wage and salary workers	7.0	6.2	6.7	6.6	6.5	6.3	6.3	6.1	6.1	6.0	5.9	5.9	5.8	5.7	5.8
Mining	13.5	10.0	14.1	13.0	9.5	11.2	13.0	9.5	7.9	8.6	7.4	8.3	7.0	8.0	7.7
Construction	13.1	11.6	12.5	11.7	12.4	12.0	12.1	11.7	10.8	11.3	11.9	11.2	10.6	10.6	12.2
Manufacturing	7.1	6.0	6.8	6.8	6.7	6.3	6.3	5.7	6.0	5.6	5.6	5.7	5.3	5.1	5.6
Durable goods	6.9	5.8	6.8	6.7	6.6	6.2	6.2	5.4	6.0	5.5	5.4	5.2	4.8	4.8	5.5
Nondurable goods	7.4	6.3	6.7	6.9	7.0	6.4	6.5	6.1	5.9	5.8	5.9	6.5	5.9	5.6	5.8
Transportation and public utilities	5.1	4.5	4.7	4.1	4.5	4.7	4.4	4.8	4.4	4.4	4.1	4.4	4.5	4.6	3.6
Wholesale and retail trade	7.6	6.9	7.4	7.2	7.3	7.1	7.0	7.1	6.8	7.0	6.4	6.5	6.8	6.2	6.1
Finance and service industries	5.5	4.9	5.2	5.2	4.9	4.8	4.9	4.9	5.1	4.7	4.8	4.7	4.8	4.8	4.9
Government workers	3.6	3.5	3.5	3.6	3.5	3.5	3.4	3.4	3.4	3.7	3.4	3.3	3.4	3.2	3.0
Agricultural wage and salary workers	12.5	10.5	11.4	11.0	10.8	9.5	9.4	9.3	10.9	10.6	8.6	10.6	11.1	10.9	11.5

¹ Aggregate hours lost by the unemployed and persons on part time for economic reasons as a percent of potentially available labor force hours.

8. Unemployment rates by sex and age, monthly data seasonally adjusted

(Civilian workers)

Sex and age	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
	Total, 16 years and over	7.0	6.2	6.7	6.6	6.5	6.3	6.3	6.1	6.0	6.0	5.9	6.0	5.9	5.8
16 to 24 years	13.3	12.2	13.0	13.0	12.8	12.6	12.5	12.1	11.8	11.8	11.8	11.8	11.6	11.2	11.6
16 to 19 years	18.3	16.9	17.7	17.9	17.8	17.3	17.6	16.0	15.8	16.2	16.4	17.2	16.6	16.1	16.0
16 to 17 years	20.2	19.1	19.9	19.8	19.9	18.9	21.0	18.8	17.5	18.3	18.3	20.4	19.2	17.8	18.7
18 to 19 years	17.0	15.2	16.2	16.4	16.2	15.9	15.2	14.5	13.9	14.7	15.2	14.7	14.8	14.7	14.5
20 to 24 years	10.7	9.7	10.7	10.4	10.2	10.1	9.8	10.0	9.7	9.4	9.4	8.8	8.9	8.5	9.1
25 years and over	5.4	4.8	5.2	5.1	5.0	4.8	4.8	4.7	4.7	4.7	4.6	4.6	4.5	4.5	4.5
25 to 54 years	5.7	5.0	5.5	5.5	5.3	5.1	5.1	4.9	5.0	4.9	4.8	4.8	4.7	4.8	4.7
55 years and over	3.9	3.3	3.3	3.1	3.4	3.4	3.6	3.2	3.1	3.2	3.3	3.1	3.4	3.2	3.5
Men, 16 years and over	6.9	6.2	6.7	6.6	6.6	6.4	6.4	6.2	6.0	6.1	5.8	5.9	5.8	5.7	5.8
16 to 24 years	13.7	12.6	13.4	13.5	13.2	13.1	13.2	12.4	11.9	12.5	12.1	12.1	12.0	11.7	12.2
16 to 19 years	19.0	17.8	18.5	18.5	19.0	18.7	19.6	16.4	15.9	17.8	17.3	17.4	17.2	17.2	16.4
16 to 17 years	20.8	20.2	21.1	20.5	20.3	21.0	22.7	19.1	17.1	20.5	19.7	20.9	20.4	19.3	19.4
18 to 19 years	17.7	16.0	17.1	17.1	17.9	17.1	17.2	15.4	13.7	15.9	15.9	14.8	14.8	15.3	14.9
20 to 24 years	11.0	9.9	10.8	10.9	10.2	10.3	9.9	10.4	9.9	9.6	9.3	9.2	9.2	8.7	9.9
25 years and over	5.4	4.8	5.2	5.1	5.1	4.9	4.9	4.8	4.7	4.7	4.5	4.5	4.4	4.4	4.4
25 to 54 years	5.6	5.0	5.6	5.4	5.3	5.1	5.1	5.0	4.9	4.9	4.7	4.8	4.6	4.6	4.5
55 years and over	4.1	3.5	3.7	3.4	3.6	3.7	3.9	3.4	3.4	3.4	3.2	3.1	3.5	3.2	4.0
Women, 16 years and over	7.1	6.2	6.6	6.6	6.5	6.3	6.2	6.0	6.1	6.0	6.1	6.1	6.0	5.9	5.9
16 to 24 years	12.8	11.7	12.7	12.4	12.4	12.0	11.8	11.7	11.7	11.0	11.5	11.5	11.2	10.7	10.9
16 to 19 years	17.6	15.9	16.8	17.1	16.6	15.9	15.6	15.5	15.7	14.4	15.4	16.9	16.0	14.8	15.6
16 to 17 years	19.6	18.0	18.6	19.0	19.6	16.6	19.1	18.4	18.0	16.0	16.9	19.9	17.9	16.2	17.9
18 to 19 years	16.3	14.3	15.3	15.7	14.3	14.7	13.1	13.6	14.1	13.4	14.4	14.6	14.7	14.1	14.1
20 to 24 years	10.3	9.4	10.5	9.9	10.1	10.0	9.7	9.6	9.5	9.0	9.4	8.5	8.6	8.4	8.2
25 years and over	5.5	4.8	5.1	5.1	5.0	4.8	4.7	4.5	4.7	4.7	4.7	4.7	4.7	4.7	4.6
25 to 54 years	5.9	5.1	5.5	5.5	5.3	5.1	5.0	4.9	5.0	5.0	4.9	4.9	4.9	4.9	4.9
55 years and over	3.6	3.0	2.8	2.7	3.0	2.9	3.0	2.8	2.6	2.9	3.5	3.1	3.2	3.3	2.8

9. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Reason for unemployment	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
	Job losers	4,033	3,566	3,971	3,835	3,791	3,705	3,612	3,554	3,529	3,389	3,313	3,388	3,307	3,200	3,209
On layoff	1,090	943	1,087	1,001	1,003	963	924	919	916	874	820	944	878	856	888
Other job losers	2,943	2,623	2,884	2,834	2,788	2,742	2,688	2,635	2,613	2,515	2,493	2,444	2,429	2,344	2,320
Job leavers	1,015	965	909	1,033	996	955	931	959	989	992	981	960	926	946	1,082
Reentrants	2,160	1,974	2,059	2,038	2,078	1,965	1,995	1,980	1,930	1,969	1,908	1,845	1,974	1,945	1,917
New entrants	1,029	920	1,048	1,007	952	918	999	854	844	855	882	914	855	909	885
PERCENT OF UNEMPLOYED															
Job losers	48.9	48.0	49.7	48.5	48.5	49.1	47.9	48.4	48.4	47.0	46.8	47.7	46.8	45.7	45.2
On layoff	13.2	12.7	13.6	12.7	12.8	12.8	12.3	12.5	12.6	12.1	11.6	13.3	12.4	12.2	12.5
Other job losers	35.7	35.3	36.1	35.8	35.7	36.4	35.7	35.9	35.8	34.9	35.2	34.4	34.4	33.5	32.7
Job leavers	12.3	13.0	11.4	13.1	12.7	12.7	12.4	13.1	13.6	13.8	13.8	13.5	13.1	13.5	15.3
Reentrants	26.2	26.6	25.8	25.8	26.6	26.1	26.5	26.9	26.5	27.3	26.9	26.0	28.0	27.8	27.0
New entrants	12.5	12.4	13.1	12.7	12.2	12.2	13.3	11.6	11.6	11.9	12.5	12.9	12.1	13.0	12.5
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.4	3.0	3.3	3.2	3.2	3.1	3.0	3.0	2.9	2.8	2.8	2.8	2.7	2.7	2.6
Job leavers	.9	.8	.8	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.9
Reentrants	1.8	1.6	1.7	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.5	1.6	1.6	1.6
New entrants	.9	.8	.9	.8	.8	.8	.8	.7	.7	.7	.7	.8	.7	.8	.7

10. Duration of unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Weeks of unemployment	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
	Less than 5 weeks	3,448	3,246	3,365	3,343	3,352	3,195	3,308	3,138	3,186	3,203	3,220	3,223	3,218	3,229	3,089
5 to 14 weeks	2,557	2,196	2,489	2,444	2,411	2,256	2,165	2,151	2,144	2,142	1,949	2,093	2,029	1,968	2,263
15 weeks and over	2,232	1,983	2,187	2,129	2,055	2,060	2,067	2,029	1,920	1,896	1,904	1,801	1,834	1,791	1,733
15 to 26 weeks	1,045	943	1,023	1,004	944	984	974	973	945	834	917	844	899	892	839
27 weeks and over	1,187	1,040	1,164	1,125	1,111	1,076	1,093	1,056	975	1,062	987	957	935	899	894
Mean duration in weeks	15.0	14.5	15.0	14.8	14.9	14.8	14.8	14.7	14.2	14.3	14.2	14.1	14.0	14.2	14.4
Median duration in weeks	6.9	6.5	7.0	6.7	6.7	6.9	6.6	6.6	6.6	6.4	5.8	6.2	6.1	6.0	6.4

11. Unemployment rates of civilian workers by State, data not seasonally adjusted

State	Dec. 1986	Dec. 1987	State	Dec. 1986	Dec. 1987
Alabama	9.6	7.1	Montana	8.0	7.8
Alaska	11.2	9.7	Nebraska	5.2	4.9
Arizona	6.7	5.5	Nevada	6.0	6.7
Arkansas	9.1	7.9	New Hampshire	2.5	2.2
California	6.3	4.9	New Jersey	3.9	3.6
Colorado	7.7	6.8	New Mexico	9.3	8.1
Connecticut	3.4	3.1	New York	5.4	4.2
Delaware	3.7	2.9	North Carolina	4.8	4.2
District of Columbia	7.3	6.0	North Dakota	6.6	5.8
Florida	4.6	5.0	Ohio	7.9	6.1
Georgia	5.7	5.4	Oklahoma	7.9	6.1
Hawaii	4.2	3.7	Oregon	8.2	6.1
Idaho	8.6	7.9	Pennsylvania	4.7	5.1
Illinois	7.0	6.9	Rhode Island	3.7	3.5
Indiana	6.4	5.9	South Carolina	5.9	4.8
Iowa	6.4	5.7	South Dakota	5.0	4.7
Kansas	5.4	5.1	Tennessee	7.6	6.1
Kentucky	8.5	7.3	Texas	8.7	6.8
Louisiana	13.4	10.9	Utah	6.0	5.8
Maine	4.3	3.5	Vermont	4.5	3.5
Maryland	4.2	4.2	Virginia	4.7	3.7
Massachusetts	3.1	2.6	Washington	8.3	7.7
Michigan	7.6	8.3	West Virginia	11.6	11.4
Minnesota	5.5	6.1	Wisconsin	7.1	6.2
Mississippi	11.7	9.7	Wyoming	9.7	7.7
Missouri	6.1	6.3			

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.

12. Employment of workers on nonagricultural payrolls by State, data not seasonally adjusted

(In thousands)

State	Dec. 1986	Nov. 1987	Dec. 1987 ^P	State	Dec. 1986	Nov. 1987	Dec. 1987 ^P
Alabama	1,474.0	1,503.3	1,507.3	Nebraska	663.2	679.7	677.8
Alaska	211.4	206.4	203.4	Nevada	481.4	511.2	512.6
Arizona	1,378.7	1,397.1	1,402.9	New Hampshire	499.6	517.2	521.9
Arkansas	824.0	853.7	854.1	New Jersey	3,549.7	3,633.3	3,637.0
California	11,526.0	11,887.9	11,939.7	New Mexico	535.3	539.7	542.1
Colorado	1,405.2	1,405.8	1,415.5	New York	8,074.3	8,254.2	8,272.9
Connecticut	1,644.6	1,673.8	1,684.5	North Carolina	2,796.8	2,890.6	2,897.1
Delaware	313.2	322.2	323.9	North Dakota	249.7	255.5	254.5
District of Columbia	647.0	652.3	656.0	Ohio	4,569.4	4,675.8	4,678.4
Florida	4,739.3	4,902.9	4,952.9	Oklahoma	1,142.8	1,132.8	1,133.1
Georgia	2,746.5	2,779.5	2,784.2	Oregon	1,072.8	1,121.9	1,118.3
Hawaii	448.1	459.4	461.9	Pennsylvania	4,876.5	5,028.2	5,031.2
Idaho	339.1	343.2	341.6	Rhode Island	452.2	456.4	454.6
Illinois	4,843.9	4,934.2	4,932.9	South Carolina	1,357.9	1,409.5	1,412.9
Indiana	2,277.5	2,363.9	2,358.0	South Dakota	252.3	257.7	256.5
Iowa	1,092.0	1,130.5	1,125.4	Tennessee	1,982.5	2,049.4	2,048.6
Kansas	990.5	1,019.1	1,017.6	Texas	6,538.8	6,580.5	6,587.7
Kentucky	1,309.8	1,328.7	1,333.1	Utah	644.0	650.1	651.4
Louisiana	1,509.4	1,510.9	1,512.0	Vermont	241.5	242.4	246.4
Maine	486.7	509.8	512.2	Virginia	2,626.5	2,682.1	2,693.0
Maryland	1,998.6	2,006.0	2,011.9	Washington	1,791.6	1,875.3	1,874.3
Massachusetts	3,045.7	3,096.9	3,109.1	West Virginia	599.6	609.2	607.7
Michigan	3,699.4	3,754.6	3,750.6	Wisconsin	2,042.8	2,103.7	2,099.1
Minnesota	1,919.6	1,996.2	1,989.8	Wyoming	191.2	190.2	188.7
Mississippi	859.8	879.1	879.7	Puerto Rico	734.4	750.0	757.3
Missouri	2,145.5	2,190.5	2,184.8	Virgin Islands	37.9	38.7	39.0
Montana	275.6	276.2	274.2				

^P = preliminary

NOTE: Some data in this table may differ from data published elsewhere

because of the continual updating of the database.

13. Employment of workers on nonagricultural payrolls by industry, monthly data seasonally adjusted

(In thousands)

Industry	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. ^P	Jan. ^P
TOTAL	99,610	102,110	100,919	101,150	101,329	101,598	101,708	101,818	102,126	102,275	102,434	102,983	103,285	103,596	103,703
PRIVATE SECTOR	82,900	85,047	83,983	84,215	84,352	84,560	84,677	84,787	85,106	85,229	85,386	85,795	86,072	86,322	86,496
GOODS-PRODUCING	24,681	24,884	24,708	24,743	24,749	24,759	24,752	24,761	24,850	24,886	24,917	25,064	25,169	25,258	25,219
Mining	783	742	718	719	722	729	735	738	744	751	759	764	759	759	745
Oil and gas extraction	457	425	405	406	408	416	420	425	430	434	439	443	439	437	426
Construction	4,904	5,031	5,034	5,038	5,032	5,019	4,999	5,008	5,002	5,006	4,989	5,053	5,074	5,122	5,072
General building contractors	1,293	1,279	1,311	1,309	1,291	1,272	1,267	1,266	1,261	1,262	1,260	1,279	1,280	1,292	1,299
Manufacturing	18,994	19,112	18,956	18,986	18,995	19,011	19,018	19,015	19,104	19,129	19,169	19,247	19,336	19,377	19,402
Production workers	12,895	13,021	12,884	12,916	12,925	12,939	12,946	12,958	13,020	13,038	13,072	13,129	13,197	13,237	13,249
Durable goods	11,244	11,236	11,157	11,179	11,176	11,175	11,175	11,176	11,195	11,248	11,268	11,319	11,367	11,401	11,413
Production workers	7,432	7,457	7,370	7,398	7,399	7,406	7,409	7,421	7,425	7,475	7,494	7,530	7,568	7,596	7,594
Lumber and wood products	711	739	731	733	734	736	738	735	740	736	740	741	750	754	755
Furniture and fixtures	497	514	500	501	502	504	509	510	518	518	520	524	526	529	533
Stone, clay, and glass products	586	585	586	588	586	586	584	582	582	582	581	583	588	590	584
Primary metal industries	753	751	726	733	739	743	742	746	750	754	764	768	771	772	766
Blast furnaces and basic steel products	275	275	254	261	266	272	272	275	277	278	283	286	287	285	283
Fabricated metal products	1,431	1,428	1,422	1,419	1,419	1,423	1,420	1,424	1,424	1,425	1,429	1,438	1,446	1,451	1,454
Machinery, except electrical	2,060	2,039	2,007	2,018	2,015	2,022	2,025	2,028	2,033	2,044	2,053	2,064	2,074	2,085	2,098
Electrical and electronic equipment	2,123	2,101	2,111	2,106	2,099	2,092	2,087	2,080	2,088	2,095	2,096	2,111	2,118	2,128	2,136
Transportation equipment	2,015	2,015	2,014	2,022	2,022	2,011	2,011	2,010	1,995	2,028	2,018	2,019	2,016	2,016	2,008
Motor vehicles and equipment	865	841	851	859	854	847	843	842	814	848	837	838	835	831	823
Instruments and related products	707	696	697	695	694	694	693	693	695	695	695	697	701	700	700
Miscellaneous manufacturing industries	362	369	363	364	366	364	366	368	370	371	372	374	377	376	379
Nondurable goods	7,750	7,875	7,799	7,807	7,819	7,836	7,843	7,839	7,909	7,881	7,901	7,928	7,969	7,976	7,989
Production workers	5,463	5,564	5,514	5,518	5,526	5,533	5,537	5,537	5,595	5,563	5,578	5,599	5,629	5,641	5,655
Food and kindred products	1,617	1,636	1,628	1,630	1,635	1,642	1,633	1,634	1,644	1,632	1,631	1,635	1,645	1,644	1,659
Tobacco manufactures	59	57	58	58	57	56	57	57	57	56	55	55	56	56	55
Textile mill products	705	730	718	722	725	724	727	729	736	732	735	736	738	738	735
Apparel and other textile products	1,106	1,113	1,106	1,101	1,103	1,104	1,107	1,108	1,130	1,110	1,117	1,123	1,128	1,121	1,114
Paper and allied products	674	678	678	679	678	677	677	676	678	677	681	678	680	681	682
Printing and publishing	1,457	1,501	1,479	1,483	1,485	1,493	1,497	1,498	1,504	1,508	1,509	1,514	1,522	1,525	1,531
Chemicals and allied products	1,023	1,027	1,018	1,018	1,017	1,018	1,022	1,014	1,026	1,031	1,031	1,035	1,041	1,047	1,049
Petroleum and coal products	169	165	164	164	164	164	164	164	164	164	166	167	167	167	165
Rubber and misc. plastics products	790	818	803	805	807	809	809	810	815	819	824	833	840	845	846
Leather and leather products	151	151	147	147	148	149	150	149	155	152	152	152	152	152	153
SERVICE-PRODUCING	74,930	77,226	76,211	76,407	76,580	76,839	76,956	77,057	77,276	77,389	77,517	77,919	78,116	78,338	78,484
Transportation and public utilities	5,244	5,377	5,304	5,315	5,333	5,348	5,344	5,350	5,363	5,377	5,416	5,436	5,459	5,468	5,476
Transportation	3,041	3,149	3,089	3,097	3,112	3,124	3,120	3,128	3,133	3,147	3,183	3,198	3,218	3,227	3,228
Communication and public utilities	2,203	2,228	2,215	2,218	2,221	2,224	2,224	2,222	2,230	2,230	2,233	2,238	2,241	2,241	2,248
Wholesale trade	5,735	5,797	5,741	5,757	5,766	5,772	5,775	5,781	5,797	5,807	5,815	5,831	5,851	5,873	5,892
Durable goods	3,383	3,419	3,386	3,391	3,397	3,397	3,401	3,405	3,418	3,422	3,431	3,444	3,456	3,475	3,487
Nondurable goods	2,351	2,379	2,355	2,366	2,369	2,375	2,374	2,376	2,379	2,385	2,384	2,387	2,395	2,398	2,405
Retail trade	17,845	18,262	18,080	18,140	18,136	18,197	18,205	18,226	18,274	18,256	18,314	18,408	18,443	18,433	18,587
General merchandise stores	2,363	2,404	2,358	2,373	2,380	2,385	2,390	2,387	2,407	2,411	2,415	2,459	2,454	2,427	2,457
Food stores	2,873	2,959	2,929	2,940	2,944	2,953	2,956	2,960	2,959	2,962	2,958	2,969	2,982	2,994	3,019
Automotive dealers and service stations	1,943	1,987	1,978	1,979	1,979	1,978	1,978	1,983	1,985	1,985	1,988	2,000	2,003	2,011	2,027
Eating and drinking places	5,879	5,994	5,946	5,956	5,964	5,962	5,976	5,982	5,985	5,992	6,018	6,032	6,047	6,063	6,082
Finance, insurance, and real estate	6,297	6,589	6,480	6,501	6,526	6,558	6,576	6,586	6,608	6,624	6,629	6,650	6,657	6,667	6,671
Finance	3,152	3,278	3,235	3,243	3,256	3,272	3,276	3,280	3,291	3,293	3,292	3,296	3,301	3,303	3,308
Insurance	1,945	2,044	2,012	2,016	2,022	2,032	2,037	2,037	2,043	2,050	2,054	2,068	2,069	2,082	2,083
Real estate	1,200	1,267	1,233	1,242	1,248	1,254	1,263	1,269	1,274	1,281	1,283	1,286	1,287	1,282	1,280
Services	23,099	24,138	23,670	23,759	23,842	23,926	24,025	24,083	24,214	24,279	24,295	24,406	24,493	24,623	24,651
Business services	4,781	5,097	4,950	4,984	5,020	5,044	5,083	5,086	5,105	5,133	5,152	5,194	5,195	5,222	5,220
Health services	6,551	6,880	6,721	6,748	6,773	6,800	6,822	6,853	6,887	6,923	6,943	6,987	7,023	7,065	7,102
Government	16,711	17,063	16,936	16,935	16,977	17,038	17,031	17,031	17,020	17,046	17,048	17,188	17,213	17,274	17,207
Federal	2,899	2,943	2,912	2,916	2,922	2,933	2,935	2,935	2,936	2,940	2,962	2,965	2,977	2,979	2,981
State	3,888	3,952	3,929	3,927	3,930	3,943	3,947	3,932	3,952	3,964	3,957	3,973	3,978	3,994	3,971
Local	9,923	10,168	10,095	10,092	10,125	10,162	10,149	10,164	10,132	10,142	10,129	10,250	10,258	10,301	10,255

^P = preliminary

NOTE: See notes on the data for a description of the most recent benchmark revision.

