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April 1989

In this issue:

Barriers to employment of older workers
Inequality in wages and salaries, 1960-80
Unemployment insurance in the U.S. and Europe

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MONTHLY LABOR REVIEW

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Labor Month In Review



KLEIN AWARD. The Lawrence R. Klein Award trustees selected the authors of three articles published in the *Monthly Labor Review* in 1988 as winners of the 20th annual Klein Award. The award will be presented at the Bureau of Labor Statistics awards ceremony on May 9.

This year, the Klein Award trustees honored these authors:

- Michael W. Horrigan and Steven E. Haugen of the Office of Employment and Unemployment Statistics, for "The declining middle-class thesis: a sensitivity analysis," which appeared in the May issue. First prize among articles by BLS authors.
- Robert Blanchfield and William Marsteller of the Office of Prices and Living Conditions, for "Rising export and import prices in 1987 reversed the trend of recent years," which appeared in the June issue. Second prize among articles by BLS authors.
- Olivia S. Mitchell of Cornell University and the National Bureau of Economic Research, for "The relation of age to workplace injuries," which appeared in the July issue. Best 1988 *Monthly Labor Review* article by an author outside BLS.

Receiving honorable mention were Glenn Halm and Clinton R. Shiells of the Bureau of International Labor Affairs, for "Damage control: yen appreciation and the Japanese labor market," in the November issue.

The Horrigan-Haugen article examines the popularly held thesis that, over the past one or two decades, the proportion of middle-income earners in the United States has declined relative to all earners. Several studies in fact point to this conclusion, but opinions differ on both the extent of the decline and how it has been reflected in the proportion of lower- and upper-income earners. Much of the difference in opinion is due to (1) definitional disagreement about what constitutes the middle-income class and (2) variations in the measurement of that class. Accordingly, what is required is a sensitivity analysis of results yielded from alternative definitions of the middle-income class and from different methods of measuring the size over time.

Horrigan and Haugen choose several different income intervals for defining the

three income classes and assess two alternative methods of measuring the changes in their size over time. An examination of these changes from both a secular and cyclical perspective then yields the conclusions that (1) in agreement with previous studies, the proportion of middle-income families has declined considerably within the last decade or two, but (2) contrary to the findings of many of those studies, most of the families that have left the middle-income category have moved to the upper- rather than lower-income class. Importantly, these conclusions are consistent with recent arguments that income distribution is becoming more unequal: in terms of aggregate income, the disparity between what the lower-income class receives and what everybody else receives is growing.

With regard to methodology, the authors show that, in an interval deflator approach to compare the sizes of the three classes over time (used in many analytical studies), the results are highly sensitive to the choice of price index used to deflate income intervals so as to maintain the purchasing power of the middle-income class at a constant level. Depending on the index used, the size of the lower class may remain stable, increase secularly, or decrease secularly. (In all of these cases, the lower-income class still receives a decreasing share of aggregate income.) Also, in studies that infer long-term trends in income distribution by year-to-year comparisons, it is clear that the results are highly sensitive to the years chosen. Especially if the years are at dissimilar points in the business cycle, the results will differ dramatically from results generated by means of secular comparisons because the size of the lower-income class typically increases during recessions and decreases during expansions.

The Blanchfield-Marsteller article discusses the rise during 1987 in export and import prices, reversing a trend that began in the early years of the decade and continued unabated. The 6.9-percent rise in export prices was the first increase in the all-export index, established in 1983, while the 14.8-percent upturn in import prices was the first increase in the all-import index, begun in 1982. Export prices were affected in large measure by rising commodity prices, especially for food and crude materials. The rise in import prices was due almost

exclusively to a 43.8-percent increase in fuel prices.

The falling value of the dollar exerted a significant influence on the upward movement of export and import prices. New indexes developed by BLS show that despite a 22.4-percent rise, in dollar terms, in the price of nonfuel imports, the trade-weighted value of the dollar fell 32.8 percent from March 1985 to December 1987. During the same period, nonfuel import prices in foreign currency terms fell 17.7 percent.

The Mitchell article argues for the thesis that older workers show no more tendency toward incurring work-related illness and injury than do younger workers, but when they are stricken, they are more likely to suffer permanent impairment and fatalities. To remedy deficiencies in earlier analyses, Mitchell uses only data on reported illnesses and injuries, as opposed to less reliable workers' self-evaluations, and controls closely for occupation, industry, and State-specific differences in workers' compensation systems in testing for linkage between age and workplace injury and illness. Age effects are shown to be robust to controls for industry and occupation, and State-specific effects persist even in the presence of controls for age, industry, and occupational dispersion in jobs.

About the award. Trustees of the Klein Award Fund are Lawrence R. Klein; Charles D. Stewart, president; Ben Burdetsky, secretary-treasurer; Peter Henle; Harold Goldstein; Howard Rosen; and Henry Lowenstern. The award was established in 1968 in honor of Lawrence R. Klein, editor-in-chief of the *Monthly Labor Review* for 22 years until his retirement in 1968. Instead of accepting a retirement gift, Klein donated it and matched the amount collected to initiate the fund. Since then, he has contributed regularly to the fund, as have others. The purpose of the award is to encourage *Review* articles that (1) exhibit originality of ideas or method of analysis, (2) adhere to the principles of scientific inquiry, and (3) are well written. Each winning article carries a cash prize.

Tax-deductible contributions to the fund may be sent to Ben Burdetsky, Secretary-Treasurer, Lawrence R. Klein Fund, c/o School of Government and Business Administration, The George Washington University, Washington, DC 20052. □

Sources of increasing inequality in wages and salaries, 1960-80

Intersectoral employment shifts appear to be much more important than regional and demographic shifts in the increase in inequality; however, the trend seems to be driven chiefly by developments within labor force groups, rather than movements among them

W. NORTON GRUBB AND ROBERT H. WILSON

Interest in the distribution of income waxes and wanes. Concern intensified during the 1960's with the "rediscovery" of poverty and the initiation of the War on Poverty. It diminished during the 1970's, as other economic difficulties commanded the Nation's attention. Evidence that the distribution of income had been relatively stable during the post-World War II period tended to make the issue even less pressing.

During the 1980's, however, distributional questions have become more prominent. According to some analysts, evidence has accumulated that the distributions of income and earnings have become more unequal. The possible consequences—increasing poverty, more demands on government programs, a growing underclass, the decline of the middle class, political instability, a generation of children with inadequate education—would be serious, and would affect almost every public and private institution in the country.

An overview

In examining inequality, it is important to distinguish inequality among individuals from inequality among fami-

lies or households, which is affected by marriage, separation or divorce, and changes in labor force participation, as well as inequality among individuals; and earnings must be distinguished from income, which includes government transfers. In this article, we explore changes in the distribution of one important component of total income—the pretax wages and salaries of individuals—between 1960 and 1980,¹ using data from the decennial census. The strategy we take is similar to that of other researchers—to examine a series of possible explanations of increasing inequality, rejecting some as unimportant and finding others responsible for some part of increases in inequality.

Many previous analyses have concentrated on the earnings distributions among men or have compared men and women.² To develop a broader analysis, we examine the effects of both gender and race on the distribution of wages and salaries. The effects of gender are of particular interest, because the increasing labor force participation of women during the study period, together with the generally lower earnings of women compared to men, could increase overall inequality.

In addition, most analyses have concentrated on national patterns. However, the two decades chosen for study were periods of important sectoral and regional shifts—from manufacturing to services, and from the Snowbelt to the Sunbelt—which increased employment

W. Norton Grubb is professor of education at the University of California, Berkeley. Robert H. Wilson is associate professor of public affairs at the Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin.

in low-wage positions and could be responsible for increasing inequality. Therefore, we examine the potential effects of regional and sectoral employment shifts.³

Finally, we use a measure of inequality—one developed by Henri Theil, which we refer to as Theil's T —that is in several ways superior to the conventional measures of inequality (such as the Gini coefficient and the variance of log income), especially in its decomposition properties.

Decomposing patterns of inequality

One substantial and much-discussed change in the U.S. economy that might explain any deterioration of the earnings distribution involves sectoral composition. If, as is sometimes claimed,⁴ well-paid manufacturing positions have been replaced by poorly paid positions in the service sector, then the distribution of earnings might have become more unequal. Alternatively, because high paying industries (often those heavily unionized) tend to show less variation in earnings,⁵ it may be that the decline in unionized heavy manufacturing has caused a shift from sectors with greater equality of wages to sectors with greater inequality. For this study, the sectors were chosen to differentiate among various types of manufacturing and service sectors.⁶ A high-tech sector is included, defined as those industries that employ technology-oriented workers and that have high research and development expenditures.⁷

The second major change involves employment shifts among regions—from the Northeast and North Central States to the southern tier of States—that has focused so much attention on the friction between the Snowbelt and the Sunbelt. Shifts *among* regions—from regions with high wages to those with low wages, or from regions of lesser inequality to those of greater inequality—may be responsible for changes in earnings patterns, rather than changes *within* regions. Both sectoral and regional shifts may be due partly to endogenous processes; for example, the mobility of employers in search of low wages means that wage patterns affect regional changes, which in turn generate greater inequality. Similarly, the relative decline of high-wage manufacturing—because of the export of production to overseas locations, or the cost advantages of firms already located in low-wage nations—describes a process whereby low-wage sectors in this country grow at the expense of high-wage sectors, potentially aggravating inequality.

In addition to analyzing distributions by sector and region, we also differentiate between men and women because the employment of women has increased so much since World War II and because their earnings patterns have been quite different from those of men. Finally, we distinguish between racial groups, again because of the possibility that racial patterns diverge.⁸ Because of limitations in the data available, we examine distributions for blacks and nonblacks; the latter group includes whites,

Asian-Americans, a small number of American Indians, and most Hispanics.⁹

The method we use involves calculating inequality within and among groups. In our analysis, then, we have 2 genders, 2 races, 14 sectors, and either 9 census regions or 51 States (including Washington, DC), for a possible total of 2,856 groups. The only data set with enough observations to permit this many groupings and still allow us to calculate within-group inequality is the decennial census. Examining other possible explanations of inequality would increase the number of groups beyond the limits of even the census data.

The reference years of the census data—1959, 1969, and 1979—were all years of economic expansion, though they differ because they occurred at different stages of their respective expansions. According to a 1980 analysis of data from the Current Population Survey (CPS) by Peter Henle and Paul Ryscavage, inequality in these years was not seriously affected by purely cyclical patterns,¹⁰ and the results obtained by Sheldon Danziger and Peter Gottschalk with decennial census data and with annual CPS data are consistent.¹¹ Therefore, we can be reasonably sure that patterns in the census data are due to secular trends and not merely to cyclical events. (Later, we plan to replicate our results with annual CPS data, to examine cyclical variation and to analyze trends since 1979.)

We examine wage and salary income for all those with nonzero earnings during the census year, rather than total earnings (which include wages, salaries, and self-employment income). By analyzing wages and salaries rather than total earned income, we concentrate on the consequence of employment decisions by firms. Inequality in total earnings is greater than inequality in wages and salaries, but the patterns of the two are similar.¹² There has been no marked trend in the relative importance of the two components of total earnings: wages and salaries were 90.2 percent of total earnings in 1969, 91.5 percent in 1979, and 92.6 percent in 1983.

Most studies of income inequality have used the Gini coefficient, the variance of the log of income, the coefficient of variation, or some measure based on fractiles of the income distribution. We have chosen to use a measure of inequality developed by Henri Theil, based on information theory.¹³ The measure is:

$$\begin{aligned} (1) \quad T &= 1/n \sum (Y_i/u_Y) \log (Y_i/u_Y) \\ &= 1/n \frac{\sum (Y_i \log Y_i) - (u_Y \log u_Y)}{u_Y} \end{aligned}$$

where u_Y refers to the mean of earnings Y . The second of the expressions clarifies that T is the dispersion of $Y_i \log Y_i$ around its mean, standardized by the mean. Theil's measure is scale invariant, so that it is unaffected by inflation.

It also adheres to the principle of transfers—that a measure of inequality should increase when income is transferred from a low-wage earner to a high-wage earner. The change in T for a transfer from a person with earnings Y_1 to one with earnings Y_2 can be shown to depend on $\log(Y_2/Y_1)$; thus, a transfer of \$100 from someone with an income of \$6,000 to one with an income of \$5,000 decreases T as much as a transfer of \$1,000 from someone earning \$60,000 to a person earning \$50,000. If we assume diminishing marginal utility of income, this is a desirable property. Finally, T is bounded from below by zero, when everyone has the same income; at the other extreme, when one person has all the income and the remaining $n-1$ people have none, the upper bound is $\log n$. Theil has argued that the tendency of the upper bound to increase with n is appropriate, because a society of 1,000 people in which one person has all the income is more unequal than a two-person society in which one person has all the income. If the upper bound were a problem, then Theil's T could be transformed into a measure with bounds of zero and 1 (like the Gini coefficient) by dividing through by $\log n$. However, in the distributions we examine, which are approximately log normal, the upper bound is irrelevant, and so we use the conventional T bounded by $\log n$.¹⁴

Aside from simplicity of calculation, another advantage of Theil's T is that it can be readily decomposed into terms representing variation among groups and variation within groups. For any number of mutually exclusive and exhaustive groups:

$$(2) \quad T = \sum (p_j u_j/u_Y) \log (u_j/u_Y) + \sum (p_j u_j/u_Y) T_j$$

where p_j is the proportion of individuals in the j th group, u_j is the mean income for the j th group, u_Y is the overall mean, and T_j is Theil's T for the j th group.¹⁵ The first term on the right is the among-group variation, and increases with the dispersion of average group incomes u_j around the overall mean u_Y . The second term is the within-group variation, a function of T_j 's, suitably weighted; this term can also be expanded to show the contribution of individual groups—for example, specific sectors—to overall inequality.

This decomposition makes it clear that inequality is affected by three factors: (1) The proportion of the population in different groups, particularly as there are shifts to higher (or lower) proportions in groups with greater inequality T_j , or higher proportions in groups with means u_j that are far from the overall mean u_Y . An example would be an employment shift from States near the national average to States with relatively high or low income averages. (2) Inequality within groups. As the individual T_j 's increase, overall inequality increases as well. (3) Increasing variation of the group means u_j around the overall income mean u_Y .

Changes in inequality between two years—for example, $T_{80} - T_{70}$ —can be expressed as changes in among-group inequality plus changes in within-group inequality. Such changes can be further decomposed into changes in the proportions in different groups, P_j ; changes in the dispersion of group incomes around the national mean u_j/u_Y ; and changes in the group specific inequality measured by T_j .¹⁶ However, as there are three distinct components of inequality, such an approach becomes tedious.¹⁷ To understand the causes of changing inequality, it is easier to simulate what inequality would have been if only certain changes had taken place—for example, what inequality would have been if there had been mobility among regions but the regional income distributions themselves had stayed constant.¹⁸ It is also straightforward to forecast inequality under different assumptions, such as further increases in women working (assuming male-female earnings patterns remain constant), or a continued shift from manufacturing to services.

In our analyses, there are a maximum of 2,856 groups, defined by gender, race, sector, and State. Keeping these groups separate allows us to examine all possible interactions of these four characteristics of individuals; for example, we can examine not only changes in inequality due to regional shifts, but also whether these changes are due to shifts in the sectoral composition within the region rather than changes within sectors. For each of these groups, we also calculated other commonly used measures of inequality as a check on T .¹⁹ (To compare Theil's T with other measures of the earnings distribution, an appendix presents correlation coefficients between T and various measures, calculated across the 2,856 groupings, for 1980.) The results of this check reveal that Theil's T behaves appropriately, compared to better-known measures.

One immediate finding of importance is that, contrary to results of some earlier work suggesting that inequality was stable during the 1960's and increasing during the 1970's, inequality in wages and salaries increased both during the 1960's—with Theil's T rising from 0.351 to 0.374—and again between 1970 and 1980, with T rising to 0.392. (See table 1.) Evidently, the worsening of inequality in pretax earnings has been occurring for longer than most observers have recognized, masked by changes in transfer payments and in family composition.

Patterns by gender and race

Our basic results for the four gender-race groups are presented in table 1. One obvious change between 1960 and 1980 is that women increased their rates of labor force participation; in 1960, women were 37.8 percent of the labor force in our sample, increasing to 45 percent by 1980. Over this period, the ratio of women's earnings to those of men increased slightly, from 44.9 percent to 47.7 percent. More remarkable, however, is the fact that inequality among men increased steadily, especially for nonblack

men, while inequality among women decreased somewhat. In 1960, women's earnings were considerably more unequal than those of men ($T = 0.364$ versus 0.296); by 1980, inequality was virtually identical ($T = 0.335$ for women and 0.330 for men).

Earnings patterns by race have diverged substantially between men and women. In 1960, black men earned an average of 55.5 percent as much as nonblack men. By 1980, this had increased to 68.0 percent, though this may partially reflect an increasing proportion of Hispanic men included among those considered nonblack, rather than any equalization of white and black male earnings.²⁰ For women, however, a dramatic equalization of earnings took place: while black women earned 60.5 percent as much as nonblack women in 1960, mean earnings of these two groups were essentially identical by 1980. There was also a convergence of inequality: while earnings of black women were substantially more unequal than those of other women in 1960—with a correspondingly higher proportion of low earners—these measures of inequality were essentially identical in 1980. The tendency for these racial differences to disappear for women, though definitely not for men, apparently is due to the fact that black women have managed to move out of the occupations to which they were traditionally restricted—especially as domestic workers—into a broader range of occupations similar to those of white women; in addition, the greater numbers of Hispanic women among nonblack women workers may be partly responsible.

Overall, therefore, inequality in earnings among these four gender-race groups fell between 1960 and 1980, from 0.072 to 0.064. This decrease has several sources: the slight narrowing of male-female differences; the vanishing difference between black and nonblack women; and a particular interaction—the fact that employment was increasing among women just as male-female differences were narrowing slightly. In contrast, the inequality explained by within-group variation increased from 0.279 to 0.328. Much of this was due to increasing inequality among nonblack men, but the increasing share of nonblack women with relatively high (though declining) within-group inequality also contributed substantially to increasing inequality.

The results on low earnings in table 1 are also interesting. (Low earners are defined as those whose wages and salaries are less than the Federal poverty standard for a family of three.) Although the Theil increased during this period, the proportion of low earners decreased by 2 percentage points between 1960 and 1970 (from 34.8 percent to 32.8 percent), and then increased during the 1970's to 33.8 percent. The trends in low earnings vary by race and gender. While the proportion of low earners was rather stable for nonwhite men, decreasing slightly during the 1960's and increasing during the 1970's, it fell markedly for black women (from 75.5 percent to 45.6 percent), substantially for black men (from 40.0 percent to 31.4 percent), and slightly for nonblack women (from 51.5 percent to 47.1 percent). There is, then, some convergence in the proportions of low earnings, and this helps explain

Table 1. Components of the distribution of wages and salaries by race and gender, 1960, 1970, and 1980

Year and worker category	Mean income	Ratio of mean income to total mean income	Proportion of earners	Theil's T	Portion of T accounted for by variation —		Percent of total within-group variation by worker group	Proportion low income earners in group
					Among groups	Within groups		
1960								
Total.....	\$3,599.25	1.000	1.000	0.35104	0.07225	0.27879	100.00	0.348
Men:								
Nonblack	4,741.42	1.317	.564	.25820	—	.19188	68.83	.211
Black	2,630.65	.731	.057	.26201	—	.01097	3.93	.400
Women:								
Nonblack	2,145.50	.596	.333	.34507	—	.06853	24.58	.515
Black	1,297.65	.361	.045	.45246	—	.00741	2.66	.755
1970								
Total.....	5,836.18	1.000	1.000	.37398	.07067	.30331	100.00	.328
Men:								
Nonblack	7,812.86	1.339	.533	.29072	—	.20752	68.42	.208
Black	4,922.46	.843	.049	.25444	—	.01062	3.50	.291
Women:								
Nonblack	3,476.29	5.96	3.72	.34604	—	.07664	25.27	.477
Black	2,947.94	.505	.045	.37127	—	.00853	2.81	.557
1980								
Total.....	11,641.91	1.000	1.000	.39175	.06143	.32762	100.00	.338
Men:								
Nonblack	15,678.82	1.347	.500	.32594	—	.21964	67.04	.223
Black	10,665.48	.916	.050	.30458	—	.01387	4.23	.314
Women:								
Nonblack	7,251.44	.623	.399	.33636	—	.08368	25.54	.471
Black	7,331.21	.630	.051	.32776	—	.01043	3.18	.456

the falling contribution of among-group variation to overall inequality.

In these results, racial patterns make little difference to changes in overall inequality, simply because blacks are such a small and constant proportion of the labor force. The patterns among blacks are interesting in their own right, and the convergence of earnings between black women and nonblack women is particularly striking. However, there simply are not enough blacks to affect the overall distribution of earnings substantially, and therefore increasing inequality must arise from some other source.

Another way to examine changes in inequality is to calculate a set of Theil's measures for hypothetical changes. In terms of equation (2) above, we can calculate T 's under the assumption that only the composition of the labor force p_j changes, without earnings patterns for groups changing; under the assumption that only the mean income ratios u_j/u_Y change; under the assumption that only the within-group inequality as measured by T_j changes; or under the assumption that any two of these change. Table 2 presents the results of calculating such hypothetical T 's. (Components of T that do not change are held constant at 1960 levels.) The first row indicates that changes in the racial and gender composition of the labor force would, by themselves, have caused inequality to decrease. This surprising result is linked to increases in the proportion of women working; because Theil's T is more sensitive to changes in low earnings than in high earnings, replacing high-earning nonblack men with low-earning nonblack women causes inequality to fall. However, changes in earnings means and changes in within-group inequality each caused increases in inequality, as expected. Together, changes in earnings and patterns would have increased T to 0.45, and then shifts in the composition of the labor force reduced T to its actual value, 0.392. Thus, changing patterns of earnings, rather than changes in the composition of the labor force, are responsible for the overall increase in inequality.

Based on these results, the finding of increasing inequality in wages and salaries should be qualified to reflect the differences among population groups. Increasing inequality is the most striking for nonblack men, precisely the group for which most analysis has been done, and there are also increases in inequality for black men. But for women, and especially for black women, there has been a tendency for inequality to decrease. Overall, however, gender and race explain a declining proportion of inequality, and so we must look for other explanations for the deterioration of the earnings distribution between 1960 and 1980.

Earnings patterns by region

We can examine regional sources of inequality by examining either States or the nine census regions. Table 3

Table 2. Theil's T for 1960 and 1980, and as recalculated for 1980 using hypothetical changes

Item	Base-year T	With hypothetical change in —				End-year T
		Employment shares	Earnings ratios	Within-group T 's	Earnings ratios and within-group T 's	
4 race-gender groups, 1960–80	0.351	0.298	0.404	0.399	0.450	0.392
9 census regions, 1960–80 .....	.351	.344	.350	.396	.394	.392
14 sectors:						
1960–80 .....	.351	.378	.330	.399	.370	.392
1960–70 .....	.351	.382	.314	.389	.349	.374
1970–80 .....	.374	.373	.382	.388	.396	.392
4 race-gender groups, 14 sectors, and 51 States:						
1960–80 .....	.351	.321	.368	.407	.422	.392
1960–70 .....	.351	.354	.337	.389	.374	.374
1970–80 .....	.374	.339	.403	.395	.424	.392

presents the results for census regions, which are easier to interpret than similar results by State. For 1960, very little of earnings inequality can be explained by among-region differences—only 2.4 percent of the Theil of 0.351. Furthermore, inter-region variation falls markedly by 1970 and 1980, to 0.6 percent of inequality in the latter year. When States are the units of analysis, 0.0126 of the 1960 Theil of 0.351 (or 3.6 percent) is explained by inter-State variation, again falling markedly to 0.0045 of the Theil of 0.392 (or 1.1 percent) by 1980. Thus, inequality is largely intra-regional or intra-State, rather than reflecting differences among regions or States.

The results in table 3 indicate that northern regions and the West have higher average earnings and lower inequality, but the table also confirms substantial convergence among regions in two dimensions of earnings. Mean earnings have converged; for example, regional means relative to the national mean ranged from 0.75 to 1.125 in 1960, but only from 0.869 to 1.078 by 1980. In addition, variation within regions, as measured by the regional Theil's, have also converged: in 1960, the region with the greatest inequality (East South Central) had a T of 0.407, while the region with the least inequality (the Mid-Atlantic) had a T of 0.307. By 1980, regional inequality ranged between 0.376 and 0.405. The same pattern of convergence is evident when we examine States rather than census regions: State mean incomes relative to the national mean ranged between 0.565 (Mississippi) and 1.20 (Connecticut) in 1960, but fell within the range of 0.785 (Mississippi) to 1.12 (Connecticut) in 1980²¹; the range of State T 's is 0.287 to 0.496 in 1960, but 0.345 to 0.444 in 1980. Of course, there is some stability in the ranking of mean earnings and inequality over time, for both States and census regions, but the most salient finding is simply that

States and regions are becoming more similar to each other in patterns of earnings.

With regard to the contribution of various regional changes to overall inequality, it is again clear from table 2 (row 2) that within-region inequality, rather than employment shifts among regions, is responsible for the changes between 1960 and 1980. Mobility among regions—reflected in table 3 by the relative increase in employment in the Mountain and Pacific regions, and the relative declines in the New England, Mid-Atlantic, and East North Central regions—changed inequality very little, from 0.351 to 0.344, because inequality among regions was small in 1960 in any case, and because increase in population shares occurred for both high-income and low-income States and regions. Similarly, the convergence in regional mean earnings by itself left inequality virtually unchanged (from 0.351 to 0.350). When these 1960–80 changes are examined by decade, mobility made a slightly greater contribution to increases in inequality during the 1960's and shifts in regional earnings were slightly more important in the 1970's. The increases in inequality *within* regions, however, are far more important, and account for virtually all of the increase in inequality between 1960 and 1980.

These results confirm the declining significance of region in the distribution of wage and salary income. Differences among regions and among States have narrowed considerably since 1960, and, in any event, these differences explain very little of national inequality. These results suggest that regional patterns can be ignored in the analysis of national inequality.

Contribution of sectoral shifts

Table 4 presents results for earnings in 14 economic sectors. Variation among sectors explains a more substantial fraction of overall inequality—13.7 percent in 1960 and 9.0 percent in 1980—than does variation among regions. Still, among-sector variation declines over time, both absolutely and relatively, while the contribution of within-sector inequality increases steadily. The sector that contributes the most to the increase in national inequality is the high-tech sector, simply because the numbers of workers employed in this sector increased from 2.0 percent of the labor force in 1960 to 4.7 percent in 1980; producers' services, in which there were substantial increases in employment (from 7.1 percent to 10.1 percent) and in inequality; and in health and education, where again both employment and inequality increased substantially.

Average earnings vary among sectors in well-known ways, and are lowest in consumer services and retail trade and highest in the high-tech sector and distributive services. Inequality varies among sectors as well: those sectors with relatively few low earners—high-tech, distributive services, and machinery—tend to have relatively low inequality, while agriculture, retail trade, and consumer services all

have high proportions of low earners and high levels of inequality. Contrary to the conventional image of the high-tech sector as one with great inequality because it consists of a few highly paid professionals and many poorly paid assemblers, this sector has relatively low inequality. The reason is that high-tech has only half the proportion of low earners as the average sector; the conventional depiction of this sector does not take into account the large number of jobs with very low pay in consumer services, retail trade, and agriculture.

As in the case of regions, there is evidence of some convergence among sectors in patterns of earnings. Sectoral means relative to the national average ranged from 0.510 to 1.57 in 1960, but from 0.615 to 1.38 in 1980; inequality within sectors ranged between 0.155 and 0.635 in 1960, but between 0.205 and 0.515 in 1980. Sectors are still remarkably different in 1980, of course, but this tendency toward convergence implies again that among-sector inequality is decreasing while within-sector inequality is increasing.

In fact, inequality increased between 1960 and 1980 within every sector except agriculture and consumer services. The increase was especially sharp in health and education, with much greater increases in inequality for men than for women (as is true in general, of course). The other sectors with substantial increases in inequality include construction, petrochemicals, high-tech, producers' services, and public administration—all with above-average employment of skilled workers or well-trained professionals and below-average proportions of low earners. Conversely, the two sectors with falling inequality—agriculture and consumers' services—hire a great deal of low-skilled labor, and have above-average proportions of low-wage labor. This suggests a hypothesis for subsequent examination: that changes in inequality within sectors are related to the use of highly-skilled or well-educated labor and to the wages and salaries paid these workers.