14. Average weekly hours of production or nonsupervisory workers on private nonagricultural payrolls by industry, monthly data seasonally adjusted

Industry	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. ^P	Jan. ^P
PRIVATE SECTOR	34.8	34.8	34.7	34.9	34.8	34.7	34.9	34.8	34.8	34.9	34.6	34.9	34.9	34.7	34.7
MANUFACTURING	40.7	41.0	40.9	41.1	40.9	40.6	41.0	41.0	41.0	41.0	40.6	41.3	41.2	41.0	41.1
Overtime hours	3.4	3.7	3.6	3.6	3.6	3.5	3.8	3.7	3.8	3.8	3.6	4.0	3.9	3.9	3.9
Durable goods	41.3	41.5	41.6	41.7	41.5	41.2	41.6	41.5	41.6	41.6	41.0	41.9	41.9	41.6	41.6
Overtime hours	3.5	3.8	3.7	3.7	3.7	3.6	3.9	3.8	3.8	4.0	3.7	4.1	4.0	4.0	4.0
Lumber and wood products	40.3	40.6	40.8	41.3	40.9	40.6	41.0	40.6	40.6	40.4	39.4	40.4	40.8	40.5	39.7
Furniture and fixtures	39.8	39.9	40.2	40.2	40.0	39.1	39.9	40.0	40.0	40.1	39.3	40.0	40.0	39.7	39.4
Stone, clay, and glass products	42.2	42.3	42.5	42.8	42.5	41.9	42.3	42.0	42.2	42.1	41.9	42.6	42.5	42.6	42.2
Primary metal industries	41.9	43.1	42.6	42.6	42.6	42.3	43.1	43.1	43.4	43.5	43.4	43.7	43.7	43.5	43.5
Blast furnaces and basic steel products	41.7	43.6	42.7	42.3	42.3	42.4	43.3	43.5	44.1	44.0	45.2	44.3	44.0	44.1	44.2
Fabricated metal products	41.3	41.5	41.6	41.6	41.5	41.2	41.6	41.5	41.4	41.5	40.8	42.0	42.1	41.8	41.8
Machinery except electrical	41.6	42.2	42.0	42.2	42.0	41.8	42.2	42.2	42.4	42.2	41.6	42.6	42.7	42.5	42.8
Electrical and electronic equipment	41.0	40.9	41.0	41.1	40.9	40.6	40.8	41.1	41.1	41.0	40.4	41.1	41.0	40.8	41.2
Transportation equipment	42.3	42.1	42.3	42.5	42.3	41.9	42.2	41.9	41.7	41.9	41.3	42.5	42.4	41.6	42.0
Motor vehicles and equipment	42.6	42.3	42.9	43.0	42.9	42.1	42.5	42.0	41.9	41.9	41.3	43.0	43.1	41.4	41.9
Instruments and related products	41.0	41.4	41.2	41.3	41.3	41.0	41.5	41.5	41.6	41.7	41.1	42.1	41.7	41.5	41.6
Nondurable goods	39.9	40.2	40.1	40.3	40.1	39.7	40.2	40.2	40.3	40.3	40.1	40.5	40.4	40.3	40.3
Overtime hours	3.3	3.6	3.5	3.5	3.5	3.3	3.7	3.6	3.7	3.7	3.6	3.8	3.8	3.7	3.8
Food and kindred products	40.0	40.2	40.0	40.1	40.0	39.8	40.1	40.1	39.9	40.3	40.2	40.5	40.6	40.6	40.5
Textile mill products	41.1	41.9	41.6	42.0	42.1	41.4	42.0	42.1	42.4	42.1	41.3	41.9	41.8	41.7	41.3
Apparel and other textile products	36.7	37.1	37.0	37.4	37.0	36.1	37.2	37.1	37.3	37.4	36.3	37.4	37.1	37.2	37.1
Paper and allied products	43.2	43.4	43.4	43.3	43.0	43.0	43.5	43.3	43.5	43.4	43.8	43.7	43.5	43.2	43.6
Printing and publishing	38.0	38.0	37.9	38.1	37.9	37.7	37.9	38.1	38.1	37.9	38.2	38.0	38.0	37.9	37.9
Chemicals and allied products	41.9	42.3	42.2	42.2	42.0	42.2	42.1	42.0	42.2	42.4	42.8	42.7	42.7	42.8	42.7
Petroleum and coal products	43.8	43.9	44.6	44.0	44.1	43.9	44.3	43.3	44.4	43.3	43.2	43.5	43.6	44.5	44.5
TRANSPORTATION AND PUBLIC UTILITIES	39.2	39.1	39.0	39.2	39.0	39.0	39.2	38.8	39.2	39.3	39.1	39.3	39.1	39.0	39.3
WHOLESALE TRADE	37.7	37.5	38.3	38.3	38.1	38.2	38.3	38.2	38.1	38.3	38.0	38.4	38.3	38.1	38.3
RETAIL TRADE	29.2	29.3	29.0	29.3	29.3	29.5	29.4	29.2	29.3	29.6	29.6	29.3	29.2	28.8	28.9
SERVICES	32.5	32.5	32.4	32.6	32.5	32.4	32.5	32.5	32.5	32.5	32.5	32.5	32.6	32.5	32.7

^P = preliminary

benchmark adjustment.

NOTE: See "Notes on the data" for a description of the most recent

15. Average hourly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry

Industry	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. ^P	Jan. ^P
PRIVATE SECTOR	\$8.76	\$8.98	\$8.90	\$8.92	\$8.92	\$8.91	\$8.93	\$8.92	\$8.91	\$8.94	\$9.06	\$9.09	\$9.14	\$9.12	\$9.18
Seasonally adjusted	-	-	8.86	8.88	8.91	8.91	8.95	8.94	8.96	9.02	9.02	9.08	9.12	9.10	9.14
MINING	12.44	12.45	12.66	12.56	12.51	12.43	12.42	12.44	12.31	12.32	12.43	12.34	12.47	12.49	12.61
CONSTRUCTION	12.47	12.66	12.58	12.51	12.59	12.55	12.60	12.61	12.57	12.67	12.77	12.79	12.80	12.78	12.90
MANUFACTURING	9.73	9.91	9.84	9.84	9.85	9.87	9.87	9.87	9.87	9.86	10.00	9.95	10.01	10.08	10.09
Durable goods	10.29	10.45	10.38	10.39	10.39	10.39	10.40	10.42	10.40	10.42	10.53	10.51	10.57	10.63	10.63
Lumber and wood products	8.33	8.40	8.27	8.31	8.28	8.34	8.37	8.44	8.46	8.49	8.48	8.44	8.49	8.45	8.55
Furniture and fixtures	7.46	7.67	7.61	7.58	7.58	7.58	7.64	7.66	7.67	7.74	7.75	7.73	7.73	7.79	7.79
Stone, clay, and glass products	10.05	10.27	10.17	10.15	10.13	10.23	10.26	10.29	10.33	10.31	10.40	10.31	10.34	10.34	10.34
Primary metal industries	11.86	11.98	11.76	11.78	11.82	11.96	11.96	11.97	11.97	11.98	12.24	12.05	12.08	12.16	12.14
Blast furnaces and basic steel products	13.73	13.84	13.55	13.59	13.66	13.84	13.80	13.83	13.70	13.81	14.17	13.97	13.97	14.07	13.98
Fabricated metal products	9.89	10.03	9.98	9.99	9.99	9.98	9.97	10.00	9.95	9.97	10.04	10.11	10.15	10.23	10.18
Machinery, except electrical	10.59	10.77	10.64	10.68	10.72	10.70	10.70	10.76	10.74	10.76	10.81	10.86	10.89	10.97	10.95
Electrical and electronic equipment	9.65	9.90	9.84	9.84	9.84	9.82	9.83	9.84	9.89	9.90	9.98	9.95	10.00	10.07	10.05
Transportation equipment	12.81	12.96	12.93	12.88	12.86	12.80	12.85	12.88	12.83	12.90	13.07	13.09	13.18	13.26	13.22
Motor vehicles and equipment	13.45	13.57	13.58	13.49	13.49	13.40	13.42	13.47	13.36	13.43	13.69	13.73	13.82	13.92	13.96
Instruments and related products	9.47	9.75	9.64	9.67	9.67	9.67	9.69	9.70	9.74	9.78	9.80	9.81	9.87	9.89	9.99
Miscellaneous manufacturing	7.54	7.73	7.69	7.68	7.66	7.67	7.72	7.74	7.72	7.70	7.76	7.77	7.81	7.87	7.95
Nondurable goods	8.94	9.16	9.09	9.08	9.09	9.14	9.13	9.11	9.16	9.12	9.28	9.18	9.24	9.31	9.33
Food and kindred products	8.74	8.92	8.90	8.91	8.93	8.95	8.96	8.91	8.88	8.80	8.92	8.86	8.96	9.05	9.10
Tobacco manufactures	12.85	13.82	12.97	13.44	13.80	14.28	14.53	15.57	14.85	14.20	12.89	12.77	13.44	13.68	14.12
Textile mill products	6.93	7.18	7.10	7.11	7.12	7.12	7.13	7.15	7.14	7.16	7.23	7.24	7.31	7.32	7.37
Apparel and other textile products	5.84	5.95	5.94	5.93	5.93	5.94	5.89	5.91	5.89	5.90	6.01	5.99	6.00	6.02	6.04
Paper and allied products	11.18	11.42	11.26	11.26	11.27	11.37	11.40	11.41	11.48	11.41	11.67	11.48	11.50	11.56	11.53
Printing and publishing	9.99	10.28	10.14	10.16	10.17	10.14	10.19	10.19	10.25	10.31	10.48	10.42	10.39	10.44	10.38
Chemicals and allied products	11.98	12.37	12.18	12.21	12.24	12.30	12.31	12.27	12.37	12.34	12.56	12.52	12.56	12.61	12.62
Petroleum and coal products	14.18	14.57	14.57	14.51	14.50	14.50	14.52	14.43	14.48	14.52	14.71	14.66	14.75	14.70	14.75
Rubber and miscellaneous plastics products	8.73	8.89	8.83	8.79	8.80	8.82	8.84	8.87	8.93	8.90	8.98	8.91	8.93	9.01	9.00
Leather and leather products	5.92	6.06	6.04	6.01	6.06	6.12	6.05	6.04	5.98	6.01	6.09	6.09	6.11	6.10	6.12
TRANSPORTATION AND PUBLIC UTILITIES	11.70	12.00	11.89	11.93	11.90	11.94	11.95	11.91	12.00	12.04	12.09	12.09	12.17	12.12	12.10
WHOLESALE TRADE	9.35	9.60	9.49	9.55	9.53	9.53	9.57	9.57	9.57	9.62	9.67	9.67	9.74	9.74	9.81
RETAIL TRADE	6.03	6.11	6.09	6.09	6.08	6.09	6.09	6.08	6.07	6.06	6.20	6.16	6.19	6.17	6.23
FINANCE, INSURANCE, AND REAL ESTATE	8.35	8.76	8.60	8.75	8.72	8.71	8.72	8.68	8.69	8.81	8.79	8.81	8.94	8.85	8.93
SERVICES	8.16	8.47	8.37	8.43	8.41	8.40	8.38	8.35	8.33	8.40	8.55	8.61	8.71	8.72	8.80

- Data not available.
 P = preliminary

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

16. Average weekly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry

Industry	Annual average		1987												1988	
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. ^P	Jan. ^P	
PRIVATE SECTOR																
Current dollars	\$304.85	\$312.50	\$306.16	\$307.74	\$308.63	\$308.29	\$310.76	\$312.20	\$312.74	\$315.58	\$314.38	\$317.24	\$318.07	\$318.29	\$315.79	\$315.79
Seasonally adjusted	-	-	307.44	309.91	310.07	309.18	312.36	311.11	311.81	314.80	312.09	316.89	318.29	315.77	317.16	-
Constant (1977) dollars	171.07	169.28	169.52	169.74	169.48	168.28	169.17	169.21	169.14	169.76	168.30	169.38	169.64	169.85	-	-
MINING	524.97	526.64	538.05	527.52	522.92	519.57	526.61	527.46	518.25	522.37	523.30	526.92	527.48	537.07	532.14	-
CONSTRUCTION	466.38	477.28	467.98	460.37	470.87	469.37	485.10	480.44	485.20	489.06	464.83	496.25	474.88	480.53	464.40	-
MANUFACTURING																
Current dollars	396.01	406.31	401.47	401.47	402.87	398.75	403.68	405.66	400.72	403.27	408.00	410.94	414.41	421.34	413.69	-
Constant (1977) dollars	222.23	220.10	222.30	221.44	221.24	217.78	219.75	219.87	216.72	216.93	218.42	219.40	221.02	224.83	-	-
Durable goods	424.98	433.68	430.77	431.19	432.22	427.03	431.60	434.51	426.40	430.35	432.78	439.32	443.94	451.78	441.15	-
Lumber and wood products	335.70	341.04	331.63	337.39	337.00	338.60	345.68	348.57	341.78	345.54	338.35	342.66	343.00	342.23	334.31	-
Furniture and fixtures	296.91	306.03	302.88	299.41	301.68	294.10	301.78	306.40	300.66	311.92	308.45	313.84	312.29	318.61	303.81	-
Stone, clay, and glass products	424.11	434.42	421.04	423.26	425.46	430.68	439.13	437.33	439.03	439.21	442.00	443.33	438.42	437.38	424.97	-
Primary metal industries	496.93	516.34	500.98	503.01	505.90	508.30	514.28	517.10	514.71	515.14	531.22	522.97	529.10	536.26	528.09	-
Blast furnaces and basic steel products	572.54	603.42	575.88	577.58	581.92	593.74	598.92	605.75	602.80	600.74	639.07	610.49	613.28	624.71	615.12	-
Fabricated metal products	408.46	416.25	414.17	413.59	414.59	408.18	412.76	417.00	405.96	411.76	410.64	424.62	429.35	437.84	424.51	-
Machinery, except electrical	440.54	454.49	446.88	449.63	452.38	445.12	449.40	455.15	447.86	449.77	449.70	460.46	467.18	478.29	468.66	-
Electrical and electronic equipment	395.65	404.91	404.42	402.46	402.46	395.75	399.10	404.42	399.56	403.92	404.19	408.95	414.00	421.93	415.07	-
Transportation equipment	541.86	545.62	549.53	546.11	547.84	536.32	542.27	539.67	526.03	530.19	538.48	553.71	561.47	568.85	557.88	-
Motor vehicles and equipment	572.97	574.01	585.30	577.37	582.77	566.82	571.69	567.09	549.10	547.94	562.66	586.27	594.26	597.17	589.11	-
Instruments and related products	388.27	403.65	397.17	399.37	401.31	394.54	399.23	402.55	398.37	403.91	402.78	410.06	414.54	421.31	415.58	-
Miscellaneous manufacturing	298.58	303.79	303.76	301.06	301.04	297.60	302.62	304.18	299.54	303.38	302.64	310.80	309.28	313.23	309.26	-
Nondurable goods	356.71	368.23	362.69	362.29	363.60	361.03	366.11	367.13	366.40	368.45	374.91	371.79	375.14	381.71	375.07	-
Food and kindred products	349.60	358.58	354.22	351.05	352.74	351.74	359.30	357.29	354.31	358.16	363.94	360.60	365.57	371.96	366.73	-
Tobacco manufactures	480.59	532.07	481.19	486.53	525.78	536.93	571.03	624.36	527.18	512.62	501.42	526.12	551.04	555.41	539.38	-
Textile mill products	284.82	300.84	293.94	295.78	299.04	291.21	298.75	303.16	297.02	302.87	301.49	305.53	308.48	309.64	302.91	-
Apparel and other textile products	214.33	220.75	218.59	220.00	219.41	212.65	219.11	221.03	217.93	220.66	218.16	224.63	224.40	226.35	222.88	-
Paper and allied products	482.98	495.63	488.68	484.18	483.48	486.64	493.62	494.05	495.94	492.91	514.65	501.68	502.55	509.80	502.71	-
Printing and publishing	379.62	390.64	381.26	384.05	386.46	381.26	384.16	384.16	387.45	392.81	403.48	397.00	397.94	404.03	390.29	-
Chemicals and allied products	501.96	523.25	514.00	514.04	515.30	519.06	518.25	516.57	518.30	519.51	537.57	530.85	537.57	546.01	538.87	-
Petroleum and coal products	621.08	639.62	645.45	629.73	636.55	635.10	637.43	624.82	645.81	631.62	644.30	642.11	646.05	654.15	651.95	-
Rubber and miscellaneous plastics products	360.55	369.82	367.33	364.79	365.20	360.74	366.86	370.77	366.13	368.46	371.77	373.33	375.95	382.02	378.00	-
Leather and leather products	218.45	230.89	225.29	223.57	227.25	224.60	233.53	237.37	230.83	233.79	229.59	235.68	234.01	234.85	235.01	-
TRANSPORTATION AND PUBLIC UTILITIES	458.64	469.20	457.77	465.27	462.91	463.27	466.05	465.68	472.80	476.78	473.93	475.14	477.06	475.10	469.48	-
WHOLESALE TRADE	359.04	366.72	361.57	361.95	361.19	363.09	366.53	367.49	366.53	369.41	368.43	371.33	373.04	373.04	373.76	-
RETAIL TRADE	176.08	179.02	172.35	174.78	175.71	177.83	178.44	179.97	182.10	183.62	183.52	179.87	179.51	180.78	176.31	-
FINANCE, INSURANCE, AND REAL ESTATE	303.94	317.99	312.18	318.50	316.54	316.17	316.54	315.95	314.58	320.68	316.44	318.92	324.52	319.49	324.16	-
SERVICES	265.20	275.28	269.51	273.13	272.48	271.32	271.51	272.21	273.22	276.36	277.02	279.83	283.08	283.40	286.00	-

- Data not available.
P = preliminary

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

17. The Hourly Earnings Index for production or nonsupervisory workers on private nonagricultural payrolls by industry

Industry	Not seasonally adjusted				Seasonally adjusted					
	Jan. 1987	Nov. 1987	Dec. 1987 ^P	Jan. 1988 ^P	Jan. 1987	Sept. 1987	Oct. 1987	Nov. 1987	Dec. 1987 ^P	Jan. 1988 ^P
PRIVATE SECTOR (in current dollars)	171.7	176.0	176.0	176.7	171.2	174.6	174.9	175.8	175.4	176.3
Mining ¹	182.6	184.1	183.5	183.0	-	-	-	-	-	-
Construction	152.8	156.1	155.5	156.5	152.8	154.0	154.7	156.6	154.5	156.7
Manufacturing	174.0	176.5	177.3	177.9	173.4	176.7	176.3	176.6	177.0	177.3
Transportation and public utilities	174.0	178.4	177.9	176.9	173.6	176.6	176.9	177.1	176.7	176.5
Wholesale trade ¹	175.0	179.6	179.6	180.7	-	-	-	-	-	-
Retail trade	159.0	162.3	161.8	162.6	158.9	162.7	162.2	162.3	161.9	162.6
Finance, insurance, and real estate ¹	184.7	192.1	190.7	192.1	-	-	-	-	-	-
Services	178.4	185.8	185.9	187.4	177.5	182.3	183.9	185.2	184.8	186.4
PRIVATE SECTOR [in constant (1977) dollars]	95.0	93.8	93.9	-	94.7	93.8	93.7	93.8	93.6	-

¹ This series is not seasonally adjusted because the seasonal component is small relative to the trend-cycle, irregular components, or both, and consequently cannot be separated with sufficient precision.

- Data not available.

P = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

18. Indexes of diffusion: industries in which employment increased, data seasonally adjusted

(In percent)

Time span and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Over 1-month span:												
1986	53.2	48.1	48.1	53.5	52.4	46.8	52.4	56.2	55.1	53.2	59.7	59.7
1987	53.5	56.8	58.6	58.4	58.6	55.7	68.6	54.6	65.4	65.4	71.9	62.2
1988	59.2	-	-	-	-	-	-	-	-	-	-	-
Over 3-month span:												
1986	49.7	44.9	45.7	48.4	47.6	45.4	48.4	55.1	55.9	58.1	58.6	60.3
1987	58.6	59.5	61.1	61.6	61.4	67.3	66.2	75.1	69.7	77.8	74.6	68.4
1988	-	-	-	-	-	-	-	-	-	-	-	-
Over 6-month span:												
1986	47.6	47.6	43.0	43.2	45.4	48.4	47.3	53.0	59.2	58.9	57.8	58.9
1987	61.9	62.7	58.9	67.3	67.6	71.1	76.2	78.6	79.5	73.2	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
Over 12-month span:												
1986	43.2	44.1	46.2	45.7	47.8	49.5	49.5	51.6	54.9	52.2	55.1	56.5
1987	62.2	63.5	67.3	68.9	73.8	71.9	76.5	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-

- Data not available.
 NOTE: Figures are the percent of industries with employment rising. (Half of the unchanged components are counted as rising.) Data are centered within the spans. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

19. Annual data: Employment status of the noninstitutional population

(Numbers in thousands)

Employment status	1979	1980	1981	1982	1983	1984	1985	1986	1987
Noninstitutional population	166,460	169,349	171,775	173,939	175,891	178,080	179,912	182,293	184,490
Labor force:									
Total (number)	106,559	108,544	110,315	111,872	113,226	115,241	117,167	119,540	121,602
Percent of population	64.0	64.1	64.2	64.3	64.4	64.7	65.1	65.6	65.9
Employed:									
Total (number)	100,421	100,907	102,042	101,194	102,510	106,702	108,856	111,303	114,177
Percent of population	60.3	59.6	59.4	58.2	58.3	59.9	60.5	61.1	61.9
Resident Armed Forces	1,597	1,604	1,645	1,668	1,676	1,697	1,706	1,706	1,737
Civilian									
Total	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440
Agriculture	3,347	3,364	3,368	3,401	3,383	3,321	3,179	3,163	3,208
Nonagricultural industries	95,477	95,938	97,030	96,125	97,450	101,685	103,971	106,434	109,232
Unemployed:									
Total (number)	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425
Percent of labor force	5.8	7.0	7.5	9.5	9.5	7.4	7.1	6.9	6.1
Not in labor force (number)	59,900	60,806	61,460	62,067	62,665	62,839	62,744	62,752	62,888

20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1979	1980	1981	1982	1983	1984	1985	1986	1987 ^P
Total employment	89,823	90,406	91,156	89,566	90,200	94,496	97,519	99,610	102,110
Private sector	73,876	74,166	75,126	73,729	74,330	78,472	81,125	82,900	85,047
Goods-producing	26,461	25,658	25,497	23,813	23,334	24,727	24,859	24,681	24,884
Mining	958	1,027	1,139	1,128	952	966	927	783	742
Construction	4,463	4,346	4,188	3,905	3,948	4,383	4,673	4,904	5,031
Manufacturing	21,040	20,285	20,170	18,781	18,434	19,378	19,260	18,994	19,112
Service-producing	63,363	64,748	65,659	65,753	66,866	69,769	72,660	74,930	77,226
Transportation and public utilities	5,136	5,146	5,165	5,082	4,954	5,159	5,238	5,244	5,377
Wholesale trade	5,204	5,275	5,358	5,278	5,268	5,555	5,717	5,735	5,797
Retail trade	14,989	15,035	15,189	15,179	15,613	16,545	17,356	17,845	18,262
Finance, insurance, and real estate	4,975	5,160	5,298	5,341	5,468	5,689	5,955	6,297	6,589
Services	17,112	17,890	18,619	19,036	19,694	20,797	22,000	23,099	24,138
Government	15,947	16,241	16,031	15,837	15,869	16,024	16,394	16,711	17,063
Federal	2,773	2,866	2,772	2,739	2,774	2,807	2,875	2,899	2,943
State	3,541	3,610	3,640	3,640	3,662	3,734	3,832	3,888	3,952
Local	9,633	9,765	9,619	9,458	9,434	9,482	9,687	9,923	10,168

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

21. Annual data: Average hours and earnings of production or nonsupervisory workers on nonagricultural payrolls, by industry

Industry	1979	1980	1981	1982	1983	1984	1985	1986	1987 ^P
Private sector									
Average weekly hours	35.7	35.3	35.2	34.8	35.0	35.2	34.9	34.8	34.8
Average hourly earnings (in dollars)	6.16	6.66	7.25	7.68	8.02	8.32	8.57	8.76	8.98
Average weekly earnings (in dollars)	219.91	235.10	255.20	267.26	280.70	292.86	299.09	304.85	312.50
Mining									
Average weekly hours	43.0	43.3	43.7	42.7	42.5	43.3	43.4	42.2	42.3
Average hourly earnings (in dollars)	8.49	9.17	10.04	10.77	11.28	11.63	11.98	12.44	12.45
Average weekly earnings (in dollars)	365.07	397.06	438.75	459.88	479.40	503.58	519.93	524.97	526.64
Construction									
Average weekly hours	37.0	37.0	36.9	36.7	37.1	37.8	37.7	37.4	37.7
Average hourly earnings (in dollars)	9.27	9.94	10.82	11.63	11.94	12.13	12.32	12.47	12.66
Average weekly earnings (in dollars)	342.99	367.78	399.26	426.82	442.97	458.51	464.46	466.38	477.28
Manufacturing									
Average weekly hours	40.2	39.7	39.8	38.9	40.1	40.7	40.5	40.7	41.0
Average hourly earnings (in dollars)	6.70	7.27	7.99	8.49	8.83	9.19	9.54	9.73	9.91
Average weekly earnings (in dollars)	269.34	288.62	318.00	330.26	354.08	374.03	386.37	396.01	406.31
Transportation and public utilities									
Average weekly hours	39.9	39.6	39.4	39.0	39.0	39.4	39.5	39.2	39.1
Average hourly earnings (in dollars)	8.16	8.87	9.70	10.32	10.79	11.12	11.40	11.70	12.00
Average weekly earnings (in dollars)	325.58	351.25	382.18	402.48	420.81	438.13	450.30	458.64	469.20
Wholesale trade									
Average weekly hours	38.8	38.5	38.5	38.3	38.5	38.5	38.4	38.4	38.2
Average hourly earnings (in dollars)	6.39	6.96	7.56	8.09	8.55	8.89	9.16	9.35	9.60
Average weekly earnings (in dollars)	247.93	267.96	291.06	309.85	329.18	342.27	351.74	359.04	366.72
Retail trade									
Average weekly hours	30.6	30.2	30.1	29.9	29.8	29.8	29.4	29.2	29.3
Average hourly earnings (in dollars)	4.53	4.88	5.25	5.48	5.74	5.85	5.94	6.03	6.11
Average weekly earnings (in dollars)	138.62	147.38	158.03	163.85	171.05	174.33	174.64	176.08	179.02
Finance, insurance, and real estate									
Average weekly hours	36.2	36.2	36.3	36.2	36.2	36.5	36.4	36.4	36.3
Average hourly earnings (in dollars)	5.27	5.79	6.31	6.78	7.29	7.63	7.94	8.35	8.76
Average weekly earnings (in dollars)	190.77	209.60	229.05	245.44	263.90	278.50	289.02	303.94	317.99
Services									
Average weekly hours	32.7	32.6	32.6	32.6	32.7	32.6	32.5	32.5	32.5
Average hourly earnings (in dollars)	5.36	5.85	6.41	6.92	7.31	7.59	7.90	8.16	8.47
Average weekly earnings (in dollars)	175.27	190.71	208.97	225.59	239.04	247.43	256.75	265.20	275.28

22. Employment Cost Index, compensation,¹ by occupation and industry group

(June 1981=100)

Series	1985		1986			1987				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 1987	
Civilian workers ²	129.2	130.6	131.5	133.0	133.8	135.0	135.9	137.5	138.6	0.8	3.6
Workers, by occupational group:											
White-collar workers	131.6	133.1	134.2	136.0	136.9	138.5	139.3	141.2	142.2	.7	3.9
Blue-collar workers	124.9	126.2	126.8	127.8	128.4	129.1	130.1	131.3	132.5	.9	3.2
Service occupations	131.8	133.1	133.7	135.4	136.6	138.0	138.5	139.9	140.8	.6	3.1
Workers, by industry division:											
Goods-producing	125.5	126.9	128.1	128.8	129.5	130.2	131.1	132.2	133.5	1.0	3.1
Manufacturing	126.0	127.7	128.7	129.3	130.1	130.7	131.5	132.7	134.1	1.1	3.1
Service-producing	131.5	132.9	133.7	135.6	136.5	138.1	138.9	140.8	141.7	.6	3.8
Services	137.1	138.8	139.4	142.4	143.6	145.2	145.8	149.2	150.6	.9	4.9
Health services	-	-	-	-	-	-	-	-	-	1.2	4.4
Hospitals	-	-	-	-	-	-	-	-	-	1.2	4.8
Public administration ³	134.8	136.8	138.0	140.6	141.6	144.1	144.7	146.4	148.1	1.2	4.6
Nonmanufacturing	130.6	131.9	132.8	134.6	135.4	136.9	137.8	139.6	140.5	.6	3.8
Private industry workers	127.5	128.9	129.9	130.8	131.6	132.9	133.8	135.1	136.0	.7	3.3
Workers, by occupational group:											
White-collar workers	129.8	131.3	132.5	133.5	134.3	136.1	137.0	138.5	139.3	.6	3.7
Professional specialty and technical occupations	-	-	-	-	-	-	-	-	-	.9	4.1
Executive, administrative, and managerial occupations	-	-	-	-	-	-	-	-	-	.5	4.4
Sales occupations	-	-	-	-	-	-	-	-	-	-3	1.2
Administrative support occupations, including clerical	-	-	-	-	-	-	-	-	-	.9	4.1
Blue-collar workers	124.4	125.7	126.3	127.2	127.8	128.4	129.5	130.6	131.8	.9	3.1
Precision production, craft, and repair occupation	-	-	-	-	-	-	-	-	-	.8	3.1
Machine operators, assemblers, and inspectors	-	-	-	-	-	-	-	-	-	1.3	3.4
Transportation and material moving occupations	-	-	-	-	-	-	-	-	-	.6	2.9
Handlers, equipment cleaners, helpers, and laborers	-	-	-	-	-	-	-	-	-	1.1	2.8
Service occupations	129.5	130.9	131.1	132.3	133.5	134.7	135.2	135.9	136.7	.6	2.4
Workers, by industry division:											
Goods-producing	125.3	126.7	127.8	128.6	129.2	129.9	130.8	131.9	133.2	1.0	3.1
Construction	-	-	-	-	-	-	-	-	-	.7	3.7
Manufacturing	126.0	127.7	128.7	129.3	130.1	130.7	131.5	132.7	134.1	1.1	3.1
Durables	-	-	-	-	-	-	-	-	-	1.0	2.7
Nondurables	-	-	-	-	-	-	-	-	-	1.2	3.8
Service-producing	129.4	130.8	131.6	132.7	133.5	135.3	136.3	137.7	138.4	.5	3.7
Transportation and public utilities	-	-	-	-	-	-	-	-	-	.4	3.0
Transportation	-	-	-	-	-	-	-	-	-	.2	2.7
Public utilities	-	-	-	-	-	-	-	-	-	.6	3.3
Wholesale and retail trade	-	-	-	-	-	-	-	-	-	.2	3.0
Wholesale trade	-	-	-	-	-	-	-	-	-	.7	4.0
Retail trade	-	-	-	-	-	-	-	-	-	.1	2.5
Finance, insurance, and real estate	-	-	-	-	-	-	-	-	-	.1	2.0
Service	-	-	-	-	-	-	-	-	-	1.0	5.2
Health services	-	-	-	-	-	-	-	-	-	1.2	4.3
Hospitals	-	-	-	-	-	-	-	-	-	1.3	4.9
Nonmanufacturing	128.4	129.7	130.6	131.7	132.4	134.1	135.1	136.4	137.1	.5	3.5
State and local government workers	137.5	138.9	139.7	143.6	144.7	145.9	146.3	149.7	151.1	.9	4.4
Workers, by occupational group:											
White-collar workers	138.6	140.0	140.5	145.0	146.0	147.2	147.5	151.2	152.7	1.0	4.6
Blue-collar workers	132.7	134.7	136.3	138.5	139.5	140.8	141.3	143.3	144.3	.7	3.4
Workers, by industry division:											
Services	139.1	140.4	140.8	145.5	146.6	147.3	147.6	151.8	153.1	.9	4.4
Hospitals and other services ⁴	135.2	136.8	137.9	139.4	141.1	142.5	143.3	145.1	146.3	.8	3.7
Health services	-	-	-	-	-	-	-	-	-	1.1	4.7
Schools	140.3	141.5	141.7	147.6	148.4	148.9	149.1	154.1	155.5	.9	4.8
Elementary and secondary	142.0	143.0	143.2	149.4	150.3	150.5	150.7	156.5	157.8	.8	5.0
Public administration ³	134.8	136.8	138.0	140.6	141.6	144.1	144.7	146.4	148.1	1.2	4.6

¹ Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

² Consist of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

³ Consist of legislative, judicial, administrative, and regulatory activities.

⁴ Includes, for example, library, social, and health services.

- Data not available.

23. Employment Cost Index, wages and salaries, by occupation and industry group

(June 1981 = 100)

Series	1985	1986				1987				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 1987	
Civilian workers ¹	127.0	128.3	129.3	130.7	131.5	132.8	133.5	135.2	136.1	0.7	3.5
Workers, by occupational group:											
White-collar workers	129.8	131.2	132.4	134.1	135.0	136.6	137.3	139.4	140.2	.6	3.9
Blue-collar workers	122.3	123.4	124.1	125.0	125.6	126.2	127.1	128.3	129.4	.9	3.0
Service occupations	128.6	129.8	130.0	131.7	132.8	134.2	134.7	136.0	136.6	.4	2.9
Workers, by industry division											
Goods-producing	123.1	124.4	125.6	126.3	127.0	127.8	128.5	129.8	131.0	.9	3.1
Manufacturing	123.8	125.3	126.5	127.2	127.9	128.7	129.5	130.8	132.2	1.1	3.4
Service-producing	129.4	130.7	131.5	133.4	134.2	135.8	136.5	138.5	139.2	.5	3.7
Services	134.8	136.4	137.0	139.9	141.1	142.7	143.4	146.8	148.2	1.0	5.0
Health services	-	-	-	-	-	-	-	-	-	1.1	4.6
Hospitals	-	-	-	-	-	-	-	-	-	1.2	5.0
Public administration ²	132.0	133.8	134.6	137.5	138.1	140.5	141.0	142.6	143.8	.8	4.1
Nonmanufacturing	128.4	129.6	130.4	132.2	133.0	134.5	135.2	137.1	137.8	.5	3.6
Private industry workers	125.6	126.8	127.9	128.8	129.5	130.8	131.7	133.0	133.8	.6	3.3
Workers, by occupational group:											
White-collar workers	128.3	129.6	131.1	132.0	132.7	134.6	135.4	137.0	137.6	.4	3.7
Professional specialty and technical occupations	131.5	132.7	134.0	135.4	136.4	138.4	139.1	141.2	142.6	1.0	4.5
Executive, administrative, and managerial occupations	128.4	130.5	132.1	132.4	133.5	135.6	136.4	138.6	139.2	.4	4.3
Sales occupations	122.5	122.4	124.3	125.2	124.9	126.7	127.1	127.0	126.1	-.7	1.0
Administrative support occupations, including clerical	127.9	129.6	130.8	131.7	132.7	134.3	135.5	137.1	138.1	.7	4.1
Blue-collar workers	122.0	123.1	123.7	124.5	125.1	125.6	126.6	127.7	128.9	.9	3.0
Precision production, craft, and repair occupations	123.8	125.3	125.7	126.7	127.4	127.9	128.8	130.2	131.1	.7	2.9
Machine operators, assemblers, and inspectors	121.6	122.6	123.6	124.1	124.9	125.5	126.7	127.5	129.2	1.3	3.4
Transportation and material moving occupations	117.8	118.0	118.9	119.8	120.1	120.5	121.5	122.3	122.9	.5	2.3
Handlers, equipment cleaners, helpers, and laborers	119.8	120.0	120.3	120.9	121.4	121.9	122.6	123.7	125.0	1.1	3.0
Service occupations	126.6	128.0	128.0	128.9	130.1	131.4	131.9	132.6	133.2	.5	2.4
Workers, by industry division:											
Goods-producing	122.9	124.2	125.4	126.1	126.8	127.5	128.3	129.6	130.8	.9	3.2
Construction	117.9	118.3	119.8	120.5	120.8	121.7	122.7	123.8	124.7	.7	3.2
Manufacturing	123.8	125.3	126.5	127.2	127.9	128.7	129.5	130.8	132.2	1.1	3.4
Durables	123.4	124.8	125.8	126.4	127.2	127.7	128.7	129.7	131.1	1.1	3.1
Nondurables	124.6	126.1	127.9	128.5	129.3	130.5	131.0	132.8	134.1	1.0	3.7
Service-producing	127.8	129.0	129.9	130.9	131.6	133.4	134.3	135.7	136.2	.4	3.5
Transportation and public utilities	125.2	126.3	126.6	127.3	127.5	128.1	129.3	130.0	130.2	.2	2.1
Transportation	-	-	-	-	-	-	-	-	-	-2.1	1.7
Public utilities	-	-	-	-	-	-	-	-	-	-	2.6
Wholesale and retail trade	123.7	124.5	125.8	126.5	126.9	127.9	129.9	130.6	130.7	.1	3.0
Wholesale trade	128.3	129.7	131.2	131.8	133.1	134.8	137.2	137.8	138.5	.5	4.1
Retail trade	121.9	122.5	123.7	124.4	124.5	125.2	127.1	127.8	127.7	-.1	2.6
Finance, insurance, and real estate	126.5	126.6	128.0	129.0	130.0	133.5	131.5	131.8	131.6	-.2	1.2
Services	134.1	136.2	136.9	138.2	139.5	141.8	142.8	145.9	147.1	.8	5.4
Health services	-	-	-	-	-	-	-	-	-	1.1	4.6
Hospitals	-	-	-	-	-	-	-	-	-	1.2	5.1
Nonmanufacturing	126.6	127.7	128.7	129.7	130.4	131.9	132.8	134.2	134.8	.4	3.4
State and local government workers	134.2	135.5	136.0	140.4	141.4	142.5	142.8	146.1	147.4	.9	4.2
Workers, by occupational group											
White-collar workers	135.3	136.6	137.0	141.8	142.8	143.9	144.1	147.7	149.3	1.1	4.6
Blue-collar workers	128.4	130.4	131.9	134.5	135.1	136.3	136.9	139.0	139.6	.4	3.3
Workers, by industry division											
Services	135.6	136.8	137.1	142.1	143.3	143.9	144.2	148.2	149.5	.9	4.3
Hospitals and other services ³	130.9	132.4	133.3	135.8	137.3	138.6	139.4	141.2	142.2	.7	3.6
Health services	-	-	-	-	-	-	-	-	-	-	4.4
Schools	137.0	138.0	138.2	144.1	145.1	145.5	145.6	150.3	151.8	1.0	4.6
Elementary and secondary	138.5	139.4	139.4	145.7	146.4	146.5	146.6	152.0	153.4	.9	4.8
Public administration ²	132.0	133.8	134.6	137.5	138.1	140.5	141.0	142.6	143.8	.8	4.1

¹ Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

² Consists of legislative, judicial, administrative, and regulatory activities.

³ Includes, for example, library, social and health services.

- Data not available.

24. Employment Cost Index, private nonfarm workers, by bargaining status, region, and area size

(June 1981=100)

Series	1985		1986				1987				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended	
										Dec. 1987		
COMPENSATION												
Workers, by bargaining status¹												
Union	127.1	128.4	128.7	129.4	129.8	130.5	131.2	132.0	133.4	1.1	2.8	
Goods-producing	125.2	126.4	126.7	127.3	127.5	128.0	128.7	129.5	131.3	1.4	3.0	
Service-producing	130.2	131.6	131.9	132.8	133.4	134.4	135.2	135.9	136.7	.6	2.5	
Manufacturing	125.5	127.0	126.9	127.5	127.9	128.0	128.7	129.5	131.5	1.5	2.8	
Nonmanufacturing	128.6	129.7	130.4	131.2	131.5	132.6	133.5	134.3	135.1	.6	2.7	
Nonunion	127.5	129.0	130.2	131.2	132.1	133.6	134.6	136.1	136.9	.6	3.6	
Goods-producing	125.1	126.7	128.2	129.1	130.0	130.8	131.8	133.1	134.1	.8	3.2	
Service-producing	129.0	130.4	131.4	132.5	133.4	135.3	136.4	137.9	138.6	.5	3.9	
Manufacturing	126.3	128.1	129.7	130.4	131.4	132.2	133.2	134.6	135.6	.7	3.2	
Nonmanufacturing	128.1	129.5	130.4	131.6	132.5	134.3	135.3	136.8	137.5	.5	3.8	
Workers, by region¹												
Northeast	129.9	131.6	133.3	134.2	135.2	137.4	138.6	140.3	141.9	1.1	5.0	
South	127.2	128.7	129.6	130.7	131.4	132.1	133.2	134.2	135.4	.9	3.0	
Midwest (formerly North Central)	124.6	125.9	126.2	127.3	128.1	129.1	130.2	131.2	131.7	.4	2.8	
West	129.8	130.8	131.6	132.1	132.8	134.1	134.2	135.8	136.3	.4	2.6	
Workers, by area size¹												
Metropolitan areas	128.1	129.5	130.5	131.4	132.2	133.5	134.4	135.8	136.7	.7	3.4	
Other areas	123.9	125.5	126.4	127.2	127.9	129.0	130.2	131.3	132.0	.5	3.2	
WAGES AND SALARIES												
Workers, by bargaining status¹												
Union	124.7	125.6	126.1	126.9	127.2	127.7	128.3	129.1	130.5	1.1	2.6	
Goods-producing	122.7	123.4	124.1	124.5	124.8	125.0	125.8	126.5	128.5	1.6	3.0	
Service-producing	127.8	129.0	129.3	130.5	130.9	131.7	132.2	132.9	133.6	.5	2.1	
Manufacturing	123.3	124.2	124.6	125.0	125.5	125.6	126.2	127.0	129.3	1.8	3.0	
Nonmanufacturing	125.9	126.9	127.4	128.5	128.7	129.5	130.1	130.8	131.5	.5	2.2	
Nonunion	125.9	127.3	128.5	129.4	130.3	131.8	132.8	134.3	135.0	.5	3.6	
Goods-producing	123.0	124.5	126.1	127.0	127.8	128.8	129.6	131.1	132.1	.8	3.4	
Service-producing	127.7	128.9	129.9	130.8	131.7	133.6	134.6	136.2	136.7	.4	3.8	
Manufacturing	124.4	126.1	127.7	128.5	129.5	130.6	131.5	133.0	133.9	.7	3.4	
Nonmanufacturing	126.6	127.8	128.9	129.8	130.6	132.4	133.4	134.9	135.4	.4	3.7	
Workers, by region¹												
Northeast	128.1	129.2	131.3	132.3	133.1	135.4	136.6	138.3	139.7	1.0	5.0	
South	125.4	126.8	127.8	128.8	129.4	130.1	131.1	132.1	133.0	.7	2.8	
Midwest (formerly North Central)	122.9	124.2	124.4	125.3	126.2	127.4	128.5	129.6	129.9	.2	2.9	
West	127.1	128.1	128.9	129.3	130.1	131.2	131.1	133.1	133.5	.3	2.6	
Workers, by area size¹												
Metropolitan areas	126.3	127.4	128.5	129.4	130.2	131.6	132.4	133.7	134.6	.7	3.4	
Other areas	122.0	123.6	124.5	125.0	125.6	126.6	127.8	129.1	129.8	.5	3.3	

¹ The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the

Monthly Labor Review Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

25. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, private industry collective bargaining situations covering 1,000 workers or more (in percent)

Measure	Annual average		Quarterly average							
	1985	1986	1986				1987			
			I	II	III	IV	I	II ^P	III ^P	IV ^P
Specified adjustments:										
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:										
First year of contract	2.6	1.1	0.6	0.7	0.7	2.7	1.7	4.1	2.5	3.4
Annual rate over life of contract	2.7	1.6	1.2	1.6	1.2	2.4	2.4	3.9	2.1	2.4
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract	2.3	1.2	.8	1.3	.8	2.0	1.2	2.6	2.1	2.4
Annual rate over life of contract	2.7	1.8	1.5	2.0	1.5	2.1	1.8	2.9	2.0	1.8
Effective adjustments:										
Total effective wage adjustment ³	3.3	2.3	.6	.7	.5	.5	.4	1.0	.9	.8
From settlements reached in period .....	.7	.5	(⁴)	.2	.1	.2	(⁴)	.2	.2	.3
Deferred from settlements reached in earlier periods	1.8	1.7	.4	.6	.5	.2	.3	.7	.6	.3
From cost-of-living-adjustments clauses .....	.7	.2	.2	(⁴)	(⁴)	.1	.1	.2	.1	.2

¹ Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.