Unlike regional shifts, which explain little of the increasing inequality between 1960 and 1980, sectoral changes did have some influence on inequality. Shifts in employment among sectors—out of agricultural, nondurable manufacturing, and miscellaneous durable manufacturing to high-tech sectors, producers' services, and health and education—would, by themselves, have accounted for a substantial part of the increase in inequality between 1960 and 1980, with employment changes increasing T from 0.351 to 0.378. (See table 2, row 3.) Results for each decade are also reported in table 2, and it is clear that these sectoral shifts were particularly important in increasing inequality in the 1960's but not during the 1970's. The convergence in earnings ratios among sectors substantially reduced inequality in the 1960's but made a slight contribution to increased inequality in the 1970's. During both decades, the single most important contribution to increased total inequality was the increase

Table 3. Components of the distribution of wages and salaries by census region, 1960, 1970, and 1980

Year and region	Mean income	Ratio of mean income to total mean income	Proportion of earners	Theil's T	Portion of T accounted for by variation—		Percent of total within-group variation by worker group	Proportion low income earners in group
					Among groups	Within groups		
1960								
Total.....	\$3,599.25	1.000	1.000	0.35104	0.00837	0.34267	100.00	0.348
New England.....	3,627.53	1.008	.062	.32513	—	.02041	5.96	.315
Mid-Atlantic.....	4,008.29	1.114	.200	.30666	—	.06819	19.90	.274
East North Central.....	3,963.12	1.101	.199	.32349	—	.07099	20.72	.306
West North Central.....	3,281.81	.912	.081	.37834	—	.02808	8.20	.397
South Atlantic.....	3,072.64	.854	.144	.38289	—	.01830	13.78	.411
East South Central.....	2,683.61	.746	.060	.40658	—	.04723	5.34	.474
West South Central.....	3,057.75	.850	.089	.40576	—	.03079	8.99	.437
Mountain.....	3,426.04	.952	.038	.35962	—	.01295	3.78	.383
Pacific.....	4,047.51	1.125	.125	.32445	—	.04573	13.34	.310
1970								
Total.....	5,836.18	1.000	1.000	.37398	.00489	.36910	100.00	.328
New England.....	5,907.29	1.012	.064	.36882	—	.02373	6.43	.324
Mid-Atlantic.....	6,462.40	1.107	.187	.35083	—	.07261	19.67	.277
East North Central.....	6,244.08	1.070	.204	.35060	—	.07664	20.76	.306
West North Central.....	5,283.75	.898	.079	.40818	—	-.02896	7.85	.386
South Atlantic.....	5,321.42	.912	.148	.37583	—	.05060	13.71	.341
East South Central.....	4,771.04	.817	.057	.36759	—	.01710	4.63	.373
West South Central.....	5,119.12	.877	.088	.39980	—	.03097	8.39	.375
Mountain.....	5,285.69	.906	.040	.40173	—	.01452	3.93	.382
Pacific.....	6,317.91	1.083	.133	.37378	—	.05397	14.62	.317
1980								
Total.....	11,641.91	1.000	1.000	.39175	.00223	.38952	100.00	.338
New England.....	11,291.07	.970	.058	.39988	—	.02265	5.81	.346
Mid-Atlantic.....	12,287.30	1.055	.160	.37740	—	.06385	16.39	.314
East North Central.....	12,329.56	1.059	.188	.37581	—	.07494	19.24	.324
West North Central.....	10,730.99	.922	.077	.40010	—	.02838	7.28	.375
South Atlantic.....	10,909.50	.937	.161	.39425	—	.05946	15.26	.344
East South Central.....	10,115.75	.869	.060	.38683	—	.02001	5.14	.371
West South Central.....	11,273.63	.968	.101	.40482	—	.03968	10.19	.349
Mountain.....	11,109.09	.954	.051	.39302	—	.01906	4.89	.361
Pacific.....	12,552.53	1.078	.144	.39729	—	.06150	15.79	.324

in *within*-sector inequality. Indeed, increasing within-sector inequality by itself would have increased *T* to 0.399, and thus the convergence of average earnings (which decreases inequality) and the shifts among sectors (which increase inequality) approximately offset each other. These results illustrate how the three components of overall inequality can behave in different ways, and indicate that sectoral changes have several different, and partially offsetting, influences on inequality.

To some extent, these findings appear to justify fears about "deindustrialization": The employment shifts from manufacturing to services have made the distribution of earnings in this country more unequal, particularly between 1960 and 1970. However, a more pervasive finding is that inequality has increased within almost all sectors, especially in those with well-trained or highly educated workers.

Interactions among groups

The census data permit us to examine any combination of race, gender, region (or State), and sector and, therefore, the interactions among these groups can be examined. Table 5 presents some figures for several interactions, describing among-group and within-group sources of in-

equality between 1960 and 1980. Of course, the sources of among-group inequality are not additive. For example, according to tables 1, 3, and 4, inequality among 4 race-gender groups in 1980 was 0.064, among 9 census regions was 0.002, and among 124 sectors was 0.035, summing to 0.101—somewhat greater than the actual inequality among the 504 race-gender-region-sector groupings of 0.092.

However, the results in table 5 add little to those presented earlier. Even for the most detailed figures, describing variation among and within 2,856 groups classified by sector, State, race, and gender, among-group inequality accounted for only 24 percent (.095/.392) of overall inequality in 1980, having declined from 32.8 percent (.115/.351) in 1960. Therefore, within-group inequality is responsible for the majority of inequality and for the increases in inequality between 1960 and 1980.

These results also demonstrate that different components of change affect inequality differently. The national discussion of regional and sectoral shifts, for example, has concentrated on changes in employment, but the convergence in mean earnings—which by itself decreased inequality (in rows 2 and 4 of table 2)—along with the

increases in within-sector and within-region inequality have been less frequently mentioned. Both trends in mean incomes and in within-group inequality have increased overall inequality (row 6 of table 2), while the changing composition of employment—specifically, gender and racial changes—have decreased inequality. The causes of trends in inequality are complex, and the decomposition of Theil's *T* helps clarify these complexities.

Conclusion and future directions

These results have confirmed with detailed census data what others have found using Current Population Survey data: overall inequality in wages and salaries increased

between 1960 and 1980. However, this increase was not evenly spread throughout the population. Inequality has gone up among men (especially nonblack men), but has actually decreased among women (especially black women). Contrary to expectations, changes in the gender and racial composition of the labor force—especially the increasing proportions of women working—by themselves *decreased* earnings inequality, while changes in the earnings distributions—particularly the increasing inequality among nonblack men—more than offset these changes.

Again contrary to expectations, regional shifts explain almost none of the changing inequality. There was instead a marked convergence among regions, so that differences

Table 4. Components of the distribution of wages and salaries by sector, 1960, 1970, and 1980

Year and sector	Mean income	Ratio of mean income to total mean income	Proportion of earners	Theil's <i>T</i>	Portion of <i>T</i> accounted for by variation—		Percent of total within-group variation by worker group	Proportion low income earners in group
					Among groups	Within groups		
1960								
Total.....	\$3,599.25	1.000	1.000	0.35104	0.04815	0.30290	100.00	0.348
Agriculture.....	2,172.82	.604	.056	.63529	—	.02129	7.03	.664
Construction.....	4,164.58	1.157	.065	.24022	—	.01794	5.92	.234
Nondurable goods.....	3,535.16	.982	.116	.32200	—	.03679	12.14	.308
Petrochemicals.....	5,451.16	1.515	.026	.18114	—	.00708	2.34	.113
Machinery.....	5,143.94	1.429	.065	.15507	—	.01430	4.72	.103
Miscellaneous durable goods.....	3,737.82	1.038	.039	.27103	—	.01091	3.60	.272
Technological industries.....	5,635.63	1.566	.020	.15635	—	.00501	1.65	.093
Distributive services.....	4,746.50	1.319	.089	.16807	—	.01982	6.54	.145
Wholesale trade.....	4,652.92	1.293	.039	.30667	—	.01529	5.05	.223
Retail trade.....	2,520.24	.700	.162	.46199	—	.05234	17.28	.520
Producer services.....	4,321.93	1.201	.071	.35504	—	.03032	10.01	.272
Consumer services.....	1,834.25	.510	.097	.56801	—	.02812	9.28	.666
Health and education.....	3,257.17	.905	.107	.33803	—	.03280	10.83	.375
Public administration.....	4,496.54	1.249	.049	.17860	—	.01088	3.59	.167
1970								
Total.....	5,836.18	1.000	1.000	.37398	.03983	.33416	100.00	.328
Agriculture.....	4,154.24	.712	.035	.58555	—	.01455	4.35	.499
Construction.....	7,267.37	1.245	.057	.25873	—	.01834	5.40	.202
Nondurable goods.....	5,462.92	.936	.087	.35935	—	.02931	8.77	.301
Petrochemicals.....	7,307.31	1.252	.016	.24669	—	.00479	1.43	.175
Machinery.....	7,868.03	1.348	.078	.18418	—	.01945	5.82	.122
Miscellaneous durable goods.....	6,151.90	1.054	.037	.29600	—	.01157	3.46	.234
Technological industries.....	8,056.64	1.380	.052	.21442	—	.01546	4.63	.132
Distributive services.....	7,298.17	1.251	.077	.20110	—	.01932	5.78	.165
Wholesale trade.....	7,389.55	1.266	.042	.33400	—	.01795	5.37	.219
Retail trade.....	3,668.62	.629	.155	.52461	—	.05117	15.31	.555
Producer services.....	6,804.58	1.166	.084	.41281	—	.04025	12.05	.281
Consumer services.....	3,306.30	.567	.079	.57089	—	.02552	7.64	.598
Health and education.....	5,188.64	.889	.150	.38672	—	.05160	15.44	.375
Public administration.....	7,292.43	1.250	.051	.23428	—	.01489	4.45	.190
1980								
Total.....	11,641.91	1.000	1.000	.39175	.03537	.35638	100.00	.338
Agriculture.....	10,706.53	.920	.032	.49426	—	.01474	4.13	.388
Construction.....	13,128.93	1.128	.059	.30950	—	.02070	5.81	.259
Nondurable goods.....	11,076.20	.951	.068	.35581	—	.02290	6.43	.316
Petrochemicals.....	14,790.86	1.270	.015	.26489	—	.00489	1.37	.189
Machinery.....	15,835.04	1.360	.070	.20530	—	.01948	5.47	.144
Miscellaneous durable goods.....	11,672.99	1.003	.032	.31555	—	.01027	2.88	.272
Technological industries.....	15,921.25	1.368	.047	.23064	—	.01483	4.16	.150
Distributive services.....	16,088.10	1.382	.071	.20782	—	.02047	5.74	.155
Wholesale trade.....	14,567.88	1.251	.042	.35766	—	.01883	5.28	.232
Retail trade.....	7,305.39	.628	.169	.51489	—	.05471	15.35	.567
Producer services.....	12,809.31	1.100	.101	.42197	—	.04674	13.11	.298
Consumer services.....	7,158.82	.615	.071	.49392	—	.02146	6.02	.555
Health and education.....	10,626.20	.914	.168	.45545	—	.06997	19.63	.367
Public administration.....	13,517.81	1.161	.055	.25811	—	.01640	4.60	.223

NOTE: See text footnote 6 for detailed definitions of sectors.

among regions and therefore inequality among regions—were of diminishing importance. This finding, which holds whether we examine 9 census regions or 51 States, seems so robust that regional patterns—which are expensive to examine in terms of data requirements—can be ignored in subsequent analyses of inequality.

However, sectoral shifts—the much debated increase in services and high-tech employment at the expense of agriculture and manufacturing—were, as hypothesized, partly responsible for increasing inequality. By themselves, changes in the sectoral composition of employment accounted for almost two-thirds of the overall increase in Theil's *T* between 1960 and 1980—but these effects were augmented by even larger increases in inequality within most sectors, and offset somewhat by a tendency for mean wages and salaries among sectors to converge. Aside from indications that inequality has increased most in sectors with high skill and education levels, the results do not suggest why inequality has increased within sectors.

Our findings so far are similar to those of earlier researchers: we have eliminated some potential explanations of increasing inequality, such as regional shifts and changes in the numbers of women working, and confirmed the importance of sectoral shifts, but much of the recent increase in inequality remains unexplained. Two potential explanations merit further attention. Occupational patterns may be important, particularly because of the tantalizing finding that the sectors with the greatest increases in inequality are those with more highly skilled or highly educated workers. Changing patterns of part-time and part-year employment, which Chris Tilly, Barry Bluestone, and Bennett Harrison have cited and which Saul Schwartz found important to increasing inequality among black men,²² might explain why inequality has increased so consistently within sectors and within regions, and why it has increased for men but decreased for women.

Table 5. Sources of inequality in wage and salary income for selected labor force groupings, 1960, 1970, and 1980

Labor force group	1960		1970		1980	
	Among groups	Within groups	Among groups	Within groups	Among groups	Within groups
14 sectors by 2 gender groups ...	0.097	0.254	0.092	0.282	0.085	0.307
9 census regions by 4 race-gender groups .....	.079	.272	.075	.299	.066	.325
14 sectors by 9 census regions ..	.056	.295	.045	.329	.039	.353
14 sectors by 9 census regions by 4 race-gender groups .....	.110	.241	.101	.273	.092	.300
14 sectors by 51 States by 4 race-gender groups .....	.115	.236	.105	.269	.095	.296
Overall inequality .	.351	—	.374	—	.392	—

There is nothing in our results to diminish the importance of the issue, however. Indeed, inequality in wages and salaries has been increasing for nonblack men for longer than most observers have thought. Nothing in these results indicates that the trend of inequality will abate; to the contrary, for men (especially black men) and for several sectors (health and education, and construction), the increase in inequality was greater during the 1970's than during the 1960's. The conclusion that increasing inequality within various groups and sectors is responsible for most of the increasing inequality—rather than well-known shifts among sectors and regions and changes in the composition of the labor force—adds to the importance of further analysis, for the reasons behind within-group developments remain poorly understood. □

—FOOTNOTES—

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¹In this article, we are interested in the fundamental shifts in the economy underlying inequality, rather than with changes in household demographics and transfer programs; therefore we confine our analysis to individuals and to wages and salaries rather than total income.

²See, for example, Martin Dooley and Peter Gottschalk, "Does a Younger Male Labor Force Mean Greater Earnings Inequality?" *Monthly Labor Review*, April 1977, pp. 7–11; Martin Dooley and Peter Gottschalk, "Earning Inequality among Males in the United States: Trends and Effects of Labor Force Growth," *Journal of Political Econ-*

omy, February 1984, pp. 59–89; Peter Henle and Paul Ryscavage, "The Distribution of Earned Income Among Men and Women, 1958–1977," *Monthly Labor Review*, April 1980, pp. 3–10; Robert Plotnick, "Trends in Male Earnings Inequality," *Southern Economic Journal*, January 1982, pp. 724–732; and Saul Schwartz "Earnings Capacity and the Trend in Inequality Among Black Men," *Journal of Human Resources*, Winter 1986, pp. 44–63.

³Among other possible explanations for trends in inequality that appear to have little influence, and that we therefore do not consider here, are changes in the age and experience of at the labor force; cyclical variation in unemployment; and changes in the educational composition of the labor force. In addition to the references in footnote 2, see also Bradley Reif, "Industry and Occupation Employment Structure and Income Distribution" (Massachusetts Institute of Technology, May 1986); and Chris Tilly, Barry Bluestone, and Bennett Harrison, "What is Making American Wages More Unequal?" (Boston College, December 1986). In subsequent analyses with both Census and CPS data, we plan to consider the effects of part-time versus full-time employment and education in addition to gender and sectoral composition.

⁴Robert Kuttner, "The Declining Middle," *Atlantic Monthly*, July 1983.

⁵See Carl B. Barsky and Martin E. Personick, "Measuring wage dispersion: pay ranges reflect industry traits," *Monthly Labor Review*, April 1981, pp. 35-41.

⁶For purposes of this analysis, sectors were defined as follows:

Agriculture, forestry, fishing, and mining (010-050)

Construction (060)

Nondurable, nonchemical manufacturing: food and kindred products (100-130), textile products and apparel (132-152), paper and allied products (132-152), printing and publishing (171-172), and leather and leather products (220-222)

Chemicals, petrochemicals, and plastics: chemicals and allied products (180-192, except 181 and 192), and petroleum, coal, rubber, and plastics (200-212)

Metal, machinery (except electrical), and transportation equipment: metal industries (270-301); machinery, except electrical (310-332, except 321 and 322); and transportation equipment (351-370, except 352 and 362)

Miscellaneous durable goods: lumber, wood products, stone, glass, clay, and concrete (230-262); electrical machinery except high-tech (340-350, except 341 and 342); and miscellaneous (390-392)

Advanced technology sectors (181, 192, 321-322, 341-342, 352, 362, 371-382)

Distributive services (400-472)

Wholesale trade (500-571)

Retail trade (580-691)

Producer services: finance, insurance, and real estate and business and professional services (700-742, 881-892)

Consumer services: repair; household and personal services; and social services (750-802, 862-880)

Private-sector health and education (812-861)

Public administration (900-932)

The census codes in parentheses are taken from *Census of Population and Housing: 1980: Public Use Microdata Sample—Technical Documentation* (Bureau of the Census, March 1983), appendix H, pp. 142-48. Advanced technology sectors are based on the third definition of high-tech sectors, those that both use technology-oriented workers and have high research and development expenditures, developed in Richard W. Riche, Daniel E. Hecker, and John U. Burgan, "High technology today and tomorrow: a small slice of the employment pie," *Monthly Labor Review*, November 1983, pp. 50-58.

⁷See Riche and others, "High technology today and tomorrow."

⁸For example, James P. Smith and Finis R. Welch found convergence of the wages of black and white men between 1940 and 1980 in *Closing the Gap: Forty Years of Economic Progress for Blacks*, R-3330-DOL (Santa Monica, CA, The RAND Corporation, February 1986). Michael Reich argued that the pattern of narrowing racial differentials during the 1960's has been replaced by a growing differential for men during the 1970's in "Postwar Racial Income Differences: Trends and Theories"

(University of California at Berkeley, October 1985). For women, the convergence in average earnings between whites and blacks has been even more marked than for men, and in fact the black-white differential has almost vanished, according to James P. Smith and Michael P. Ward, *Women's Wages and Work in the Twentieth Century*, R-3119-NICHD (Santa Monica, CA, The RAND Corporation, October 1984).

⁹The census definition of Hispanics was not consistent over the years 1960, 1970, and 1980.

¹⁰See Peter Henle and Paul Ryscavage, "The distribution of earned income among men and women, 1958-77," *Monthly Labor Review*, April 1980, pp. 3-10.

¹¹See Sheldon Danziger and Peter Gottschalk, "How Have Families with Children Been Faring?" report presented to the Joint Economic Committee of the U.S. Congress, November 1985.

¹²Henle and Ryscavage, "The distribution of earned income."

¹³Henri Theil, *Economics and Information Theory* (Amsterdam, North-Holland Publishing Co., 1967).

¹⁴For comparisons of different measures of inequality, see Paul Allison, "Measures of Inequality," *American Sociological Review*, December 1978, pp. 865-80.

¹⁵See Henri Theil, *Statistical Decomposition Analysis* (Amsterdam, North-Holland Publishing Co., 1972); and Allison, "Measures of Inequality."

¹⁶For such a decomposition of the variance of log income, see Bradley Reiff, "Industry and Occupation Employment Structure and Income Distribution" (Cambridge, MA, Massachusetts Institute of Technology, May 1986).

¹⁷Because the proportions p_j and income ratios u_j/u_i enter both terms of equation (2), the decomposition of changes in T involves several complex interaction terms. This does prove to be a drawback of using Theil's T rather than the variance of the log of earnings, for which the decomposition is more tractable.

¹⁸For an application, see Theil, *Economics and Information Theory*.

¹⁹In the census data files, earnings are given in \$10 intervals, so that the problem of underestimating inequality because of ignoring inequality within large earnings intervals—as is necessary with published census data—does not arise. However, there is always an open-ended earnings group—those above \$25,000 of earnings in 1960, \$50,000 in 1970, and \$75,000 in 1980. For those very few individuals in these open-ended categories, we followed the standard procedure of fitting a Pareto distribution to the upper 30 percent of the earnings distribution to estimate the mean earnings for this group.

²⁰See Michael Reich, "Postwar Racial Income Differences."

²¹In these comparisons, we eliminate Alaska, which is an outlier with values of 1.20 in 1960 and 1.413 in 1980.

²²See Chris Tilly, Barry Bluestone, and Bennett Harrison, "What Is Making American Wages More Unequal?" unpublished paper (Boston College, December 1986); and Schwartz, "Earnings Capacity."

APPENDIX: Theil's T compared to other measures

As indicated in the text, for each gender-race-sector-State group, we calculated not only the mean and Theil's T of wages and salaries, but also other commonly used measures of inequality—the Gini coefficient and the proportions of earnings going to the bottom 5 percent and 20 percent and to the top 5 percent and 20 percent of earners as a check on T . These fractiles also allow us to calculate the fraction of earnings going to the middle 60 percent of earners—one measure of the middle of the distribution, and therefore relevant to the thesis of the "vanishing mid-

dle." In addition, we also calculate a measure of low earnings; the proportion of earners whose wages and salaries are under the Federal poverty standard for a family of three. (Over a very large number of observations the Gini coefficient is very time-consuming to calculate, and so we have not calculated Gini coefficients for the country.)

To give some sense of the magnitude of Theil's T compared to the Gini coefficient, table A-1 presents both measures for sectors in California in 1980. To compare Theil's T against other measures of the earnings dis-

Table A-1. Pearson correlation coefficients for various inequality measures, 1980

Measure	Theil's <i>T</i>	Gini coefficient	Percent low earners	Bottom 5 percent	Bottom 20 percent	Middle 60 percent	Top 20 percent	Top 5 percent
Theil's <i>T</i>	1.00000	0.96072	0.59459	-0.38677	-0.60264	-0.68233	0.71588	0.29841
Gini coefficient	—	1.00000	.58359	-.32686	-.55793	-.57601	.61353	.13654
Percent low earners	—	—	1.00000	-.40965	-.56526	-.41552	.45563	.31355
Bottom 5 percent	—	—	—	1.00000	.74437	.47081	-.27236	-.39858
Bottom 20 percent	—	—	—	—	1.00000	.57895	-.33960	-.44869
Middle 60 percent	—	—	—	—	—	1.00000	-.99429	-.92078
Top 20 percent	—	—	—	—	—	—	1.00000	.86501
California								
Agriculture .....	.429	.489	—	—	—	—	—	—
Construction .....	.297	.410	—	—	—	—	—	—
Nondurable goods .....	.318	.417	—	—	—	—	—	—
Petrochemicals .....	.247	.372	—	—	—	—	—	—
Machinery .....	.236	.361	—	—	—	—	—	—
Miscellaneous durable goods .....	.310	.414	—	—	—	—	—	—
High-technology industries .....	.181	.320	—	—	—	—	—	—
Distributive services .....	.196	.323	—	—	—	—	—	—
Wholesale trade .....	.320	.416	—	—	—	—	—	—
Retail trade .....	.415	.503	—	—	—	—	—	—
Producer services .....	.392	.465	—	—	—	—	—	—
Consumer services .....	.478	.506	—	—	—	—	—	—
Health and education .....	.534	.516	—	—	—	—	—	—
Public administration .....	.163	.279	—	—	—	—	—	—

NOTE: See text footnote 6 for detailed definition of sectors.

tribution, the table also presents correlation coefficients between *T* and various measures, calculated across the 2,856 groupings, for 1980. The correlation between *T* and the Gini coefficient is very high, at 0.96; the Spearman rank order correlation is even higher, at 0.99. Theil's *T* is correlated about equally with the proportion of earnings

held by the top and bottom tails of the earnings distribution. The correlation between *T* and the middle 60 percent of the distribution is negative, indicating that a declining middle would indeed increase inequality as measured by *T*. In sum, Theil's *T* appears to behave appropriately when compared to other measures of inequality.

Institutional barriers to employment of older workers

Social Security and private pension rules often encourage early retirement; those who wish to keep working typically face a part-time job market which provides few well-paid jobs

DIANE E. HERZ AND PHILIP L. RONES

Retirement ages have fallen steadily since World War II. Early retirement, a term often used to describe labor force withdrawal prior to age 65, has become the norm. By age 62, almost half of all men are out of the labor force (they are neither working nor looking for work), and by age 64, three-fifths are "retired" by that definition.¹

The trend toward early retirement has generally been regarded as a positive one, as it primarily reflects improvements in retirement resources—Social Security, pensions, and wealth. Some retirements, however, may not be strictly voluntary; rather, they may be in response to actual or probable job loss, or to a lack of acceptable job opportunities for older workers. These retirements may be voluntary only to the extent that leaving the labor force is the best available option. Some workers might prefer another choice—either phased retirement or a "second career" upon job loss or pension acceptance. But this choice is often not feasible because of institutional rules and job market realities. Usually, workers must choose between continued full-time employment (during which some pension benefits often are lost), part-time work for relatively low wages, or complete retirement. Given these limitations, many workers choose complete retirement.

Anticipating a dramatic decline in the ratio of workers to retirees as the baby-boom generation becomes eligible for retirement early in the next century, Federal policy has been directed toward encouraging workers to extend their worklives.² Social Security regulations have been altered to encourage later withdrawal from the labor force,

and mandatory retirement has been prohibited—regardless of age. Also, researchers are examining ways in which work schedules and environments could be designed to address the needs and desires of older persons.

At the same time that Federal efforts have been directed at extending worklives, however, an opposite and, for some workers, more dominant force has influenced retirement decisions; many employers have made early retirement possible or have liberalized options already offered in their pension plans. Such efforts may be the result of labor management negotiations, employers' desires to attract workers by offering the prospect of generous and early pensions, or employers' attempts to reduce employment by inducing older workers to retire earlier than they might have planned. Both by liberalizing provisions in their normal pension plans and by offering Early Retirement Incentive Plans (ERIP's), employers have made retirement increasingly affordable for many older workers.

This article discusses various *institutional* obstacles faced by older persons who might want to work. It is divided into three sections: (1) the impact of Social Security regulations and pension policies on work activity; (2) the market for part-time jobs; and (3) age discrimination.

Social Security

Social Security benefits are the major source of income for the elderly. In 1986, 9 of 10 nonmarried persons or married couples in which the husband was age 65 or older received some portion of their income from Social Security, and 60 percent relied on Social Security for more than half of their total income.³ Thus, changes in Social Security policies could affect the majority of older persons.

Diane E. Herz and Philip L. Rones are economists in the Division of Labor Force Statistics, Bureau of Labor Statistics. This article has been adapted from a broader report submitted to Congress in January 1989.

Researchers have examined the effects of Social Security rules on the work activity of older persons for many years. While findings are sometimes contradictory, most studies have concluded that Social Security regulations provide substantial disincentives to work at older ages. Policymakers concerned about reducing financial burdens on the Social Security system have recognized these disincentives to work; several reforms designed to encourage older persons to remain in the labor force were passed as part of the Social Security Amendments of 1983.⁴ Operations of the current program, evidence that work disincentives exist, and long-term reforms to the program and their potential effects are discussed below.

How the current program works. Social Security benefits are based on lifetime earnings in covered employment. While the process of determining benefits is complex, in general, annual earnings between 1951 and the year of eligibility for retirement first are averaged and adjusted for inflation to derive an Average Index of Monthly Earnings (AIME). A benefit formula is then applied to the AIME to determine an individual's full benefit amount—or Primary Insurance Amount (PIA). The percentage of the PIA that an individual actually receives depends on both age at retirement and current earnings, if the individual continues to work.⁵

Currently, individuals are eligible to receive full benefits (equal to 100 percent of PIA) at age 65—the “normal” retirement age as defined in the Social Security program. Reduced benefits equal to 80 percent of the PIA are available at age 62. For every month after age 62 that receipt is deferred, the 20-percent *early retirement penalty* is reduced by 0.56 percent (or 6.67 percent per year) so that the full PIA level is earned at age 65. If an individual chooses to continue working beyond age 65, he or she receives a *delayed retirement credit* of 3 percent per year. For example, a person working (and deferring Social Security receipt) to age 68 could expect to receive benefits equal to 109 percent of his or her determined PIA.