² Adjustments are the net result of increases, decreases, and no changes in compensation or wages.

³ Because of rounding, total may not equal sum of parts.

⁴ Between -0.05 and 0.05 percent.

^P = preliminary.

26. Average specified compensation and wage adjustments, major collective bargaining settlements in private industry situations covering 1,000 workers or more during 4-quarter periods (in percent)

Measure	Average for four quarters ending--							
	1986				1987			
	I	II	III	IV	I	II ^P	III ^P	IV ^P
Specified total compensation adjustments, settlements covering 5,000 workers or more, all industries:								
First year of contract	2.3	1.4	0.9	1.1	1.2	1.9	2.8	3.1
Annual rate over life of contract	2.5	2.0	1.4	1.6	1.7	2.1	2.6	2.6
Specified wage adjustments, settlements covering 1,000 workers or more:								
All industries								
First year of contract	2.0	1.6	1.2	1.2	1.2	1.5	2.1	2.2
Contracts with COLA clauses	1.6	1.8	2.2	1.9	2.0	1.8	2.1	2.3
Contracts without COLA clauses	2.2	1.5	.8	.9	.9	1.4	2.1	2.2
Annual rate over life of contract	2.5	2.2	1.7	1.8	1.8	2.0	2.2	2.1
Contracts with COLA clauses	2.5	2.5	2.0	1.7	1.8	1.7	1.7	1.5
Contracts without COLA clauses	2.5	2.1	1.6	1.8	1.8	2.2	2.6	2.6
Manufacturing								
First year of contract .....	.8	.1	-1.0	-1.2	-1.5	-.8	1.1	2.1
Contracts with COLA clauses .....	.8	.7	1.1	1.3	1.3	1.3	2.1	2.4
Contracts without COLA clauses .....	.9	-.4	-2.0	-2.8	-3.5	-2.7	-.1	1.3
Annual rate over life of contract	1.8	1.4	.3	.2	(²)	.3	1.0	1.3
Contracts with COLA clauses	2.1	2.0	1.1	.9	.8	.8	1.0	1.0
Contracts without COLA clauses	1.5	.9	-.1	-.2	-.6	-.2	1.2	2.1
Nonmanufacturing								
First year of contract	2.8	2.6	2.1	2.0	2.2	2.3	2.5	2.4
Contracts with COLA clauses	3.5	3.4	2.7	2.1	2.2	2.1	2.1	1.9
Contracts without COLA clauses	2.7	2.4	1.9	2.0	2.2	2.4	2.7	2.5
Annual rate over life of contract	3.0	2.8	2.3	2.3	2.4	2.6	2.8	2.7
Contracts with COLA clauses	3.6	3.3	2.5	2.1	2.2	2.2	2.4	2.7
Contracts without COLA clauses	2.8	2.6	2.2	2.4	2.6	2.8	3.0	2.8
Construction								
First year of contract	1.6	2.3	2.3	2.2	2.4	2.7	3.0	2.9
Contracts with COLA clauses	(¹)	1.1	1.4	1.4	1.6	3.7	(¹)	(¹)
Contracts without COLA clauses	(¹)	2.4	2.4	2.3	2.4	2.7	(¹)	(¹)
Annual rate over life of contract	2.2	2.5	2.6	2.5	2.5	2.9	3.2	3.1
Contracts with COLA clauses	(¹)	1.2	1.6	1.6	1.4	3.8	(¹)	(¹)
Contracts without COLA clauses	(¹)	2.6	2.6	2.5	2.6	2.9	(¹)	(¹)

¹ Data do not meet publication standards.

² Between -0.05 and 0.05 percent.

^P = preliminary.

27. Average effective wage adjustments, private industry collective bargaining situations covering 1,000 workers or more during 4-quarter periods (in percent)

Effective wage adjustment	Average for four quarters ending--						
	1986			1987			
	II	III	IV	I	II ^P	III ^P	IV ^P
For all workers:¹							
Total	2.9	2.3	2.3	2.0	2.2	2.6	3.1
From settlements reached in period .....	.5	.5	.5	.4	.3	.5	.7
Deferred from settlements reached in earlier period	1.8	1.6	1.7	1.5	1.6	1.7	1.8
From cost-of-living-adjustments clauses .....	.7	.2	.2	.1	.3	.4	.5
For workers receiving changes:							
Total	3.8	3.1	2.8	2.5	2.8	3.2	3.6
From settlements reached in period	2.5	1.7	1.6	1.2	1.0	1.9	2.9
Deferred from settlements reached in earlier period	3.4	3.8	3.9	3.7	3.5	3.3	3.3
From cost-of-living-adjustments clauses	2.0	1.0	1.0	.6	1.8	2.3	2.6

¹ Because of rounding, total may not equal sum of parts.

^P = preliminary.

28. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, State and local government collective bargaining situations covering 1,000 workers or more (in percent)

Measure	Annual average		
	1985	1986	1987
Specified adjustments:			
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:			
First year of contract	4.2	6.2	4.9
Annual rate over life of contract	5.1	6.0	4.8
Wage adjustments, settlements covering 1,000 workers or more:			
First year of contract	4.6	5.7	4.9
Annual rate over life of contract	5.4	5.7	5.1
Effective adjustments:			
Total effective wage adjustment ³	5.7	5.5	4.9
From settlements reached in period	4.1	2.4	2.6
Deferred from settlements reached in earlier periods	1.6	3.0	2.2
From cost-of-living-adjustment clauses	(⁴)	(⁴)	(⁴)

¹ Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.

² Adjustments are the net result of increases, decreases, and no changes in compensation or wages.

³ Because of rounding, total may not equal sum of parts.

⁴ Less than 0.05 percent.

29. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1987												1988 ^P
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Number of stoppages:															
Beginning in period	69	46	2	5	3	2	3	8	6	3	7	1	6	0	2
In effect during period	72	51	7	7	5	5	7	12	14	11	15	12	11	5	5
Workers involved:															
Beginning in period (in thousands)	533.0	174.4	7.3	37.6	12.2	2.7	7.0	16.1	8.4	18.4	45.9	1.3	11.8	.0	6.2
In effect during period (in thousands)	899.5	377.7	47.6	41.6	16.2	8.9	13.9	25.8	14.1	36.0	71.9	53.7	22.2	8.9	9.8
Days idle:															
Number (in thousands)	1,186.1	4,480.8	828.6	194.1	104.4	151.3	201.2	278.0	471.0	361.4	1,155.1	353.3	222.9	159.4	87.0
Percent of estimated working time ¹ .....	.05	.02	.04	.01	.01	.01	.01	.01	.01	.02	.02	.05	.02	.01	.4

¹ Agricultural and government employees are included in the total employed and total working time; private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in "Total economy" measure of strike idleness," *Monthly Labor Review*, October 1968.

pp. 54-56.

^P = preliminary

30. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84 = 100, unless otherwise indicated)

Series	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:															
All items	109.6	113.6	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4	115.4	115.7
All items (1967 = 100)	328.4	340.4	333.1	334.4	335.9	337.7	338.7	340.1	340.8	342.7	344.4	345.3	345.8	345.7	346.7
Food and beverages	109.1	113.5	112.1	112.5	112.5	112.8	113.3	113.8	113.7	113.8	114.2	114.3	114.3	114.8	115.7
Food	109.0	113.5	112.1	112.5	112.5	112.8	113.3	113.8	113.7	113.8	114.1	114.3	114.2	114.7	115.7
Food at home	107.3	111.9	110.7	111.2	110.9	111.3	112.0	112.6	112.1	112.1	112.4	112.4	112.1	112.8	114.1
Cereals and bakery products	110.9	114.8	112.9	113.3	113.4	114.3	114.6	114.7	115.2	115.3	115.4	115.6	116.2	116.8	118.1
Meats, poultry, fish, and eggs	104.5	110.5	109.9	108.8	108.9	108.6	109.6	110.4	111.4	111.9	112.7	112.0	111.2	110.3	111.0
Dairy products	103.3	105.9	105.3	105.9	105.4	105.3	105.7	105.5	105.3	105.7	106.4	106.9	106.9	106.7	107.4
Fruits and vegetables	109.4	119.1	114.6	118.3	117.4	120.1	121.8	124.1	119.6	117.4	117.4	117.8	117.4	123.4	126.4
Other foods at home	109.4	110.5	110.9	111.3	110.8	110.6	110.5	110.2	110.0	110.4	110.3	110.6	110.2	110.0	111.3
Sugar and sweets	109.0	111.0	110.3	110.3	110.7	110.7	110.8	111.2	111.1	111.3	111.6	111.6	111.4	111.0	112.2
Fats and oils	106.5	108.1	108.5	107.4	109.0	108.0	108.5	107.8	108.4	108.3	107.8	107.4	108.0	107.7	108.5
Nonalcoholic beverages	110.4	107.5	111.4	111.3	109.8	108.5	108.0	106.8	105.9	105.9	105.8	106.7	105.0	104.8	106.9
Other prepared foods	109.2	113.8	111.5	112.9	112.6	113.3	113.4	113.7	114.1	114.8	114.6	114.7	115.1	115.0	115.9
Food away from home	112.5	117.0	115.2	115.5	115.9	116.1	116.4	116.8	117.2	117.5	118.0	118.3	118.6	118.9	119.3
Alcoholic beverages	111.1	114.1	112.4	112.8	112.9	113.3	113.6	114.0	114.4	114.7	114.9	115.2	115.4	115.4	115.8
Housing	110.9	114.2	112.0	112.4	112.8	113.2	113.6	114.3	114.7	115.4	115.6	115.5	115.5	115.6	116.2
Shelter	115.8	121.3	118.5	119.0	119.6	120.2	120.5	120.8	121.3	122.2	122.5	123.2	123.4	123.7	124.6
Renters' costs (12/82 = 100)	121.9	128.1	125.3	125.8	126.4	127.1	127.3	127.9	129.3	130.1	129.8	129.4	129.2	129.1	130.8
Rent, residential	118.3	123.1	121.3	121.7	121.8	122.0	122.3	122.3	123.0	123.8	124.4	124.8	124.8	125.6	126.0
Other renters' costs	118.6	127.4	122.1	122.8	125.0	127.1	127.1	129.1	132.8	133.3	130.5	127.7	126.7	124.1	129.4
Homeowners' costs (12/82 = 100)	119.4	124.8	122.0	122.5	123.0	123.6	124.0	124.2	124.4	125.4	126.0	127.1	127.4	128.0	128.5
Owners' equivalent rent (12/82 = 100)	119.4	124.8	122.0	122.5	123.0	123.6	124.1	124.2	124.4	125.4	126.0	127.1	127.4	128.0	128.6
Household insurance (12/82 = 100)	119.2	124.0	121.8	122.0	122.2	122.4	123.0	123.6	124.5	125.1	125.5	125.8	125.9	126.2	126.9
Maintenance and repairs	107.9	111.8	110.3	110.2	110.7	110.3	110.2	111.1	113.2	112.9	112.7	112.8	113.5	113.3	113.7
Maintenance and repair services	111.2	114.8	112.9	112.5	113.4	112.8	112.3	113.7	116.8	116.5	116.3	116.4	116.9	116.6	117.4
Maintenance and repair commodities	103.7	107.8	106.8	107.2	107.1	107.2	107.5	107.8	108.4	108.2	107.8	108.1	108.9	109.1	108.7
Fuel and other utilities	104.1	103.0	101.1	101.4	101.5	101.3	102.2	104.9	105.0	105.9	105.5	103.2	102.4	102.0	102.4
Fuels	99.2	97.3	95.0	95.3	95.2	94.7	96.1	100.8	100.4	101.4	101.0	96.9	95.5	95.1	95.6
Fuel oil, coal, and bottled gas	77.6	77.9	75.5	77.9	77.5	77.5	77.1	77.2	77.1	77.8	77.6	78.5	80.3	80.5	80.8
Gas (piped) and electricity	105.7	103.8	101.5	101.5	101.5	100.8	102.5	108.1	107.6	108.7	108.2	103.3	101.4	100.9	101.5
Other utilities and public services	117.9	120.1	118.7	119.1	119.3	119.7	119.8	119.4	120.5	121.1	120.8	121.2	121.3	120.9	121.3
Household furnishings and operations	105.2	107.1	106.3	106.5	106.8	107.2	107.1	107.1	107.2	107.3	107.5	107.4	107.4	107.3	107.5
Household furnishings	102.2	103.6	103.2	103.3	103.6	104.0	103.5	103.5	103.6	103.8	103.9	103.6	103.6	103.3	103.5
Housekeeping supplies	108.2	111.5	109.9	110.1	110.9	111.1	111.7	111.9	111.7	111.5	111.8	112.3	112.4	112.5	113.1
Housekeeping services	108.5	110.6	109.5	109.8	109.9	110.3	110.6	110.5	110.8	110.9	111.0	111.2	111.2	111.4	111.5
Apparel and upkeep	105.9	110.6	105.6	106.2	109.7	111.5	111.1	109.3	107.3	109.4	113.3	115.4	115.4	112.7	110.4
Apparel commodities	104.2	108.9	103.7	104.3	108.1	110.0	109.5	107.6	105.3	107.6	111.8	114.0	114.0	111.0	108.6
Men's and boys' apparel	106.2	109.1	105.7	106.1	108.0	109.2	109.9	109.0	107.8	108.3	110.6	112.0	112.5	110.7	109.0
Women's and girls' apparel	104.0	110.4	103.1	103.9	109.6	112.8	111.2	107.6	104.2	108.4	115.3	118.3	117.7	112.6	108.2
Infants' and toddlers' apparel	111.8	112.1	107.9	108.9	114.3	114.1	113.1	110.1	107.7	109.0	112.1	116.2	116.7	114.5	113.6
Footwear	101.9	105.1	101.3	101.8	104.5	105.8	106.5	105.6	103.4	104.2	105.7	107.3	108.0	107.2	106.1
Other apparel commodities	101.7	108.0	104.2	105.5	106.1	105.9	105.8	107.6	108.2	109.3	110.3	110.7	110.7	111.3	112.9
Apparel services	115.1	119.6	117.9	118.1	118.6	118.6	119.3	119.5	120.0	119.8	119.9	120.8	121.1	121.4	121.6
Transportation	102.3	105.4	102.6	103.1	103.3	104.2	104.7	105.4	106.0	106.5	106.6	107.1	107.8	107.6	107.1
Private transportation	101.2	104.2	101.3	101.8	102.0	103.0	103.5	104.3	104.9	105.4	105.4	106.0	106.8	106.5	106.0
New vehicles	110.6	114.4	114.7	113.5	113.1	113.5	113.8	114.1	114.4	114.0	113.8	115.0	116.3	116.4	116.1
New cars	110.6	114.6	114.8	113.5	113.1	113.6	114.0	114.3	114.7	114.4	114.1	115.2	116.6	116.6	116.2
Used cars	108.8	113.1	106.2	106.9	108.7	111.3	113.4	114.7	115.4	115.5	116.0	116.2	116.5	116.3	116.0
Motor fuel	77.1	80.2	72.8	76.0	76.6	78.5	79.1	80.8	82.2	84.3	84.0	83.2	83.2	82.0	79.7
Gasoline	77.0	80.1	72.7	75.9	76.4	78.4	79.0	80.7	82.1	84.3	84.0	83.1	83.1	81.8	79.5
Maintenance and repair	110.3	114.8	112.8	113.3	113.3	114.3	114.3	114.4	114.5	115.1	115.7	116.1	116.5	116.9	117.2
Other private transportation	115.1	120.8	119.3	118.9	119.1	119.4	119.7	120.3	120.8	120.7	121.1	122.8	123.8	123.8	124.7
Other private transportation commodities	96.3	96.9	96.6	96.4	96.7	96.0	96.7	96.3	96.8	97.6	98.0	97.6	97.6	97.5	98.2
Other private transportation services	118.8	125.6	123.7	123.4	123.5	124.0	124.2	125.0	125.7	125.5	125.8	127.8	129.2	129.2	130.1
Public transportation	117.0	121.1	120.4	120.6	121.1	120.9	120.6	120.2	120.2	121.5	122.1	121.2	122.0	122.1	121.8
Medical care	122.0	130.1	126.6	127.4	128.1	128.7	129.2	129.9	130.7	131.2	131.7	132.3	132.8	133.1	134.4
Medical care commodities	122.8	131.0	126.7	127.4	128.5	129.0	129.9	130.8	131.6	132.2	132.7	133.5	134.2	134.9	135.4
Medical care services	121.9	130.0	126.6	127.4	128.0	128.7	129.0	129.6	130.4	131.0	131.5	132.0	132.5	132.7	134.1
Professional services	120.8	128.8	124.8	125.8	126.6	127.5	127.9	128.8	129.5	130.0	130.7	131.2	131.5	131.8	133.2
Hospital and related services	123.1	131.6	127.9	128.6	129.1	129.7	130.1	130.6	132.0	133.0	133.3	134.2	135.4	135.9	137.6
Entertainment	111.6	115.3	113.3	113.5	113.9	114.5	114.8	114.9	115.4	115.6	116.1	116.9	117.3	117.4	118.1
Entertainment commodities	107.9	110.5	108.8	108.8	109.6	109.9	110.3	110.3	110.7	110.6	110.7	111.2	112.2	112.6	112.9
Entertainment services	116.8	122.0	119.6	120.0	120.1	121.0	121.2	121.4	122.0	122.5	123.5	124.5	124.3	125.4	
Other goods and services	121.4	128.5	125.5	126.1	126.3	126.6	126.9	127.2	128.0	128.5	131.1	131.6	131.8	132.1	133.4
Tobacco products	124.7	133.6	129.6	130.8	131.3										

30. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84=100, unless otherwise indicated)

Series	Annual average		1987												1988
	1986	1987	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
All items	109.6	113.6	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4	115.4	115.7
Commodities	104.4	107.7	105.3	105.8	106.4	107.2	107.5	107.7	107.6	108.2	108.9	109.3	109.5	109.3	109.2
Food and beverages	109.1	113.5	112.1	112.5	112.5	112.8	113.3	113.8	113.7	113.8	114.2	114.3	114.3	114.8	115.7
Commodities less food and beverages	101.4	104.0	101.0	101.6	102.6	103.6	103.7	103.8	103.8	104.6	105.5	106.1	106.5	105.7	105.1
Nondurables less food and beverages	97.8	101.1	96.5	97.9	99.4	100.7	100.9	100.7	100.6	102.0	103.5	104.2	104.3	103.1	102.1
Apparel commodities	104.2	108.9	103.7	104.3	108.1	110.0	109.5	107.6	105.3	107.6	111.8	114.0	114.0	111.0	108.6
Nondurables less food, beverages, and apparel	95.9	99.5	95.1	96.8	97.3	98.3	98.7	99.6	100.5	101.5	101.6	101.5	101.8	101.5	101.2
Durables	106.6	108.2	107.4	107.0	107.2	107.7	107.9	108.2	108.4	108.3	108.3	108.8	109.6	109.5	109.4
Services	115.4	120.2	117.7	118.1	118.5	118.9	119.3	120.1	120.5	121.2	121.7	121.9	122.0	122.2	122.9
Rent of shelter (12/82=100)	120.2	125.9	123.1	123.6	124.1	124.8	125.1	125.4	126.0	126.9	127.2	128.0	128.1	128.5	129.4
Household services less rent of shelter (12/82=100)	112.8	113.1	111.3	111.5	111.5	111.4	112.3	114.8	115.1	115.8	115.5	115.5	112.6	112.3	112.7
Transportation services	116.3	121.9	120.3	120.3	120.4	120.9	120.9	121.3	121.7	122.0	122.5	123.4	124.5	124.6	125.1
Medical care services	121.9	130.0	126.6	127.4	128.0	128.7	129.0	129.6	130.4	131.0	131.5	132.0	132.5	132.7	134.1
Other services	119.4	125.7	123.1	123.4	123.7	124.1	124.4	124.7	125.1	125.6	127.9	128.7	128.8	129.0	129.6
Special indexes:															
All items less food	109.8	113.6	111.0	111.4	112.0	112.7	113.0	113.5	113.8	114.5	115.1	115.5	115.7	115.5	115.7
All items less shelter	108.0	111.6	109.3	109.7	110.2	110.8	111.1	111.7	111.8	112.3	113.0	113.2	113.3	113.2	113.3
All items less homeowners' costs (12/82=100)	111.2	115.1	112.7	113.1	113.6	114.2	114.6	115.1	115.3	115.9	116.5	116.6	116.8	116.6	116.9
All items less medical care	108.8	112.6	110.2	110.6	111.1	111.7	112.1	112.5	112.7	113.3	113.9	114.2	114.4	114.3	114.6
Commodities less food	101.7	104.3	101.4	102.0	102.9	103.9	104.0	104.1	104.1	104.9	105.7	106.3	106.7	106.0	105.5
Nondurables less food	98.5	101.8	97.4	98.6	100.1	101.3	101.4	101.4	101.3	102.6	104.0	104.6	104.8	103.7	102.8
Nondurables less food and apparel	96.9	100.3	96.2	97.7	98.2	99.1	99.5	100.3	101.1	102.0	102.2	102.1	102.4	102.1	101.9
Nondurables	103.5	107.5	104.4	105.3	106.1	106.9	107.2	107.4	107.3	108.1	109.0	109.4	109.5	109.1	109.1
Services less rent of shelter (12/82=100)	118.7	123.1	120.8	121.1	121.3	121.6	122.1	123.2	124.2	124.9	124.9	124.6	124.6	124.6	125.3
Services less medical care	114.6	119.1	116.7	117.0	117.4	117.8	118.2	119.0	119.4	120.1	120.6	120.8	120.8	121.0	121.7
Energy	88.2	88.6	83.9	85.6	85.8	86.4	87.4	90.7	91.1	92.7	92.3	89.8	89.0	88.3	87.4
All items less energy	112.6	117.2	115.0	115.3	115.8	116.4	116.7	116.9	117.1	117.6	118.3	118.9	119.2	119.2	119.7
All items less food and energy	113.5	118.2	115.8	116.1	116.8	117.4	117.6	117.7	118.0	118.6	119.4	120.1	120.5	120.4	120.8
Commodities less food and energy	108.6	111.8	109.5	109.6	110.7	111.5	111.7	111.4	111.2	111.8	112.9	113.7	114.1	113.5	113.2
Energy commodities	77.2	80.2	73.3	76.4	76.9	78.5	79.1	80.6	81.8	83.8	83.5	82.9	83.1	82.0	80.0
Services less energy	116.5	122.0	119.5	119.9	120.3	120.9	121.2	121.4	122.0	122.7	123.2	123.9	124.2	124.4	125.2
Purchasing power of the consumer dollar:															
1982-84=\$1.00	91.3	88.0	89.9	89.5	89.1	88.6	88.4	88.0	87.8	87.3	86.9	86.7	86.5	86.6	86.4
1967=\$1.00	30.5	29.4	30.0	29.9	29.8	29.6	29.5	29.4	29.3	29.2	29.0	29.0	28.9	28.9	28.8
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:															
All items	108.6	112.5	110.0	110.5	111.0	111.6	111.9	112.4	112.7	113.3	113.8	114.1	114.3	114.2	114.5
All items (1967=100)	323.4	335.0	327.7	329.0	330.5	332.3	333.4	334.9	335.6	337.4	339.1	340.0	340.4	340.2	341.0
Food and beverages	108.9	113.3	111.9	112.3	112.3	112.6	113.1	113.6	113.5	113.6	114.0	114.1	114.1	114.5	115.4
Food	108.8	113.3	111.9	112.3	112.3	112.5	113.1	113.6	113.5	113.6	114.0	114.1	114.1	114.5	115.4
Food at home	107.1	111.7	110.5	110.9	110.7	111.0	111.7	112.3	111.9	111.9	112.2	112.2	111.9	112.5	113.7
Cereals and bakery products	110.9	114.8	112.9	113.3	113.4	114.3	114.5	114.8	115.2	115.3	115.4	115.7	116.2	116.9	118.1
Meats, poultry, fish, and eggs	104.4	110.4	109.8	108.7	108.7	108.5	109.5	110.4	111.3	111.8	112.7	112.0	111.2	110.1	110.8
Dairy products	103.2	105.7	105.1	105.8	105.3	105.1	105.6	105.3	105.1	105.5	106.2	106.7	106.7	106.4	107.1
Fruits and vegetables	109.4	118.8	114.3	117.7	116.9	119.5	121.1	123.9	119.6	117.3	117.1	117.5	117.4	123.0	125.7
Other foods at home	109.1	110.4	110.7	111.0	110.7	110.4	110.4	110.1	109.9	110.3	110.2	110.5	110.1	109.8	111.3
Sugar and sweets	109.0	110.9	110.1	110.1	110.5	110.5	110.7	111.1	111.0	111.3	111.5	111.6	111.2	110.9	112.1
Fats and oils	106.4	107.9	108.3	107.3	108.8	107.9	108.3	107.6	108.2	108.1	107.6	107.3	107.9	107.6	108.4
Nonalcoholic beverages	110.0	107.5	111.3	111.0	109.7	108.4	108.1	106.8	105.9	106.0	106.0	106.9	105.2	104.9	107.2
Other prepared foods	109.0	113.6	111.3	112.6	112.4	113.1	113.2	113.5	113.9	114.6	114.4	114.5	114.9	114.8	115.7
Food away from home	112.5	116.9	115.2	115.5	115.8	116.0	116.2	116.7	117.0	117.4	117.9	118.2	118.5	118.8	119.1
Alcoholic beverages	111.1	113.9	112.4	112.8	112.9	113.2	113.5	113.9	114.2	114.4	114.6	114.9	115.2	115.1	115.6
Housing	109.7	112.8	110.7	111.0	111.4	111.8	112.2	112.9	113.2	114.0	114.1	114.0	113.9	114.1	114.6
Shelter	113.5	118.8	116.1	116.6	117.1	117.7	118.1	118.2	118.8	119.6	120.0	120.7	120.9	121.2	121.9
Renters' costs (12/84=100)	109.5	114.6	112.3	112.7	113.3	113.8	114.0	114.2	115.3	116.0	116.2	116.0	115.9	115.9	116.9
Rent, residential	118.2	122.9	121.2	121.5	121.7	121.9	122.1	122.2	122.8	123.6	124.2	124.5	124.6	125.3	125.7
Other renters' costs	119.1	128.2	121.6	122.4	125.6	128.3	128.6	129.7	133.6	134.2	132.2	129.3	128.1	124.5	129.2
Homeowners' costs (12/84=100)	108.8	113.8	111.1	111.6	112.1	112.7	113.1	113.2	113.4	114.3	114.8	115.9	116.2	116.6	117.1
Owners' equivalent rent (12/84=100)	108.8	113.7	111.1	111.5	112.1	112.7	113.1	113.2	113.4	114.3	114.8	115.9	116.2	116.6	117.1
Household insurance (12/84=100)	109.4	114.1	111.9	112.1	112.4	112.5	113.1	113.8	114.6	115.1	115.5	115.8	115.9	116.1	116.7
Maintenance and repairs	107.7	111.3	110.0	109.9	110.3	110.2	110.2	111.0	112.6	112.4	112.1	112.2	112.7	112.5	113.0
Maintenance and repair services	110.5	114.7	112.9	112.4	113.5	113.2	112.5	113.9	116.9	116.6	116.4	116.0	116.5	115.9	117.1
Maintenance and repair commodities	103.1	106.0	105.1	105.4	105.2	105.2	106.0	106.3	106.3	106.2	105.8	106.3	106.9	107.1	106.9
Fuel and other utilities	103.9	102.7	100.8	101.1	101.2	101.0	101.8	104.6	104.7	105.6	105.2	102.8	102.0	101.7	102.0
Fuels	99.2	97.1	94.9	95.1	95.0	94.4	95.8	100.7	100.2	101.3	100.8	96.5	95.1	94.8	95.2
Fuel oil, coal, and bottled gas	77.8	77.6	75.5	77.7	77.3	77.3	76.8	77.0	76.9	77.5	77.3	78.2	80.1	80.2	80.4
Gas (piped) and electricity	105.7	103.6	101.4	101.3	101.3	100.6	102.2	108.0	107.4	108.6	108.1	103.0	101.1	100.7	101.2
Other utilities and public services	117.7	120.1	118.6	119.0	119.3	119.6	119.7	119.4							

31. Consumer Price Index: U.S. city average and available local area data: all items

(1982-84 = 100, unless otherwise indicated)

Area ¹	Pricing schedule ²	Other index base	All Urban Consumers						Urban Wage Earners							
			1987						1988							
			Jan.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Jan.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.
U.S. city average	M	-	111.2	111.6	115.0	115.3	115.4	115.4	115.7	110.0	110.5	113.8	114.1	114.3	114.2	114.5
Region and area size³																
Northeast urban	M	-	113.3	113.6	117.5	118.1	118.3	118.3	118.9	112.3	112.7	116.6	117.1	117.4	117.4	117.9
Size A - More than 1,200,000	M	-	113.9	114.4	118.8	119.2	119.3	119.4	120.0	112.3	112.7	117.1	117.6	117.7	117.8	118.1
Size B - 500,000 to 1,200,000	M	-	111.5	111.3	113.9	115.4	116.1	115.6	116.2	110.4	110.4	112.9	114.3	115.0	114.5	115.1
Size C - 50,000 to 500,000	M	-	112.7	112.9	115.8	115.9	116.0	116.2	117.1	115.1	115.3	118.5	118.6	118.6	118.8	119.6
North Central urban	M	-	109.6	109.7	113.6	113.5	113.5	113.3	113.4	107.8	107.8	111.7	111.6	111.7	111.4	111.5
Size A - More than 1,200,000	M	-	110.3	110.5	114.6	114.2	114.4	113.9	114.1	107.9	108.0	112.1	111.7	111.8	111.4	111.6
Size B - 360,000 to 1,200,000	M	-	109.6	109.6	112.9	113.0	113.0	113.0	113.3	107.2	107.2	110.4	110.7	110.7	110.7	110.9
Size C - 50,000 to 360,000	M	-	109.2	109.0	113.5	113.9	113.9	113.6	113.4	108.3	108.1	112.3	112.8	112.8	112.6	112.4
Size D - Nonmetropolitan (less than 50,000)	M	-	107.6	107.9	110.2	110.5	110.5	110.9	110.6	107.2	107.5	110.1	110.4	110.5	110.7	110.4
South urban	M	-	110.2	110.7	113.5	113.8	114.1	114.0	114.1	109.6	110.1	113.0	113.4	113.6	113.5	113.6
Size A - More than 1,200,000	M	-	110.6	111.2	114.4	114.8	115.2	114.9	114.9	109.7	110.3	113.7	114.1	114.4	114.2	114.1
Size B - 450,000 to 1,200,000	M	-	110.8	111.3	114.1	114.4	114.5	114.5	114.8	108.9	109.5	112.4	112.6	112.7	112.7	112.9
Size C - 50,000 to 450,000	M	-	109.7	110.3	112.5	112.8	113.1	112.8	113.3	109.9	110.6	113.0	113.3	113.5	113.3	113.6
Size D - Nonmetropolitan (less than 50,000)	M	-	109.3	109.2	111.5	112.2	112.6	112.6	112.8	109.9	109.9	112.4	113.0	113.4	113.3	113.5
West urban	M	-	111.7	112.6	115.5	115.9	116.0	116.2	116.7	110.6	111.5	114.3	114.8	114.8	115.0	115.5
Size A - More than 1,250,000	M	-	112.6	113.6	116.7	117.1	117.0	117.2	117.9	110.2	111.3	114.2	114.6	114.5	114.8	115.3
Size B - 330,000 to 1,250,000	M	-	110.5	111.0	114.2	115.0	114.8	115.0	115.8	110.8	111.2	114.4	115.2	115.0	115.2	116.0
Size C - 50,000 to 330,000	M	-	112.1	112.7	114.7	115.1	115.9	116.0	116.0	111.4	112.0	114.1	114.5	115.3	115.4	115.3
Size classes:																
A	M	12/86	100.6	101.1	104.4	104.6	104.8	104.7	105.0	100.6	100.1	104.5	104.7	104.8	104.7	105.0
B	M	-	110.6	110.9	113.8	114.4	114.6	114.5	115.0	109.3	109.6	112.5	113.1	113.3	113.2	113.6
C	M	-	110.5	110.9	113.8	114.1	114.3	114.2	114.5	110.8	111.1	114.1	114.4	114.7	114.6	114.8
D	M	-	109.2	109.4	111.8	112.3	112.6	112.7	112.9	109.3	109.6	112.2	112.6	113.0	113.1	113.2
Selected local areas																
Chicago, IL- Northwestern IN	M	-	111.9	111.9	117.1	115.1	115.7	115.7	115.3	108.7	108.6	113.6	111.7	112.2	112.2	111.9
Los Angeles-Long Beach, Anaheim, CA	M	-	113.4	114.7	118.0	118.6	118.2	118.5	118.9	110.8	112.1	115.2	115.8	115.4	115.7	115.9
New York, NY- Northeastern NJ	M	-	114.7	115.3	119.8	120.2	120.5	120.6	121.3	113.2	113.8	118.5	118.8	119.1	119.1	119.6
Philadelphia, PA-NJ	M	-	113.4	113.9	118.7	119.1	118.6	118.9	119.3	113.3	113.6	118.5	119.0	118.6	119.0	119.3
San Francisco- Oakland, CA	M	-	112.5	113.4	116.6	117.1	117.3	117.4	118.4	111.3	112.4	115.4	116.0	116.2	116.4	117.5
Baltimore, MD	1	-	111.7	-	115.7	-	115.7	-	116.8	111.1	-	115.5	-	115.3	-	116.2
Boston, MA	1	-	114.6	-	119.5	-	119.9	-	120.1	114.5	-	119.5	-	119.9	-	120.2
Cleveland, OH	1	-	110.1	-	114.7	-	114.5	-	113.9	105.6	-	109.9	-	109.9	-	109.3
Miami, FL	1	-	109.9	-	112.5	-	113.8	-	114.5	109.3	-	111.8	-	113.1	-	113.8
St. Louis, MO-IL	1	-	110.0	-	114.3	-	113.1	-	113.4	109.4	-	114.1	-	112.7	-	113.0
Washington, DC-MD-VA	1	-	113.7	-	117.8	-	118.5	-	118.3	112.7	-	117.1	-	117.9	-	117.6
Dallas-Ft. Worth, TX	2	-	-	110.9	-	114.9	-	113.9	-	-	110.6	-	114.7	-	113.8	-
Detroit, MI	2	-	-	110.2	-	114.1	-	112.6	-	-	107.5	-	111.3	-	109.8	-
Houston, TX	2	-	-	104.4	-	108.0	-	107.3	-	-	104.3	-	108.1	-	107.4	-
Pittsburgh, PA	2	-	-	109.8	-	112.8	-	113.0	-	-	105.7	-	108.3	-	108.6	-

¹ Area is the Consolidated Metropolitan Statistical Area (CMSA), exclusive of farms and military. Area definitions are those established by the Office of Management and Budget in 1983, except for Boston-Lawrence-Salem, MA-NH Area (excludes Monroe County); and Milwaukee, WI Area (includes only the Milwaukee MSA). Definitions do not include revisions made since 1983.

² Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated.

M - Every month.

1 - January, March, May, July, September, and November.

2 - February, April, June, August, October, and December.

³ Regions are defined as the four Census regions.

- Data not available.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Because each local index is a small subset of the national index, it has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error than the national index. As a result, local area indexes show greater volatility than the national index, although their long-term trends are quite similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in escalator clauses.

32. Annual data: Consumer Price Index, U.S. city average, all items and major groups

(1982-84 = 100)

Series	1979	1980	1981	1982	1983	1984	1985	1986	1987
Consumer Price Index for All Urban Consumers:									
All items:									
Index	72.6	82.4	90.9	96.5	99.6	103.9	107.6	109.6	113.6
Percent change	11.3	13.5	10.3	6.2	3.2	4.3	3.6	1.9	3.6
Food and beverages:									
Index	79.9	86.7	93.5	97.3	99.5	103.2	105.6	109.1	113.5
Percent change	10.7	8.5	7.8	4.1	2.3	3.7	2.3	3.3	4.0
Housing:									
Index	70.1	81.1	90.4	96.9	99.5	103.6	107.7	110.9	114.2
Percent change	12.3	15.7	11.5	7.2	2.7	4.1	4.0	3.0	3.0
Apparel and upkeep:									
Index	84.9	90.9	95.3	97.8	100.2	102.1	105.0	105.9	110.6
Percent change	4.3	7.1	4.8	2.6	2.5	1.9	2.8	.9	4.4
Transportation:									
Index	70.5	83.1	93.2	97.0	99.3	103.7	106.4	102.3	105.4
Percent change	14.3	17.9	12.2	4.1	2.4	4.4	2.6	-3.9	3.0
Medical care:									
Index	67.5	74.9	82.9	92.5	100.6	106.8	113.5	122.0	130.1
Percent change	9.2	11.0	10.7	11.6	8.8	6.2	6.3	7.5	6.6
Entertainment:									
Index	76.7	83.6	90.1	96.0	100.1	103.8	107.9	111.6	115.3
Percent change	6.7	9.0	7.8	6.5	4.3	3.7	3.9	3.4	3.3
Other goods and services:									
Index	68.9	75.2	82.6	91.1	101.1	107.9	114.5	121.4	128.5
Percent change	7.2	9.1	9.8	10.3	11.0	6.7	6.1	6.0	5.8
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	73.1	82.9	91.4	96.9	99.8	103.3	106.9	108.6	112.5
Percent change	11.4	13.4	10.3	6.0	3.0	3.5	3.5	1.6	3.6

33. Producer Price Indexes, by stage of processing

(1982=100)

Grouping	Annual average		1987											1988
	1986	1987	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Finished goods	103.2	105.4	104.1	104.3	105.1	105.4	105.5	106.0	105.9	105.7	106.3	106.2	105.7	106.2
Finished consumer goods	101.4	103.6	102.2	102.3	103.2	103.7	103.9	104.4	104.3	104.2	104.5	104.5	103.9	104.3
Finished consumer goods	107.3	109.5	108.3	108.1	109.2	110.6	110.6	110.9	109.5	110.5	109.6	109.9	108.8	110.6
Finished consumer goods excluding foods	98.5	100.7	99.1	99.5	100.3	100.3	100.6	101.2	101.8	101.1	102.0	101.8	101.4	101.3
Nondurable goods less food	93.3	94.8	93.1	93.6	94.3	94.4	94.8	95.7	96.6	96.1	95.8	95.8	95.6	95.3
Durable goods	108.9	111.5	110.6	110.5	111.4	111.2	111.2	111.3	110.9	110.0	113.6	112.9	112.2	112.5
Capital equipment	109.7	111.7	111.2	111.1	111.6	111.6	111.4	111.6	111.7	111.2	112.6	112.5	112.4	112.7
Intermediate materials, supplies, and components	99.1	101.5	99.5	99.6	100.2	100.9	101.5	102.1	102.5	102.7	103.1	103.5	103.7	104.2
Materials and components for manufacturing	102.2	105.3	103.1	103.4	104.0	104.6	105.1	105.5	105.8	106.3	107.2	107.6	108.2	109.3
Materials for food manufacturing	98.4	100.8	98.7	98.2	100.1	102.7	102.3	102.7	101.5	102.8	101.7	100.3	99.8	102.0
Materials for nondurable manufacturing	98.1	102.3	99.5	99.8	100.9	101.3	102.5	102.6	102.9	103.4	104.7	105.2	105.4	107.0
Materials for durable manufacturing	101.2	106.2	102.0	102.5	103.3	104.5	104.9	106.2	107.1	108.1	110.0	110.9	112.9	114.4
Components for manufacturing	107.5	108.8	108.1	108.4	108.4	108.5	108.5	108.7	108.8	109.0	109.3	109.6	109.8	110.3
Materials and components for construction	108.1	109.8	108.2	108.5	108.7	108.9	109.3	109.8	110.2	110.7	111.3	111.8	112.5	113.5
Processed fuels and lubricants	72.7	73.4	70.7	70.3	71.2	72.5	74.5	76.0	77.3	75.9	74.7	74.9	73.3	71.2
Containers	110.3	114.5	113.3	113.8	114.0	114.0	114.2	114.2	114.4	115.4	115.9	116.3	116.1	116.7
Supplies	105.6	107.7	106.4	106.4	106.7	107.3	107.6	107.8	107.8	108.2	108.7	109.4	110.1	110.6
Crude materials for further processing ...	87.7	93.6	89.9	90.3	92.4	94.8	95.1	96.0	96.5	95.7	95.2	94.6	94.3	93.4
Foodstuffs and feedstuffs	93.2	96.2	92.8	92.7	96.9	101.6	99.7	98.4	97.1	96.6	95.9	95.2	95.8	96.9
Crude nonfood materials	81.6	87.9	84.1	84.8	85.5	86.4	88.0	90.3	91.8	90.8	90.5	90.0	89.1	87.1
Special groupings														
Finished goods, excluding foods	101.9	104.0	102.8	103.0	103.7	103.7	103.9	104.3	104.7	104.2	105.2	105.0	104.7	104.7
Finished energy goods	63.0	61.8	59.5	60.2	61.7	61.6	62.5	63.4	64.9	63.4	62.5	62.4	60.9	59.0
Finished goods less energy	109.7	112.3	111.3	111.3	112.0	112.4	112.3	112.7	112.3	112.4	113.2	113.2	112.9	113.8
Finished consumer goods less energy	109.7	112.5	111.3	111.3	112.1	112.6	112.7	113.1	112.6	112.8	113.4	113.4	113.1	114.2
Finished goods less food and energy	110.6	113.3	112.4	112.5	112.9	113.0	112.9	113.3	113.4	113.1	114.6	114.4	114.5	115.0
Finished consumer goods less food and energy	111.1	114.2	113.0	113.2	113.7	113.7	113.7	114.2	114.3	114.1	115.7	115.5	115.6	116.3
Consumer nondurable goods less food and energy	113.1	116.3	114.9	115.3	115.5	115.6	115.7	116.5	116.9	117.3	117.3	117.5	118.3	119.2
Intermediate materials less foods and feeds	99.3	101.7	99.7	99.9	100.4	100.9	101.6	102.2	102.7	102.8	103.3	103.7	103.8	104.2
Intermediate foods and feeds	96.2	99.2	96.1	95.1	96.9	100.4	100.7	100.7	99.6	101.0	100.5	101.1	101.9	103.1
Intermediate energy goods	72.6	73.1	70.5	70.1	71.0	72.2	74.1	75.7	77.0	75.6	74.4	74.6	73.0	70.9
Intermediate goods less energy	104.5	107.3	105.4	105.6	106.1	106.7	107.1	107.4	107.7	108.3	108.9	109.4	110.0	110.9
Intermediate materials less foods and energy	104.9	107.8	105.9	106.2	106.6	107.0	107.5	107.9	108.2	108.7	109.6	110.1	110.7	111.7
Crude energy materials	71.8	75.0	72.9	73.6	74.1	74.5	75.6	77.8	78.9	76.7	75.5	74.6	73.5	70.7
Crude materials less energy	95.4	100.8	95.9	95.9	99.4	103.5	102.8	102.4	102.3	103.0	103.3	103.0	103.5	104.8
Crude nonfood materials less energy	103.1	115.6	106.2	106.8	108.1	110.5	113.5	115.7	118.7	122.9	126.0	126.7	127.0	128.6