Social Security rules have been based on a longstanding policy that benefits are insurance against earnings lost due to retirement. Therefore, recipients who work may only earn up to a specified exempt amount before their Social Security benefits are reduced. Currently, Social Security recipients younger than age 65 can earn up to \$6,480, beyond which point their benefit amount is reduced by \$1 for every \$2 earned. Workers ages 65 to 70 can earn \$8,800 before benefit reductions begin. After age 70, these reductions no longer apply.

Effects on work incentives. Studies have examined how these regulations may affect the work activity of older persons. Most studies have indicated that disincentives to work do exist, but a few have not. After examining the benefit stream available to an “illustrative” worker at

various retirement ages in 1982, Gary Fields and Olivia Mitchell concluded that, although the level of benefits increased for each year of additional work, gains from additional benefits were more than offset by the smaller number of years of benefit receipt.⁶ In fact, the present value of total future benefits for a person who worked until age 68 was only 90 percent of that for a worker who retired at age 60. This “penalty” for retiring at age 68 is largely the result of the 3-percent delayed retirement credit being far below the actuarially neutral level (the level at which the value of benefits for an average worker would be the same regardless of when he or she retires). Thus, Fields and Mitchell concluded, the current system provides incentives to retire *before* age 65 rather than after. Studies by other researchers have produced similar results.⁷

The effect of the earnings test on work activity has also been widely examined. Using data from the Social Security Newly Entitled Beneficiary Survey (NBS), Howard M. Iams found that male beneficiaries in 1982 had median earnings of \$4,391—just below the \$4,400 earnings test level that year. Social Security benefit recipients ages 65 to 71, who could earn up to \$6,000 before benefits were reduced, consistently had higher earnings than recipients younger than age 65.⁸ Median earnings for men in the older group were \$5,460. In another study on the effect of the earnings test, Gary Burtless and Robert Moffitt found that workers kept post-retirement hours to the level at which total earnings equaled the exempt amount.⁹

Avoidance of earnings in excess of the exempt amount is understandable. Not only would half of any excess earnings be lost through Social Security reductions, but, in addition, all earnings would be subject to Federal, State, and local income taxes as well as Social Security withholdings. Another effect of the earnings test, although impossible to quantify, is that some persons might work “off the books” rather than pay Social Security and income taxes on their earnings.

For retirees with pension incomes, Social Security benefits, and a lifelong accumulation of savings, the earnings test is probably of little or no consequence. These workers often prefer early retirement. Some retirees may choose to work part time or part year to supplement their retirement income. For those who limit their activity so as not to exceed the exempt amount, the liberalization or elimination of the earnings test could increase their work effort. However, among the smaller group of part-timers who earn more than the exempt amount while receiving reduced benefits, work effort may actually be reduced, as they could work fewer hours without a loss in income.

What is still not clear, however, is the extent to which Social Security encourages retirement or discourages continued work. Some researchers believe that the method of calculating Social Security benefits may cause some workers to postpone retirement. Because the most recent (and

presumably highest) years of earnings are averaged in benefit computation, some researchers believe that workers may choose to work longer, replacing low earnings years with higher ones, and therefore increasing their Social Security benefit.¹⁰

Changes in the program. The Social Security Amendments of 1983 contained several long-term provisions designed to remove work disincentives. These included the following:¹¹

1. *An increase in the normal retirement age.* Beginning in the year 2000, the retirement age at which beneficiaries are eligible to receive full benefits will increase gradually from 65 to 67. The normal retirement age will remain at 67 for those reaching age 62 after 2022.

2. *An increase in the early retirement penalty.* Reduced benefits will continue to be available at age 62, but reduction factors will be revised to a maximum of 30 percent (for workers entitled at 62 when normal retirement age is 67) compared to the prior 20-percent reduction.

3. *An increase in the delayed retirement credit.* The delayed retirement credit will increase by half a percentage point every other year, from 3 percent for workers age 62 prior to 1987 to 8 percent per year for workers age 62 after 2004.

4. *A decrease in the withholding rate under the earnings test.* Beginning in 1990, the withholding rate will decrease from \$1 of every \$2 above the exempt amount for persons who attain full retirement age to \$1 of every \$3. Beginning in 2000, the age at which this occurs will increase as the normal retirement age increases.

Potential effects of the changes. Despite the fact that Social Security is an important income source for almost all older persons, most analysts believe that changes in retirement ages, as a result of the Social Security amendments, will be small. This is particularly clear when the changes are dissected. For example, while earnings above the exempt amount will be subject to a one-third offset under the new law (rather than the present one-half), those earnings will continue to be subject to Federal, State, and local taxes and Social Security withholdings. Thus, the system will still provide disincentives to exceed the exempt amount.

Alan Gustman and Thomas Steinmeier studied the potential effect of 1983 reforms and concluded that "in comparison with the previous rules, the 1983 rules, when they take full effect, should have a fairly small impact on the number of people working full time and the number retired before age 65, but at age 65 and thereafter, the percentage of individuals working full time would be noticeably increased [largely due to the scheduled increase in the delayed retirement credit] and the percentages working part time and retired would both decline."¹² Fields and Mitchell found that increasing the normal retirement age from 65 to 68 (legislation raises it to age 67) could be expected to increase average retirement age by only 1.6 months. They also found that the largest increase

(still only 3.1 months) occurred when the percentage of total benefits received at age 62 was reduced from 80 to 55 percent (the reforms only reduced the percentage to 70 percent) and the delayed retirement credit was increased to 20 percent (from the current 9 percent) at age 68.¹³

Other pensions

Retirement decisions are rarely based on Social Security benefit levels alone; they also depend, among other things, on preferences for leisure over work, on health status, and on other income sources. Although most workers can no longer be forced to retire because of their age, many other provisions in pension plans encourage workers to retire at specific ages, often well before the normal retirement age of 65 in the Social Security program.

Pension policies do not affect all workers. In fact, of those persons receiving Social Security benefits (of any type) in 1980–81, only about 57 percent of men and 31 percent of women were either receiving or expecting to receive a pension.¹⁴ For those who do receive pensions, however, plan policies greatly affect retirement decisions. And, in general, it does not take a large pension to induce workers to retire.¹⁵

Retirement provisions. While individuals are not eligible for full Social Security benefits before age 65, normal (full-benefit) retirement ages in private and governmental pension plans tend to be much lower. In recent years, retirement programs have become increasingly liberal, allowing full benefits at earlier ages. Seventy-nine percent of pension plans surveyed by the Bureau of Labor Statistics in 1983 had no minimum retirement age or provided full benefits at age 62 or earlier, up from 55 percent in 1974. And 37 percent of those plans allowed for full-benefit retirement as early as age 55, usually with 30 years of service.¹⁶

Almost all private pensions surveyed by BLS in both 1974 and 1983 permitted early retirement, although at reduced benefits. Over the 1974–83 period, however, both age and years-of-service requirements for early retirement declined. In 1983, the length of service required for early retirement (with reduced benefits) at age 55 averaged 7 years and 2 months, down from 10 years and 3 months in 1974.¹⁷

Are pensions actuarially neutral? Individuals who opt for early retirement usually receive reduced benefits. However, reduction percentages are not always actuarially neutral; the greater number of years of pension receipt (due to early retirement) often more than offset any decline in benefits. In a study of 10 pension plans surveyed in the 1978 Benefits Amounts Survey, Fields and Mitchell found that, in half of the plans, the present value of net pension benefits was greatest for workers retiring at age 60.¹⁸ Four of the 10 plans paid the highest

benefits at age 61 or 62, and the remaining plan at age 66. Similarly, Lawrence J. Kotlikoff and David A. Wise, in a study of more than 2,000 pension plans, found that plan provisions strongly discouraged work after a normal retirement age—some after an early retirement age.¹⁹ Continued work does provide additional earnings; however, the foregone pension benefits (as with deferred Social Security benefits) result in an *implicit tax* on earnings which may be as high as 100 percent.²⁰

Some pension provisions penalize continued work activity. Since passage of the Omnibus Budget Act of 1986, pension plans are no longer allowed to deny continued pension accrual for persons over age 65. Caps are still permitted, however, on years of service that may be counted toward a pension and on total benefit levels.²¹ Also, rates of accrual may be less than actuarially neutral for those who delay retirement. These provisions, in effect, reduce total compensation levels for persons who continue working after reaching either the maximum levels of credited service or pension benefits.

Combining pensions and Social Security. Not only do pension plans provide different options and retirement incentives than Social Security, but, in many cases, pension benefits are derived using a formula that accounts for Social Security benefits. Thus, changes in Social Security policy designed to alter work patterns may be undermined by the structure of pension plans.

A 1986 survey of employee benefits in medium- and large-sized firms found that 62 percent of all full-time participants in defined-benefit pension plans were in plans “integrated,” or combined in some way, with Social Security.²² Sixty-nine percent of the employees in these integrated plans had *offset* provisions; pension benefits were derived as a function of Social Security payments (usually pension levels were reduced by 50 percent of an individual’s Social Security benefit). For example, workers with expected pension benefits of \$8,000 and expected Social Security benefits of \$2,000 would actually receive pension benefits of \$7,000 [$\$8,000 - (.50 \times \$2,000)$] in addition to their \$2,000 Social Security benefit. In this way, public policy efforts to increase incentives to work by reducing benefits would be countered by a 50-percent increase in private benefits. A reduction of \$1,000 in Social Security benefits, for example, would be countered by a \$500 corresponding increase in pension benefits. Plans with *excess* formulas also recognize the structure of Social Security benefits and attempt to increase benefits to workers with higher earnings (whose Social Security benefits replace a smaller share of earnings). This is accomplished by applying higher benefit accrual percentages to earnings above a specified limit—usually equal to the Social Security taxable maximum.²³

Some retirees receive supplemental benefits to their pensions to compensate for retiring prior to eligibility for

Social Security payments. A 1984 BLS survey of pension plans found that 11 percent of all plan participants could receive supplements upon early retirement. Ten percent were eligible for supplements on top of their full benefits if they retired “normally” before age 62—when they would become eligible for reduced Social Security benefits.²⁴ These supplemental payments are often equal to or greater than the Social Security benefits they would later receive. Each of these pension provisions that integrate Social Security and pension benefits may mitigate any changes in incentives that Social Security reforms are intended to produce.

Recently, researchers have begun to compare the incentive effects of Social Security and private pension provisions on individual retirement decisions. A study by James H. Stock and David A. Wise modeled the retirement behavior of employees in one large firm and simulated the effects of changes in Social Security and of alternative pension plans. The researchers found that increases in the firm’s early retirement age dramatically reduced the number of workers retiring by age 60. In contrast, the effects of changes in Social Security rules were minimal.²⁵ Also, the researchers concluded that “Changes in Social Security provisions that would otherwise encourage workers to continue working can easily be offset by countervailing changes in the provisions of the firm’s pension plan.”

Early Retirement Incentive Plans

Early withdrawal from the labor force has expanded with the increasing use of Early Retirement Incentive Plans (ERIP’s). These plans allow workers to retire earlier than the normal terms of their pension plans would allow. Typically, ERIP’s either liberalize the requirements for pension eligibility or provide employees with richer pension benefits. Some also offer early retirees either a continuation of or improvement in medical coverage after their separation from service. ERIP’s are typically offered for only a short period, after which the normal plan rules apply.

ERIP’s, in many ways, are simply an extension of the trend toward early retirement made possible by pension plan provisions already discussed in this article. The key issue related to ERIP’s is whether they are truly voluntary: Do workers perceive turning down these offers as being a viable option? Are workers satisfied with the early retirement decision?

Two facts are critical to the discussion of ERIP’s. First, no one knows how prevalent they are. The few surveys of employers conducted to date often are not representative samples of all employers and often have low response rates; hence, the results based on data from reporting firms may not reflect the experience of all firms.

Second, and probably the most important for policy considerations, it is difficult to determine the extent of

involuntary separations resulting from these plans. A study by Phyllis H. Mutschler and others indicates that companies, workers, and unions have embraced them.²⁶ At the same time, a study conducted for the Public Policy Institute of the American Association of Retired Persons (AARP) concludes that such plans are primarily "older worker termination programs," and that neither the individuals involved nor the Nation's interests are well served by them.²⁷

The plans seem to be voluntary, given that the majority of eligible workers do not accept them. A study by Hewitt Associates indicates that, on average, about 1 in 3 workers accept ERIP's when offered.²⁸ Indeed, some companies have had far more workers accept these offers than they had expected, causing a damaging loss of experienced personnel. On the other hand, numerous lawsuits related to these plans suggest that some older workers view them as forced retirement schemes.²⁹

The Hewitt Associates' analysis of the prevalence of ERIP's is the most extensive to date. Of the 529 companies responding to their 1985 survey, a third reported that they had used *early retirement windows* (whereby the employee is given a specific period of time in which to decide whether to retire with the improved benefit package) or other types of voluntary separation plans. About 40 percent of the companies using ERIP's had offered them more than once. Plans were offered far more frequently by the larger firms than by smaller ones; over half of the companies employing 25,000 persons or more had used them. And, as mentioned, about a third of all eligible employees accepted these offers, although about 1 in 4 plans had acceptance rates of at least 75 percent.

Employees' views of such plans are difficult to interpret. The AARP report makes no mention of ERIP's as a welcome offer to many older workers who may view retirement quite positively. Yet, substantial numbers of workers welcome the opportunity to retire earlier than "normal." In a survey of workers age 40 and older, conducted for AARP by the Gallup Organization, 41 percent of all workers surveyed responded that they would be likely to accept incentive offers for early retirement.³⁰ Affirmative responses were most common among workers with high levels of income and education.

Mutschler and others studied persons who had retired from an unidentified Fortune 500 company with and without special incentives. They found that employees clearly responded to the economic incentives of the ERIP's under study—the better the retirement package, the more likely workers were to accept it.³¹ Also, there was no evidence that those accepting the offer had suffered financially as a result (which would have suggested coercion); however, the authors did express some concern over the long-term effects of inflation on the value of retirees' pensions. Other than this study, little is known about the

conditions under which workers accept ERIP's and the outcomes of their decisions.

The hazy distinction between voluntary and involuntary retirement makes analysis of this labor force issue difficult. The voluntary nature of ERIP's may not even be a static concept. An individual who had positive views about accepting an "early out" at the time of the offer may have a very negative view after the fact, or vice versa. While it certainly is possible to better quantify the use of ERIP's than has been done so far, to evaluate the effect of these programs on workers' financial and nonfinancial well-being would be far more complicated.

In summary, the incentives in Social Security and private pension policies often operate in opposite directions. It is unclear exactly what long-term effect Social Security reforms will have on the work activity of older persons; however, it is clear that private pensions have not followed Social Security's lead in encouraging later retirement. While pension policies that allow retirement well before age 65 are undoubtedly attractive to many older workers, those who might prefer to continue to work part time often do not or cannot. Some reasons for this are discussed in the next section.

The market for part-time jobs

Many observers have noted that older workers often are faced with a choice between continuing full time in a long-held job or withdrawing from the labor force; the majority reject part-time employment, which usually pays relatively low wages and provides very few benefits. Whether part-time work by older persons will become more common in the future depends on many diverse factors, including pension and Social Security regulations that determine levels of nonwage income and place restrictions on employment; the characteristics of part-time jobs; and the preference for leisure over work at older ages.

Relatively few older persons choose to work after first receiving retirement benefits, and those who do usually have very low levels of nonwage retirement income.³² However, many older men still do not seek employment despite very small pension benefit levels.³³ According to data from the Social Security New Beneficiary Survey, fewer than 1 in 4 persons was employed at all 18 months to 2 years after first receiving retired-worker benefits.³⁴ And, among those who were *not* in the labor force, 95 percent responded in the Current Population Survey that they "do not want a job now, either full or part time."³⁵

Does this low level of work activity beyond retirement mean that older persons simply do not want to work, or is it a reflection of poor employment options? While the preference for leisure over work is very strong for many older persons, it is also possible that many say they do not want to work because they see only very limited choices. As discussed previously, substantial institutional barriers—especially the Social Security earnings test—provide

strong disincentives to full-time work at later ages. And pension provisions often make continued work for one's employer unjustifiable. Older workers, then, tend to be funneled into the part-time job market, where options are frequently limited to low-paid employment. The solution, many argue, would be to expand opportunities for part-time work to include jobs that are well paid and provide nonwage benefits.³⁶

There is little doubt that part-time work done by older workers is relatively low paid. Jondrow and others, cited earlier, have found that hourly wages tend to decline about 30 to 40 percent when weekly hours are reduced from 35 to 20.³⁷ However, low pay is not necessarily evidence of age discrimination. In fact, the same researchers found that ". . . the scarcity of well-paid part-time jobs is not a matter of discrimination against older workers; such jobs are scarce throughout the economy."³⁸

A primary reason for the scarcity of well-paying part-time jobs is the high cost of such schedules to employers. Training costs, for example, are virtually identical for full- and part-time workers, as are many administrative costs. A short workweek raises the hourly costs to employers for such expenses. In contrast, jobs that generally require little training do not significantly raise the costs to employers offering part-time schedules, especially if the benefit packages are more limited than those given full-time workers. These jobs, by their nature, are usually low skilled and provide low pay.

Whether such a restrictive market for part-time jobs for older persons is the only possible scenario is still open to question. Hilda Kahne, in her book *Reconceiving Part-Time Work*, distinguishes between "New Concept" part-time work and "Old Concept" work.³⁹ The latter was described above—work at very low pay rates, often in low-wage industries, and with few benefits. The former, Kahne envisions, would be work done in the full range of industries and occupations and would generally provide prorated full-time wages and benefits. Kahne presents a convincing argument for the potential interest in such employment from the older workers' point of view; however, she does less to explain how such jobs make sense for employers, particularly those not facing labor shortages. For now, at least, it appears that such "New Concept" job market offers lag behind workers' desire for them.

As the younger population declines and the growth rate in the female labor force slows,⁴⁰ some service-sector employers are beginning to target jobs to older workers. Such employment will attract a narrow range of elderly persons, however, as it is typically part-time work with few fringe benefits. While widespread worker shortages may occur in the future,⁴¹ their effect on employment opportunities for older workers is difficult to predict, particularly in the context of today's institutional structures that strongly favor early retirement.

Age discrimination

When any group's labor market experiences are found to be inferior to another's, the issue of discrimination is a subject for discussion. However, discrimination is one of the most difficult labor market issues to identify and quantify. This is because it is difficult to discern whether between-group differences in earnings or unemployment, for example, are the result of discrimination or of real differences in productivity or labor market goals. These measurement problems have limited the amount of research conducted on age discrimination in employment. It would appear, however, that discrimination does take place in the job market—that hiring, training, and promotion decisions involving older persons are not entirely age, sex, and race neutral.

Regarding the earnings of older workers, Richard A. Wanner and Lynn McDonald, using National Longitudinal Survey (NLS) data for mature men, found that as the men in the sample aged between 1966 and 1976 (and gained tenure and experience), they had a substantial *decline* (in real terms) in earnings.⁴² This occurred during a period of sizable increases in earnings among all workers. The poor earnings performance among older workers was determined to be unrelated to any decrease that might have been associated with job changing.

The authors identified three theoretical explanations for this. First, human capital theorists in economics would attribute the lower earnings of older workers primarily to lower productivity, perhaps related to skill obsolescence and employers' reluctance to invest in the upgrading of those skills. This would seem reasonable, given the relatively short payoff time for such an investment. Second, equity theorists in sociology would argue that wages reflect not only productivity but also the workers' need for income and that declining wages at older ages describe a legitimate lifetime earnings profile. Workers' preferences for increased leisure (largely associated with declining financial need) may partly explain the earnings profiles of older workers found by Wanner and McDonald. Although their methodology accounts for reductions in the number of weeks worked, by their own admission, they may have missed some of the hours effect, such as not incorporating older workers' lower propensity to accept overtime work.

The researchers prefer a third explanation: employers assume that older workers will accept lower levels of salary increases, or fewer of them, because older persons' ability to find comparable alternative employment is quite low. Certainly, human capital theorists would agree that workers accumulate extensive firm-specific human capital for which a new employer would be unwilling to compensate them. Stephen R. McConnell, in his assessment of age discrimination, also highlights this decline in leverage for older workers brought about by their high cost of job switching.⁴³

Using the National Longitudinal survey to examine the wage decline for workers who were forced to look for a new job, David Shapiro and Stephen H. Sandell found little evidence of discrimination. In fact, they determined that about 90 percent of any loss in earnings in workers' new jobs reflected a loss of their firm-specific human capital.⁴⁴ While this is a real and important earnings loss for many workers, it cannot be said that such declines in earnings are the result of unfair practices by employers, who would not be expected to pay for skills, knowledge, or experience that are not transferable to a new job.

It is interesting to examine workers' own perceptions of discrimination. In the previously mentioned survey conducted by the Gallup Organization in 1985, a sample of workers age 40 and older was asked whether they had experienced age discrimination.⁴⁵ Only about 6 percent answered in the affirmative, mostly with the response that they had been denied a promotion or a chance for advancement because of their age. The perception of age discrimination increased with age; 4 percent of workers in their forties believed they had experienced age discrimination, compared with 10 percent of those age 63 and over. It is not clear whether the greater affirmative response for the older group represents increased discrimination with age (although it seems reasonable that this would be the case) or the greater number of years over which they could have experienced discrimination. A shortcoming of this survey, and most others, is that respondents are employed persons only; thus, those who may be unemployed or out of the labor force who have been victims of age discrimination are not included. These may be the groups of older persons who have been most affected by discriminatory employment practices.

Further insight into age bias comes from employers' perceptions of older workers. In a 1985 study, Benson Rosen and Thomas H. Jerdee found that many managers exhibited age discrimination in their personnel decisions.⁴⁶ They asked 6,000 readers of *Harvard Business Review* (most of whom were in management positions) to make management decisions in seven hypothetical cases. In half of the respondents' questionnaires, the worker in question was a younger person; in the other half, an older one. Except for the age of

the workers, the scenarios were identical. In the almost 1,600 returned survey forms, respondents consistently made different hiring, promotion, discipline, and training decisions based on the stated age of the worker in question. Yet, in a final set of questions, respondents indicated a very high level of support for nondiscriminatory business practices. Interestingly, respondents age 50 and over were consistently more supportive of the older workers than were younger respondents, from which the authors concluded that an older worker's best prospect for fair treatment appeared to be working for an older supervisor.

The above research and other similar work suggest that age discrimination exists regarding older workers' employment and advancement opportunities. Nevertheless, relatively few older workers state that they have been the victims of age discrimination. Few older workers search for a job, whereby they would be most exposed to discrimination. Also, experience on the job may provide many older workers with the skills and abilities that prevent them from being marginal employees. In addition, the promotion expectations (or desires) of some workers may decline with age, often because of the desire to stay in a "comfort zone" toward the end of a career.

WHILE RECENT Federal policy has been directed toward extending worklives, substantial disincentives to work at older ages still exist. Changes in Social Security policies designed to increase work activity will not substantially alter the structure of the Social Security system and, as a result, may have only minor impacts on the labor force behavior of older persons. In addition, any changes that do occur may be overshadowed by decreases in work activity resulting from greatly liberalized pension plan provisions.

For those persons who wish to continue working at older ages, a scarcity of well-paying, part-time jobs may limit work activity. And, for some workers, age discrimination may provide barriers to employment. As the number of young workers continues to decline, however, it is possible that employers will begin to provide more attractive work options for older persons. □

FOOTNOTES

¹The concept of retirement is more complex for women. That is because women in their fifties and sixties today often had very little work experience throughout their lives. As a result, they often do not choose a retirement age based on their own work history or pension resources. Labor force participation rates for women ages 65 and over have followed the same trend as those for men—they have declined from a high of about 11 percent in the early 1960's to about 7 percent today. Participation rates for women ages 55 to 64 have changed little over the last two decades.

²John A. Svahn and Mary Ross, "Social Security Amendments of 1983: Legislative History and Summary of Provisions," *Social Security*

Bulletin, July 1983, pp. 3–48. See *Older Americans in the Workforce: Challenges and Situations* (Washington, Bureau of National Affairs, Inc., 1987). Also see appendix: Text of the Age Discrimination in Employment Act of 1967, as amended. The 1986 amendments removed the upper limit (which had been age 70) in the law's proscription against age discrimination.

³Susan Grad, *Income of the Population 55 and Over, 1986* (Social Security Administration, 1988), Publication No. 13–11871, pp. 1, 87.

⁴Svahn and Ross, "Social Security Amendments," pp. 3–48.

⁵For a detailed explanation of how benefits are derived, see the *Social*

Security Handbook, 1988 (Social Security Administration, 1988), Publication No. 05-10135, ch. 7; see also *Social Security Bulletin, Annual Statistical Supplement, 1987* (Social Security Administration, 1987).

⁶Gary S. Fields and Olivia S. Mitchell, "Restructuring Social Security: How Will Retirement Ages Respond?" in Stephen H. Sandell, ed., *The Problem Isn't Age* (New York, Praeger Publishers, 1987), pp. 192-205.

⁷See, for example, Arden Hall and Terry R. Johnson, "The Determinants of Planned Retirement Age," *Industrial and Labor Relations Review*, January 1980, pp. 241-54; and Richard V. Burkhauser, "The Early Acceptance of Social Security: An Asset Maximization Approach," *Industrial and Labor Relations Review*, July 1980, pp. 484-92.

⁸In 1982, workers were subject to an earnings test until age 72. Currently, benefits are not reduced for earnings after age 70. See Howard M. Iams, "Jobs of Persons Working After Receiving Retired-Worker Benefits," *Social Security Bulletin*, November 1987, pp. 4-19.

⁹Gary Burtless and Robert A. Moffitt, "The Joint Choice of Retirement Age and Postretirement Hours of Work," *Journal of Labor Economics*, April 1985, pp. 209-36.

¹⁰Alan S. Blinder, Roger H. Gordon, and Donald E. Wise, "Reconsidering the Work Disincentive Effects of Social Security," *National Tax Journal*, December 1980, pp. 431-42.

¹¹Svahn and Ross, "Social Security Amendments," pp. 3-48.

¹²Alan L. Gustman and Thomas L. Steinmeier, "The 1983 Social Security Reforms and Labor Supply Adjustments of Older Individuals in the Long Run," *Journal of Labor Economics*, April 1985, pp. 237-53.

¹³Fields and Mitchell, "Restructuring," pp. 192-205.

¹⁴John R. Woods, "Retirement Age Women and Pensions: Findings From the New Beneficiary Survey," *Social Security Bulletin*, December 1988, pp. 5-16.

¹⁵See Scott H. Beck, "Determinants of Labor Force Activity Among Retired Men," *Research on Aging*, June 1985, pp. 251-80.

¹⁶Donald Bell and William Marclay, "Trends in retirement eligibility and pension benefits, 1974-83," *Monthly Labor Review*, April 1987, pp. 18-25.

¹⁷*Ibid.*, p. 19.

¹⁸Gary S. Fields and Olivia S. Mitchell, *Retirement, Pensions, and Social Security* (Cambridge, MA, The MIT Press, 1984), pp. 33-51.

¹⁹Laurence J. Kotlikoff and David A. Wise, *The Incentive Effects of Private Pension Plans* (Cambridge, MA, National Bureau of Economic Research, Inc., 1984), Working Paper Series 1510.

²⁰Laurence J. Kotlikoff and David A. Wise, *Employee Retirement and a Firm's Pension Plan* (Cambridge, MA, National Bureau of Economic Research, Inc., 1987), Working Paper Series, 2323.

²¹Patricia M. Moore, "Age-Related Changes in Retirement Policies and Plans," *Compensation and Benefits Management*, Spring 1988, pp. 217-20.

²²*Employee Benefits in Medium and Large Firms, 1986*, Bulletin 2281 (Bureau of Labor Statistics, 1987), pp. 53-76.

²³Donald Bell and Diane Hill, "How Social Security Payments Affect Private Pensions," *Monthly Labor Review*, May 1984, pp. 15-20.

²⁴Bell and Marclay, "Trends in retirement eligibility," p. 24.

²⁵James H. Stock and David A. Wise, *The Pension Inducement to Retire: An Option Value Analysis* (Cambridge, MA, National Bureau of Economic Research, Inc., 1988), Working Paper Series, 2660.