34. Producer Price indexes, by durability of product

(1982 = 100)

Grouping	Annual average		1987											1988
	1986	1987	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Total durable goods	107.5	109.9	108.5	108.7	109.1	109.2	109.3	109.7	110.0	110.2	111.4	111.7	112.0	112.6
Total nondurable goods	94.8	97.5	95.4	95.5	96.5	97.6	98.2	98.8	99.0	98.8	98.5	98.6	98.3	98.5
Total manufactures	101.7	104.4	102.7	102.8	103.5	104.0	104.3	104.8	105.1	105.1	105.8	106.0	105.9	106.5
Durable	107.5	109.6	108.5	108.7	109.0	109.1	109.1	109.4	109.7	109.7	110.9	111.1	111.5	112.0
Nondurable	96.0	99.2	97.1	96.9	98.1	98.9	99.5	100.1	100.5	100.4	100.7	100.9	100.5	101.0
Total raw or slightly processed goods	92.3	94.2	91.7	92.4	93.1	94.8	95.4	96.2	96.2	95.9	94.8	94.7	94.5	94.1
Durable	107.8	122.4	111.6	111.7	112.1	114.6	118.6	121.8	125.7	130.9	136.3	137.8	137.8	139.5
Nondurable	91.5	92.9	90.7	91.4	92.2	93.8	94.2	95.0	94.7	94.3	92.9	92.7	92.4	92.0

35. Annual data: Producer Price Indexes, by stage of processing

(1982 = 100)

Index	1978	1979	1980	1981	1982	1983	1984	1985	1986
Finished goods:									
Total	69.8	77.6	88.0	96.1	100.0	101.6	103.7	104.7	103.2
Consumer goods	69.4	77.5	88.6	96.6	100.0	101.3	103.3	103.8	101.4
Capital equipment	71.3	77.5	85.8	94.6	100.0	102.8	105.2	107.5	109.7
Intermediate materials, supplies, and components:									
Total	69.5	78.4	90.3	98.6	100.0	100.6	103.1	102.7	99.1
Materials and components for manufacturing	72.0	80.9	91.7	98.7	100.0	101.2	104.1	103.3	102.2
Materials and components for construction	76.5	84.2	91.3	97.9	100.0	102.8	105.6	107.3	108.1
Processed fuels and lubricants	49.9	61.6	85.0	100.6	100.0	95.4	95.7	92.8	72.7
Containers	71.0	79.4	89.1	96.7	100.0	100.4	105.9	109.0	110.3
Supplies	72.9	80.2	89.9	96.9	100.0	101.8	104.1	104.4	105.6
Crude materials for further processing:									
Total	73.4	85.9	95.3	103.0	100.0	101.3	103.5	95.8	87.7
Foodstuffs and feedstuffs	87.3	100.0	104.6	103.9	100.0	101.8	104.7	94.8	93.2
Nonfood materials except fuel	57.5	69.6	84.6	101.8	100.0	100.7	102.2	96.9	81.6
Fuel	48.2	57.3	69.4	84.8	100.0	105.1	105.1	102.7	92.2

36. U.S. export price indexes by Standard International Trade Classification

(June 1977=100, unless otherwise indicated)

Category	1974 SITC	1985			1986				1987			
		June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
ALL COMMODITIES (9/83=100)		97.5	96.5	96.7	97.0	96.7	95.1	96.2	97.2	99.9	100.2	102.8
Food (3/83=100)	0	94.0	90.2	93.6	90.5	89.5	77.2	81.2	79.8	83.4	79.6	88.5
Meat (3/83=100)	01	104.7	106.1	112.2	111.5	114.7	122.0	122.6	123.4	129.0	127.9	117.8
Fish (3/83=100)	03	103.6	102.6	101.8	102.2	106.2	111.2	116.9	118.5	122.9	126.3	135.4
Grain and grain preparations (3/80=100)	04	90.3	82.6	87.1	82.1	79.1	59.0	64.8	62.9	66.5	62.1	72.3
Vegetables and fruit (3/83=100)	05	120.2	126.9	118.9	115.3	125.8	131.4	131.9	130.8	130.8	124.4	125.4
Feedstuffs for animals (3/83=100)	08	68.6	75.7	83.4	88.5	85.5	90.2	87.4	85.7	93.7	92.4	111.5
Misc. food products (3/83=100)	09	109.2	108.1	107.7	106.0	104.7	106.6	108.2	108.6	110.0	109.4	109.3
Beverages and tobacco (6/83=100)	1	100.1	99.7	98.6	95.6	96.5	96.3	101.6	101.7	104.0	104.4	105.7
Beverages (9/83=100)	11	105.3	101.8	100.9	101.9	103.0	102.2	102.9	104.7	104.8	104.4	105.6
Tobacco and tobacco products (6/83=100)	12	99.6	99.5	98.4	95.1	95.9	95.8	101.4	101.4	104.0	104.5	105.7
Crude materials (6/83=100)	2	96.8	93.3	92.5	95.8	95.6	92.3	94.8	97.1	106.3	109.1	114.4
Raw hides and skins (6/80=100)	21	126.2	129.0	139.9	138.9	148.9	138.0	148.3	168.8	191.2	189.1	200.3
Oilseeds and oleaginous fruit (9/77=100)	22	71.2	64.2	63.9	66.9	65.8	64.5	62.9	60.4	68.6	64.3	73.6
Crude rubber (including synthetic and reclaimed) (9/83=100)	23	106.3	107.1	106.0	106.0	106.1	105.3	104.4	106.2	107.5	109.0	112.9
Wood	24	125.7	124.5	128.1	128.7	128.7	129.7	135.5	139.0	146.2	174.0	179.9
Pulp and waste paper (6/83=100)	25	96.1	93.8	92.7	98.8	109.7	119.8	121.2	133.0	138.7	142.6	146.6
Textile fibers	26	105.8	103.6	97.7	101.6	98.6	74.7	92.2	99.7	115.0	119.2	114.4
Crude fertilizers and minerals	27	167.9	169.4	165.5	168.0	166.1	164.3	162.8	155.6	155.1	149.8	149.8
Metalliferous ores and metal scrap	28	82.0	80.1	78.7	83.4	80.5	84.6	80.7	82.2	90.7	99.7	103.8
Mineral fuels	3	99.2	97.6	96.6	91.9	86.7	85.7	84.7	85.6	84.4	85.6	84.7
Animal and vegetable oils, fats, and waxes	4	144.5	114.5	101.4	90.8	84.4	76.5	86.8	88.9	94.5	94.1	98.4
Fixed vegetable oils and fats (6/83=100)	42	164.8	128.8	108.7	95.4	95.3	80.8	87.0	89.1	94.7	94.3	100.4
Chemicals (3/83=100)	5	96.8	97.1	96.6	96.5	95.4	93.1	92.2	96.6	103.1	104.1	108.6
Organic chemicals (12/83=100)	51	96.5	97.1	95.4	93.5	89.3	88.0	89.4	99.5	114.3	111.1	115.8
Fertilizers, manufactured (3/83=100)	56	87.9	89.8	90.0	88.6	84.0	77.4	68.7	75.4	80.4	88.0	93.9
Intermediate manufactured products (9/81=100)	6	99.2	99.2	99.1	100.3	101.2	102.2	102.7	104.4	106.8	108.5	109.6
Leather and furskins (9/79=100)	61	79.2	75.9	78.5	77.8	82.5	84.2	88.0	96.3	101.1	99.7	97.2
Rubber manufactures	62	149.0	148.3	148.7	151.0	150.0	150.4	151.3	152.1	153.9	155.2	155.6
Paper and paperboard products (6/78=100)	64	151.6	149.6	148.2	152.2	158.7	165.3	167.9	174.4	177.7	182.3	184.6
Iron and steel (3/82=100)	67	95.3	95.9	98.2	98.4	99.4	100.2	100.1	101.5	101.5	102.4	104.5
Nonferrous metals (9/81=100)	68	79.6	79.8	78.2	80.2	79.1	79.4	78.8	80.3	90.1	94.6	95.3
Metal manufactures, n.e.s. (3/82=100)	69	105.2	105.4	104.4	105.3	105.5	105.6	105.7	105.7	105.6	106.2	106.7
Machinery and transport equipment, excluding military and commercial aircraft (12/78=100)	7	142.9	143.1	143.3	144.0	144.2	144.6	145.5	146.2	146.7	147.2	148.0
Power generating machinery and equipment (12/78=100)	71	167.4	167.1	167.5	169.1	169.2	169.5	171.4	173.0	171.7	173.4	174.3
Machinery specialized for particular industries (9/78=100)	72	155.7	156.0	156.2	155.5	154.7	155.0	155.7	154.7	155.9	156.5	157.1
Metalworking machinery (6/78=100)	73	155.1	156.3	158.4	159.0	158.9	160.4	161.8	165.0	165.8	167.8	168.3
General industrial machines and parts n.e.s. 9/78=100)	74	152.0	152.4	152.2	152.3	153.3	154.4	155.3	157.7	157.8	157.9	159.3
Office machines and automatic data processing equipment	75	100.0	99.9	99.4	99.9	99.2	98.9	98.1	96.1	96.0	95.5	95.4
Telecommunications, sound recording and reproducing equipment	76	133.3	134.1	134.5	136.5	137.0	137.8	139.7	141.3	140.8	141.2	142.1
Electrical machinery and equipment	77	116.1	115.3	113.8	115.1	114.2	114.4	114.9	117.0	117.4	117.6	119.1
Road vehicles and parts (3/80=100)	78	133.9	133.8	135.0	135.5	136.4	136.5	137.9	138.0	138.5	138.9	139.1
Other transport equipment, excl. military and commercial aviation	79	196.6	199.3	200.7	203.3	206.8	207.4	209.7	211.4	214.7	215.7	218.7
Other manufactured articles	8	100.4	100.3	100.3	102.6	103.4	104.1	104.3	105.3	107.3	107.7	108.4
Apparel (9/83=100)	84	104.7	105.0	105.3	-	-	-	110.0	-	-	-	-
Professional, scientific, and controlling instruments and apparatus	87	178.3	178.7	178.8	182.1	183.8	183.8	184.8	186.4	188.5	190.2	191.9
Photographic apparatus and supplies, optical goods, watches and clocks (12/77=100)	88	129.1	127.5	128.5	131.6	132.9	132.7	132.0	133.4	133.1	129.5	128.2
Miscellaneous manufactured articles, n.e.s.	89	93.1	93.1	92.4	95.6	95.6	97.6	97.7	98.1	102.1	103.0	103.8
Gold, non-monetary (6/83=100)	971	75.4	77.4	77.5	81.8	82.2	97.5	94.5	98.2	108.4	110.0	117.1

- Data not available.

37. U.S. import price indexes by Standard International Trade Classification

(June 1977 = 100, unless otherwise indicated)

Category	1974 SITC	1985	1986				1987			
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
ALL COMMODITIES (9/82=100)		94.2	88.5	83.2	83.9	86.0	91.6	95.3	96.8	98.7
Food (9/77=100)	0	102.8	113.4	104.7	109.1	105.3	100.2	102.0	102.8	105.5
Meat	01	131.2	122.7	118.5	126.9	134.4	132.1	135.9	142.9	142.0
Dairy products and eggs (6/81=100)	02	100.5	106.7	107.1	109.4	111.5	116.8	119.6	118.9	122.3
Fish	03	132.7	139.3	144.8	149.6	157.1	161.6	167.4	174.4	175.2
Bakery goods, pasta products, grain and grain preparations (9/77=100)	04	141.9	146.9	149.2	154.0	155.3	161.0	165.2	161.2	168.3
Fruits and vegetables	05	131.3	119.4	119.4	127.1	125.5	120.5	125.4	124.5	131.2
Sugar, sugar preparations, and honey (3/82=100)	06	111.9	124.6	121.6	123.9	124.3	126.0	128.6	128.0	125.3
Coffee, tea, cocoa	07	64.6	85.9	69.2	71.8	61.0	50.9	49.3	48.3	51.5
Beverages and tobacco	1	162.1	163.2	165.5	165.8	168.0	170.8	174.1	174.4	175.9
Beverages	11	159.1	161.8	163.9	165.5	168.2	171.5	174.6	175.6	177.8
Crude materials	2	91.2	94.2	95.3	98.1	98.5	103.1	105.6	108.6	112.7
Crude rubber (inc. synthetic & reclaimed) (3/84=100)	23	73.2	78.8	75.5	76.9	78.5	79.1	84.5	89.4	97.8
Wood (9/81=100)	24	99.4	104.3	106.3	109.4	107.2	115.0	112.0	119.2	111.2
Pulp and waste paper (12/81=100)	25	75.8	74.9	79.9	86.0	92.8	100.5	104.6	105.9	111.9
Crude fertilizers and crude minerals (12/83=100)	27	102.1	101.5	100.0	100.4	100.2	99.5	98.5	97.3	98.7
Metalliferous ores and metal scrap (3/84=100)	28	90.1	94.5	95.6	98.2	95.4	98.0	100.0	102.9	113.3
Crude vegetable and animal materials, n.e.s.	29	102.5	103.6	104.4	104.8	104.7	113.4	120.3	113.6	118.5
Fuels and related products (6/82=100)	3	79.1	55.3	37.5	33.6	38.4	49.7	54.8	56.4	55.2
Petroleum and petroleum products (6/82=100)	33	80.1	54.7	36.1	32.1	37.9	49.9	55.2	57.3	56.2
Fats and oils (9/83=100)	4	50.6	41.4	39.3	35.5	51.6	50.8	54.5	61.3	64.5
Vegetable oils (9/83=100)	42	48.9	39.3	37.4	33.5	50.0	49.2	52.6	59.4	62.5
Chemicals (9/82=100)	5	94.2	94.6	93.3	93.4	93.2	95.9	98.7	99.5	104.4
Medicinal and pharmaceutical products (3/84=100)	54	96.7	102.9	104.9	110.0	110.1	116.2	120.3	118.8	123.3
Manufactured fertilizers (3/84=100)	56	78.5	79.2	79.7	77.4	79.7	81.8	83.6	98.8	124.2
Chemical materials and products, n.e.s. (9/84=100)	59	97.8	99.9	100.3	101.0	102.8	104.3	105.0	108.2	110.1
Intermediate manufactured products (12/77=100)	6	133.4	134.0	135.6	138.8	139.4	142.2	147.4	152.8	157.9
Leather and furskins	61	141.3	141.6	143.0	147.4	143.3	149.5	156.6	159.6	167.5
Rubber manufactures, n.e.s.	62	138.1	136.5	137.7	138.1	138.1	140.8	140.5	138.0	139.8
Cork and wood manufactures	63	124.0	130.8	134.3	137.4	142.7	144.3	151.6	156.3	157.6
Paper and paperboard products	64	156.5	157.1	157.1	157.5	164.8	165.2	165.0	174.6	177.7
Textiles	65	128.1	131.2	132.9	135.1	135.3	138.8	140.4	142.8	147.6
Nonmetallic mineral manufactures, n.e.s.	66	162.2	164.2	169.6	178.2	180.2	183.1	190.3	195.1	199.3
Iron and steel (9/78=100)	67	118.3	117.3	118.1	119.0	118.5	122.3	127.1	132.1	138.9
Nonferrous metals (12/81=100)	68	80.4	79.4	78.9	83.5	81.6	82.4	90.9	97.5	101.9
Metal manufactures, n.e.s.	69	121.6	124.4	127.8	129.1	129.1	133.4	134.5	136.0	139.4
Machinery and transport equipment (6/81=100)	7	107.2	111.5	115.3	118.1	120.2	123.9	126.1	126.4	129.4
Machinery specialized for particular industries (9/78=100)	72	104.9	112.1	115.4	120.1	121.0	127.5	130.0	130.0	136.9
Metalworking machinery (3/80=100)	73	98.1	105.0	107.7	110.7	115.7	122.4	126.1	129.8	135.0
General industrial machinery and parts, n.e.s. (6/81=100)	74	98.0	103.8	109.0	112.8	113.9	120.5	123.3	122.4	128.7
Office machines and automatic data processing equipment (3/80=100)	75	93.7	96.9	101.3	102.5	102.4	103.2	106.4	106.8	109.1
Telecommunications, sound recording and reproducing apparatus (3/80=100)	76	88.6	89.4	91.6	93.7	93.9	94.6	95.5	95.9	97.3
Electrical machinery and equipment (12/81=100)	77	83.1	84.5	87.5	89.5	91.7	93.6	94.8	94.2	96.5
Road vehicles and parts (6/81=100)	78	117.8	123.4	127.1	129.8	133.2	137.0	139.2	139.6	141.7
Misc. manufactured articles (3/80=100)	8	100.8	103.3	104.8	109.5	109.6	114.3	118.1	119.8	123.8
Plumbing, heating, and lighting fixtures (6/80=100)	81	115.0	120.1	123.5	125.5	125.5	125.5	130.6	131.1	137.5
Furniture and parts (6/80=100)	82	142.7	147.0	142.2	145.8	146.9	148.9	153.3	156.1	161.2
Clothing (9/77=100)	84	134.5	133.4	135.3	137.8	139.1	145.5	150.9	153.8	154.5
Footwear	85	142.7	147.0	142.2	145.8	146.9	148.9	153.3	156.1	161.2
Professional, scientific, and controlling instruments and apparatus (12/79=100)	87	102.4	106.4	112.5	118.3	118.0	125.6	129.5	127.0	132.4
Photographic apparatus and supplies, optical goods, watches, and clocks (3/80=100)	88	94.5	99.3	103.2	106.9	107.6	111.8	114.4	113.2	116.9
Misc. manufactured articles, n.e.s. (6/82=100)	89	97.9	102.1	103.4	112.3	111.0	116.9	121.8	124.6	132.2
Gold, non-monetary (6/82=100)	971	101.0	106.7	107.3	126.9	123.3	128.0	141.5	143.5	152.8

38. U.S. export price indexes by end-use category

(September 1983 = 100 unless otherwise indicated)

Category	Per-centage of 1980 trade value	1985	1986				1987			
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Foods, feeds, and beverages	16.294	77.5	75.5	74.7	66.0	68.4	67.1	71.3	68.0	75.6
Raw materials	30.696	95.9	96.0	94.9	93.3	94.8	98.2	103.1	105.9	108.1
Raw materials, nondurable	21.327	97.9	97.5	96.1	93.7	95.4	99.4	104.7	106.1	108.4
Raw materials, durable	9.368	91.0	92.5	91.9	92.5	93.2	95.1	99.2	105.3	107.3
Capital goods (12/82=100)	30.186	106.6	107.4	107.5	107.7	108.3	108.9	109.4	109.8	110.7
Automotive vehicles, parts and engines (12/82=100)	7.483	109.2	109.5	110.4	110.8	111.8	111.9	112.1	112.5	112.6
Consumer goods	7.467	101.4	103.7	104.5	104.5	105.7	106.9	107.1	107.5	108.1
Durables	3.965	99.5	101.8	101.8	102.1	102.7	103.9	103.6	104.3	105.3
Nondurables	3.501	103.3	105.5	107.2	106.9	108.5	109.8	110.5	110.5	110.9

39. U.S. import price indexes by end-use category

(December 1982=100)

Category	Per-centage of 1980 trade value	1985	1986				1987			
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Foods, feeds, and beverages	7.477	106.0	115.8	108.2	112.3	109.2	104.7	106.6	107.5	109.9
Petroleum and petroleum products, excl. natural gas	31.108	80.5	55.4	36.8	32.6	38.3	50.5	55.8	57.9	56.8
Raw materials, excluding petroleum	19.205	93.9	94.5	94.0	95.3	94.9	96.9	100.5	103.5	106.7
Raw materials, nondurable	9.391	91.8	91.1	89.7	89.5	89.7	91.8	94.5	95.4	97.9
Raw materials, durable	9.814	96.2	98.1	98.7	101.4	100.3	102.3	106.8	112.0	116.1
Capital goods	13.164	100.0	102.8	106.7	109.4	110.7	115.3	117.9	118.2	122.3
Automotive vehicles, parts and engines	11.750	111.4	115.6	119.0	121.0	123.9	126.2	128.0	127.9	129.7
Consumer goods	14.250	102.4	104.5	106.5	110.1	110.6	114.3	117.5	119.1	122.1
Durable	5.507	100.7	103.4	106.5	111.2	111.6	114.8	117.5	119.0	122.2
Nondurable	8.743	104.7	106.0	106.6	108.6	109.2	113.7	117.6	119.3	121.9

40. U.S. export price indexes by Standard Industrial Classification¹

Industry group	1985	1986				1987			
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Manufacturing:									
Food and kindred products (6/83=100)	98.1	97.0	95.0	95.2	97.6	99.0	104.1	103.6	113.4
Lumber and wood products, except furniture (6/83=100)	101.2	101.5	101.2	102.1	105.7	109.8	113.0	133.1	137.2
Furniture and fixtures (9/83=100)	108.4	109.2	109.7	110.1	110.4	113.4	114.0	114.1	116.9
Paper and allied products (3/81=100)	92.1	95.7	101.5	106.1	108.7	113.7	116.7	120.3	123.2
Chemicals and allied products (12/84=100)	99.2	98.9	98.3	96.2	95.9	100.1	106.3	107.6	112.6
Petroleum and coal products (12/83=100)	99.1	93.5	83.1	83.1	82.2	83.5	86.8	87.1	85.8
Primary metal products (3/82=100)	87.9	89.8	89.8	90.7	89.9	91.7	97.4	100.1	101.0
Machinery, except electrical (9/78=100)	140.5	140.6	140.3	140.5	140.7	141.0	141.2	141.4	142.0
Electrical machinery (12/80=100)	111.2	112.6	112.3	112.6	113.6	115.2	115.3	115.8	116.8
Transportation equipment (12/78=100)	164.1	165.1	167.1	167.4	169.4	170.0	171.2	172.3	173.9
Scientific instruments; optical goods; clocks (6/77=100)	156.7	159.7	161.2	161.5	162.3	163.3	164.6	164.7	165.4

¹ SIC - based classification.

41. U.S. import price indexes by Standard Industrial Classification ¹

Industry group	1985	1986				1987				
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	
Manufacturing:										
Food and kindred products (6/77=100)	115.1	117.7	115.6	118.0	122.4	122.7	125.9	128.5	129.8	
Textile mill products (9/82=100)	101.8	104.7	106.4	107.1	108.0	111.7	113.6	116.2	120.8	
Apparel and related products (6/77=100)	134.4	133.4	135.1	137.8	139.3	146.0	150.9	153.9	154.5	
Lumber and wood products, except furniture (6/77=100)	115.8	122.1	124.8	127.9	127.9	134.5	135.0	141.3	136.3	
Furniture and fixtures (6/80=100)	98.2	101.2	103.5	105.4	105.6	109.6	110.2	111.5	113.1	
Paper and allied products (6/77=100)	137.4	137.6	139.4	142.2	150.3	154.0	155.7	162.9	167.6	
Chemicals and allied products (9/82=100)	95.8	98.6	102.1	103.8	102.4	104.7	105.7	106.1	110.8	
Rubber and miscellaneous plastic products (12/80=100)	97.5	100.9	100.6	101.9	102.1	104.4	105.8	104.9	108.8	
Leather and leather products	144.0	145.8	144.6	147.7	148.7	151.8	156.2	159.8	164.0	
Primary metal products (6/81=100)	82.6	82.0	82.4	84.9	84.0	85.4	91.3	96.0	100.3	
Fabricated metal products (12/84=100)	102.6	104.9	108.5	110.3	111.1	115.5	116.2	118.1	119.9	
Machinery, except electrical (3/80=100)	100.0	105.5	109.0	112.5	114.2	119.1	122.2	122.6	128.1	
Electrical machinery (9/84=100)	95.8	97.0	100.2	102.6	104.0	105.7	106.9	106.6	108.7	
Transportation equipment (6/81=100)	119.6	123.9	128.0	130.4	133.2	136.5	138.4	138.7	141.2	
Scientific instruments; optical goods; clocks (12/79=100)	98.8	103.9	109.1	113.7	113.7	119.1	122.1	120.4	124.6	
Miscellaneous manufactured commodities (9/82=100)	98.7	99.9	101.7	106.9	108.1	110.3	113.8	116.4	118.8	

¹ SIC - based classification.

42. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

(1977=100)

Item	Quarterly Indexes											
	1985			1986				1987				
	II	III	IV	I	II	III	IV	I	II	III	IV	
Business:												
Output per hour of all persons	107.2	108.2	107.9	109.5	109.7	109.6	109.6	109.7	110.1	111.3	111.1	
Compensation per hour	174.6	177.0	179.3	180.7	182.2	183.6	185.2	185.8	187.3	189.1	190.5	
Real compensation per hour	98.6	99.4	99.7	100.1	101.3	101.4	101.6	100.7	100.3	100.3	100.2	
Unit labor costs	162.8	163.6	166.1	165.0	166.2	167.5	169.0	169.4	170.2	169.8	171.4	
Unit nonlabor payments	160.4	161.8	160.2	163.1	163.9	165.7	162.4	166.0	168.6	172.2	171.2	
Implicit price deflator	162.0	163.0	164.0	164.3	165.4	166.9	166.7	168.2	169.6	170.7	171.3	
Nonfarm business:												
Output per hour of all persons	105.7	106.4	105.9	107.7	107.7	107.5	107.5	107.6	108.0	109.1	109.0	
Compensation per hour	174.1	176.2	178.3	180.0	181.3	182.6	184.4	184.9	186.3	187.9	189.5	
Real compensation per hour	98.3	98.9	99.2	99.7	100.8	100.9	101.2	100.2	99.7	99.6	99.6	
Unit labor costs	164.7	165.7	168.3	167.2	168.4	169.8	171.5	171.8	172.5	172.2	173.8	
Unit nonlabor payments	161.5	163.4	160.8	164.7	165.2	167.0	163.9	167.4	169.2	173.0	171.9	
Implicit price deflator	163.6	164.9	165.7	166.4	167.3	168.8	168.8	170.3	171.4	172.5	173.1	
Nonfinancial corporations:												
Output per hour of all employees	107.7	109.2	108.9	109.8	109.7	109.9	110.5	109.7	109.9	110.8	-	
Compensation per hour	171.8	173.8	175.7	177.2	178.4	179.5	181.0	180.8	182.0	183.3	-	
Real compensation per hour	97.0	97.6	97.7	98.2	99.1	99.2	99.3	98.0	97.4	97.2	-	
Total unit costs	164.3	163.7	166.0	166.3	167.2	168.5	168.7	169.7	170.9	171.0	-	
Unit labor costs	159.5	159.1	161.4	161.5	162.6	163.2	163.8	164.8	165.6	165.5	-	
Unit nonlabor costs	178.7	177.5	179.4	180.7	180.6	184.2	183.2	184.1	186.6	187.3	-	
Unit profits	132.2	142.5	128.7	129.7	129.5	130.6	127.7	132.2	132.9	142.1	-	
Unit nonlabor payments	162.5	165.2	161.6	162.8	162.7	165.4	163.7	165.9	167.8	171.4	-	
Implicit price deflator	160.5	161.2	161.5	161.9	162.7	164.0	163.8	165.2	166.3	167.5	-	
Manufacturing:												
Output per hour of all persons	124.1	125.3	126.1	127.6	128.4	129.3	129.8	130.8	132.9	134.1	134.1	
Compensation per hour	176.1	178.0	180.2	181.0	182.1	183.1	184.3	183.9	184.8	185.4	186.3	
Real compensation per hour	99.5	99.9	100.2	100.3	101.2	101.2	101.2	99.6	98.9	98.3	97.9	
Unit labor costs	142.0	142.1	142.9	141.9	141.8	141.7	142.0	140.5	139.0	138.2	138.9	

- Data not available.

43. Annual indexes of multifactor productivity and related measures, selected years

(1977 = 100)

Item	1960	1970	1973	1976	1978	1980	1981	1982	1983	1984	1985	1986
Private business												
Productivity:												
Output per hour of all persons	67.3	88.4	95.9	98.4	100.8	99.2	100.6	100.3	103.1	105.7	107.6	109.7
Output per unit of capital services	102.1	101.9	105.3	97.2	102.0	94.2	92.4	86.7	88.4	92.8	92.8	92.8
Multifactor productivity	78.1	92.9	99.1	98.0	101.2	97.4	97.7	95.3	97.7	101.0	102.2	103.4
Output	55.3	80.2	93.0	94.5	105.8	106.6	108.9	105.4	109.9	119.2	124.0	128.1
Inputs:												
Hours of all persons	82.2	90.8	96.9	96.1	105.0	107.5	108.2	105.2	106.7	112.8	115.2	116.8
Capital services	54.2	78.7	88.3	97.2	103.8	113.1	117.8	121.7	124.4	128.5	133.6	138.0
Combined units of labor and capital input	70.8	86.3	93.8	96.5	104.5	109.4	111.5	110.7	112.6	118.1	121.3	123.8
Capital per hour of all persons	65.9	86.7	91.1	101.2	98.8	105.3	108.8	115.7	116.6	113.9	116.0	118.2
Private nonfarm business												
Productivity:												
Output per hour of all persons	70.7	89.2	96.4	98.5	100.8	98.7	99.6	99.1	102.5	104.7	105.9	107.6
Output per unit of capital services	103.6	102.8	106.0	97.3	101.9	93.4	91.1	85.1	87.3	91.3	90.8	90.5
Multifactor productivity	80.9	93.7	99.6	98.1	101.2	96.9	96.7	94.1	97.0	99.9	100.5	101.4
Output	54.4	79.9	92.9	94.4	106.0	106.6	108.4	104.8	110.1	119.3	123.7	127.6
Inputs:												
Hours of all persons	77.0	89.6	96.3	95.8	105.1	108.0	108.8	105.7	107.4	114.0	116.8	118.5
Capital services	52.5	77.8	87.6	97.0	104.0	114.1	119.0	123.2	126.1	130.6	136.3	141.0
Combined units of labor and capital input	67.3	85.3	93.3	96.2	104.7	110.0	112.2	111.4	113.5	119.4	123.1	125.8
Capital per hour of all persons	68.2	86.8	91.0	101.3	98.9	105.6	109.4	116.5	117.4	114.6	116.7	119.0
Manufacturing												
Productivity:												
Output per hour of all persons	62.2	80.8	93.4	97.1	101.5	101.4	103.6	105.9	112.0	118.1	124.2	128.8
Output per unit of capital services	102.5	98.6	111.4	96.2	102.1	91.2	89.2	81.8	86.9	95.7	97.8	99.3
Multifactor productivity	71.9	85.2	97.9	96.8	101.7	98.7	99.8	99.2	105.1	112.2	117.0	120.6
Output	52.5	78.6	96.3	93.1	106.0	103.2	104.8	98.4	104.7	117.5	122.5	125.9
Inputs:												
Hours of all persons	84.4	97.3	103.1	95.9	104.4	101.7	101.1	92.9	93.5	99.5	98.7	97.8
Capital services	51.2	79.7	86.4	96.7	103.7	113.1	117.5	120.3	120.6	122.8	125.3	126.8
Combined units of labor and capital inputs	73.0	92.2	98.4	96.1	104.2	104.5	105.0	99.2	99.7	104.7	104.8	104.4
Capital per hour of all persons	60.7	82.0	83.8	100.9	99.4	111.2	116.2	129.4	129.0	123.5	127.0	129.7

44. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

(1977 = 100)

Item	1960	1970	1973	1976	1978	1980	1981	1982	1983	1984	1985	1986	1987
Business:													
Output per hour of all persons	67.6	88.4	95.9	98.3	100.8	99.3	100.7	100.3	103.0	105.6	107.5	109.5	110.5
Compensation per hour	33.6	57.8	70.9	92.8	108.5	131.5	143.7	154.9	161.5	168.0	175.9	182.8	188.2
Real compensation per hour	68.9	90.2	96.7	98.7	100.8	96.7	95.7	97.3	98.2	98.0	99.1	101.0	100.3
Unit labor costs	49.7	65.4	73.9	94.3	107.6	132.5	142.7	154.5	156.7	159.1	163.6	166.9	170.2
Unit nonlabor payments	46.4	59.4	72.5	93.3	106.7	118.7	134.6	136.6	146.4	156.5	160.3	163.8	169.5
Implicit price deflator	48.5	63.2	73.4	94.0	107.3	127.6	139.8	148.1	153.0	158.2	162.4	165.8	170.0
Nonfarm business:													
Output per hour of all persons	71.0	89.3	96.4	98.5	100.8	98.8	99.8	99.2	102.5	104.6	105.8	107.5	108.4
Compensation per hour	35.3	58.2	71.2	92.8	108.6	131.3	143.6	154.8	161.5	167.8	175.2	182.0	187.1
Real compensation per hour	72.3	90.8	97.1	98.8	100.9	96.6	95.7	97.2	98.2	97.9	98.7	100.6	99.8
Unit labor costs	49.7	65.2	73.9	94.3	107.7	132.9	144.0	156.0	157.6	160.4	165.6	169.3	172.6
Unit nonlabor payments	46.3	60.0	69.3	93.0	105.6	118.5	133.5	136.5	148.3	156.4	161.3	165.2	170.4
Implicit price deflator	48.5	63.4	72.3	93.8	107.0	127.8	140.3	149.2	154.3	159.0	164.1	167.8	171.8
Nonfinancial corporations:													
Output per hour of all employees	73.4	91.1	97.5	98.4	100.6	99.1	99.6	100.4	103.5	106.0	108.2	109.9	-
Compensation per hour	36.9	59.2	71.6	92.9	108.4	131.1	143.3	154.3	159.9	165.8	172.8	178.9	-
Real compensation per hour	75.5	92.4	97.6	98.9	100.7	96.4	95.5	96.9	97.3	96.7	97.4	98.9	-
Total unit costs	49.4	64.8	72.7	94.8	107.3	133.4	147.7	159.5	159.5	160.8	164.4	167.7	-
Unit labor costs	50.2	65.0	73.4	94.3	107.8	132.3	143.8	153.8	154.5	156.5	159.7	162.8	-
Unit nonlabor costs	47.0	64.2	70.7	96.2	105.7	136.7	159.1	176.4	173.6	173.6	178.3	182.2	-
Unit profits	59.8	52.3	65.6	89.4	102.0	85.2	98.1	78.5	110.9	136.5	133.9	129.3	-
Unit nonlabor payments	51.5	60.1	68.9	93.8	104.4	118.6	137.8	142.1	152.1	160.6	162.7	163.7	-
Implicit price deflator	50.7	63.3	71.9	94.2	106.6	127.6	141.7	149.8	153.7	157.9	160.7	163.1	-
Manufacturing:													
Output per hour of all persons	62.2	80.8	93.4	97.1	101.5	101.4	103.6	105.9	112.0	118.1	124.2	128.8	133.0
Compensation per hour	36.5	57.4	68.8	92.1	108.2	132.4	145.2	157.5	162.4	168.0	176.9	182.7	185.1
Real compensation per hour	74.8	89.5	93.8	98.1	100.5	97.4	96.7	98.9	98.8	98.0	99.6	100.9	98.7
Unit labor costs	58.7	71.0	73.7	94.9	106.6	130.6	140.1	148.7	145.0	142.2	142.4	141.8	139.1
Unit nonlabor payments	60.0	64.1	70.7	93.5	101.9	97.8	111.8	114.0	128.5	138.6	134.7	137.9	-
Implicit price deflator	59.1	69.0	72.8	94.5	105.2	121.0	131.8	138.6	140.2	141.2	140.2	140.7	-

- Data not available.

45. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		1986			1987			
	1986	1987	II	III	IV	I	II	III	IV
Total labor force basis									
United States	6.9	6.1	7.1	6.9	6.8	6.5	6.2	5.9	5.8
Canada	9.5	-	9.5	9.6	9.4	9.6	9.0	8.8	-
Australia	8.0	-	7.7	8.2	8.3	8.3	8.1	8.0	-
Japan	2.8	-	2.8	2.9	2.9	3.0	3.1	2.8	-
France	10.4	-	10.4	10.6	10.6	11.0	11.0	10.9	-
Germany	7.1	-	7.2	7.0	6.9	7.0	7.1	7.1	-
Italy ^{1, 2}	6.2	-	6.2	5.9	6.5	6.6	6.6	6.6	-
Sweden	2.6	-	2.6	2.6	2.6	2.0	1.9	1.8	-
United Kingdom	11.1	-	11.2	11.1	10.9	10.6	10.2	9.7	-
Civilian labor force basis									
United States	7.0	6.2	7.2	7.0	6.8	6.6	6.3	6.0	5.9
Canada	9.6	-	9.6	9.7	9.4	9.6	9.1	8.8	-
Australia	8.1	-	7.8	8.3	8.4	8.3	8.2	8.0	-
Japan	2.8	-	2.8	2.9	2.9	3.0	3.1	2.8	-
France	10.7	-	10.7	10.8	10.8	11.2	11.3	11.2	-
Germany	7.2	-	7.3	7.2	7.0	7.1	7.2	7.3	-
Italy ^{1, 2}	6.3	-	6.3	6.0	6.6	6.7	6.7	6.8	-
Sweden	2.7	-	2.6	2.6	2.6	2.0	1.9	1.9	-
United Kingdom	11.1	-	11.2	11.2	10.9	10.7	10.3	9.8	-

¹ Quarterly rates are for the first month of the quarter.

² Major changes in the Italian labor force survey, introduced in 1977, resulted in a large increase in persons enumerated as unemployed. However, many persons reported that they had not actively sought work in the past 30 days, and they have been provisionally excluded for comparability with U.S. concepts. Inclusion of such persons would about

double the Italian unemployment rate shown.

- Data not available.

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures.

46. Annual data: Employment status of the civilian working-age population, approximating U.S. concepts, 10 countries

(Numbers in thousands)

Employment status and country	1978	1979	1980	1981	1982	1983	1984	1985	1986
Labor force									
United States	102,251	104,962	106,940	108,670	110,204	111,550	113,544	115,461	117,834
Canada	10,895	11,231	11,573	11,904	11,958	12,183	12,399	12,639	12,870
Australia	6,443	6,519	6,693	6,810	6,910	6,997	7,133	7,272	7,562
Japan	54,610	55,210	55,740	56,320	56,980	58,110	58,480	58,820	59,410
France	22,460	22,670	22,800	22,930	23,160	23,130	23,290	23,340	23,480
Germany	26,000	26,250	26,520	26,650	26,700	26,650	26,760	26,980	27,180
Italy	20,570	20,850	21,120	21,320	21,410	21,590	21,670	21,800	21,990
Netherlands	5,010	5,100	5,310	5,520	5,570	5,600	5,620	5,710	5,760
Sweden	4,203	4,262	4,312	4,327	4,350	4,369	4,385	4,418	4,437
United Kingdom	26,260	26,350	26,520	26,590	26,740	26,790	27,180	27,370	27,460
Participation rate¹									
United States	63.2	63.7	63.8	63.9	64.0	64.0	64.4	64.8	65.3
Canada	62.7	63.4	64.1	64.8	64.1	64.4	64.8	65.2	65.7
Australia	61.9	61.6	62.1	61.9	61.7	61.4	61.5	61.8	63.0
Japan	62.8	62.7	62.6	62.6	62.7	63.1	62.7	62.3	62.1
France	57.5	57.5	57.2	57.1	57.1	56.6	56.6	56.2	56.2
Germany	53.3	53.3	53.2	52.9	52.6	52.3	52.4	52.6	53.0
Italy	47.8	48.0	48.2	48.3	47.7	47.5	47.3	47.2	47.5
Netherlands	48.8	49.0	50.2	51.4	51.2	50.9	50.5	50.7	50.8
Sweden	66.1	66.6	66.9	66.8	66.8	66.7	66.6	66.9	67.2
United Kingdom	62.8	62.6	62.5	62.2	62.3	62.1	62.6	62.7	62.5
Employed									
United States	96,048	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597
Canada	9,987	10,395	10,708	11,006	10,644	10,734	11,000	11,311	11,634
Australia	6,038	6,111	6,284	6,416	6,415	6,300	6,490	6,670	6,952
Japan	53,370	54,040	54,600	55,060	55,620	56,550	56,870	57,260	57,740
France	21,250	21,300	21,330	21,200	21,240	21,170	20,980	20,900	20,970
Germany	25,130	25,470	25,750	25,560	25,140	24,750	24,790	24,950	25,210
Italy	19,720	19,930	20,200	20,280	20,250	20,320	20,390	20,490	20,610
Netherlands	4,750	4,830	4,980	5,010	4,980	4,890	4,930	5,110	5,200
Sweden	4,109	4,174	4,226	4,219	4,213	4,218	4,249	4,293	4,319
United Kingdom	24,610	24,940	24,670	23,800	23,710	23,600	24,000	24,300	24,400
Employment-population ratio²									
United States	59.3	59.9	59.2	59.0	57.8	57.9	59.5	60.1	60.7
Canada	57.5	58.7	59.3	59.9	57.0	56.7	57.4	58.4	59.4
Australia	58.0	57.8	58.3	58.4	57.3	55.3	56.0	56.6	57.9
Japan	61.3	61.4	61.3	61.2	61.2	61.4	61.0	60.6	60.4
France	54.4	54.0	53.5	52.8	52.3	51.8	51.0	50.4	50.2
Germany	51.5	51.7	51.7	50.8	49.6	48.6	48.5	48.7	49.1
Italy	45.9	45.9	46.1	45.9	45.2	44.7	44.5	44.4	44.6
Netherlands	46.3	46.4	47.0	46.6	45.8	44.5	44.3	45.4	45.9
Sweden	64.6	65.3	65.6	65.1	64.7	64.4	64.5	65.0	65.4
United Kingdom	58.8	59.2	58.1	55.7	55.3	54.7	55.3	55.7	55.6
Unemployed									
United States	6,202	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237
Canada	908	836	865	898	1,314	1,448	1,399	1,328	1,236
Australia	405	408	409	394	495	697	642	602	610
Japan	1,240	1,170	1,140	1,260	1,360	1,560	1,610	1,560	1,670
France	1,210	1,370	1,470	1,730	1,920	1,960	2,310	2,440	2,510
Germany	870	780	770	1,090	1,560	1,900	1,970	2,030	1,970
Italy	850	920	920	1,040	1,160	1,270	1,280	1,310	1,380
Netherlands	260	270	330	510	590	710	690	600	560
Sweden	94	88	86	108	137	151	136	125	118
United Kingdom	1,650	1,420	1,850	2,790	3,030	3,190	3,180	3,070	3,060
Unemployment rate									
United States	6.1	5.8	7.1	7.6	9.7	9.6	7.5	7.2	7.0
Canada	8.3	7.4	7.5	7.5	11.0	11.9	11.3	10.5	9.6
Australia	6.3	6.3	6.1	5.8	7.2	10.0	9.0	8.3	8.1
Japan	2.3	2.1	2.0	2.2	2.4	2.7	2.8	2.6	2.8
France	5.4	6.0	6.4	7.5	8.3	8.5	9.9	10.4	10.7
Germany	3.3	3.0	2.9	4.1	5.8	7.1	7.4	7.5	7.2
Italy	4.1	4.4	4.4	4.9	5.4	5.9	5.9	6.0	6.3
Netherlands	5.2	5.3	6.2	9.2	10.6	12.7	12.3	10.5	9.7
Sweden	2.2	2.1	2.0	2.5	3.1	3.5	3.1	2.8	2.7
United Kingdom	6.3	5.4	7.0	10.5	11.3	11.9	11.7	11.2	11.1

¹ Labor force as a percent of the civilian working-age population.

² Employment as a percent of the civilian working-age population.