²⁶Phyllis H. Mutschler, James H. Schultz, and Thomas D. Leavitt, *What Price Retirement?: A Study of Early Retirement Incentive Programs* (Washington, American Association of Retired Persons, 1984).

²⁷Elizabeth L. Meier, *Early Retirement Incentive Programs: Trends and Implications* (Washington, American Association of Retired Persons, Andrus Foundation, 1984).

²⁸Hewitt Associates, *Plan Design and Experience in Early Retirement Windows and Other Voluntary Separation Plans* (Lincolnshire, IL, Hewitt Associates, 1986).

²⁹Raymond C. Fay, *The ADEA and Early Retirement Incentives*, (Washington, Law Offices of Bell, Boyd, and Lloyd, undated).

³⁰American Association of Retired Persons, *Work and Retirement: Employees Over 40 and Their Views* (Washington, American Association of Retired Persons, 1986).

³¹Mutschler and others, "What Price Retirement?"

³²See Stephen R. McConnell and others, *Alternative Work Options for Older Workers: A Feasibility Study* (Los Angeles, CA, The Ethel Andrus Gerontology Center, 1980).

³³Beck, "Determinants of Labor Force Activity," p. 276.

³⁴Howard M. Iams, "Jobs of Persons Working After Receiving Retired-Worker Benefits," *Social Security Bulletin*, November 1987, pp. 4-19.

³⁵The Current Population Survey (CPS) is a monthly survey of about 55,000 households conducted by the Bureau of the Census for the Bureau of Labor Statistics.

³⁶See McConnell and others, *Alternative Work Options*; also see Hilda Kahne, *Reconceiving Part-Time Work: New Perspectives for Older Workers and Women* (Totowa, NJ, Rowman & Allanheld, 1985).

³⁷Jim Jondrow, Frank Brechling, and Alan Marcus, "Older Workers in the Market for Part-Time Employment," in Steven H. Sandell, ed., *The Problem Isn't Age* (New York, Praeger Publishers, 1987), pp. 84-99.

³⁸*Ibid.*, p. 96.

³⁹Kahne, *Reconceiving Part-Time Work*.

⁴⁰See Howard N Fullerton, Jr., "Labor force projections: 1986 to 2000," *Monthly Labor Review*, September 1987, pp. 19-29.

⁴¹See, for example, Lawrence Olson, Christopher Caton, and Martin Duffy, *The Elderly and the Future Economy* (Lexington, MA, Lexington Books, 1981).

⁴²The National Longitudinal Survey of Labor Market Experience (NLS), a survey of several cohorts conducted by the Ohio State University, was specifically designed to measure many of the labor market problems experienced by older workers. The mature men's cohort was first interviewed in 1966, when respondents were ages 45 to 59. See Richard A. Wanner and Lynn McDonald, "Ageism in the Labor Market: Estimating Earnings Discrimination Against Older Workers," *Journal of Gerontology*, Vol. 38, No. 6, pp. 738-44.

⁴³Stephen R. McConnell, "Age Discrimination in Employment," in Herbert S. Parnes, ed., *Policy Issues in Work and Retirement* (Kalamazoo, MI, W. E. Upjohn Institute for Employment Research, 1983).

⁴⁴David Shapiro and Steven H. Sandell, "Age Discrimination in Wages and Displaced Older Men," *Southern Economic Journal*, July 1985, pp. 90-102.

⁴⁵American Association of Retired Persons, *Work and Retirement*.

⁴⁶Benson Rosen and Thomas H. Jerdee, *Older Employees: New Roles for Valued Resources* (Homewood, IL, Dow Jones-Irwin, 1985).

Unemployment insurance in the United States and Europe, 1973–83

In general, comparisons show rising costs, changes in eligibility and benefits, possible disincentives to work, and low replacement ratios for the unemployed; some industrial countries have altered their unemployment insurance provisions with these problems in mind

BEATRICE G. REUBENS

The unemployment insurance systems of Western European countries have been subjected to recent strong pressures because of higher unemployment rates and prolonged spells of unemployment. There has been concern that traditional unemployment insurance programs may not be able to cope with the current composition of unemployment. This has led to the search for new approaches in some countries and efforts to curtail expenditures in others.

This article compares the unemployment insurance programs of the United States and five western European countries—Austria, France, Germany, Great Britain, and Sweden. It discusses, among other subjects, the cost of the program, financing, the number of persons receiving benefits, benefit levels, and replacement ratios. In addition, the article outlines the steps taken by the countries to curtail rising unemployment insurance costs, reports the diverse views on the effects of unemployment insurance benefits on work incentives, and raises some questions for which additional research is needed. This study covers the 1973–83 period; two Organization for Economic Cooperation and Development (OECD) studies for other years are briefly discussed for comparison purposes.

Beatrice G. Reubens, formerly a senior research associate at the Conservation of Human Resources, Columbia University, is an international economic consultant.

Background

Unemployment rates in most Western European countries were considerably lower than those in the United States through the 1950's and 1960's, rising with the onset of the oil crisis in 1973, dropping slightly for a few years, then increasing sharply in the early 1980's, and remaining at high levels. While the U.S. unemployment rate has dropped since 1983, few European countries have shown much improvement. Along with the rise in unemployment rates, the average duration of unemployment also increased, although less in the United States than in most Western European countries. European employment has grown slowly since 1975, in contrast with substantial U.S. employment growth.

The composition of unemployment also has changed, especially when compared with the pre-World War II period when male heads of household constituted the bulk of the labor force and were the focus of social concern. Structural unemployment, with its adverse effects on older workers, has reached new proportions in Europe, often overshadowing cyclical and frictional unemployment. Professional, white-collar, and skilled unemployment also has increased. Furthermore, unemployment has risen for young people, women, and a markedly enlarged minority population—groups given scant attention when unemployment insurance programs were first designed.¹

Growth of unemployment insurance costs

Unemployment insurance costs rose more sharply in the 1970's than in the 1960's. An OECD study of unemployment insurance costs in seven countries—the United States, Japan, Germany, Canada, France, Italy, and the United Kingdom—found that, on average, expenditures (in 1975 prices) almost doubled during the 1960's and more than tripled in the 1970's. When the timespan was divided into four periods (1960–64; 1965–69; 1970–74; and 1975–79), France, Germany, the United Kingdom, and the United States showed more periods with increases than with decreases in the average annual growth of unemployment insurance expenditures. Three of these four countries experienced their highest rate of increase between 1970 and 1975; only the United Kingdom had its greatest rise between 1965 and 1970.² Another OECD analysis for the 1960–75 period showed an average increase of 180 percent in unemployment insurance expenditures (in constant prices) in the same seven countries.³

The 180-percent increase found in the OECD study for 1960–75 was exceeded in the six countries studied in this article during the period 1973–82. Four of the five European countries experienced greater cost increases (in 1973 prices) than did the United States, and all exceeded the United States in 1982 prices. Measured by the increase in expenditures per recipient (in 1973 prices), Austria led, followed by Germany, Sweden, and the United States. Only Great Britain spent less in 1982 per recipient than it had in 1973 (in 1973 prices). The relatively low position of the United States in regard to expenditures reflects its more favorable unemployment record, but the per beneficiary amounts also reflect a less generous approach than in four of five European countries. (See table 1.)

By 1982, unemployment insurance expenditures as a percentage of the gross national product, while modest, were at least 2 to 3 times the 1973 level in four of the six countries; the rise was even greater in France and Germany. (See table 2.) In one OECD seven-country study, it was found that the average rise in unemployment insurance expenditures as a share of gross domestic product (in 1975 prices) was greater in the 1970's than in the 1960's.⁴

In four of the six countries, unemployment insurance as a percentage of total expenditures on all public measures related to employment and training, including unemployment benefits and allowances, rose considerably from 1973 to 1982. (See table 2.) In the United States, "passive" unemployment benefits dominate "active" training and employment programs, while the reverse is true of Sweden and Great Britain. Sweden has emphasized active labor market programs that foster the adaptability and mobility of the labor force and improve the position of disadvantaged groups, areas, and industries, rather than unemployment insurance and other passive income replacement.⁵

Table 1. Indexes of change in expenditures for unemployment insurance benefits over the 1973–82 period, six countries

[1973=100]

Country	1982 prices	1973 prices (constant)	
	Total	Total	Per recipient
Austria	681	401	343
France	2,567	968	—
Germany	1,292	861	143
Great Britain	852	245	51
Sweden ¹	786	333	³ 121
United States ²	543	278	104

¹Data are for 1974–83.

²Includes programs for special groups (railroad workers, for example). Data for the United States have been computed according to the definitions of unemployment insurance programs adopted for the six-country study by the International Institute of Management. Results may not fully agree with data published on unemployment compensation in the United States.

³Calculated from annual average daily benefits.

NOTE: Dash indicates data not available.

SOURCE: Gert Bruche, *The Financing of Labour Market Policy in Austria* (Berlin, International Institute of Management, 1984), tables 1–3; Gert Bruche, *The Financing of Labour Market Policy in France* (Berlin, International Institute of Management, 1984), tables 1–2; Gert Bruche and Bernd Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany* (Berlin, International Institute of Management, 1985), tables 1, 2, and 5; Bernd Reissert, *The Financing of Labour Market Policy in Great Britain* (Berlin, International Institute of Management, 1985), tables 2–5, and 16; Günther Schmid, *The Financing of Labour Market Policy in Sweden* (Berlin, International Institute of Management, 1984), tables 1, 3, and 4; Eskil Wadensjö, *The Financial Effects of Unemployment and Labour Market Policy Programs for Public Authorities in Sweden* (Berlin, International Institute of Management, 1985), table A6; Bernd Reissert, *The Financing of Labour Market Policy in the USA* (Berlin, International Institute of Management, 1985), tables 1, 5, and 7; and the author's own calculations.

Unemployment insurance expenditures (in 1975 prices) generally increased as a percentage of total expenditures on income maintenance measures, according to one OECD seven-country study. However, the share of expenditures remained lower in Western Europe, mainly because of the commitment to a more complex set of additional income maintenance programs with higher benefits than are found in North America. Thus, Canada spent between 8.43 and 17.35 percent of its income maintenance budget on unemployment insurance benefits during the four 5-year periods of 1960–80, followed by the United States, with 4.81 to 9.92 percent. France, Germany, and the United Kingdom spent under 5 percent, and Italy, under 2 percent.⁶

Why costs rose. Expenditures on unemployment insurance benefits change because of changes in (1) the levels, composition, and duration of unemployment; (2) the size of the labor force and the share covered by unemployment insurance; (3) coverage and eligibility rules and benefits; and (4) family circumstances and previous earnings of unemployed persons. The effects of these factors vary over time and by country.

The OECD analysis of seven large countries for the period 1960–75 established that improvements in real benefit levels were the most important factor contributing to the increase in unemployment insurance expenditures. The study noted that changes in the numbers covered by unemployment insurance (growth of population, labor

force, and unemployment) also strongly affected expenditures, but found no influence from changes in eligibility for benefits.⁷

Another OECD study of the same countries (France, Germany, the United Kingdom, the United States, Canada, Italy, and Japan) for the period 1960 to 1980 found that benefits grew moderately and in line with wages in the 1960's, except in Italy. After the oil crisis of 1973, the growth of benefits accelerated, exceeding that of wages. The growth slowed at the end of the 1970's, when benefits dropped in real value in five of the countries, but not in Japan and France. The OECD study also found that the ratio of unemployment insurance recipients to total unemployed, after dropping slightly in the latter half of the 1960's, except in Japan, rose sharply in the first half of the 1970's, except in Germany, and then dropped again in the late 1970's to early 1960's levels or below.

The following general points also emerged regarding unemployment insurance expenditures trends:

- The behavior of individual factors has not been constant over the period, and the contribution of each to unemployment insurance expenditures has changed.
- Certain factors, such as the number of beneficiaries, are more affected than others by changes in the level of economic activity. Important lags in effect also occur.
- Cyclical influences and long-term trends tend to interact so that the influence of the underlying factors changes over time.
- The slowdown in annual growth rates of unemployment insurance expenditures noticed in 1979–80 has been reversed by the rise in unemployment since 1981.

But the tightening of eligibility and payment criteria and slow or negative growth in the real value of benefits are containing expenditures.

- Besides the unemployment rate, discretionary policy changes are of the greatest importance in explaining expenditure trends.⁸

Studies of individual countries, especially Germany, add to the picture, but do not contradict the above general findings.⁹

Policy responses

In the first half of the 1980's, many European countries and American States contained the growth in unemployment insurance costs through tightened eligibility criteria, little or negative growth in the amount and duration of benefits, and restructured programs to limit the unemployment insurance portion of total income replacement programs for the unemployed.¹⁰ These actions were tied to the efforts of nations to cover rising unemployment insurance costs without excessive demands on financing sources.

The main methods of augmenting the funds available to unemployment insurance systems are: increased contributions from employers and workers; special assessments; use of income from reserve funds; drawing down reserve funds; borrowing; and an increased share of costs shifted to the government. The five European countries studied resorted to increased contribution rates. (See table 3.) Nevertheless, after 1973, the total intake from employer and employee contributions formed a declining share of unemployment insurance expenditures in Austria and Germany. France had a fluctuating share, while Sweden balanced a relative decrease in the share of direct employer contributions with a large rise in the share of employer indirect contributions. No calculation was made for Great Britain or the United States.¹¹ Further increases in payroll taxes to support unemployment insurance would be unpopular in most European countries and are feared as an impediment to employment growth.

When deficits continue despite these measures, governments provide subsidies, required by law in most cases. Governments also assume certain costs, such as all or part of administrative costs or continuation of contributions to old age, health, and other insurance on behalf of unemployment insurance recipients. From 1973 to 1982, the government's share of expenditures was highest in Sweden and lowest in Austria; the United States ranked fourth. (See table 4.) The government's share decreased in Austria over the 1973–82 period, increased steadily in the United States, and fluctuated in the other countries.¹²

In most countries, government funding offers only limited relief. Restraints on expenditures appear to have been the main recourse. In the United States, the Federal Treasury loaned \$11.8 billion to State unemployment insur-

Table 2. Expenditures for unemployment insurance benefits as a percentage of gross national product and of unemployment, employment, and other labor market programs, six countries, 1973–82

Country	Unemployment, insurance benefits as a percentage of —					
	1973	1982	1973	1975	1980	1982
Austria .....	.15	.43	37.0	38.8	39.1	43.4
France .....	.20	1.40	18.6	34.2	40.8	41.4
Germany ¹ .....	.15	1.13	20.4	43.0	36.8	47.0
Great Britain .....	.25	.56	² 34.1	³ 36.7	⁴ 30.9	⁵ 21.7
Sweden ⁶	⁷ 3.30	⁸ 9.90	⁷ 15.1	13.8	13.8	24.0
United States ⁹ .....	.35	.81	42.1	70.2	55.2	69.6

¹Excludes special Federal Government labor market programs and State and local measures.

²For budget year 1974–75.

³For budget year 1975–76.

⁴For budget year 1980–81.

⁵For budget year 1982–83.

⁶Excludes regional development and industrial policy programs.

⁷Data are for 1974.

⁸Data are for 1983.

⁹Includes programs for special groups (railroad workers, for example). Data for the United States have been computed according to the definitions of unemployment insurance programs adopted for the six-country study by the International Institute of Management. Results may not fully agree with data produced on unemployment compensation in the United States.

NOTE: For sources, see table 1.

Table 3. Rates of contribution to unemployment insurance by employers and employees, six countries, 1973-84

Country	Employer (Percent of eligible payroll)				Employee (Percent of eligible earnings)			
	1973	1975	1979	1984	1973	1975	1979	1984
Austria ¹	1.00	1.00	1.05	2.20	1.00	1.00	1.05	2.20
France ² .....	.56	1.92	2.76	4.08	.14	.48	0.84	1.72
Germany ¹ .....	.85	1.00	1.50	2.30	.85	1.00	1.50	2.30
Great Britain ³	—	8.50	10.00	10.45	—	5.50	6.50	9.00
Sweden	—	4.40	4.40	41.3	(⁵)	(⁵)	(⁵)	(⁵)
United States	(⁶)	(⁶)	(⁶)	(⁶)	(⁷)	(⁷)	(⁷)	(⁷)

¹Contributions are for active labor market programs, as well as for unemployment insurance and unemployment allowance programs.

²Rates as of the end of the year.

³Includes contributions for all social insurance programs (old age, health, disability, and maternity, for example).

⁴Includes contributions for unemployment insurance and allowances. Data are for 1974 to 1982. From 1973 forward, data include tax for labor market training, previously under a separate payroll tax.

⁵Rates vary among funds.

⁶Tax varies among States.

⁷Most States do not tax employees.

NOTE: Dash indicates data not available.

SOURCE: See table 1.

ance trust funds following the 1981-82 recession. According to a recent General Accounting Office report, pressure by the Federal Government for repayment of the loans led to a tightening of eligibility requirements and/or a cutting of benefits in 44 States. Since 1976, the report declares, no more than two States in any given year have had sufficient funds to cope with a recession without seeking Federal assistance. The report expressed concern that, in the event of another recession, State unemployment insurance systems would lack the financial resources to "stabilize the economy and mitigate the effects of income loss suffered by the unemployed." These and other issues pertaining to the goals and functions of unemployment insurance are under discussion in many industrialized nations and their international organizations.

Because of sluggish employment growth, some European nations have extended the duration of unemployment benefits and instituted early retirement pensions for older workers, despite the increased costs. In addition, European countries have initiated programs that utilize unemployment insurance benefit monies to support employment-related activities beyond the job search. There are three major innovative uses of unemployment funds: (1) to compensate individuals working in regular jobs but on organized and approved short-time work, as in West Germany; (2) to permit fully unemployed persons already receiving unemployment benefits to continue to do so while undertaking an activity (such as training or education) to improve their labor market position, or even while establishing a business as an entrepreneur; and (3) to support particular programs, such as early retirement, public training courses or allowances, private firm on-the-job training, or temporary employment, as well as give

employment subsidies to employers who hire unemployment benefit recipients. The rationale for funding such innovations is the presumed reduction of compensable unemployment that follows.

How many receive benefits?

The proportion of the labor force covered by unemployment insurance systems has increased steadily since World War II.¹³ However, the percentage of unemployed persons receiving unemployment benefits is smaller than the share of the labor force covered by unemployment insurance programs. This occurs, in part, because those most likely to become unemployed have lower rates of unemployment insurance coverage and also because covered workers either fail to meet eligibility requirements or exhaust their benefits. The proportion of the unemployed receiving unemployment insurance benefits rose in many countries from 1973 to 1975, and then declined. In Austria, Germany, and Great Britain, the proportion of the labor force covered by unemployment insurance was lower in 1983 than in 1973, reflecting not only the further rise in unemployment in the 1980's, but also the tightening of eligibility requirements. (See table 5.) This downward trend, not fully revealed by the 1983 data, contrasts with the 1973-75 period when the proportion of unemployed workers receiving benefits rose because many

Table 4. Government share of unemployment insurance expenditures over the 1973-82 period, six countries
[In percent]

Country	1973	1975	1979	1980	1982
Austria ¹	8.4	6.1	26.6	6.5	4.9
France	29.1	24.8	39.6	25.8	34.9
Germany ¹	0	40.8	0	8.5	21.0
Great Britain ⁴	14.0	15.0	18.0	18.0	13.0
Sweden	73.5	59.8	50.9	54.4	54.0
United States ⁵	7.0	15.0	11.0	17.0	18.0

¹Expenditures are for active labor market programs as well as unemployment benefits and unemployment allowances.

²Data are for 1977.

³Data for 1979 and after are not entirely comparable to those for earlier years.

⁴Includes expenditures for all social insurance programs (old age, health, disability, maternity, for example). Unemployment insurance accounted for 4 to 10 percent of all expenditures during the 1973-84 period.

⁵From 1975 forward, excludes part of government subsidy drawn from tax on employers imposed in 1974.

⁶Includes advances from general fund for unemployment insurance trust fund expenditures on special groups (railroad workers, for example), and supplemental programs.

SOURCES: Robert A. Hart, *Unemployment Insurance and the Firm's Employment Strategy: A European and United States Comparison* (Berlin, International Institute of Management, 1982), table 1; Axel Mittelstädt, *Unemployment Benefits and Related Payments in Seven Major Countries* (Paris, OECD Economic Outlook, Occasional Studies, July 1975), table 2; Saul J. Blaustein and Isabel Craig, *An International Review of Unemployment Insurance Schemes* (Kalamazoo, MI, The W. E. Upjohn Institute for Employment, 1977), table 9; Gert Bruche, *The Financing of Labour Market Policy in Austria*, tables 4, 7; Gert Bruche, *The Financing of Labour Market Policy in France*, tables 4, 5; Gert Bruche, *French Unemployment Insurance* (Berlin, International Institute of Management, 1982), table 1; Gert Bruche and Bernd Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany*, tables 5, 6, 12; Günther Schmid, *The Financing of Labour Market Policy in Sweden*, pp. 20-23, table 7; Eskil Wadensjö, *The Financial Effect of Unemployment and Labour Market Policy Programs for Public Authorities in Sweden*, table A2; Bernd Reissert, *The Financing of Labour Market Policy in the USA*, table 3; and the author's own calculations.

long-term employed persons became unemployed and because of policy changes in unemployment insurance, including extended coverage, new programs, and easing of eligibility rules.

Whether the reduced share of unemployed workers receiving unemployment insurance benefits represents a deterioration in their economic position depends on the available alternative sources of income. Most Western European countries have a national unemployment allowance program which makes payments to unemployed workers who have exhausted their unemployment insurance benefits or who do not qualify for such benefits. Usually, means-tested unemployment allowances may be paid for a stipulated period, or indefinitely, if employment is not obtained. In addition, the safety net includes a local government social welfare payment for which some unemployed persons qualify.

In Britain, between 1973 and 1983, the balance shifted from unemployment insurance to supplementary benefits—the national, means-tested program for all low income persons. During the same period, the proportion of the unemployed who received neither unemployment insurance nor supplementary benefits shrank from almost 25 percent to 12.7 percent.¹⁴

The decline in the proportion of British unemployed workers without benefits from any national income replacement program is a sign of progress. Also, the shift from unemployment insurance to supplementary benefits is not necessarily an adverse condition. A 1978 study of a cohort of unemployed men found that family income re-

placement rates of men receiving supplementary benefits only were very close to those of men receiving unemployment insurance only.¹⁵ However, earned unemployment insurance benefits may yield higher psychic benefits than means-tested supplementary benefits.

Germany showed a less favorable trend, although the proportion of the unemployed on unemployment insurance was higher than in Britain. From 1973 to 1983, the proportion of the unemployed receiving unemployment allowances climbed from 8 to 21 percent. Unlike the British case, the maximum German unemployment allowance payment is set at 10 percent below unemployment insurance benefits. Many workers on unemployment allowances receive less than the statutory maximum because other resources, such as a spouse's earnings, reduce the allowance. In April 1983, about one-third of Germany's unemployment allowance recipients were on reduced payments.

Throughout the decade, about one-third of registered German unemployed workers received neither unemployment insurance nor unemployment allowance benefits.¹⁶ The number of unemployed recipients of public assistance grew dramatically in industrial cities in response to the restrictions placed on both unemployment insurance and unemployment allowances. The burden on localities in aiding the unemployed rose markedly after 1978.¹⁷

A stable percentage of unemployed workers without income provision implies a worse absolute position in the face of rising unemployment totals. Even in Britain, the absolute number of unemployed without income provi-

Table 5. Number receiving unemployment insurance benefits and percent of unemployed receiving unemployment benefits, six countries, 1973–1983 (monthly average)
(Numbers in thousands)

Persons receiving benefits by country	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Austria:											
Number.....	34	—	35	—	33	—	—	35	—	67	75
Percent.....	81.3	—	68.5	—	61.5	—	—	65.7	—	63.5	59.2
France:											
Number.....	128	152	225	—	—	—	—	—	—	—	—
Percent.....	32.4	30.5	35.4	—	—	—	—	—	—	—	—
Germany:											
Number.....	154	352	707	615	557	516	448	454	698	926	1,014
Percent.....	56	60	66	58	54	55	51	51	55	51	45
Great Britain:¹											
Number.....	210	292	553	—	589	517	494	984	—	1,013	938
Percent.....	39.2	44.6	49.0	—	41.8	40.6	40.6	49.5	—	33.9	31.2
Sweden:²											
Number.....	—	8,625	8,718	8,128	8,161	10,597	11,036	10,666	14,485	20,018	23,594
Percent.....	—	41	50	47	42	45	48	47	52	56	60
United States:³											
Number.....	1,793	2,558	6,116	4,974	3,683	2,686	2,592	3,837	3,410	4,795	4,660
Percent.....	41.1	49.6	77.1	67.2	52.7	43.3	42.2	50.2	41.2	44.9	43.5

¹Data relate to November of each year.

²Number of persons not available. Data are annual total days of unemployment and percent of days compensated by unemployment insurance benefits.

³Includes all unemployment insurance programs.

NOTE: Dashes indicate data not available.

SOURCES: Gert Bruche, *The Financing of Labour Market Policy in Austria* (Berlin, International Institute of Management, 1984), table 3; *Unemployment Compen-*

sation and Related Employment Policy Measures in France (Paris, Organization for Economic Cooperation and Development, 1976), table 6; Gert Bruche and Bernd Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany* (Berlin, International Institute of Management, 1985), table 2; Bernd Reissert, *The Financing of Labour Market Policy in Great Britain* (Berlin, International Institute of Management, 1985), table 1; Eskil Wadensjö, *The Financial Effects of Unemployment and Labour Market Policy Programs for Public Authorities in Sweden* (Berlin, International Institute of Management, 1985), table 3; Bernd Reissert, *The Financing of Labour Market Policy in the USA* (Berlin, International Institute of Management, 1985), table 5; and the author's own calculations.

sion tripled (128,000 to 383,000) between 1973 and 1983, despite a reduced share of unprotected workers.¹⁸

Austrian data, while not entirely reliable, show a stable trend since 1975 in the proportion of unemployed workers with neither unemployment insurance nor unemployment allowance benefits. After 1973, the proportion of unemployed in neither program rose from less than 10 percent to about 25 percent.¹⁹

The proportion of the Swedish unemployed workers covered by unemployment insurance funds (for the most part, the funds are organized by trade unions) has risen dramatically over the years, especially among women. In 1963, one-third of men age 16 to 74 were covered; by 1982 the proportion had risen to 60 percent. For women, the proportion increased from 7 percent in 1963 to 50 percent by 1982.²⁰ During the period 1974–84, it is estimated that the proportion of Swedish unemployed workers who received benefits from unemployment insurance funds rose from 41 percent to 69 percent, while the proportion receiving the government's unemployment insurance benefit, payable to eligible nonmembers of funds, increased from 10 to 18 percent. This left 13 percent of the unemployed dependent on the social welfare payments of local governments in 1984, down from one-half in 1974. Unemployed persons whose unemployment insurance or allowance has expired have the right to publicly created jobs; through these jobs, they acquire unemployment insurance eligibility once more. These "transitional measures," introduced in the 1970's and made a legal right in the 1980's, are credited with producing the much smaller proportion of long-term unemployed workers in Sweden than is found in other western European countries.²¹

The evidence for Great Britain, Sweden, and the United States indicates that for much of the 1973–83 period, fewer than half of the unemployed received unemployment insurance benefits. (See table 5.) In the United States, according to a recent General Accounting Office report, only 32 percent of unemployed civilian workers received unemployment benefits in 1986, compared to 55 percent in 1952. At the same time, it is not well established how levels of payment from unemployment allowance and local welfare programs compare with unemployment benefits.

Replacement ratios

How well off are those on unemployment insurance compared with their own earnings from full-time work? The definition and computation of appropriate replacement ratios are complex, especially for comparative purposes. The first comparative efforts simply measured the percentage of average weekly earnings replaced by average weekly unemployment insurance benefits. More recently, a comprehensive concept of replacement ratios takes account of both net losses and net additions of in-

come from all sources while unemployed. For example, net unemployment insurance benefits may drop if recipients are liable for income tax, Social Security contributions, or other charges. However, the unemployed may receive assistance from other social programs, in addition to basic unemployment insurance. Net unemployment insurance benefits also may vary by family size. In some countries, benefit levels differ by region and occupational group. These and other factors can significantly affect the calculation of the replacement ratio.