47. Annual indexes of manufacturing productivity and related measures, 12 countries

(1977=100)

Item and country	1960	1970	1973	1975	1976	1977	1979	1980	1981	1982	1983	1984	1985	1986
Output per hour														
United States	62.2	80.8	93.4	92.9	97.1	100.0	101.4	101.4	103.6	105.9	112.0	118.1	124.2	128.8
Canada	50.7	75.6	90.3	88.6	94.8	100.0	102.0	98.2	102.9	98.3	105.4	116.8	119.7	119.4
Japan	23.2	64.8	83.1	87.7	94.3	100.0	114.8	122.7	127.2	135.0	142.3	152.5	163.7	168.2
Belgium	33.0	60.4	78.8	86.5	95.3	100.0	111.9	119.2	127.6	135.2	148.2	154.4	159.0	163.1
Denmark	37.2	65.6	83.3	94.6	98.2	100.0	106.5	112.3	114.2	114.6	120.2	118.6	118.3	119.9
France	36.4	69.6	82.3	88.5	95.1	100.0	109.7	110.6	114.0	122.0	125.2	129.0	133.0	135.6
Germany	40.3	71.2	84.0	90.1	96.5	100.0	108.2	108.6	111.0	112.6	119.2	123.6	128.7	130.6
Italy	35.4	72.7	90.9	91.1	98.9	100.0	110.5	116.9	124.8	129.6	135.7	144.4	146.6	148.3
Netherlands	32.4	64.3	81.5	86.2	95.8	100.0	112.3	113.9	116.9	119.4	127.5	140.5	145.1	144.7
Norway	54.6	81.7	94.6	96.8	99.7	100.0	107.1	106.7	107.0	109.8	117.2	123.9	125.2	124.4
Sweden	42.3	80.7	94.8	100.2	101.7	100.0	110.9	112.7	113.2	116.5	125.5	131.0	136.1	136.4
United Kingdom	55.9	80.4	95.5	94.9	99.1	100.0	102.5	101.8	107.0	113.5	123.2	129.8	134.7	139.5
Output														
United States	52.5	78.6	96.3	84.9	93.1	100.0	108.1	103.2	104.8	98.4	104.7	117.5	122.5	125.9
Canada	41.3	73.5	93.5	89.9	96.5	100.0	108.5	103.6	107.4	93.6	99.6	114.9	121.2	123.9
Japan	19.2	69.9	91.9	86.2	94.8	100.0	113.9	124.1	129.8	137.3	148.2	165.4	179.3	182.1
Belgium	41.9	78.6	96.4	92.7	99.7	100.0	104.1	106.8	105.7	110.1	114.8	117.5	119.9	122.0
Denmark	49.2	82.0	95.9	95.0	99.6	100.0	105.4	110.1	106.6	108.3	115.6	119.7	123.4	126.7
France	35.4	73.3	88.6	90.0	96.1	100.0	105.3	104.6	102.9	104.0	103.8	104.0	103.3	103.0
Germany	50.0	86.6	96.1	91.0	98.0	100.0	106.6	106.6	104.9	102.4	103.6	106.4	110.1	112.8
Italy	36.4	78.0	90.5	86.9	97.9	100.0	108.6	115.4	115.1	113.4	111.5	116.2	118.0	121.9
Netherlands	44.8	84.4	95.8	92.7	99.0	100.0	106.1	106.6	106.7	105.0	107.0	113.3	116.0	117.3
Norway	55.1	86.9	99.5	101.0	101.4	100.0	100.3	98.8	97.7	97.4	97.2	102.6	105.2	107.0
Sweden	52.6	92.5	100.3	106.1	106.1	100.0	103.6	104.0	100.6	100.1	105.2	111.5	115.3	115.2
United Kingdom	71.2	95.0	104.8	96.3	98.2	100.0	100.5	91.7	86.2	86.4	88.9	92.5	95.2	96.2
Total hours														
United States	84.4	97.3	103.1	91.4	95.9	100.0	106.5	101.7	101.1	92.9	93.5	99.5	98.7	97.8
Canada	81.4	97.2	103.6	101.5	101.8	100.0	106.3	105.5	104.3	95.2	94.5	98.3	101.2	103.8
Japan	82.7	107.9	110.7	98.2	100.6	100.0	99.3	101.2	102.0	101.7	104.2	108.5	109.6	108.3
Belgium	127.1	130.2	122.3	107.1	104.6	100.0	93.0	89.6	82.8	81.4	77.5	76.1	75.4	74.8
Denmark	132.4	125.1	115.2	100.4	101.4	100.0	99.0	98.0	93.4	94.5	96.2	100.9	104.3	105.7
France	97.2	105.3	107.7	101.7	101.2	100.0	95.9	94.6	90.3	85.2	82.9	80.6	77.7	75.9
Germany	123.8	121.7	114.4	101.0	101.6	100.0	98.5	98.1	94.6	91.0	86.9	86.1	85.6	86.4
Italy	102.8	107.4	99.6	95.4	99.0	100.0	98.2	98.7	92.2	87.5	82.2	80.5	80.5	82.2
Netherlands	138.4	131.2	117.6	107.6	103.3	100.0	94.4	93.6	91.2	88.0	83.9	80.6	79.9	81.1
Norway	101.0	106.4	105.1	104.3	101.7	100.0	93.6	92.6	91.3	88.6	82.9	82.8	84.0	86.0
Sweden	124.4	114.6	105.7	105.9	104.3	100.0	93.4	92.3	88.9	85.9	83.9	85.1	84.7	84.5
United Kingdom	127.3	118.1	109.8	101.5	99.0	100.0	98.0	90.1	80.6	76.2	72.2	71.2	70.7	69.0
Compensation per hour														
United States	36.5	57.4	68.8	85.1	92.1	100.0	118.6	132.4	145.2	157.5	162.4	168.0	176.9	182.7
Canada	27.5	47.9	60.0	78.9	90.3	100.0	118.6	131.3	151.1	167.0	177.2	185.5	194.7	202.3
Japan	8.9	33.9	55.1	84.2	90.7	100.0	113.4	120.7	129.8	136.6	140.7	144.9	152.0	157.3
Belgium	13.8	34.9	53.5	79.0	89.5	100.0	117.5	130.4	144.5	150.7	159.7	173.0	184.9	191.8
Denmark	12.6	36.3	56.1	81.0	90.4	100.0	123.1	135.9	149.7	162.9	174.2	184.4	196.1	207.7
France	15.1	36.5	52.1	76.5	88.7	100.0	128.4	148.5	172.0	203.9	225.2	247.3	267.3	279.2
Germany	18.8	48.0	67.5	84.5	91.3	100.0	116.1	125.6	134.5	141.0	148.3	155.5	164.9	172.5
Italy	8.4	26.1	43.7	70.2	84.2	100.0	134.7	160.2	198.4	238.3	282.8	314.5	347.3	362.1
Netherlands	12.5	39.0	60.5	82.2	91.9	100.0	117.0	123.6	129.1	137.5	144.0	150.0	157.7	161.5
Norway	15.8	37.9	54.5	77.2	88.8	100.0	116.0	128.0	142.8	156.0	173.5	188.3	204.8	224.6
Sweden	14.7	38.5	54.2	77.3	91.5	100.0	120.1	133.6	148.1	158.9	173.3	189.7	212.4	228.1
United Kingdom	15.1	31.3	47.5	76.0	88.3	100.0	137.4	167.4	193.9	209.3	224.4	238.8	254.6	273.5
Unit labor costs: National currency basis														
United States	58.7	71.0	73.7	91.7	94.9	100.0	117.0	130.6	140.1	148.7	145.0	142.2	142.4	141.8
Canada	54.2	63.4	66.5	89.1	95.3	100.0	116.2	133.7	146.7	170.0	168.1	158.8	162.6	169.4
Japan	38.4	52.3	66.4	96.0	96.2	100.0	98.8	98.4	102.0	101.2	98.9	95.0	92.9	93.5
Belgium	41.7	57.8	67.9	91.2	93.9	100.0	105.0	109.4	113.2	111.4	107.8	112.1	116.3	117.6
Denmark	33.8	55.4	67.4	85.6	92.1	100.0	115.7	121.0	131.1	142.2	144.9	155.4	165.7	173.2
France	41.5	52.5	63.4	86.5	93.3	100.0	117.0	134.3	151.0	167.2	179.9	191.6	200.9	205.9
Germany	46.6	67.4	80.3	93.8	94.6	100.0	107.3	115.7	121.2	125.2	124.4	125.8	128.1	132.1
Italy	23.7	36.0	48.1	77.1	85.1	100.0	121.9	137.0	158.9	184.0	208.4	217.8	236.9	244.1
Netherlands	38.5	60.7	74.3	95.4	96.0	100.0	104.1	108.5	110.4	115.2	113.0	106.8	108.7	111.6
Norway	29.0	46.4	57.6	79.7	89.1	100.0	108.2	120.0	133.4	142.1	148.0	152.0	163.5	180.5
Sweden	34.8	47.7	57.2	77.1	90.0	100.0	108.3	118.6	130.9	136.3	138.1	144.8	156.1	167.3
United Kingdom	27.1	38.9	49.8	80.2	89.1	100.0	134.1	164.5	181.2	184.4	182.2	183.9	189.0	196.1
Unit labor costs: U.S. dollar basis														
United States	58.7	71.0	73.7	91.7	94.9	100.0	117.0	130.6	140.1	148.7	145.0	142.2	142.4	141.8
Canada	59.4	64.5	70.6	93.1	102.7	100.0	105.4	121.5	130.0	146.3	144.9	130.3	126.5	129.5
Japan	28.5	39.1	65.6	86.7	86.9	100.0	121.3	116.8	123.8	108.8	111.5	107.2	104.3	148.7
Belgium	30.0	41.7	62.7	89.1	87.2	100.0	128.3	134.3	109.6	87.2	75.5	69.5	70.2	94.3
Denmark	29.5	44.4	67.2	89.6	91.5	100.0	132.0	129.0	110.3	102.3	95.1	90.1	93.9	128.4
France	41.6	46.7	70.2	99.3	96.1	100.0	135.2	156.4	136.4	124.9	116.1	107.8	110.0	146.2
Germany	25.9	42.9	70.4	88.7	87.3	100.0	135.9	147.9	124.9	119.7	113.1	102.6	101.1	141.3
Italy	33.7	50.6	73.1	104.3	90.5	100.0	129.5	141.4	123.2	119.9	121.1	109.5	109.6	144.5
Netherlands	25.1	41.2	65.6	92.8	89.1	100.0	127.4	134.1	108.9	105.8	97.1	81.6	80.4	111.9
Norway	21.7	34.5	53.4	81.4	86.9	100.0	113.8	129.3	123.6	117.1	107.9	99.1	101.3	129.8
Sweden	30.1	41.1	58.7	83.2	92.3	100.0	112.9	125.3	115.4	96.9	80.4	78.2	81.1	104.9
United Kingdom	43.6	53.5	70.0	102.0	92.1	100.0	163.1	219.2	210.2	184.8	158.3	140.9	140.5	164.9

48. Occupational injury and illness incidence rates by industry, United States

Industry and type of case ¹	Incidence rates per 100 full-time workers ²								
	1978	1979	1980	1981	1982	1983	1984	1985	1986
PRIVATE SECTOR³									
Total cases	9.4	9.5	8.7	8.3	7.7	7.6	8.0	7.9	7.9
Lost workday cases	4.1	4.3	4.0	3.8	3.5	3.4	3.7	3.6	3.6
Lost workdays	63.5	67.7	65.2	61.7	58.7	58.5	63.4	64.9	65.8
Agriculture, forestry, and fishing³									
Total cases	11.6	11.7	11.9	12.3	11.8	11.9	12.0	11.4	11.2
Lost workday cases	5.4	5.7	5.8	5.9	5.9	6.1	6.1	5.7	5.6
Lost workdays	80.7	83.7	82.7	82.8	86.0	90.8	90.7	91.3	93.6
Mining									
Total cases	11.5	11.4	11.2	11.6	10.5	8.4	9.7	8.4	7.4
Lost workday cases	6.4	6.8	6.5	6.2	5.4	4.5	5.3	4.8	4.1
Lost workdays	143.2	150.5	163.6	146.4	137.3	125.1	160.2	145.3	125.9
Construction									
Total cases	16.0	16.2	15.7	15.1	14.6	14.8	15.5	15.2	15.2
Lost workday cases	6.4	6.8	6.5	6.3	6.0	6.3	6.9	6.8	6.9
Lost workdays	109.4	120.4	117.0	113.1	115.7	118.2	128.1	128.9	134.5
General building contractors:									
Total cases	15.9	16.3	15.5	15.1	14.1	14.4	15.4	15.2	14.9
Lost workday cases	6.3	6.8	6.5	6.1	5.9	6.2	6.9	6.8	6.6
Lost workdays	105.3	111.2	113.0	107.1	112.0	113.0	121.3	120.4	122.7
Heavy construction contractors:									
Total cases	16.6	16.6	16.3	14.9	15.1	15.4	14.9	14.5	14.7
Lost workday cases	6.2	6.7	6.3	6.0	5.8	6.2	6.4	6.3	6.3
Lost workdays	110.9	123.1	117.6	106.0	113.1	122.4	131.7	127.3	132.9
Special trade contractors:									
Total cases	15.8	16.0	15.5	15.2	14.7	14.8	15.8	15.4	15.6
Lost workday cases	6.6	6.9	6.7	6.6	6.2	6.4	7.1	7.0	7.2
Lost workdays	111.0	124.3	118.9	119.3	118.6	119.0	130.1	133.3	140.4
Manufacturing									
Total cases	13.2	13.3	12.2	11.5	10.2	10.0	10.6	10.4	10.6
Lost workday cases	5.6	5.9	5.4	5.1	4.4	4.3	4.7	4.6	4.7
Lost workdays	84.9	90.2	86.7	82.0	75.0	73.5	77.9	80.2	85.2
Durable goods									
Lumber and wood products:									
Total cases	22.6	20.7	18.6	17.6	16.9	18.3	19.6	18.5	18.9
Lost workday cases	11.1	10.8	9.5	9.0	8.3	9.2	9.9	9.3	9.7
Lost workdays	178.8	175.9	171.8	158.4	153.3	163.5	172.0	171.4	177.2
Furniture and fixtures:									
Total cases	17.5	17.6	16.0	15.1	13.9	14.1	15.3	15.0	15.2
Lost workday cases	6.9	7.1	6.6	6.2	5.5	5.7	6.4	6.3	6.3
Lost workdays	95.9	99.6	97.6	91.9	85.6	83.0	101.5	100.4	103.0
Stone, clay, and glass products:									
Total cases	16.8	16.8	15.0	14.1	13.0	13.1	13.6	13.9	13.6
Lost workday cases	7.8	8.0	7.1	6.9	6.1	6.0	6.6	6.7	6.5
Lost workdays	126.3	133.7	128.1	122.2	112.2	112.0	120.8	127.8	126.0
Primary metal industries:									
Total cases	17.0	17.3	15.2	14.4	12.4	12.4	13.3	12.6	13.6
Lost workday cases	7.5	8.1	7.1	6.7	5.4	5.4	6.1	5.7	6.1
Lost workdays	123.6	134.7	128.3	121.3	101.6	103.4	115.3	113.8	125.5
Fabricated metal products:									
Total cases	19.3	19.9	18.5	17.5	15.3	15.1	16.1	16.3	16.0
Lost workday cases	8.0	8.7	8.0	7.5	6.4	6.1	6.7	6.9	6.8
Lost workdays	112.4	124.2	118.4	109.9	102.5	96.5	104.9	110.1	115.5
Machinery, except electrical:									
Total cases	14.4	14.7	13.7	12.9	10.7	9.8	10.7	10.8	10.7
Lost workday cases	5.4	5.9	5.5	5.1	4.2	3.6	4.1	4.2	4.2
Lost workdays	75.1	83.6	81.3	74.9	66.0	58.1	65.8	69.3	72.0
Electric and electronic equipment:									
Total cases	8.7	8.6	8.0	7.4	6.5	6.3	6.8	6.4	6.4
Lost workday cases	3.3	3.4	3.3	3.1	2.7	2.6	2.8	2.7	2.7
Lost workdays	50.3	51.9	51.8	48.4	42.2	41.4	45.0	45.7	49.8
Transportation equipment:									
Total cases	11.5	11.6	10.6	9.8	9.2	8.4	9.3	9.0	9.6
Lost workday cases	5.1	5.5	4.9	4.6	4.0	3.6	4.2	3.9	4.1
Lost workdays	78.0	85.9	82.4	78.1	72.2	64.5	68.8	71.6	79.1
Instruments and related products:									
Total cases	6.9	7.2	6.8	6.5	5.6	5.2	5.4	5.2	5.3
Lost workday cases	2.6	2.8	2.7	2.7	2.3	2.1	2.2	2.2	2.3
Lost workdays	37.0	40.0	41.8	39.2	37.0	35.6	37.5	37.9	42.2
Miscellaneous manufacturing industries:									
Total cases	11.8	11.7	10.9	10.7	9.9	9.9	10.5	9.7	10.2
Lost workday cases	4.5	4.7	4.4	4.4	4.1	4.0	4.3	4.2	4.3
Lost workdays	66.4	67.7	67.9	68.3	69.9	66.3	70.2	73.2	70.9

See footnotes at end of table.

48. Continued— Occupational injury and illness incidence rates by industry, United States

Industry and type of case ¹	Incidence rates per 100 full-time workers ²								
	1978	1979	1980	1981	1982	1983	1984	1985	1986
Nondurable goods									
Food and kindred products:									
Total cases	19.4	19.9	18.7	17.8	16.7	16.5	16.7	16.7	16.5
Lost workday cases	8.9	9.5	9.0	8.6	8.0	7.9	8.1	8.1	8.0
Lost workdays	132.2	141.8	136.8	130.7	129.3	131.2	131.6	138.0	137.8
Tobacco manufacturing:									
Total cases	8.7	9.3	8.1	8.2	7.2	6.5	7.7	7.3	6.7
Lost workday cases	4.0	4.2	3.8	3.9	3.2	3.0	3.2	3.0	2.5
Lost workdays	58.6	64.8	45.8	56.8	44.6	42.8	51.7	51.7	45.6
Textile mill products:									
Total cases	10.2	9.7	9.1	8.8	7.6	7.4	8.0	7.5	7.8
Lost workday cases	3.4	3.4	3.3	3.2	2.8	2.8	3.0	3.0	3.1
Lost workdays	61.5	61.3	62.8	59.2	53.8	51.4	54.0	57.4	59.3
Apparel and other textile products:									
Total cases	6.5	6.5	6.4	6.3	6.0	6.4	6.7	6.7	6.7
Lost workday cases	2.2	2.2	2.2	2.2	2.1	2.4	2.5	2.6	2.7
Lost workdays	32.4	34.1	34.9	35.0	36.4	40.6	40.9	44.1	49.4
Paper and allied products:									
Total cases	13.5	13.5	12.7	11.6	10.6	10.0	10.4	10.2	10.5
Lost workday cases	5.7	6.0	5.8	5.4	4.9	4.5	4.7	4.7	4.7
Lost workdays	103.3	108.4	112.3	103.6	99.1	90.3	93.8	94.6	99.5
Printing and publishing:									
Total cases	7.0	7.1	6.9	6.7	6.6	6.6	6.5	6.3	6.5
Lost workday cases	2.9	3.1	3.1	3.0	2.8	2.9	2.9	2.9	2.9
Lost workdays	43.8	45.1	46.5	47.4	45.7	44.6	46.0	49.2	50.8
Chemicals and allied products:									
Total cases	7.8	7.7	6.8	6.6	5.7	5.5	5.3	5.1	6.3
Lost workday cases	3.3	3.5	3.1	3.0	2.5	2.5	2.4	2.3	2.7
Lost workdays	50.9	54.9	50.3	48.1	39.4	42.3	40.8	38.8	49.4
Petroleum and coal products:									
Total cases	7.9	7.7	7.2	6.7	5.3	5.5	5.1	5.1	7.1
Lost workday cases	3.4	3.6	3.5	2.9	2.5	2.4	2.4	2.4	3.2
Lost workdays	58.3	62.0	59.1	51.2	46.4	46.8	53.5	49.9	67.5
Rubber and miscellaneous plastics products:									
Total cases	17.1	17.1	15.5	14.6	12.7	13.0	13.6	13.4	14.0
Lost workday cases	8.1	8.2	7.4	7.2	6.0	6.2	6.4	6.3	6.6
Lost workdays	125.5	127.1	118.6	117.4	100.9	101.4	104.3	107.4	118.2
Leather and leather products:									
Total cases	11.7	11.5	11.7	11.5	9.9	10.0	10.5	10.3	10.5
Lost workday cases	4.7	4.9	5.0	5.1	4.5	4.4	4.7	4.6	4.8
Lost workdays	72.5	76.2	82.7	82.6	86.5	87.3	94.4	88.3	83.4
Transportation and public utilities									
Total cases	10.1	10.0	9.4	9.0	8.5	8.2	8.8	8.6	8.2
Lost workday cases	5.7	5.9	5.5	5.3	4.9	4.7	5.2	5.0	4.8
Lost workdays	102.3	107.0	104.5	100.6	96.7	94.9	105.1	107.1	102.1
Wholesale and retail trade									
Total cases	7.9	8.0	7.4	7.3	7.2	7.2	7.4	7.4	7.7
Lost workday cases	3.2	3.4	3.2	3.1	3.1	3.1	3.3	3.2	3.3
Lost workdays	44.9	49.0	48.7	45.3	45.5	47.8	50.5	50.7	54.0
Wholesale trade:									
Total cases	8.9	8.8	8.2	7.7	7.1	7.0	7.2	7.2	7.2
Lost workday cases	3.9	4.1	3.9	3.6	3.4	3.2	3.5	3.5	3.6
Lost workdays	57.5	59.1	58.2	54.7	52.1	50.6	55.5	59.8	62.5
Retail trade:									
Total cases	7.5	7.7	7.1	7.1	7.2	7.3	7.5	7.5	7.8
Lost workday cases	2.8	3.1	2.9	2.9	2.9	3.0	3.2	3.1	3.2
Lost workdays	39.7	44.7	44.5	41.1	42.6	46.7	48.4	47.0	50.5
Finance, insurance, and real estate									
Total cases	2.1	2.1	2.0	1.9	2.0	2.0	1.9	2.0	2.0
Lost workday cases .....	.8	.9	.8	.8	.9	.9	.9	.9	.9
Lost workdays	12.5	13.3	12.2	11.6	13.2	12.8	13.6	15.4	17.1
Services									
Total cases	5.5	5.5	5.2	5.0	4.9	5.1	5.2	5.4	5.3
Lost workday cases	2.4	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.5
Lost workdays	36.2	38.1	35.8	35.9	35.8	37.0	41.1	45.4	43.0

¹ Total cases include fatalities.

² The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as: (N/EH) x 200,000, where:

N = number of injuries and illnesses or lost workdays.

EH = total hours worked by all employees during calendar year.
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year.)

³ Excludes farms with fewer than 11 employees since 1976.

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