The United Nations Economic Commission for Europe examined replacement ratios from 1972 to 1982 in 17 European countries, Canada, and the United States. The results show that:

- Unemployment insurance benefits usually were lower than previous take-home pay from employment in all countries over the entire period.
- The replacement ratios varied significantly among countries, with average income losses during unemployment ranging from 8 percent to more than 50 percent.
- The percentage income loss was greater for a single man than for a married man in most countries, except Austria, Denmark, Norway, Switzerland, Spain, and the United States.
- Replacement ratios for the majority of countries remained unchanged or fell between 1972 and 1982, but rose markedly in France and Sweden (after 1975), Portugal (during the early 1980's), and less sharply in Italy.
- A special analysis of Finland and the United Kingdom in the same study, using an alternative calculation based on the average earnings of typical unemployed workers while employed, instead of the actual last earnings of the unemployed, found a sharp decline over time in replacement ratios.²²

Another issue concerns net replacement ratios over longer periods, weighing all forms of replacement income, because unemployment may continue after unemployment insurance benefits are exhausted. An OECD study assessed how the incomes of model families in five countries—Australia, Canada, Germany, the United Kingdom, and the United States (represented by Michigan data only)—changed as the principal earner moved from full-time employment into prolonged unemployment.²³

For a married couple with the earnings of an average production worker and no spousal income or children, the replacement ratio during the first year of unemployment ranged between 35.9 percent in the United States and 68.5 percent in Canada; for single people, the variation was greater. Replacement ratios varied by family size, and were as high as 90 percent or more in Austria and the United Kingdom for families with two children, whose single-earner family income previously was half the na-

tional average. When average earnings were assumed, the replacement ratios ranged from 41 percent in the United States to 72 percent in Canada.

In most countries, the continuation of the spouse's earnings meant that family income fell less and that the replacement ratio was higher. In addition, the study found that in some countries, replacement ratios tend to decline over time as unemployment insurance benefits end and primary earners move from a nonmeans-tested program to a means-tested program; the value of the contribution of the second earner will tend to decline sharply, given that such earnings limit the means-tested benefit of the unemployed principal earner.

The conclusion was that there is a wide disparity in income replacement during prolonged unemployment. This is so between countries for families of the same type at comparable earnings levels, and between families of different types at a range of earnings levels within the same country. In general, unemployment implies a substantial drop in net income, although there are exceptions. Replacement ratios during long-term unemployment are much lower than those during short-term unemployment and display much more variation.

Do benefits affect work incentives?

If workers lose only a small part of their disposable income when they become unemployed, they may delay their job search, perhaps waiting until their unemployment insurance benefits are about to expire. Unemployment insurance recipients with high replacement ratios may search for a job less actively than they would if they had lower replacement ratios. Finally, the level of replacement income will influence the reservation wage, that is, the wage the unemployed are willing to accept on a new job.

In a cross-national framework, no correlation appears between the level of replacement ratios in a country and the extent or depth of its belief, as expressed in popular, official, and academic opinions, that replacement ratios are too high and act as a work disincentive. In fact, countries with relatively high replacement ratios, as in Scandinavia, may be least vocal on the issue. Moreover, in countries where the issue has been raised, the volume of comment has not responded much to the downward trends in replacement ratios noted by the United Nations Economic Commission for Europe:

... the fact that for the majority of countries considered the replacement ratio has either remained unchanged or has fallen since 1972 suggests that unemployment benefits have had little to do with the increase in unemployment since 1974, and especially with the large increase since 1979.²⁴

The adverse effects of unemployment insurance benefits on work incentives appear to concern the English-speaking countries far more than continental Europe. The

United States, Great Britain, and Canada provide the bulk of academic contributions on this issue.²⁵

Some multicountry studies have found that unemployment insurance benefits deter the search for a job and prolong unemployment.²⁶ H. Grubel and M. A. Walker assembled studies on 10 countries, of which 7 showed that by lowering the cost of not looking for work, unemployment insurance benefits increased voluntary unemployment. Significant effects were found in the United States, Canada, Ireland, and the United Kingdom, but only limited evidence of induced unemployment was found in France, New Zealand, and Belgium. Germany and Italy showed no evidence of this effect.²⁷ In Italy, flat-rate unemployment benefits, financed by a payroll tax on employers, are very low and are used less often than an alternative system of benefits for temporary layoffs and short-time working.²⁸

Great Britain has translated its academic findings into policy. Earnings-related unemployment insurance benefits were abolished in 1982, leaving only the basic flat-rate benefit. British economists have developed optimal unemployment insurance programs to minimize work disincentives and have suggested reforms, some of which were implemented in the 1970's.²⁹

In contrast, discussions and public concern are rarer in the continental European countries, and especially in Scandinavia where replacement rates are relatively high.³⁰ A recent German analysis contends that unemployment insurance protects the existing wage structure, the skills hierarchy, and working conditions on the job against the adverse effects of unemployment. This social function of unemployment insurance might be regarded less benignly in other countries. Also, reductions of unemployment insurance payments or restrictive definitions strengthen the employers' bargaining position while undermining that of the unions.³¹

Many continental Europeans might agree with an OECD multicountry report that declared:

... [A] small but not negligible amount of additional unemployment may be induced by the level of benefits, but these benefits are intended to raise social welfare, and the fact that people prolong their job search by an extra week or two may well improve the match between their skills and job opportunities and reduce labour turnover in the longer run.³²

Only a few official representatives who attended the 1982 OECD conference on income support policies mentioned that work disincentives or other distorting effects on the labor market resulted from unemployment insurance benefits, instead pointing to factors other than replacement ratios that affect unemployment duration. They suggested that governments could more accurately test unemployment insurance recipients' willingness to work by taking responsibility for effective placement services and job offers.³³ An earlier review of the academic literature had concluded that, although the phenomenon

of insurance-induced unemployment exists, its importance should not be exaggerated, especially as a factor in the post-1979 rise in unemployment.³⁴

Despite increased sophistication in recent economic studies on the work disincentives of unemployment insurance benefits, many questions persist about the concepts, methodology, and data, including the way the replacement ratio is derived and interpreted. For example, replacement ratios based on prior earnings—the usual measure for such studies—may be less relevant to reservation wages than the comparison of disposable resources during unemployment with those on the proposed new job. Hypothetical, rather than actual, income data are faulted as are the limited number of worker or family types studied. The studies need a complete distribution of replacement ratios, rather than averages. While the most appropriate unit for measuring the replacement ratio may be the household, more information is needed about income sharing and the basis upon which work decisions are made within households. For most countries, it is misleading to compute replacement ratios only for recipients of unemployment insurance, omitting the unemployed receiving other income replacement. More insights are needed into the way unemployed persons think about their replacement ratios, their alternatives, and the time frame (weekly, monthly, annual) they use in looking for new employment. Such information might indicate that some theoretical models are inappropriate for predicting behavior. For policy purposes, it is important to know how the replacement ratio changes over time for particular unemployed individuals. Another question that needs to be treated is replacement ratios for the employed population so that insights can be gained into the motivations for remaining in work when high replacement ratios are available for not working. A high replacement ratio may be a commentary on too low a wage while employed.³⁵

Other questions about the labor supply also have been addressed. Studies have explored the effects of unemployment insurance on labor force participation and migration rates, and the aggregate unemployment rate. Studies have also inquired into the effects of unemployment insurance on the distribution of unemployment among various age-sex groups, insured and uninsured workers, and registered versus unregistered unemployment.³⁶

Another approach to the subject stresses that existing analyses are lopsided in concentrating on the effects of unemployment insurance on the supply of labor. The reduced form equation with deviations from the trend in output used to capture influences on the demand side is considered inappropriate for two reasons. First, the underlying structure of the labor market is not explicitly outlined and, as a result, the structural parameters cannot be retrieved. Second, European academic studies ignore the possible effects of unemployment insurance programs on employment or unemployment via the demand for la-

bor, as well as the potential of demand for confounding the estimation of a labor-supply response.

Specifying a complete model of the labor market and using British data for the period between World Wars I and II, Alan Harrison and Robert A. Hart found that unemployment insurance influenced unemployment via the demand for labor, but did not influence the supply of labor or labor force participation.³⁷ Hart found that unemployment insurance affects the firm's employment and layoff strategy in European countries as well as in the United States.³⁸ This challenge to the most common analytic approach to work incentives and unemployment insurance benefits indicates that it will remain a lively issue.

Conclusion

Since 1973, many Western European countries have felt severe pressures on their unemployment insurance systems because of elevated unemployment rates, longer spells of unemployment, and a changed composition of the unemployed from the time when unemployment insurance was introduced. Unlike the United States, many of the European countries experienced a 5- to 10-fold increase in the number of recipients of unemployment insurance benefits from 1973 to 1983.

Expenditures on unemployment insurance rose more sharply in the 1970's and early 1980's than they had in the 1960's; the United States was less affected by cost pressures than the five European countries studied in this article. In these and other industrialized countries, unemployment insurance also accounted for a rising share of gross national product and of total expenditures on all public measures related to unemployment, employment training, and other labor market programs. Unemployment insurance accounted for a rising share of income maintenance program expenditures.

In the 1970's and 1980's, many European countries sought to contain the growth in unemployment insurance costs through tighter eligibility criteria, little or no growth in the amount and duration of unemployment benefits, and restructuring of labor market programs to limit the unemployment insurance share of the various methods used to improve the position of the unemployed. In addition, unemployment insurance funds were augmented by increases in the contribution rates paid by employers and, in some cases, employees, as well as by drawing down reserve funds or by borrowing. Governments gave aid to a limited extent. Financing remains a problem for many unemployment insurance systems, especially in planning for possible recessions.

Despite the financial crunch, some European countries have extended the duration of unemployment benefits for older unemployed workers, easing them into earlier retirement and in the process reducing the labor supply. Programs also have been instituted to utilize unemploy-

ment insurance monies to support employment-related activities of claimants beyond job search.

The proportion of unemployed workers receiving unemployment benefits tended to rise from 1973 to 1975 and then decline through 1983. Various forms of unemployment allowances and local social assistance filled the gap left by a declining role for unemployment insurance. At the same time, most countries reduced the proportion of the unemployed who were not served by any income-replacement program. However, the absolute number of unemployed without any public support tended to increase because of the sheer escalation in the numbers of unemployed workers.

The adequacy of income replacement programs, their relation to previous income and reservation wages, and the impact on incentives to seek and obtain new jobs have been increasingly studied in individual countries and in cross-national perspective. Findings in one large study indicate that there is significant variation in the amount of income loss from country to country and that unemployment insurance benefits were lower than take-home pay from employment over the 1972–82 period. Replacement ratios in a majority of the countries declined from 1972 to 1982. Another study found that the wide disparity in

income replacement during prolonged unemployment affected families of the same type at comparable earnings levels among countries, as well as families of different types at a range of earnings within a country. In general, unemployment implies a substantial drop in net family income, especially in long-term unemployment, although there are exceptions.

These exceptions, whose income during unemployment is higher, the same as, or only slightly lower than their last earnings or reservation wage, form the basis for the concern about the disincentives to work inherent in unemployment insurance; the concern is much stronger in the English-speaking industrial countries than in others. Many questions remain about the concepts, methodology, data, and conclusions in studies of the work disincentives of unemployment insurance.

Others point to the need to study additional aspects of the impact of unemployment insurance—on the labor demand, labor force participation rates, migration rates, the aggregate unemployment rate, unemployment rates of various age-sex groups, insured versus uninsured unemployed workers, and registered versus unregistered unemployed workers. It is fair to say that the last word on work incentives has not been said. □

—FOOTNOTES—

¹*High Unemployment: A Challenge for Income Support Policies* (Paris, Organization for Economic Cooperation and Development, 1984), pp. 83–86.

²*High Unemployment*, pp. 193–94.

³“Social Expenditure: Erosion or Evolution?” *OECD Observer*, January 1984, pp. 3–6.

⁴French unemployment insurance expenditures as a share of gross domestic product showed the strongest growth, with considerable increases in Germany and the United Kingdom. The United States, Canada, Italy, and Japan, however, showed decreases in the share of gross domestic product going to unemployment insurance benefits in the 1965–70 period. Only small changes occurred in the United States, Italy, and Japan in subsequent periods, but Canada tripled its percentage from 1965–70 to 1975–80. Canada ranked first in the share of gross domestic product going to unemployment insurance benefits in each period, but the other rankings shifted. In 1970–75, the percentages ranged from 1.4 to 0.18 among the seven countries, with the United States second, followed by the United Kingdom, Japan, Germany, Italy, and France. During the 1975–80 period, when the range was 1.74 percent to 0.25 percent, France moved to third place after Canada and the United States, with Germany followed by the United Kingdom, Japan, and Italy. See *High Unemployment*, pp. 193–94.

⁵Research on Sweden suggests that active labor market programs are more fiscally sound policy than passive programs. The rise in the unemployment insurance share of Sweden's total labor market expenditures in 1982 reflects an increase in unemployment insurance costs as well as a new emphasis on the less expensive forms of active labor market policy, for example, placement rather than public works or public service jobs. See Inga Persson Tanimura, *On the Costs of Unemployment in Sweden* (Berlin, International Institute of Management, 1979), Discussion Paper IIM/LMP 79–16; Jan Johannesson, “Financing Active and Passive Labour Market Policy in Sweden” (Stockholm, unpublished paper, 1984); and Günther Schmid, *The Financing of Labour Market Policy in Sweden* (Berlin, International Institute of Management, 1985).

⁶*High Unemployment*, pp. 193–94.

⁷“Social Expenditure,” pp. 3–6.

⁸*High Unemployment*, pp. 193–204.

⁹For example, see “Unemployment Compensation and Related Employment Policy Measures in Germany” (unpublished OECD paper, 1976), pp. 11–27; and Gert Bruche and Bernd Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany* (Berlin, International Institute of Management, 1985), pp. 12–15, table 2.

¹⁰Gert Bruche, *The Financing of Labour Market Policy in France* (Berlin, International Institute of Management, 1984), Discussion Paper IIM/LMP 84–21b; Bernd Reissert, *The Financing of Labour Market Policy in Great Britain* (Berlin, International Institute of Management, 1984), Discussion Paper IIM/LMP 84–21c; *High Unemployment*; “Percentage of Jobless Lacking Benefits is Highest in 30 years,” *The New York Times*, Nov. 12, 1987; and “GAO Warns on Jobless Insurance Reserves.” *The New York Times*, Sept. 27, 1988.

¹¹Gert Bruche, *The Financing of Labour Market Policy in Austria* (Berlin, International Institute of Management, 1984), Discussion Paper IIM/LMP 84–21d; Bruche, *The Financing of Labour Market Policy in France*; Bruche and Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany*; Bernd Reissert, *The Financing of Labour Market Policy in the USA* (Berlin, International Institute of Management, 1985); and Eskil Wadensjö, *The Financial Effects of Unemployment and Labour Market Policy Programs for Public Authorities in Sweden* (Berlin, International Institute of Management, 1985).

¹²In most countries, administrative costs are included in the base for calculating the government's share. The comparability of the data in table 4 is limited. Data for Austria and Germany refer to the government's subsidy to all labor market programs of the Austrian Unemployment Insurance Fund and the German Federal Employment Institute, while French data include government support of income maintenance for the unemployed other than conventional unemployment insurance programs. British government subsidies support all social insurance programs, but rising unemployment largely accounts for the increased

government share in the budget years 1973–74 and 1980–81; the drop in the next three budget years reflects the increased share of employer and employee contributions in total intake. Noncomparability of the data does not fully explain the extent of government sharing in unemployment insurance expenditures. Germany probably has had no Federal subsidy to the Federal Employment Institute for unemployment insurance, because unemployment insurance benefits are a first charge on the Federal Employment Institute Fund, taking precedence over discretionary expenditures or active labor market measures. In the few years when the Federal Employment Institute required a Federal subsidy, it was not necessarily used to cover expenditures on unemployment insurance. The same would be the case in Austria. If the French data concerned only the government share for conventional unemployment insurance benefits, the proportion would probably drop to near the British or Austrian level.

¹³As a percentage of the civilian labor force, those covered by unemployment insurance programs increased from 38.2 percent in 1960 to 59.4 percent in 1975 in France; from 38.0 percent in 1957 to 47.7 percent around 1980 in Italy; from 50.2 percent in 1950 to 87.7 percent in 1975 in Canada; and from 55.2 percent in 1950 to 89.5 percent around 1980 in the United States. In the United Kingdom, the coverage rate decreased from 88.9 percent in 1950 to 73.8 percent in 1974. See *High Unemployment*, p. 28.

¹⁴British unemployment insurance recipients constituted 39 percent of the unemployed in 1973, but reached highs of nearly 50 percent in 1975 and again in 1980, and then fell to 31 percent in 1983. Means-tested supplementary benefits took up most of the slack. From 1973 to 1976, about one-third of the unemployed received supplementary benefits, rising to more than two-fifths at the end of the decade and more than half in 1982 and 1983. See Reissert, *The Financing of Labour Market Policy in Great Britain*, table 1.

¹⁵M. White, *Long Term Unemployment and Labour Markets* (London, Policy Studies Institute, 1983), Publication No. 622; and *High Unemployment*, pp. 121–33.

¹⁶Bruche and Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany*, p. 82, table 2.

¹⁷Between 1982 and 1983, three cities in the Ruhr reported a 70-percent increase in unemployed recipients of local public assistance. By 1983, 7 percent of the total expenditure was borne locally. Bruche and Reissert, *Financing of Labour Market Policy in the Federal Republic of Germany*, p. 102, table 14.

¹⁸Reissert, *The Financing of Labour Market Policy in Great Britain*, table 1.

¹⁹Bruche, *The Financing of Labour Market Policy in Austria*, table 3.

²⁰Anders Björklund and Bertil Holmlund, *Arbetslöshetersättningen i Sverige-motiv, regler och effekter* [Unemployment Programs in Sweden.] (Stockholm, Publication No. 151, Industriens Utredningsinstitut, 1983), table 3.

²¹Schmid, *Financing Labour Market Policy in Sweden*, pp. 10, 19; and Wadensjö, *Financial Effects of Unemployment and Labour Market Programs*, Sweden, table 3.

²²United Nations, *Economic Bulletin for Europe* (New York, Pergamon Press, September 1983), pp. 289–306.

²³See *L'Indemnisation du chômage en France et à l'Étranger* [Unemployment Compensation in France and Abroad.] (Paris, Centre d'Étude des Revenus et des Coûts, 1982), Document No. 62; *Employment Outlook* (Paris, Organization for Economic Cooperation and Development, September 1984), pp. 93–96; and *High Unemployment*, pp. 98–120.

²⁴*Economic Bulletin for Europe*, September 1983, pp. 295.

²⁵For British and Canadian examples, see A. B. Atkinson, "Unemployment Benefits and Incentives," in J. Creedy, ed., *Economics of*

Unemployment in Great Britain (London, Butterworth, 1981); A. B. Atkinson and others, *Unemployment Benefit Duration and Incentives: How Robust is the Evidence?* (London, London School of Economics, 1982); D. K. Benjamin and L. A. Kochin, "Searching for an Explanation of Unemployment in Inter-war Britain," *Journal of Political Economy*, June 1979; A. W. Dilnot and C. W. Morris, "Private Costs and Benefits of Unemployment: Measuring Replacement Rates," *Oxford Economic Papers*, November 1983, supplement; S. F. Kaliski, "Real and Insurance-Induced Unemployment in Canada," *Canadian Journal of Economics*, 1975; S. F. Kaliski, "Unemployment and Unemployment Insurance: Testing Some Corollaries," *Canadian Journal of Economics*, 1976; C. Green and J. M. Cousineau, *Unemployment in Canada: The Impact of Unemployment Insurance* (Ottawa, Economic Council of Canada, 1976); H. Grubel and M. A. Walker, eds., *Unemployment Benefits: Global Evidence of Its Effects on Unemployment* (Vancouver, BC, The Fraser Institute, 1978); R. Layard and S. J. Nickell, "The Causes of British Unemployment," *National Institute Economic Review*, October 1985; D. R. Maki and Z. A. Spindler, "The Effect of Unemployment Compensation on the Rate of Unemployment in Great Britain," *Oxford Economic Papers*, December 1975; W. Narendranathan, S. J. Nickell, and J. Stern, *Unemployment Benefits Revisited* (London, London School of Economics, 1983); S. J. Nickell, "The Effects of Unemployment and Related Benefits on the Duration of Unemployment," *Economic Journal*, March 1979; Z. A. Spindler and D. R. Maki, "More on the Effects of Unemployment Compensation on the Rate of Unemployment in Great Britain," *Oxford Economic Papers*, 1978.

²⁶B. M. Walsh, *Unemployment Insurance and the Labour Market: A Review of Research Relating to Policy* (Paris, Organization for Economic Cooperation and Development, 1981).

²⁷Grubel and Walker, *Unemployment Benefits*.

²⁸"International: Unemployment Benefits in Twelve Countries," *European Industrial Relations Review*, October 1982, p. 12.

²⁹The United Kingdom and Ireland set limits on replacement ratios at 85 percent; Canada reduced the rate of benefit; and Australia tightened eligibility criteria, widened the definitions of suitable jobs, and required more frequent registration by the unemployed. Some countries introduced taxation of unemployment insurance benefits, but government financial stringency played a role, along with the aim of reducing work disincentives. See Walsh, *Unemployment Insurance and the Labour Market*; Richard Disney and David Metcalf, "Financing Labour Market Policy in Great Britain" (Canterbury, England, University of Kent, unpublished).

³⁰Björklund and Holmlund, *Unemployment Insurance and the Labour Market*, p. 108ff.

³¹Bruche and Reissert, *The Financing of Labour Market Policy in the Federal Republic of Germany*, p. 180.

³²*Unemployment Compensation and Related Employment Policy Measures* (Paris, Organization for Economic Cooperation and Development, 1979).

³³*High Unemployment*, pp. 14, 81, 87–89, 95, 125, and 134–36.

³⁴Walsh, *Unemployment Insurance and the Labor Market*, p. 61.

³⁵*High Unemployment*, pp. 121–35.

³⁶Walsh, *Unemployment Insurance and the Labour Market*, p. 61.

³⁷Alan Harrison and Robert A. Hart, *A Labour-Market Model of Unemployment Insurance* (Berlin, International Institute of Management 1982), Discussion Paper IIM/LMP 82–19.

³⁸Robert A. Hart, *Unemployment Insurance and the Firm's Employment Strategy: A European and United States Comparison* (Berlin, International Institute of Management, 1982), Discussion Paper IIM/LMP 82–11.

Multifactor productivity slips in the nonrubber footwear industry

While output per employee hour rose modestly from 1958 to 1986, multifactor productivity for this industry declined on average, more so in the period before 1973

JOHN DUKE AND LISA USHER

For many years, the Bureau of Labor Statistics has published, a labor productivity measure for the footwear industry termed output per employee hour.¹ Many factors influence movements in labor productivity, for example, technological change, changes in the skills and efforts of the work force, economies of scale, the amount of capital input per worker, and the amount of intermediate purchases input per worker. This article presents a supplementary productivity measure for the footwear industry—multifactor productivity—in which output is related to the combined inputs of labor, capital, and intermediate purchases. This measure differs from the traditional measure in that it accounts for the last two influences in the input measure and therefore does not reflect the impact of these influences in the productivity residual.

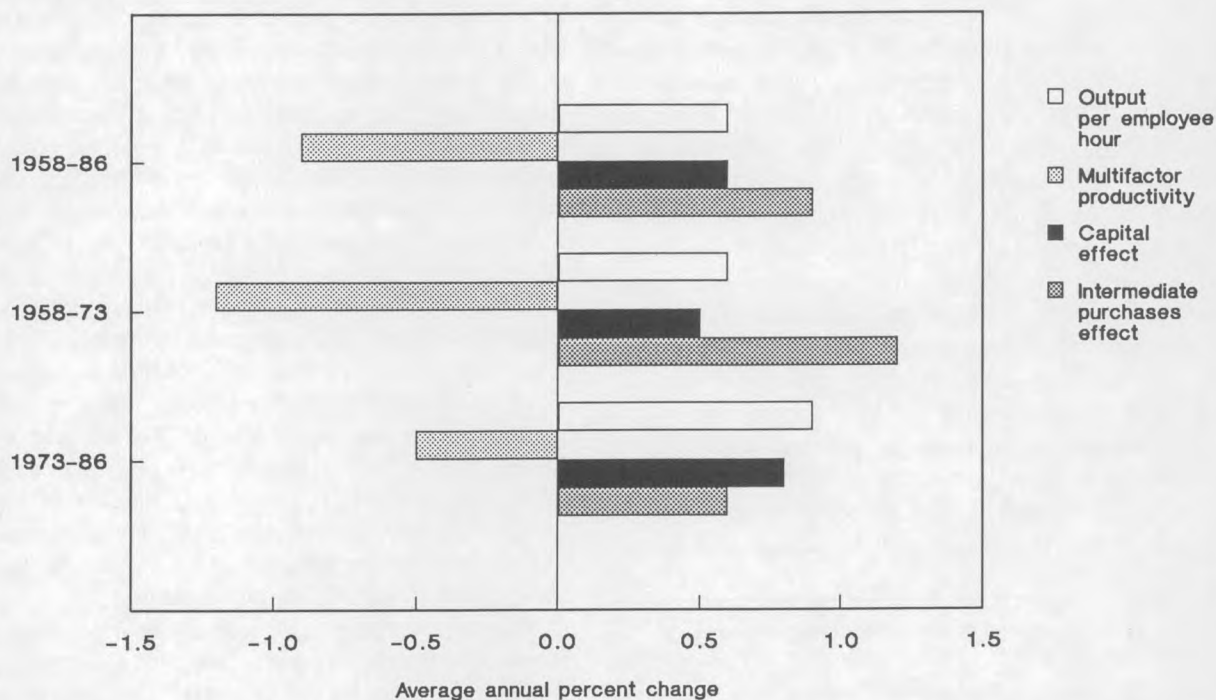
From 1958 to 1986, output per employee hour in the footwear industry rose at an average rate of 0.6 percent per year, well below the 2.5-percent rate for manufacturing as a whole. Multifactor productivity actually declined over the period by an average 0.9 percent per year. The rise in

output per employee hour reflected changes in the contribution of capital per hour, of intermediate purchases per hour, and of other sources (multifactor productivity). The development of the multifactor productivity measure indicates that the low rate of growth in output per employee hour was caused not by declining amounts of capital or intermediate purchases available to labor over the period, but rather by the influence of other factors. The influence of capital, referred to here as the *capital effect*, is measured as the change in the capital-labor ratio multiplied by the share of capital income in the total output. The influence of intermediate purchases, referred to here as the *intermediate purchases effect*, is measured as the change in the intermediate purchases-labor ratio multiplied by the share of intermediate purchases in the total output. The capital effect showed an increase of 0.6 percent per year over the period 1958–86, while the intermediate purchases effect rose 0.9 percent. The decline in multifactor productivity was more than offset by these increases in the capital effect and intermediate purchases effect. Multifactor productivity suffered at least in part from a slow pace of development and diffusion of new technology in the industry.

Underlying the 0.9-percent annual decrease in multifactor productivity was an output decline of 3.0 percent

John Duke and Lisa Usher are economists in the Office of Productivity and Technology, Bureau of Labor Statistics.

Chart 1. Output per employee hour rose in nonrubber footwear--despite multifactor productivity's fall--as capital and intermediate purchases increased relative to labor



per year and a 2.1-percent average annual drop in combined inputs. The decline in multifactor productivity slackened on average after 1973. (See table 1.) Although there have been year-to-year fluctuations, multifactor productivity fell at only a 0.5-percent rate after that year, compared with the 1.2-percent average rate of decrease prior to 1973. Output per employee hour also improved in the post-1973 period relative to the earlier period, but it was well below the manufacturing average for both periods.

Trends in the individual inputs varied considerably over the 1958-86 period. (See table 2.) While labor input dropped at a rate of 3.5 percent per year, capital input rose a scant 0.1 percent per year, and intermediate purchases declined at a 1.9-percent rate. Combined inputs, the weighted aggregate of these components, declined at a 2.1-percent rate per year. Thus, over the whole period, labor input showed the most rapid decline, followed by the lesser drop in intermediate purchases, while capital input showed a slight gain.

Although the growth in output per employee hour was well below average in the footwear industry over the period 1958-86, there was no post-1973 slowdown, as there was for manufacturing as a whole and most other industries. Output per employee hour in the manufacturing sector fell off from a rate of 2.9 percent in the period 1958-73 to a rate

of 2.4 percent between 1973 and 1986. (It had declined to a rate of 1.6 percent in the period 1973-81, but began recovering in the mid-1980's.) For the footwear industry, output per employee hour actually accelerated somewhat from a rate of 0.6 percent in the earlier period to 0.9 percent in the post-1973 period.²

The relative contributions of the capital effect, the intermediate purchases effect, and multifactor productivity to changes in output per employee hour were not the same in the pre- and post-1973 periods. During the pre-1973 period, a 0.6-percent gain in output per employee hour was obtained from a 1.2-percent decline in multifactor productivity plus a 0.5-percent annual gain in the capital effect plus a 1.2-percent increase in the intermediate purchases effect. (Rounding produces the one-tenth of a point discrepancy when the addends are summed.) In the period 1973-86, a 0.9-percent average annual gain in output per employee hour was obtained from a 0.5-percent per year average drop in multifactor productivity plus a 0.8-percent rise in the capital effect plus a 0.6-percent increase in the intermediate purchases effect. (See chart 1.) Thus, in both periods output per employee hour recorded an increase, despite a decline in multifactor productivity, as a result of increases in the amount of capital per worker hour and intermediate purchases per worker hour.

For the period 1958–86 as a whole, the increase in the capital effect was 0.6 percent, resulting from a gain of 0.1 percent in capital input, while labor input was declining at a rate of 3.5 percent per year. Although the capital effect did not change much from the pre- to the post-1973 period (0.5 percent and 0.8 percent), the changes in the components differed. In the period 1958–73, capital input grew at a rate of 1.6 percent per year, while labor input declined by 1.7 percent per year. In the period 1973–86, capital fell by 1.5 percent per year, but labor fell even faster at a 5.3-percent rate.

The intermediate purchases effect showed a 0.9-percent gain over the period 1958–86. This increase resulted from a 1.9-percent decline per year in intermediate purchases, more than offset by a 3.5-percent average drop in hours. The intermediate purchases effect did fall off somewhat from a pre-1973 rate of 1.2 percent to a post-1973 rate of 0.6 percent. Underlying the pre-1973 growth was a 0.7-percent increase in intermediate purchases and a 1.7-percent drop in labor hours. The somewhat slower rate during 1973–86 resulted from a decline in intermediate purchases of 4.2 percent coming closer to matching a drop

in labor of 5.3 percent than was the case in the earlier period.

Technological change

Technological change has come slowly to the footwear industry. Automation of the industry on a mass scale has been hampered by a number of factors, including the high cost of the necessary equipment and the small size of most of the firms in the industry. In addition, for years the industry lacked a uniform last-grading system needed to facilitate the making of shoes in a wide variety of shoe lengths and widths. With the advent of affordable computers and computer-aided design, it is now possible to design a shoe pattern and grade it for production in different sizes and widths within hours. However, frequent style changes are a fact of life for the footwear industry, and difficulty in adapting the production equipment to these changes is still a problem. Moreover, frequently changing styles do not allow for the long production runs required to make the purchase of the equipment feasible. Accordingly, most of the improvements in technology have been of an incremental nature involving improvements in existing machine designs, and even these improvements have not spread rapidly throughout the industry. As a result, the footwear industry has remained very labor intensive.

Much of the technological change that occurred in the footwear industry during the late 1950's and 1960's was directed at reducing labor costs. This emphasis was strengthened as competition from low-cost imports rose. These imports benefit from low labor costs. For example, the introduction of injection molding made it possible to use liquid plastic to mold the upper material of the shoe onto the sole using no stitching and very little labor. Similarly, the process of affixing preformed soles and heels to uppers using cement also saved time and labor costs. This process was accompanied by an increase in the use of pre-molded "unit bottoms" purchased from outside the industry, thus saving further on labor costs to the industry.

Many of the technologies introduced during the 1970's and 1980's, along with the increased use of synthetic materials that coincided with the introduction of these new technologies, resulted in savings in both labor and intermediate purchases. Synthetic materials for shoe uppers, for example, were more uniform in weight and quality and could be cut in layers with automatic machinery. This saved time and labor costs and also reduced the amount of materials wastage. Similarly, the flow molding process, whereby designs are embossed onto a thermoplastic upper from a mold, reduced both labor and materials costs. The advent of computerized equipment has allowed even more savings: computer-controlled cutting and computer-controlled stitching, though not widespread in the industry, have tended to reduce the amount of labor time involved and the amount of damage done to materials. More recently, computer-aided design lets manufacturers respond rapidly to style changes by reducing the time

Table 1. Multifactor and related productivity indexes, 1958–86

[1977=100]

Year	Multifactor productivity	Output per employee hour	Output per unit of capital	Output per unit of intermediate purchases
1958	113.0	86.2	150.0	123.1
1959	119.0	90.7	165.6	128.3
1960	116.0	89.4	156.3	125.2
1961	117.7	90.0	159.4	127.5
1962	118.0	90.7	159.7	127.4
1963	118.8	94.2	153.3	127.2
1964	117.7	94.0	153.7	124.7
1965	115.1	93.0	149.9	121.3
1966	115.9	94.6	150.4	121.3
1967	105.8	92.6	134.8	106.3
1968	108.3	95.9	139.8	107.7
1969	101.6	89.8	120.5	104.1
1970	103.7	96.6	118.7	103.8
1971	102.8	98.3	114.7	101.9
1972	101.5	95.9	115.6	100.8
1973	101.0	94.9	106.1	103.1
1974	97.8	93.8	98.2	100.0
1975	97.1	97.6	94.3	97.6
1976	99.4	98.2	101.8	99.3
1977	100.0	100.0	100.0	100.0
1978	101.6	101.8	100.0	101.9
1979	106.5	99.7	98.2	113.0
1980	99.2	98.0	94.6	101.0
1981	95.6	95.0	91.1	97.2
1982	100.3	106.0	88.1	101.6
1983	99.2	104.1	85.2	101.8
1984	97.6	105.0	77.9	101.6
1985	91.4	105.4	69.4	93.5
1986	91.2	107.4	64.7	94.3
Average annual rates of change (percent)				
1958–86	-0.9	0.6	-3.0	-1.1
1958–73	-1.2	.6	-2.7	-1.8
1973–86	-.5	.9	-3.1	-.3

Table 2. Output and input indexes, 1958-86

[1977=100]

Year	Output	Combined inputs	Employee hours	Capital	Intermediate purchases
1958.....	134.9	119.4	156.5	89.9	109.6
1959.....	148.4	124.7	163.7	89.6	115.6
1960.....	141.0	121.6	157.8	90.2	112.6
1961.....	142.0	120.7	157.8	89.1	111.4
1962.....	144.2	122.1	159.0	90.3	113.1
1963.....	140.3	118.1	149.0	91.5	110.3
1964.....	143.4	121.9	152.6	93.3	114.9
1965.....	143.9	125.0	154.8	96.0	118.6
1966.....	148.3	128.0	156.8	98.6	122.3
1967.....	138.6	131.0	149.7	102.8	130.3
1968.....	147.4	136.0	153.7	105.4	136.9
1969.....	132.1	129.9	147.1	109.6	126.8
1970.....	130.1	125.5	134.7	109.6	125.4
1971.....	122.6	119.2	124.7	106.9	120.3
1972.....	121.5	119.7	126.6	105.1	120.5
1973.....	114.0	112.9	120.2	107.4	110.6
1974.....	105.8	108.2	112.8	107.8	105.8
1975.....	98.2	101.2	100.7	104.2	100.6
1976.....	101.7	102.3	103.5	99.9	102.4
1977.....	100.0	100.0	100.0	100.0	100.0
1978.....	99.5	97.9	97.7	99.5	97.6
1979.....	94.0	88.3	94.3	95.7	83.2
1980.....	90.3	91.1	92.2	95.5	89.4
1981.....	87.9	91.9	92.5	96.5	90.4
1982.....	86.3	86.0	81.4	97.9	84.9
1983.....	80.8	81.4	77.6	94.8	79.4
1984.....	71.8	73.5	68.3	92.2	70.7
1985.....	62.1	67.9	59.0	89.6	66.4
1986.....	55.3	60.6	51.5	85.4	58.6
Average annual rates of change (percent)					
1958-86	-3.0	-2.1	-3.5	0.1	-1.9
1958-73 ..	-1.2	.0	-1.7	1.6	.7
1973-86 ..	-4.5	-4.0	-5.3	-1.5	-4.2

involved in designing and grading patterns. Also, the process allows the operator to adjust the pattern to maximize the amount of usable material.³

Output

Between 1958 and 1986, output of nonrubber footwear declined at an average annual rate of 3.0 percent. Although the industry attained slightly higher levels of output in 1959 and 1966 relative to 1968, there was a general, though slight, upward trend in output between 1958 and 1968. After 1968, output declined in every year (except for a small gain in 1976), falling to less than one-half the 1968 level in 1986.

Since the late 1950's, output of the U.S. footwear industry has been adversely affected by a variety of factors. In particular, competition from foreign manufacturers has eroded the U.S. industry's share of the total domestic consumption of footwear. Moreover, despite large increases in disposable income in the United States, per capita consumption of shoes has not increased substantially over the period. Imports of nonrubber footwear went from less than 27 million pairs in 1960 to more than 940 million pairs in 1986, a 35-fold increase. The ratio of imports to U.S. consumption of nonrubber shoes rose from 4 percent in 1960 to 80 percent in 1986, in quantity terms.⁴ In value terms, however,

imports account for a smaller proportion, almost 67 percent of U.S. consumption in 1986. These numbers reflect the continuing concentration of domestic production in a higher priced segment of the market.

The product mix of U.S. production of footwear has also changed. While U.S. production of all types of footwear has declined since the late 1950's, the contraction in output has been especially severe in women's and in misses' and children's shoes. Output of women's shoes fell about 70 percent between 1958 and 1986. Women's shoes made up more than 46 percent of all nonrubber footwear produced domestically in 1958; by 1986, the proportion had fallen to 34 percent. Production of misses' and children's shoes also declined dramatically, by about 87 percent between 1958 and 1986. The proportion of misses' and children's shoes to total nonrubber footwear fell from about 12 percent in 1958 to less than 4 percent in 1986.

Although output of men's shoes declined by almost 43 percent between 1958 and 1986, the rate at which production of men's shoes fell was slower than that for women's or for misses' and children's shoes. As a result, the proportion of men's shoes produced rose from 17 percent of all nonrubber footwear in 1958 to 24 percent in 1986.

Capital

Over the period 1958-86 as a whole, the flow of services from the capital stock in the industry rose slightly, by 0.1 percent per year on average. From 1958 to 1968, when output trended slightly upward, capital input increased at a 1.6-percent rate per year. From 1968 to 1986, when output was declining substantially, capital input fell, but at a much slower rate (-1.2 percent) than the drop in output.

Capital rose almost steadily, though rather slowly, reaching a peak in 1970, 22 percent above the 1958 level. Capital input then declined almost every year thereafter. This pattern was similar to that of output, but capital rose more than output in the earlier period and fell more slowly than output in the latter period.

Capital input includes the services in the production process yielded by the structures (mostly buildings) in which production takes place, the land on which the structures stand, the equipment used in producing output (both in direct production activities and in support activities), and the inventories of finished goods, work in process, and materials and supplies that the firm holds. These categories of capital input—structures, land, equipment, and inventories—did not always move together. In the period 1958-68, when total capital grew at a 1.6-percent average annual rate, equipment grew at almost the same rate (1.4 percent), but structures and land rose more slowly (both at 0.3 percent), while inventories increased 2.2 percent per year. In the period 1968-86, when total capital fell by 1.2 percent per year, structures and land continued to increase slightly (by 0.2 percent per year), while inventories dropped by a substantial 2.1

percent per year and equipment fell 0.9 percent per year.

Labor

Employment in the nonrubber footwear industry declined from 227,000 workers in 1958 to 75,900 workers in 1986. Footwear employment has responded closely to changes in output throughout the period, declining only slightly during the early to mid-1960's. Between 1958 and 1968, employment declined by 5.3 percent. From 1968 to 1986, however, employment fell 65 percent, or an average of 4.7 percent per year.

In many industries, there is a lag between the time that demand rises or falls off and the time that employee hours are increased or reduced. This lag occurs because it is difficult for managers to predict how long changes in demand will last, and in many cases employers are reluctant to lay off skilled personnel because it can be costly to rehire them or train new personnel when demand rises again. As can be seen in table 3, in most years the declines (gains) in output after 1968 were matched quickly by reductions (increases) in employee hours. The reductions in employee hours occurred because of both layoffs at existing plants and plant closures over the period. From 1967 to 1982, the number of footwear establishments declined from 1,083 to 751, a loss of more than 20 plants per year on average. Since 1982, plant closures have continued.

Intermediate purchases

Intermediate purchases consist of the raw materials, energy (purchased fuels and electricity), and purchased services used in the production of the industry's output. Materials constitute more than 80 percent of the value of intermediate purchases for the nonrubber footwear industry, and by far the largest component of materials for this industry is leather. Intermediate purchases declined at an average rate of 1.9 percent per year between 1958 and 1986. However, in the earlier part of the period, from 1958 to 1968, intermediate purchases rose at a relatively rapid 1.8-percent rate per year on average. In comparison, output increased at an average annual rate of only 0.3 percent during that period. From 1968 to 1973, intermediate purchases fell at an average annual rate of 3.5 percent per year, more closely in line with the rate at which output fell (-4.4 percent). As a result, the rate of decline in the productivity of intermediate purchases, that is, the ratio of output to intermediate purchases, which fell by 1.5 percent per year from 1958 to 1968, eased to a decrease of 0.9 percent per year between 1968 and 1973, and to 0.3 percent after 1973.

Despite some year-to-year volatility in leather prices, the period 1958-68 was one of moderate price increases in intermediate purchases. Between 1958 and 1968, prices of intermediate purchases increased by about 0.9 percent per year on average. In contrast, the later period was characterized by much larger price increases in both

Table 3. Annual percent changes in output and employee hours in the footwear industry, 1968-86

Year	Output	Employee hours
1968-69	-10.4	-4.3
1969-70	-1.5	-8.4
1970-71	-5.8	-7.4
1971-72	-9	1.5
1972-73	-6.2	-5.1
1973-74	-7.2	-6.2
1974-75	-7.2	-10.7
1975-76	3.6	2.8
1976-77	-1.7	-3.4
1977-78	-5	-2.3
1978-79	-5.5	-3.5
1979-80	-3.9	-2.2
1980-81	-2.7	.3
1981-82	-1.8	-12.0
1982-83	-6.4	-4.7
1983-84	-11.1	-12.0
1984-85	-13.5	-13.6
1985-86	-11.0	-12.7

leather and petrochemical-based inputs (affecting many synthetic materials). Between 1968 and 1986, intermediate purchases prices were increasing at an average annual rate of 7.7 percent.

The more rapidly rising intermediate purchases prices after 1968 provided an incentive for manufacturers to find ways of conserving on intermediate purchases consumption. For example, during the 1960's footwear manufacturers shifted to using more synthetic materials. These synthetic materials, such as plastic, vinyl, and other polymeric materials, are more uniform in weight and quality and therefore allow less wastage. Tanners responded by supplying leathers that were more uniform than before, with the less desirable parts removed. Improvements in cutting, such as the use of laser technology, water-jet cutting, and piecework systems, were introduced to reduce wastage also. Other technological changes, such as the numerically controlled upper roughing machines used for roughing the leather, also reduced damage to materials.

Summary

Output per employee hour in the footwear industry over the period 1958-86 grew only 0.6 percent per year. This low rate of growth reflected increases in the amount of intermediate purchases and capital relative to labor, offsetting a decline of 0.9 percent per year in multifactor productivity. The decline in multifactor productivity was concentrated in the pre-1973 period; multifactor productivity declined at a slower rate on average during the post-1973 period. Output per employee hour did not slow down after 1973, but it was still well below the manufacturing average in both the pre- and post-1973 periods.

Domestic production of footwear has fallen by more than half since the late 1960's, as imports have risen rapidly since that time. Productivity growth in the industry has been hampered partly by a slow pace of technological change and a slow rate of adoption of whatever new technology has been introduced. □

¹This labor productivity measure was introduced by the Bureau in July 1965 in *Indexes of Output per Man-hour 1949-63*.

²The conclusion that labor productivity in this industry experienced no slowdown in the 1970's and early 1980's holds regardless of the choice of initial and terminal years. With 1973 as the breakpoint, none of the growth rates ending in 1978 or later is significantly below any of the

rates beginning in 1965 or earlier.

³For further examination of the changes in technology in the footwear industry, see *Technology and Its Impact on Labor in Four Industries*, Bulletin 2263 (Bureau of Labor Statistics, November 1986).

⁴*Current Industrial Reports*, Series MA31A, U.S. Department of Commerce, various issues.

APPENDIX: Multifactor productivity measurement

Methodology and data definitions

The following is a brief summary of the methods and data underlying the multifactor productivity measure for the footwear industry. A technical note, describing the procedures and data in more detail, is available from the authors at the Office of Productivity and Technology, Bureau of Labor Statistics, Washington, DC 20212.

Output. The output measure for the footwear industry is based on the weighted change in the quantity of production of eight types of shoes and slippers as reported in the Bureau of the Census' Current Industrial Reports, series MA31A. The weights are computed as the share obtained by each type of shoe in the total value of production of all nonrubber footwear.

For multifactor measures for individual industries, output is defined as total production, rather than the alternative of value added. For a value-added measure, intermediate inputs are subtracted from total production. Consequently, an important difference between the multifactor productivity measures that BLS publishes for individual industries and those for aggregate sectors of the economy is that the latter measures are constructed within a value-added framework. For the major sectors of the economy, intermediate transactions tend to cancel out; intermediate inputs are much more important in production at the industry level.

Further, output in industry measures is defined as total production which "leaves" an industry in a given year in the form of shipments plus net changes in inventories of finished goods and work in process. Shipments to other establishments within the same industry are excluded because they represent double counting, which distorts the productivity measures.

Labor. Employee-hour indexes, which represent the labor input, measure the aggregate number of employee hours. These hours are the sum of production worker hours, from *Censuses of Manufactures* and *Annual Surveys of Manufactures* (U.S. Department of Commerce), and nonproduction worker hours, derived by multiplying the number of nonproduction workers from the Census publication by an estimate of nonproduction worker average

annual hours. The labor input data are the same as those used in the published BLS output per hour series.

Capital. A broad definition of capital input, including equipment, structures, land, and inventories, is used to measure the flow of services derived from the stock of physical assets. Financial assets are not included.

For productivity measurement, the appropriate concept of capital is "productive" capital stock, which represents the stock used to produce the capital services employed in current production. To measure the productive stock, it is necessary, for each type of asset, to take account of the loss of efficiency of the asset as it ages. That is, assets of different vintages have to be aggregated. For the measures in this article, a concave form of the age/efficiency pattern (slower declining efficiency during earlier years) is chosen.

In combining the various types of capital stock, the weights applied are implicit rental prices of each type of asset. They reflect the implicit rate of return to capital, the rate of depreciation, capital gains, and taxes. (For an extensive discussion of capital measurement, see *Trends in Multifactor Productivity, 1948-81*, Bulletin 2178 (Bureau of Labor Statistics, 1983).)

Intermediate purchases. Intermediate purchases primarily include materials, fuels, electricity, and purchased business services. Materials measured in real terms refer to items consumed or put into production during the year. Freight charges and other direct charges incurred by the establishment in acquiring these materials are also included. The data from which the intermediate inputs are derived include all purchased materials and fuels regardless of whether they were purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year. An estimate of intraindustry transactions is removed from materials and fuels data.

Annual estimates of the cost of services purchased from other business firms are also required for multifactor productivity measurement in a total output framework. Some examples of such services are legal services, communica-

tions services, and repair of machinery. An estimate of the constant-dollar cost of these services is included in the intermediate purchases input.

Capital, labor, and intermediate purchases income shares. Weights are needed to combine the indexes of the major inputs into a combined input measure. The weights for the footwear industry are derived in two steps: first, an estimate of income in current dollars for each input is derived, and then the income of each input is divided by the total income of all inputs.

Conceptual framework

The multifactor productivity measure presented here is computed by dividing an index of output by an index of combined inputs of capital, labor, and intermediate purchases. The framework for measurement is a production function describing the relation of output and inputs and an index formula that is consistent with this production function.

The general form of the production function underlying the multifactor productivity measures is postulated to be

$$(1) \quad Q(t) = Q(K(t), L(t), M(t), t),$$

where $Q(t)$ is total output, $K(t)$ is input of capital services, $L(t)$ is input of labor services, $M(t)$ is input of intermediate purchases, and t is time.

Differentiating equation (1) with respect to time, and with some algebraic manipulations, the sources-of-growth equation is,

$$(2) \quad \frac{\dot{Q}}{Q} = A + w_k \frac{\dot{K}}{K} + w_l \frac{\dot{L}}{L} + w_m \frac{\dot{M}}{M},$$

where A is the rate of change of multifactor productivity, w_k is output elasticity (percentage change in output due to a 1-percent change in input) with respect to the capital input, w_l is output elasticity with respect to the labor input, and w_m is output elasticity with respect to the intermediate purchases input. (The dot over a variable indicates the derivative of the variable with respect to time.)

Equation (2) shows the rate of change of output as the sum of the rate of change of multifactor productivity and a weighted average of rates of change of capital, labor, and intermediate purchases inputs. Now, if competitive input markets are assumed, then each input is paid the value of its marginal product. The output elasticities in equation (2) can then be replaced by the factor income shares,

$$w_k = \frac{P_k K}{P_q Q},$$

$$w_l = \frac{P_l L}{P_q Q}, \text{ and}$$

$$w_m = \frac{P_m M}{P_q Q},$$

where P_q is the price of output and P_k , P_l , and P_m are the prices paid for the capital, labor, and intermediate purchases inputs, respectively. Furthermore, if constant returns to scale are assumed, then $w_k + w_l + w_m = 1$.

Equation (2) can be rewritten as

$$(3) \quad A = \frac{\dot{Q}}{Q} - w_k \frac{\dot{K}}{K} - w_l \frac{\dot{L}}{L} - w_m \frac{\dot{M}}{M}$$

In this expression, the growth of multifactor productivity can be seen as a measure of economic progress: it measures the increase in output over and above the gain due to increases in inputs.

Equation (2) can also be transformed into a contribution equation which allows for an analysis of the change in output per employee hour. First, subtract \dot{L}/L from both sides of equation (2). Because the weights sum to unity, apply the term $(w_k + w_m)$ to the \dot{L}/L term inserted on the right-hand side. Next, gather terms with the same weight and derive the following equation:

$$(4) \quad \frac{\dot{Q}}{Q} - \frac{\dot{L}}{L} = w_k \left(\frac{\dot{K}}{K} - \frac{\dot{L}}{L} \right) + w_m \left(\frac{\dot{M}}{M} - \frac{\dot{L}}{L} \right) + A$$

The left side of equation (4) is the growth rate of output per employee hour. The terms in parentheses on the right side are, in order, the rates of change in the capital-labor ratio and the intermediate purchases-labor ratio. Thus, the rate of growth in output per employee hour can be decomposed into the weighted sum of changes in these ratios plus the change in multifactor productivity.

Equations (2), (3), and (4) are Divisia indexes which require continuous data for computation. The BLS multifactor indexes are actually constructed according to a Tornqvist formula which represents a discrete approximation to the Divisia index. The rate of change in output or an input is calculated as the difference from one period to the next in the natural logarithms of the variables. For example, \dot{Q}/Q is calculated as $\ln Q(t) - \ln Q(t-1)$. Indexes are then constructed from the antilogarithms of this differential. The weights w_k , w_l , and w_m are calculated as the arithmetic averages of the respective shares in time periods t and $t-1$.

Major Agreements Expiring Next Month



This list of selected collective bargaining agreements expiring in May 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			
Mining	Homestake Mining Co. (Lead, SD)	United Steelworkers	1,125
Construction	Kanawa Valley Builders Association (Charlestown, WV, area)	Laborers	1,000
	Associated General Contractors (Detroit, MI)	Carpenters	6,000
	Associated General Contractors (Detroit, MI)	Laborers	1,650
	Associated General Contractors (Detroit, MI)	Operating Engineers	7,500
	Associated General Contractors (Columbus, OH)	Laborers	1,700
	Fox Valley Contractors Association (Illinois)	Carpenters	1,100
	Associated General Contractors (Eastern Massachusetts)	Carpenters	4,200
	Associated General Contractors (Alabama)	Various unions	2,000
	Associated General Contractors (Central Illinois)	Laborers	6,000
	Michigan Road Builders Association (Michigan)	Laborers	2,000
	Michigan Road Builders Association	Operating Engineers	2,500
	Idaho Employers Bargaining Council (Southern Idaho)	Various unions	3,450
	Associated General Contractors (Western and Central Washington) ..	Carpenters	7,000
	Associated General Contractors (Western and Central Washington) ..	Laborers	4,500
	Associated General Contractors (Seattle and Tacoma, WA, area)	Operating Engineers	3,200
	Associated General Contractors (Western Washington)	Teamsters	1,100
	Underground Contractors Association (Chicago, IL)	Laborers	1,600
	Associated General Contractors (Rhode Island)	Carpenters	1,500
	National Electrical Contractors Association (White Plains, NY)	Electrical Workers (IBEW)	1,500
	Painting and Decorating Contractors (Michigan)	Painters	1,300
National Electrical Contractors Association (Southeastern Michigan) ..	Electrical Workers (IBEW)	3,500	
Metropolitan Detroit Plumbing and Mechanical Contractors (Detroit, MI, area)	Plumbers and Pipe Fitters	3,000	
National Electrical Contractors Association (Los Angeles, CA)	Electrical Workers (IBEW)	6,000	
National Electrical Contractors Association (Colorado)	Electrical Workers (IBEW)	1,800	
Sheet Metal and Air Conditioning Contractors Association (Northwest Washington)	Sheet Metal Workers	1,100	
Associated General Contractors (Columbus, OH)	Carpenters	3,000	
Food and kindred products	California and Hawaiian Sugar Co. (California)	Seafarers	1,000
	Wholesale Bakers Group (California)	Bakery, Confectionery and Tobacco Workers	1,350
	J. R. Simplot (Caldwell, ID)	Teamsters	1,300
	Entenmann's Inc. (Long Island, NY)	Bakery, Confectionery and Tobacco Workers	1,250
Textile mill products	Cone Mills Corp. (Greensboro, NC)	Clothing and Textile Workers	2,000
Paper and allied products	Kimberly-Clark Corp. (Memphis, TN)	United Paperworkers	1,250
	Union Camp Corp. (Savannah, GA)	United Paperworkers	1,000
	James River Corp. (Green Bay, WI)	United Paperworkers	1,000
Chemicals and allied products ...	BASF Corp. (Enka, NC)	United Textile Workers	1,000
Stone, clay, and glass products ...	PPG Industries, Inc.	Machinists	1,050
	Owens-Corning Fiberglas Corp. (Aiken, SC)	Teamsters	1,250

See footnote at end of table.

Continued—Major Agreements Expiring Next Month

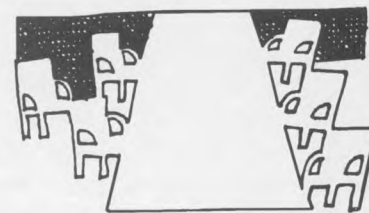
Industry or activity	Employer and location	Labor organization ¹	Number of workers
Fabricated metal products	Master Lock Co. (Milwaukee, WI)	Auto Workers	1,050
Electrical and electronic equipment	Leviton Manufacturing Co. (Hills Grove, RI)	Electrical Workers (IBEW)	1,500
Public utilities	AT&T Technologies (Interstate)	Communications Workers	155,000
	General Telephone Co. of the Southwest (Interstate)	Communications Workers	8,000
	Connecticut Light and Power Co.	Electrical Workers (IBEW)	2,350
	Washington Gas Light Co. (Washington, DC, area)	Various unions	1,800
	Toledo Edison Co. (Toledo, OH)	Electrical Workers (IBEW)	1,100
Retail trade	Woodward & Lothrop, Inc. (Washington, DC, area)	Food and Commercial Workers	5,500
	Nordstrom Inc. (Seattle, WA, area)	Food and Commercial Workers	1,600
	Allied Employers, Inc. (Puget Sound, WA, area)	Food and Commercial Workers	12,000
Services	Nevada Resort Association (Las Vegas, NV)	Hotel Employees and Restaurant Employees	25,000
	Sacramento hotels and motels (Sacramento, CA)	Hotel Employees and Restaurant Employees	2,100
	Minneapolis hotels and motels	Hotel Employees and Restaurant Employees	2,000
Public			
Medical services	Michigan: University of Michigan nurses (Ann Arbor)	American Nurses Association	1,100

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

A note on communications

The *Monthly Labor Review* welcomes communications that supplement, challenge, or expand on research published in its pages. To be considered for publication, communications should be factual and analytical, not polemical in tone. Communications should be addressed to the Editor-in-Chief, *Monthly Labor Review*, Bureau of Labor Statistics, U.S. Department of Labor, Washington, DC 20212.

Developments In Industrial Relations



Meatpacking settlements

Farmstead Foods employees in Cedar Rapids, IA, and Albert Lea, MN, accepted a 40-month contract proposal that was essentially the same as one they rejected 3 months earlier. According to the United Food and Commercial Workers local union in Cedar Rapids, Farmstead was unable to significantly improve the offer because of intense competition from lower cost nonunion firms. The company also faced the possibility of competition from Quality Pork Processors of Dallas, TX, which was reopening a hog slaughtering line in a Geo. A Hormel & Co. plant in nearby Austin, MN, after negotiating wage and benefit terms with the union's Local 9. The slaughtering line—but not pork processing—was closed in January 1988 because of high labor costs, according to Hormel.

The Farmstead contract, covering 2,700 hog slaughtering and processing employees, provided for three hourly wage increases of 10, 12, and 18 cents, bringing base pay to \$9.10 in January 1992. The employees will also receive a lump-sum payment in December 1990 equal to 10 cents for each hour worked in 1989.

Local 9's settlement with Quality Pork Processing included a company pledge to hire the employees it will need (variously estimated at 250 to 600) from a pool of 950 people who lost jobs when Hormel closed the hog slaughtering line. The agreement calls for an initial base wage rate of \$7 an hour, rising to \$9.10 in 1992.

The wage rate drew criticism from leaders of the union's locals at the two Farmstead plants. They contend that Quality Pork would have a cost advantage in buying hogs from farmers. However, Local 9 officials in Austin maintain that the combined wage-cost of the Quality Pork-Hormel operation would be comparable to that at Farmstead. Hormel, which buys carcasses from the Quality Pork slaughtering operation, pays its workers \$10.20 an hour, rising to \$10.70 by March 1990 under a contract with the union. Meatpackers such as Hormel provide

higher compensation for processing employees because profits are higher on such operations than on slaughtering.

Meatpacking plant acts to curb injuries

Cumulative trauma injuries, which have become of increasing concern in a number of industries, were addressed in a program adopted by IBP Inc. and the Food and Commercial Workers for the company's flagship meatpacking plant in Dakota City, NE. A company official explained that other IBP plants were initially excluded so that the program could be tried in "a controlled environment, not helter-skelter." Some results might be seen in 6 months or so; other results might take 2 years.

Cumulative trauma injuries (carpal tunnel syndrome, for example) usually result from repetitive motions, such as those performed by workers on slaughtering lines.

The agreement calls for:

- training certain workers as "ergonomics monitors" to identify injury-inducing jobs and recommend solutions (disputes, if any, between union and management regarding the solutions will be resolved by a joint committee);
- training new employees in avoiding stressful work methods;
- developing new work-station layouts to ease physical strain on employees; and
- initiating a medical program to treat and rehabilitate injured employees.

The 3-year agreement came less than 2 years after the Food and Commercial Workers began a campaign to publicize alleged unsafe working conditions at the plant. Later, the Occupational Safety and Health Administration intensified enforcement activity in the meatpacking industry, culminating in a 1987 proposal to fine IBP \$5.7 million for alleged safety and recordkeeping violations. In return for the company's adopting the new safety program, OSHA reduced the fine to \$975,000.

ConAgra to use robots in slaughterhouses

ConAgra announced that it would install robots in some of its slaughterhouses by the end of 1989. A company official said that the goal is "to try to make this a

"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.

safer place to work" by eliminating some of the more difficult tasks employees must perform.

A spokesperson for the Food and Commercial Workers said that any resulting loss of jobs was acceptable if the use of robots improves the quality of the remaining jobs and increases safety.

Although ConAgra's use of robots would be the first in animal slaughtering, Geo. A. Hormel & Co. already uses robots in producing processed meats. Danish pork houses also employ robots.

California hotel and restaurant employees settle

In Los Angeles, CA, 6,500 workers were covered by a settlement between the 16-member Hotel and Restaurant Employers Council and the Hotel Employees and Restaurant Employees union. The new contract, effective immediately and running to April 15, 1992, replaces one that was scheduled to expire March 1, 1989. The new contract provided for nontipped employees to receive a wage increase of 50 cents an hour retroactive to June 1, 1988, a 25-cent increase in March 1989, and 35-cent increases in March of 1990 and 1991. For tipped employees, increases are 37, 15, 15, and 15 cents an hour on the corresponding dates.

The agreement also provided for transferring persons who bus tables from the tipped category to the nontipped category, resulting in a pay increase; broadening the seniority preference provision to apply to work scheduling, shifts, days off, promotions, job transfers, and bumping rights; an employer-financed legal services plan; and an employer obligation of 5 cents per hour worked for a new program of the union's choice.

Coors employees reject union representation

The latest occurrence in the long dispute between Adolph Coors Co. and organized labor was an election at the company's Golden, CO, brewery in which the employees decisively rejected representation by the Teamsters. The tally was 1,081 votes against union representation and 413 in favor.

David Laughton, director of the union's Brewery and Soft Drink Worker Conference, said the organizing campaign was initiated in response to requests from Coors employees and "if we come back again, it will be in response to their [future activity]." Laughton said he was satisfied with the fairness of the organizing contest and election and that organized labor would not resume its boycott of Coors' products.

In August 1987, the AFL-CIO and Coors had negotiated an end to the 10-year-old boycott campaign in return for company assurances that Coors employees would be allowed "to freely choose union representation or refrain from doing so." Following the Teamsters reaffiliation with the AFL-CIO later in the year, an arbitrator selected

the Teamsters for the organizing role from among several competing member unions. The Coors employees had been represented by an AFL-CIO affiliated local union until 1977, when it was ousted in a representation election following a collective bargaining impasse.

UAW organizes GM salaried workers

The Auto Workers attained an organizing victory at General Motors Corp. (GM) when salaried employees at the company's payroll check processing operation in Flint, MI, voted to be represented by the union. The tally was 32-28, with one eligible employee not voting. Despite several attempts in recent years, this was the union's first win among salaried employees at Flint since 1972, when about 30 nurses at the Buick Motor Division voted for Auto Workers representation.

A union representative said, "we've got a lot of other salaried (organizing) drives going, but this one was the toughest and most important of all, because we actually got into a salaried unit." The union claimed that the organizing success at Flint was aided by GM's 1988 decision to increase health insurance deductibles, which angered employees.

An administrator of the check processing unit said, "we are disappointed . . . but we do respect our employees' right to be represented by a union."

Nationwide, fewer than 300 of GM's 108,000 salaried employees belong to the Auto Workers, according to the company. The union represents all of GM's 335,000 production workers, except for 20,000 represented by the Electronic Workers and 4,000 represented by the Rubber Workers.

Elsewhere in the industry, the Auto Workers represents production workers and some nonmanagement salaried employees at Chrysler Corp. and production workers at Ford Motor Co.

Court upholds invalidation of containers rules

The International Longshoremen's Association (ILA) and Atlantic and Gulf Coast shippers, already facing daunting problems in their 1989 contract negotiations, faced another problem when the Supreme Court let stand a 1987 Federal Maritime Commission ruling invalidating their "Rules on Containers." The rules, adopted in 1959, had reserved to ILA members the packing and unpacking of containerized cargo within 50 miles of a port where the union holds bargaining rights. In 1980 and 1985, the Supreme Court held that the container rules were valid work preservation measures consistent with labor law. The Court accepted the Maritime Commission's 1987 ruling because it was limited to a finding that the negotiated rules imposed unwarranted costs on shippers.

The container rules have been a cornerstone of the bargaining relationship since their inception, giving employers the right to automate operations in return for

guaranteed work for employees and annual pay guarantees they receive in most ports, financed by an employer payment for each container handled.

Other issues to be addressed in a new contract to succeed the one scheduled to expire in September 1989 include increasing competition for cargo from non-ILA ports and reduced shipments of some types of cargo, particularly in the South. In the last round of bargaining, in 1986, the workers in the southern ports generally accepted wage cuts, while those in the northern ports won wage increases.

Legal rulings

- The Department of Labor ruled that special local union assessments to subsidize wage costs for unionized employers are not legal under the Copeland Anti-Kickback Act and the Davis Bacon Act. In issuing the ruling, the Department rejected the contention of the Associated Builders and Contractors that criminal prosecution was also warranted against the defendant, Local 595 of the International Brotherhood of Electrical Workers, located in Oakland, CA.

The trade association's complaint arose from the local union's practice of financially aiding employers with whom it had collective bargaining agreements to help them counter the labor cost advantages of nonunion firms. The aid, which was approved by a majority vote of the local's members, emanated from an assessment on all members equal to 3 percent of their earnings.

- General Motors Corp. (GM) settled charges that it had discriminated against black employees in pay and promotions. Under the consent accord, which did not include an admission of guilt by the company, GM will track the careers of black "salaried" employees to assure that they fare the same as do whites. Factors to be used in assessing the qualifications of the employees are total time with the company, time in the current job, years of education, area of study, and degrees earned and when the degree was obtained. If, after considering the factors, the percentage of promotions is substantially less among blacks than among whites, GM will be required to correct the imbalance. The aim is not to ensure promotions for specific employees, but to attain equality in three broad areas: clerical, engineering, and manufacturing supervision.

The plan applies to GM's nonexecutive salaried employees in Michigan, Ohio, and Indiana, or about 75

percent of its total salaried employees, 7,000 of whom are black.

The plaintiffs' attorney said that, unlike the typical plan which has rather rigid goals, this plan is better because it accommodates the legitimate objectives of management and employees without resorting to a "myriad of exceptions."

The plan provides for annual reviews of the results over a 5-year period, with provision for financial penalties if GM does not conform to the formula. GM would not estimate the plan's cost, but attorneys for the plaintiffs estimated as much as \$53 million over the 5 years.

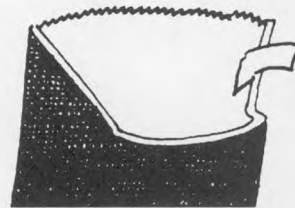
- Chrysler Corp. agreed to pay \$8.1 million to a group of nonunion salaried employees forced into retirement in the wake of the company's financial crisis that began in 1979. Chrysler's consent decrees with the Equal Employment Opportunity Commission, ending the long legal dispute, provide for payments totaling \$2.9 million to 82 employees who were involuntarily retired "at corporate option" and \$5.1 million to 149 employees who signed "voluntary" retirement agreements that contained illegal conditions.

The settlement came after Chrysler lost in proceedings before the Commission and on appeal to a Federal district court. In its defense, Chrysler presented a "failing company" justification for the retirements.

- Nissan Motor Corp.'s distributor in the United States settled 4½-year-old charges by the Equal Employment Opportunity Commission that the unit had discriminated against minorities, women, and older employees. While not admitting any discrimination, an official of the Japanese vehicle producer conceded that "there was room for improvement in the way we developed opportunities for protected employees, and, in that regard, we are specifically committed to implementing several changes in our practices."

Under the settlement, which did not involve Nissan's manufacturing plant in Smyrna, TN, the company agreed to give managerial jobs to 68 current employees who were denied promotions between June 1981 and December 1987; pay a total of \$605,600 to the 68 employees and others who took early retirement after not being "properly considered" for promotion; drop a requirement that employees have a college degree to be considered for promotion; advertise managerial job openings within the company more frequently; and require supervisors to attend classes on preventing discriminatory practices. □

Book Reviews



Numbers that work

The U.S. Economy Demystified: What the Major Economic Statistics Mean and Their Significance for Business. Rev. ed. By Albert T. Sommers with Lucie R. Blau. Lexington, MA, D. C. Heath and Co., 1988. 154 pp. \$19.95, cloth; \$13.95, paper.

The purpose of this book is to increase the reader's ability to understand the major data series on the U.S. economy and thereby to enable the reader "to develop confidence in his knowledge of current economic events, and to sense the probable range of future developments." According to Albert T. Sommers, the book is intended, not for professional economists, but rather for business decision-makers, financial executives, and private investors "who seek a compact, digestible guide to the evidence on economic conditions." Therefore, this volume presents no ground-breaking analysis (except, by definition, for the author's discussion of housing-start data). What it does present is a lucid, edifying, and very readable explanation of the major macroeconomic data series. A large number of charts clarify the discussion, and a unique—and very useful—feature of the book is a set of calendars showing the approximate release dates of the important economic indicators. Another unique feature of the book is a list of the addresses and telephone numbers of the agencies that publish the major economic statistics.

Sommers reports in his preface that the book has been adopted as a supplementary text in many economics courses. I heartily recommend the book for this purpose. While standard macro textbooks do a good job of presenting theory, they generally do not teach the student how to interpret the various statistics relating to the current business environment. Sommers' book fills this void nicely.

I must note one irony in the book. Sommers comments that "in the years since 1984" the U.S. economy has remained sluggish despite stimulative economic policy, but that this paradox "does not reflect defects in the statistical system." However, recently revised GNP data show that the economy has not, in fact, been sluggish. Thus, the growth rate for 1985 has been revised from 3.0 to 3.4 percent and the rate for 1987 from 2.9 to 3.4 percent, largely because sales to consumers, government, and foreigners now appear to have been stronger than was apparent earlier. Thus, despite Sommers' comment, the fault appears to lie not in our sales, but in the stats.

Sommers' introduction says that the book is designed to help the reader understand the issues confronting the U.S. economy "in the remainder of this decade." I infer from that statement that the author plans another revision in the early 1990's. Another revision would be most welcome, not only because any discussion of statistical series and their meaning must be updated periodically, but also because the revision would afford the author an opportunity to correct some flaws that mar an otherwise excellent work.

The flaws are of two types. First, the book short-changes the reader in its coverage of some important data series. For example, while acknowledging that the index of leading indicators "receives enormous attention from the press," the author does not offer any discussion of the strengths and weaknesses of the index as a forecasting device. Employment data are similarly shortchanged; the discussion of the differences between the household and payroll measures of employment, for example, is confined to a single sentence on page 80. The employment data warrant more attention, because they are the first of the comprehensive monthly indicators to appear, and they provide business analysts with the earliest assessment of the economy's performance in the previous month. Moreover, the differing behavior of the two employment series has been of great interest to business-conditions analysts during the current economic expansion.

The book's second flaw consists of a number of errors of fact and some statements of questionable analytical accuracy. Thus, on page 30, the author writes that "durable goods" in the national-income-and-product accounts are those with an expected life of "more than a year." The standard is actually 3 years. On page 7, Sommers states, "In the automobile market and in the housing market the term of loans stopped rising several years ago." In fact, Federal Reserve Board data show that the average term of a new-car loan at auto finance companies was 56 months in the spring of 1988, up from 50 months in 1986 and 48 months in 1984.

On a more conceptual matter, Sommers implies on pages 92–93 that the Keynesian multiplier applies only to investment goods, and not to consumption goods. In fact, it applies to both. A most puzzling statement appears at the bottom of page 79: "It is often argued (with some justice) that unemployment compensation tends to elevate unemployment, but it is worth noting that on

average more than half the unemployed are unemployed because they lost a job." I am mystified by the "but" part of this sentence. Does Sommers mean that the high proportion of job losers among the unemployed shows that unemployment insurance (UI) is not a factor in increasing unemployment? By and large, it is only job losers (as opposed to job leavers and idle labor force entrants and reentrants) who are eligible for UI, and so, if anything, the high proportion of job losers among the unemployed supports the hypothesis that UI increases unemployment. (According to that hypothesis, UI increases unemployment by lengthening the job search of job losers.)

These flaws aside, the quality of Sommers' work is certainly a business conditions economist's best kind of unemployment insurance.

—EDWARD I. STEINBERG
Economist
AT&T

Publications received

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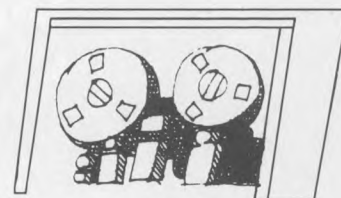
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Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	April 7	March	May 5	April	June 2	May	1; 4-21
Producer Price Indexes	April 14	March	May 12	April	June 9	May	2; 33-35
Consumer Price Index	April 18	March	May 18	April	June 16	May	2; 30-32
Real earnings	April 18	March	May 18	April	June 16	May	14-17
Major collective bargaining settlements	April 25	1st quarter	.....	.....	.....	.....	3; 25-28
Employment Cost Index	April 25	1st quarter	.....	.....	.....	.....	1-3; 22-24
U.S. Import and Export Price Indexes	April 27	1st quarter	May 25	April	June 22	May	36-41
Productivity and costs:							
Nonfarm business and manufacturing .....	.....	.....	May 3	1st quarter	.....	.....	2; 42-44
Nonfinancial corporations .....	.....	.....	.....	.....	June 1	1st quarter	2; 42-44

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, 15, 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 1989 issue of the *Review*, to reflect experience through 1988.

Annual revisions of the seasonally adjusted payroll data shown in tables 13 and 17 were made in the July 1988 *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 "real" earnings shown in table 15—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 data books—*Revised Seasonally Adjusted Labor Force Statistics*, Bulletin 2306, and *Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2307. 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 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 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*, Bulletin 2285 (Bureau of Labor Statistics, 1988), as well as the additional bulletins, articles, and other publications noted in the separate sections of the Review's "Current Labor Statistics Notes." 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 55,800 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 employment 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 housework, 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 1988.

Additional sources of information

For detailed explanations of the data, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). Historical unadjusted data from 1948 to 1987 are available in *Labor Force Statistics Derived from the Current Population Survey*, Bulletin 2307 (Bureau of Labor Statistics, 1988). Historical seasonally adjusted data appear in *Labor Force Statistics Derived from the Current Population Survey: A Data-book*, Vol. II, Bulletin 2096 (Bureau of Labor Statistics, 1982), and *Revised Seasonally Adjusted Labor Force Statistics, 1978-87*, Bulletin 2306 (Bureau of Labor Statistics, 1988).

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 300,000 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 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 nonsupervisory 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).

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** represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. 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. Data are centered within the span. The March 1989 *Review* introduced an expanded index on private nonagricultural employment based on 349 industries, and a new manufacturing index based on 143 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

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 1988 data, published in the July 1988 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 1986; seasonally adjusted data have been revised back to January 1983. These revisions were published in the *Supplement to Employment and Earnings* (Bureau of Labor Statistics, 1988). Unadjusted data from April 1987 forward, and seasonally adjusted data from January 1984 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.

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 2285 (Bureau of Labor Statistics, 1988).

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 2285 (Bureau of Labor Statistics, 1988).

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 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, on wages and salaries, and on benefit costs are available for private nonfarm workers excluding proprietors, the self-employed, and household workers. The total compensation costs and wages and salaries 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 3,400 private nonfarm establishments providing about 18,000 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 for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series for changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981 = 100) of the quarterly rates of change are presented in the March issue of the BLS periodical, *Current Wage Developments*.

Additional sources of information

For a more detailed discussion of the Employment Cost Index, see the *Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), 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 of the contract effective date—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 straight-time hourly wage rate plus shift premium 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 of 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

Comparisons of major collective bargaining settlements for State and local government with those for private industry should note differences in occupational mix, bargaining practices, and settlement characteristics. Professional and white-collar employees, for example, make up a much larger proportion of the workers covered by government than by private industry settlements. Lump-sum payments and cost-of-living adjustment (COLA) clauses, on the other hand, are rare in government but common in private industry settlements. Also, State and local government bargaining frequently excludes items such as pension benefits and holidays, that are prescribed by law, while these items are typical bargaining issues in private industry.

Additional sources of information

For a more detailed discussion on the series, see the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). Comprehensive data are published in press releases issued quarterly (in January, April, July, and October) for private industry, and semiannually (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 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 and historical data appear in the BLS periodical, *Current Wage Developments*. Historical data appear in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

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 for many Producer Price Indexes or 1982-84 = 100 for many Consumer Price Indexes, 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*, Bulletin 2285 (Bureau of Labor Statistics, 1988). 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 by domestic 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 2285 (Bureau of Labor Statistics, 1988).

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 1985 = 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 1985.

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. 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. For a given product, only one price basis series is used in the construction of an index.

Beginning in 1988, the Bureau has also been publishing a series of indexes which represent the price of U.S. exports and imports in foreign currency terms.

Additional sources of information

For a discussion of the general method of computing International Price Indexes, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

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). For further information on the foreign currency indexes, see "BLS publishes average exchange rate and foreign currency price indexes," *Monthly Labor Review*, December 1987, pp. 47-49.

PRODUCTIVITY DATA

(Tables 2; 42-44)

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 productivity 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 combined labor and capital inputs). 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 output per unit of combined labor and capital inputs. 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 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.

Unit profits include corporate profits with inventory valuation and capital consumption 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

Constant-dollar output for the **business sector** is equal to constant-dollar gross national product but excludes the rental value of owner-occupied dwellings, the rest-of-world sector, the output of nonprofit institutions, the output of paid employees of private households, general government, and the statistical discrepancy. Output of the **nonfarm business sector** is equal to business sector output less farming. 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 measures of manufacturing 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 2285 (Bureau of Labor Statistics, 1988). Historical data for selected industries are provided in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

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; 15 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.

There are breaks in the date series for Germany (1983), Italy (1986), the Netherlands (1983), and Sweden (1987). For both Germany and the Netherlands, the breaks reflect the replacement of labor force survey results tabulated by the national statistical offices with those tabulated by the European Community Statistical Office (EUROSTAT). The Dutch figures for 1983 onward also reflect the replacement of man-year

employment data with data from the Dutch Survey of Employed Persons. The impact of the changes was to lower the adjusted unemployment rate by 0.3 percentage point for Germany and by about 2 percentage points for the Netherlands.

For Italy, the break in series reflects more accurate enumeration of time of last job search. This resulted in a significant increase in the number of people reported as seeking work in the past 30 days. The impact was to increase the Italian unemployment rates approximating U.S. concepts by about 1 percentage point.

Sweden introduced a new questionnaire. Questions regarding current availability were added and the period of active workseeking was reduced from 60 days to 4 weeks. These changes resulted in lowering Sweden's unemployment rate by 0.5 percentage point.

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*. The latest article appears in the April 1988 *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 2285 (Bureau of Labor Statistics, 1988), and periodic *Monthly Labor Review* articles. Historical data are provided in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). The statistics are issued twice per year—in a news release (generally in May) and in a *Monthly Labor Review* article.

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 employee 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 Safety, Health, and Working Conditions.

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 Safety, Health, and Working Conditions.

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 2285 (Bureau of Labor Statistics, 1988); *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	1987	1988	1987				1988			
			I	II	III	IV	I	II	III	IV
Employment data										
Employment status of the civilian noninstitutionalized population (household survey): ¹										
Labor force participation rate	65.6	65.9	65.4	65.6	65.6	65.7	65.8	65.8	65.9	66.1
Employment-population ratio	61.5	62.3	61.1	61.5	61.7	61.9	62.1	62.2	62.3	62.5
Unemployment rate	6.2	5.5	6.6	6.3	6.0	5.9	5.7	5.5	5.5	5.3
Men	6.2	5.5	6.6	6.4	6.0	5.8	5.6	5.4	5.4	5.4
16 to 24 years	12.6	11.4	13.3	13.1	12.2	11.9	11.8	11.2	11.4	11.3
25 years and over	4.8	4.2	5.1	4.9	4.6	4.4	4.3	4.2	4.1	4.1
Women	6.2	5.6	6.6	6.2	6.0	5.8	5.6	5.6	5.6	5.3
16 to 24 years	11.7	10.6	12.5	11.7	11.4	11.2	11.0	10.7	10.5	10.3
25 years and over	4.8	4.3	5.0	4.7	4.7	4.6	4.5	4.3	4.4	4.2
Unemployment rate, 15 weeks and over	1.7	1.3	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
Employment, nonagricultural (payroll data), in thousands: ¹										
Total	102,310	106,039	101,024	101,841	102,669	103,683	104,670	105,609	106,478	107,344
Private sector	85,295	88,653	84,130	84,869	85,643	86,518	87,406	88,263	89,063	89,812
Goods-producing	24,784	25,565	24,523	24,644	24,847	25,116	25,260	25,498	25,648	25,827
Manufacturing	19,065	19,539	18,895	18,965	19,112	19,290	19,388	19,498	19,567	19,701
Service-producing	77,525	80,475	76,500	77,196	77,782	78,567	79,410	80,111	80,830	81,517
Average hours:										
Private sector	34.8	34.8	34.8	34.7	34.7	34.8	34.7	34.8	34.7	34.8
Manufacturing	41.0	41.1	41.0	40.9	40.9	41.1	41.0	41.1	41.1	41.1
Overtime	3.7	3.9	3.6	3.7	3.8	3.9	3.8	3.9	3.9	3.9
Employment Cost Index										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers)	3.6	5.0	.9	.7	1.2	.8	1.4	1.1	1.3	1.0
Private industry workers	3.3	4.9	1.0	.7	1.0	.7	1.5	1.2	1.0	1.0
Goods-producing ²	3.1	4.4	.5	.7	.8	1.0	1.8	1.1	.6	.8
Service-producing ²	3.7	5.1	1.3	.7	1.0	.5	1.3	1.4	1.2	1.2
State and local government workers	4.4	5.6	.8	.3	2.3	.9	1.3	.3	2.7	1.1
Workers by bargaining status (private industry):										
Union	2.8	3.9	.5	.5	.6	1.1	1.6	1.0	.7	.5
Nonunion	3.6	5.1	1.1	.7	1.1	.6	1.5	1.3	1.1	1.2

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	1987	1988	1987				1988			
			I	II	III	IV	I	II	III	IV
Compensation data^{1, 2}										
Employment Cost Index--compensation (wages, salaries, benefits):										
Civilian nonfarm	3.6	5.0	0.9	0.7	1.2	0.8	1.4	1.1	1.3	1.0
Private nonfarm	3.3	4.9	1.0	.7	1.0	.7	1.5	1.2	1.0	1.0
Employment Cost Index--wages and salaries										
Civilian nonfarm	3.5	4.3	1.0	.5	1.3	.7	1.0	.9	1.3	1.0
Private nonfarm	3.3	4.1	1.0	.7	1.0	.6	1.0	1.1	1.0	1.0
Price data¹										
Consumer Price Index (All urban consumers): All items	4.4	4.4	1.4	1.2	1.3	.3	1.0	1.3	1.5	.6
Producer Price Index:										
Finished goods	2.2	4.0	.8	1.2	.2	.1	.5	1.3	.8	1.3
Finished consumer goods	2.6	4.0	.9	1.6	.3	-.2	.4	1.4	1.0	1.1
Capital equipment	1.3	3.5	.1	.3	-.2	1.1	.7	.6	.4	1.7
Intermediate materials, supplies, components	5.4	5.7	1.3	1.9	1.2	.9	1.1	2.6	1.2	.7
Crude materials	8.9	2.8	4.2	5.3	.6	-1.4	-3	4.0	-1.2	.3
Productivity data³										
Output per hour of all persons:										
Business sector .....	.8	1.0	.3	2.7	3.9	.6	3.5	-3.4	1.7	-2.0
Nonfarm business sector .....	.8	1.4	.0	3.2	3.7	.9	3.4	-2.4	2.0	.1
Nonfinancial corporations ⁴	1.5	1.2	-1.0	3.1	4.7	-1	4.3	-1.6	-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--					
	1987		1988				1987		1988			
	III	IV	I	II	III	IV	III	IV	I	II	III	IV
Average hourly compensation:¹												
All persons, business sector	4.6	6.2	3.7	4.8	6.2	4.7	3.9	4.2	4.5	4.8	5.2	4.8
All employees, nonfarm business sector	4.5	6.4	3.5	4.2	5.7	5.6	3.7	4.1	4.4	4.6	5.0	4.8
Employment Cost Index--compensation:												
Civilian nonfarm ²	1.2	.8	1.4	1.1	1.3	1.0	3.4	3.6	4.1	4.6	4.7	5.0
Private nonfarm	1.0	.7	1.5	1.2	1.0	1.0	3.3	3.3	3.9	4.5	4.5	4.9
Union .....	.6	1.1	1.6	1.0	.7	.5	2.0	2.8	3.9	4.3	4.5	3.9
Nonunion	1.1	.6	1.5	1.3	1.1	1.2	3.7	3.6	4.0	4.5	4.5	5.1
State and local governments	2.3	.9	1.3	.3	2.7	1.1	4.2	4.4	4.9	5.0	5.4	5.6
Employment Cost Index--wages and salaries:												
Civilian nonfarm ²	1.3	.7	1.0	.9	1.3	1.0	3.4	3.5	3.5	3.9	3.9	4.3
Private nonfarm	1.0	.6	1.0	1.1	1.0	1.0	3.3	3.3	3.3	3.7	3.7	4.1
Union .....	.6	1.1	.4	.8	.7	.4	1.7	2.6	2.6	2.9	2.9	2.2
Nonunion	1.1	.5	1.0	1.2	1.0	1.1	3.8	3.6	3.5	4.0	3.9	4.5
State and local governments	2.3	.9	.9	.3	2.6	1.0	4.1	4.2	4.4	4.4	4.7	4.8
Total effective wage adjustments³												
From current settlements .....	.9	.8	.4	.9	.8	.5	2.6	3.1	3.2	3.0	2.9	2.6
From prior settlements .....	.2	.3	.1	.3	.2	.1	.4	.7	.8	1.0	1.0	.7
From cost-of-living provision .....	.6	.3	.3	.5	.4	.2	1.7	1.8	1.8	1.6	1.4	1.3
From negotiated wage adjustments from settlements: ³												
First-year adjustments .....	.1	.2	.1	.1	.2	.2	.4	.5	.5	.5	.5	.6
Negotiated wage adjustments from settlements:³												
First-year adjustments	2.1	2.4	2.1	2.6	2.7	2.7	2.0	2.2	2.4	2.4	2.5	2.6
Annual rate over life of contract	2.0	1.8	2.3	2.2	2.8	2.3	2.2	2.1	2.2	2.0	2.2	2.4
Negotiated wage and benefit adjustments from settlements:⁴												
First-year adjustment	2.5	3.4	1.8	3.1	3.4	3.8	2.7	3.0	3.1	3.0	3.1	3.1
Annual rate over life of contract	2.1	2.4	1.8	2.4	3.2	2.2	2.6	2.6	2.5	2.3	2.5	2.5

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 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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
TOTAL																
Noninstitutional population ^{1, 2}	184,490	186,322	185,705	185,847	185,964	186,088	186,247	186,402	186,522	186,666	186,801	186,949	187,098	187,340	187,461	
Labor force ²	121,602	123,378	122,901	122,672	123,060	122,917	123,209	123,331	123,692	123,688	123,778	124,215	124,259	125,124	124,865	
Participation rate ³	65.9	66.2	66.2	66.0	66.2	66.1	66.2	66.2	66.3	66.3	66.4	66.4	66.4	66.8	66.6	
Total employed ²	114,177	116,677	116,009	115,865	116,392	116,117	116,686	116,707	116,895	117,074	117,260	117,652	117,705	118,407	118,537	
Employment-population ratio ⁴	61.9	62.6	62.5	62.3	62.6	62.4	62.7	62.6	62.7	62.7	62.8	62.9	62.9	63.2	63.2	
Resident Armed Forces ¹	1,737	1,709	1,736	1,736	1,732	1,714	1,685	1,673	1,692	1,704	1,687	1,705	1,696	1,696	1,684	
Civilian employed	112,440	114,968	114,273	114,129	114,660	114,403	115,001	115,034	115,203	115,370	115,573	115,947	116,009	116,711	116,853	
Agriculture	3,208	3,169	3,200	3,181	3,187	3,110	3,121	3,060	3,142	3,176	3,238	3,238	3,193	3,300	3,223	
Nonagricultural industries	109,232	111,800	111,073	110,948	111,473	111,293	111,880	111,974	112,061	112,194	112,335	112,709	112,816	113,411	113,630	
Unemployed	7,425	6,701	6,892	6,807	6,668	6,800	6,523	6,624	6,797	6,614	6,518	6,563	6,554	6,716	6,328	
Unemployment rate ⁵	6.1	5.4	5.6	5.5	5.4	5.5	5.3	5.4	5.5	5.3	5.3	5.3	5.3	5.4	5.1	
Not in labor force	62,888	62,944	62,804	63,175	62,904	63,171	63,038	63,071	62,830	62,978	63,023	62,734	62,839	62,216	62,596	
Men, 16 years and over																
Noninstitutional population ^{1, 2}	88,476	89,404	89,099	89,168	89,225	89,287	89,367	89,445	89,504	89,577	89,637	89,716	89,792	89,914	89,973	
Labor force ²	67,784	68,474	68,289	68,194	68,462	68,409	68,436	68,461	68,685	68,604	68,569	68,686	68,638	69,032	69,113	
Participation rate ³	76.6	76.6	76.6	76.5	76.7	76.6	76.6	76.5	76.7	76.6	76.5	76.6	76.4	76.8	76.8	
Total employed ²	63,684	64,820	64,587	64,417	64,866	64,672	64,894	64,941	64,931	65,015	64,976	65,074	65,055	65,322	65,572	
Employment-population ratio ⁴	72.0	72.5	72.5	72.2	72.7	72.4	72.6	72.6	72.5	72.6	72.5	72.5	72.5	72.6	72.9	
Resident Armed Forces ¹	1,577	1,547	1,577	1,573	1,569	1,553	1,523	1,512	1,529	1,540	1,526	1,542	1,534	1,532	1,521	
Civilian employed	62,107	63,273	63,010	62,844	63,297	63,119	63,371	63,429	63,402	63,475	63,450	63,532	63,521	63,790	64,051	
Unemployed	4,101	3,655	3,702	3,777	3,596	3,737	3,542	3,520	3,754	3,589	3,593	3,612	3,583	3,710	3,540	
Unemployment rate ⁵	6.1	5.3	5.4	5.5	5.3	5.5	5.2	5.1	5.5	5.2	5.2	5.3	5.2	5.4	5.1	
Women, 16 years and over																
Noninstitutional population ^{1, 2}	96,013	96,918	96,606	96,679	96,739	96,801	96,880	96,957	97,018	97,089	97,164	97,234	97,306	97,427	97,488	
Labor force ²	53,818	54,904	54,612	54,478	54,598	54,508	54,773	54,870	55,007	55,084	55,209	55,529	55,621	56,091	55,752	
Participation rate ³	56.1	56.6	56.5	56.3	56.4	56.3	56.5	56.6	56.7	56.7	56.8	57.1	57.2	57.6	57.2	
Total employed ²	50,494	51,858	51,422	51,448	51,526	51,445	51,792	51,766	51,964	52,059	52,284	52,578	52,650	53,085	52,965	
Employment-population ratio ⁴	52.6	53.5	53.2	53.2	53.3	53.1	53.5	53.4	53.6	53.6	53.8	54.1	54.1	54.5	54.3	
Resident Armed Forces ¹	160	162	159	163	163	161	162	161	163	164	161	163	162	164	163	
Civilian employed	50,334	51,696	51,263	51,285	51,363	51,284	51,630	51,605	51,801	51,895	52,123	52,415	52,488	52,921	52,802	
Unemployed	3,324	3,046	3,190	3,030	3,072	3,063	2,981	3,104	3,043	3,025	2,925	2,951	2,971	3,006	2,787	
Unemployment rate ⁵	6.2	5.5	5.8	5.6	5.6	5.6	5.4	5.7	5.5	5.5	5.3	5.3	5.3	5.4	5.0	

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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
TOTAL																
Civilian noninstitutional population ¹	182,753	184,613	183,969	184,111	184,232	184,374	184,562	184,729	184,830	184,962	185,114	185,244	185,402	185,644	185,777	
Civilian labor force	119,865	121,669	121,165	120,936	121,328	121,203	121,524	121,658	122,000	121,984	122,091	122,510	122,563	123,428	123,181	
Participation rate	65.6	65.9	65.9	65.7	65.9	65.7	65.8	65.9	66.0	66.0	66.0	66.1	66.1	66.5	66.3	
Employed	112,440	114,968	114,273	114,129	114,660	114,403	115,001	115,034	115,203	115,370	115,573	115,947	116,009	116,711	116,853	
Employment-population ratio ²	61.5	62.3	62.1	62.0	62.2	62.0	62.3	62.3	62.3	62.4	62.4	62.6	62.6	62.9	62.9	
Unemployed	7,425	6,701	6,892	6,807	6,668	6,800	6,523	6,624	6,797	6,614	6,518	6,563	6,554	6,716	6,328	
Unemployment rate	6.2	5.5	5.7	5.6	5.5	5.6	5.4	5.4	5.6	5.4	5.3	5.4	5.3	5.4	5.1	
Not in labor force	62,888	62,944	62,804	63,175	62,904	63,171	63,038	63,071	62,830	62,978	63,023	62,734	62,839	62,216	62,596	
Men, 20 years and over																
Civilian noninstitutional population ¹	79,565	80,553	80,203	80,260	80,326	80,402	80,526	80,608	80,669	80,751	80,851	80,924	81,001	81,162	81,256	
Civilian labor force	62,095	62,768	62,614	62,532	62,774	62,721	62,669	62,729	62,916	62,884	62,915	62,995	63,002	63,358	63,490	
Participation rate	78.0	77.9	78.1	77.9	78.1	78.0	77.8	77.8	78.0	77.9	77.8	77.8	77.8	78.1	78.1	
Employed	58,726	59,781	59,561	59,468	59,833	59,656	59,780	59,897	59,839	59,979	60,004	59,999	60,049	60,420	60,636	
Employment-population ratio ²	73.8	74.2	74.3	74.1	74.5	74.2	74.2	74.3	74.2	74.3	74.2	74.1	74.1	74.4	74.6	
Agriculture	2,329	2,271	2,279	2,258	2,259	2,238	2,231	2,252	2,273	2,249	2,315	2,313	2,292	2,277	2,320	
Nonagricultural industries	56,397	57,510	57,282	57,210	57,574	57,418	57,549	57,645	57,566	57,730	57,689	57,686	57,757	58,143	58,316	
Unemployed	3,369	2,987	3,053	3,064	2,941	3,065	2,889	2,832	3,077	2,905	2,911	2,996	2,953	2,938	2,853	
Unemployment rate	5.4	4.8	4.9	4.9	4.7	4.9	4.6	4.5	4.9	4.6	4.6	4.8	4.7	4.6	4.5	
Women, 20 years and over																
Civilian noninstitutional population ¹	88,583	89,532	89,178	89,261	89,307	89,382	89,502	89,588	89,670	89,735	89,807	89,887	89,954	90,072	90,153	
Civilian labor force	49,783	50,870	50,530	50,510	50,591	50,532	50,690	50,807	50,959	50,991	51,201	51,558	51,587	51,998	51,821	
Participation rate	56.2	56.8	56.7	56.6	56.6	56.5	56.6	56.7	56.8	56.8	57.0	57.4	57.3	57.7	57.5	
Employed	47,074	48,383	47,934	48,060	48,120	48,040	48,205	48,242	48,492	48,535	48,788	49,113	49,165	49,543	49,514	
Employment-population ratio ²	53.1	54.0	53.8	53.8	53.9	53.7	53.9	53.8	54.1	54.1	54.3	54.6	54.7	55.0	54.9	
Agriculture	622	625	638	641	653	604	626	549	609	638	640	640	646	666	666	
Nonagricultural industries	46,453	47,757	47,296	47,419	47,467	47,436	47,579	47,693	47,883	47,897	48,148	48,473	48,519	48,827	48,849	
Unemployed	2,709	2,487	2,596	2,450	2,471	2,492	2,485	2,565	2,467	2,456	2,413	2,445	2,422	2,455	2,306	
Unemployment rate	5.4	4.9	5.1	4.9	4.9	4.9	4.9	5.0	4.8	4.8	4.7	4.7	4.7	4.7	4.5	
Both sexes, 16 to 19 years																
Civilian noninstitutional population ¹	14,606	14,527	14,588	14,591	14,598	14,590	14,534	14,533	14,491	14,477	14,456	14,433	14,447	14,410	14,367	
Civilian labor force	7,988	8,031	8,021	7,894	7,963	7,950	8,165	8,122	8,125	8,109	7,975	7,957	7,974	8,071	7,871	
Participation rate	54.7	55.3	55.0	54.1	54.5	54.5	56.2	55.9	56.1	56.0	55.2	55.1	55.2	56.0	54.8	
Employed	6,640	6,805	6,778	6,601	6,707	6,707	7,016	6,895	6,872	6,856	6,781	6,835	6,795	6,748	6,703	
Employment-population ratio ²	45.5	46.8	46.5	45.2	45.9	46.0	48.3	47.4	47.4	47.4	46.9	47.4	47.0	46.8	46.7	
Agriculture	258	273	283	282	275	268	264	259	260	289	283	285	255	307	237	
Nonagricultural industries	6,382	6,532	6,495	6,319	6,432	6,439	6,752	6,636	6,612	6,567	6,498	6,550	6,540	6,441	6,466	
Unemployed	1,347	1,226	1,243	1,293	1,256	1,243	1,149	1,227	1,253	1,253	1,194	1,122	1,179	1,323	1,168	
Unemployment rate	16.9	15.3	15.5	16.4	15.8	15.6	14.1	15.1	15.4	15.5	15.0	14.1	14.8	16.4	14.8	
White																
Civilian noninstitutional population ¹	156,958	158,194	157,773	157,868	157,943	158,034	158,166	158,279	158,340	158,422	158,524	158,603	158,705	158,865	158,947	
Civilian labor force	103,290	104,756	104,404	104,172	104,517	104,433	104,716	104,651	105,013	105,036	105,051	105,395	105,411	106,106	105,798	
Participation rate	65.8	66.2	66.2	66.0	66.2	66.1	66.2	66.1	66.3	66.3	66.3	66.5	66.4	66.8	66.6	
Employed	97,789	99,812	99,350	99,252	99,663	99,508	99,902	99,761	99,907	100,058	100,199	100,543	100,567	101,183	101,278	
Employment-population ratio ²	62.3	63.1	63.0	62.9	63.1	63.0	63.2	63.0	63.1	63.2	63.2	63.4	63.4	63.7	63.7	
Unemployed	5,501	4,944	5,054	4,920	4,854	4,925	4,814	4,890	5,106	4,978	4,852	4,852	4,844	4,923	4,521	
Unemployment rate	5.3	4.7	4.8	4.7	4.6	4.7	4.6	4.7	4.9	4.7	4.6	4.6	4.6	4.6	4.3	
Black																
Civilian noninstitutional population ¹	20,352	20,692	20,569	20,596	20,622	20,650	20,683	20,715	20,736	20,762	20,786	20,811	20,842	20,877	20,905	
Civilian labor force	12,993	13,205	13,138	13,100	13,101	13,102	13,066	13,283	13,236	13,201	13,290	13,330	13,405	13,477	13,476	
Participation rate	63.8	63.8	63.9	63.6	63.5	63.4	63.2	64.1	63.8	63.6	63.9	64.1	64.3	64.6	64.5	
Employed	11,309	11,658	11,504	11,461	11,534	11,514	11,543	11,761	11,733	11,758	11,807	11,831	11,856	11,860	11,873	
Employment-population ratio ²	55.6	56.3	55.9	55.6	55.9	55.8	55.8	56.8	56.6	56.6	56.8	56.8	56.9	56.8	56.8	
Unemployed	1,684	1,547	1,634	1,639	1,567	1,588	1,523	1,522	1,503	1,443	1,483	1,499	1,549	1,617	1,603	
Unemployment rate	13.0	11.7	12.4	12.5	12.0	12.1	11.7	11.5	11.4	10.9	11.2	11.2	11.6	12.0	11.9	

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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
Hispanic origin																
Civilian noninstitutional population ¹	12,867	13,325	13,153	13,192	13,230	13,268	13,306	13,344	13,381	13,419	13,458	13,495	13,533	13,564	13,606	
Civilian labor force	8,541	8,982	8,987	8,818	8,823	8,910	9,009	8,997	8,963	9,061	9,075	9,148	9,133	9,205	9,219	
Participation rate	66.4	67.4	68.3	66.8	66.7	67.2	67.7	67.4	67.0	67.5	67.4	67.8	67.5	67.9	67.8	
Employed	7,790	8,250	8,241	8,068	8,030	8,128	8,222	8,265	8,214	8,378	8,368	8,419	8,441	8,434	8,596	
Employment-population ratio ²	60.5	61.9	62.7	61.3	60.7	61.3	61.8	61.9	61.4	62.4	62.2	62.4	62.4	62.2	63.2	
Unemployed	751	732	746	730	793	782	787	732	749	683	707	729	692	771	624	
Unemployment rate	8.8	8.2	8.3	8.3	9.0	8.8	8.7	8.1	8.4	7.5	7.8	8.0	7.6	8.4	6.8	

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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
CHARACTERISTIC																
Civilian employed, 16 years and over	112,440	114,968	114,273	114,129	114,660	114,403	115,001	115,034	115,203	115,370	115,573	115,947	116,009	116,711	116,853	
Men	62,107	63,273	63,010	62,844	63,297	63,119	63,371	63,429	63,402	63,475	63,450	63,532	63,521	63,790	64,051	
Women	50,334	51,696	51,263	51,285	51,363	51,284	51,630	51,605	51,801	51,895	52,123	52,415	52,488	52,921	52,802	
Married men, spouse present ..	40,265	40,472	40,488	40,486	40,494	40,317	40,493	40,518	40,511	40,513	40,504	40,407	40,483	40,925	40,928	
Married women, spouse present	28,107	28,756	28,620	28,713	28,772	28,632	28,678	28,669	28,809	28,836	28,890	28,995	29,053	29,589	29,412	
Women who maintain families ..	6,060	6,211	6,151	6,158	6,091	6,000	6,130	6,170	6,280	6,253	6,344	6,375	6,399	6,416	6,385	
MAJOR INDUSTRY AND CLASS OF WORKER																
Agriculture:																
Wage and salary workers	1,632	1,621	1,640	1,610	1,632	1,574	1,583	1,572	1,607	1,612	1,661	1,672	1,698	1,684	1,645	
Self-employed workers	1,423	1,398	1,410	1,416	1,390	1,365	1,375	1,362	1,411	1,421	1,405	1,450	1,349	1,387	1,419	
Unpaid family workers	153	150	123	146	152	155	161	149	158	137	177	125	149	189	150	
Nonagricultural industries:																
Wage and salary workers	100,771	103,021	102,498	102,339	102,562	102,145	102,953	103,189	103,207	103,501	103,733	103,770	103,904	104,510	104,797	
Government	16,800	17,114	16,961	16,952	17,012	16,946	17,049	17,031	17,111	17,145	17,240	17,387	17,423	17,393	17,311	
Private industries	83,970	85,907	85,537	85,387	85,550	85,199	85,904	86,158	86,096	86,356	86,493	86,383	86,481	87,117	87,486	
Private households	1,208	1,153	1,167	1,167	1,114	1,152	1,146	1,132	1,128	1,119	1,152	1,209	1,210	1,196	1,135	
Other	82,762	84,754	84,370	84,220	84,436	84,047	84,758	85,026	84,968	85,237	85,341	85,174	85,271	85,921	86,350	
Self-employed workers	8,201	8,519	8,338	8,395	8,567	8,816	8,536	8,531	8,508	8,570	8,479	8,619	8,602	8,718	8,517	
Unpaid family workers	260	260	232	250	272	301	297	251	241	230	232	300	266	298	285	
PERSONS AT WORK PART TIME¹																
All industries:																
Part time for economic reasons ..	5,401	5,206	5,369	5,331	5,212	4,878	5,302	5,341	5,192	5,097	4,963	5,061	5,321	5,097	4,981	
Slack work	2,385	2,350	2,408	2,448	2,264	2,267	2,346	2,471	2,315	2,266	2,220	2,279	2,549	2,302	2,303	
Could only find part-time work ..	2,672	2,487	2,591	2,548	2,519	2,353	2,586	2,538	2,473	2,389	2,399	2,375	2,410	2,352	2,333	
Voluntary part time	14,395	14,963	14,619	14,654	14,949	14,813	14,612	15,026	14,999	15,270	15,161	15,446	15,363	15,401	15,126	
Nonagricultural industries:																
Part time for economic reasons ..	5,122	4,965	5,101	5,087	4,953	4,676	5,073	5,102	4,972	4,862	4,727	4,819	5,033	4,837	4,697	
Slack work	2,201	2,199	2,258	2,265	2,131	2,136	2,183	2,334	2,171	2,102	2,095	2,116	2,377	2,144	2,105	
Could only find part-time work ..	2,587	2,408	2,477	2,482	2,426	2,276	2,504	2,493	2,408	2,317	2,319	2,288	2,307	2,283	2,272	
Voluntary part time	13,928	14,509	14,172	14,203	14,441	14,376	14,180	14,606	14,564	14,819	14,679	14,986	14,928	14,970	14,688	

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		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
CHARACTERISTIC															
Total, all civilian workers	6.2	5.5	5.7	5.6	5.5	5.6	5.4	5.4	5.6	5.4	5.3	5.4	5.3	5.4	5.1
Both sexes, 16 to 19 years	16.9	15.3	15.5	16.4	15.8	15.6	14.1	15.1	15.4	15.5	15.0	14.1	14.8	16.4	14.8
Men, 20 years and over	5.4	4.8	4.9	4.9	4.7	4.9	4.6	4.5	4.9	4.6	4.6	4.8	4.7	4.6	4.5
Women, 20 years and over	5.4	4.9	5.1	4.9	4.9	4.9	4.9	5.0	4.8	4.8	4.7	4.7	4.7	4.7	4.5
White, total	5.3	4.7	4.8	4.7	4.6	4.7	4.6	4.7	4.9	4.7	4.6	4.6	4.6	4.6	4.3
Both sexes, 16 to 19 years	14.4	13.1	12.5	14.1	13.9	13.2	12.3	12.9	13.7	13.4	12.9	11.9	12.6	14.1	12.1
Men, 16 to 19 years	15.5	13.9	12.5	15.5	14.4	14.0	13.2	14.3	13.9	14.5	14.4	12.6	13.4	16.4	14.0
Women, 16 to 19 years	13.4	12.3	12.6	12.6	13.3	12.3	11.4	11.4	13.5	12.3	11.3	11.3	11.8	11.7	10.2
Men, 20 years and over	4.8	4.1	4.2	4.2	4.0	4.2	4.0	3.9	4.3	4.1	4.1	4.2	4.1	4.0	3.8
Women, 20 years and over	4.6	4.1	4.4	3.9	4.0	4.1	4.1	4.3	4.1	4.1	4.0	4.0	3.9	3.9	3.6
Black, total	13.0	11.7	12.4	12.5	12.0	12.1	11.7	11.5	11.4	10.9	11.2	11.2	11.6	12.0	11.9
Both sexes, 16 to 19 years	34.7	32.4	36.8	35.8	30.8	33.9	30.6	31.7	32.1	31.9	30.9	31.1	29.6	34.5	32.4
Men, 16 to 19 years	34.4	32.7	39.9	37.8	27.9	33.2	31.5	31.2	32.1	31.9	32.8	32.1	29.8	36.7	33.1
Women, 16 to 19 years	34.9	32.0	33.8	33.9	33.9	34.8	29.6	32.4	32.0	31.9	28.6	29.9	29.3	32.0	31.6
Men, 20 years and over	11.1	10.1	10.9	11.0	10.4	10.4	9.9	9.6	9.7	9.1	9.6	9.8	10.0	10.4	10.5
Women, 20 years and over	11.6	10.4	10.5	10.8	10.9	10.6	10.6	10.3	10.0	9.7	9.8	9.8	10.5	10.4	10.3
Hispanic origin, total	8.8	8.2	8.3	8.3	9.0	8.8	8.7	8.1	8.4	7.5	7.8	8.0	7.6	8.4	6.8
Married men, spouse present	3.9	3.3	3.4	3.4	3.1	3.3	3.2	3.1	3.4	3.1	3.1	3.3	3.1	3.1	3.1
Married women, spouse present	4.3	3.9	4.0	4.0	3.8	3.9	3.9	4.0	4.0	3.8	3.7	3.8	3.7	3.6	3.4
Women who maintain families	9.2	8.1	8.3	7.5	8.5	8.4	7.9	8.5	7.5	8.1	7.9	7.7	8.2	8.0	8.0
Full-time workers	5.8	5.2	5.3	5.3	5.1	5.2	5.0	5.0	5.3	5.1	5.0	5.0	5.1	5.0	4.8
Part-time workers	8.4	7.6	7.9	7.8	7.5	7.7	7.7	8.0	7.4	7.4	7.4	7.1	7.0	7.9	7.3
Unemployed 15 weeks and over	1.7	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.1
Labor force time lost ¹	7.1	6.3	6.6	6.5	6.2	6.4	6.3	6.4	6.4	6.3	6.1	6.2	6.3	6.2	5.9
INDUSTRY															
Nonagricultural private wage and salary workers	6.2	5.5	5.7	5.6	5.4	5.6	5.4	5.4	5.6	5.4	5.4	5.5	5.4	5.6	5.1
Mining	10.0	7.9	7.8	8.2	8.1	9.4	6.8	5.4	7.0	8.6	8.8	8.9	7.7	6.1	8.0
Construction	11.6	10.6	10.9	10.6	10.6	10.5	10.3	10.4	10.7	9.6	10.0	10.6	10.4	10.4	10.0
Manufacturing	6.0	5.3	5.6	5.2	5.3	5.3	4.9	5.2	5.5	5.4	5.3	5.1	5.2	5.3	4.9
Durable goods	5.8	5.0	5.7	5.1	4.8	4.9	4.5	4.9	5.0	5.2	5.0	4.9	5.0	5.0	4.4
Non-durable goods	6.3	5.7	5.4	5.4	5.9	5.9	5.5	5.6	6.3	5.8	5.7	5.3	5.5	5.7	5.5
Transportation and public utilities	4.5	3.9	3.8	4.1	3.8	4.2	4.1	3.6	3.8	3.8	3.5	4.0	3.8	3.8	3.9
Wholesale and retail trade	6.9	6.2	6.3	6.7	5.9	6.3	6.0	6.2	6.4	6.2	6.0	6.2	6.3	6.3	5.6
Finance and service industries	4.9	4.5	4.6	4.3	4.3	4.6	4.6	4.5	4.4	4.4	4.5	4.6	4.1	4.7	4.3
Government workers	3.5	2.8	2.9	2.9	3.0	2.9	2.9	3.0	2.9	2.7	2.6	2.5	2.7	2.7	2.7
Agricultural wage and salary workers	10.5	10.6	10.5	11.0	11.0	12.4	10.0	11.0	11.0	10.8	10.2	9.3	8.8	9.5	8.9

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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
Total, 16 years and over	6.2	5.5	5.7	5.6	5.5	5.6	5.4	5.4	5.6	5.4	5.3	5.4	5.3	5.4	5.1	
16 to 24 years	12.2	11.0	11.1	11.6	11.2	11.2	10.5	10.9	11.0	10.9	10.9	10.6	10.9	11.9	10.5	
16 to 19 years	16.9	15.3	15.5	16.4	15.8	15.6	14.1	15.1	15.4	15.5	15.0	14.1	14.8	16.4	14.8	
16 to 17 years	19.1	17.4	17.7	17.7	17.7	16.7	15.9	17.5	18.5	19.6	17.2	15.8	16.6	18.3	18.2	
18 to 19 years	15.2	13.8	14.1	15.3	14.1	14.8	13.3	13.1	13.7	12.8	13.3	12.9	13.3	15.4	12.7	
20 to 24 years	9.7	8.7	8.7	9.0	8.7	8.8	8.5	8.5	8.4	8.4	8.6	8.7	8.7	9.3	8.1	
25 years and over	4.8	4.3	4.4	4.2	4.2	4.3	4.2	4.2	4.4	4.2	4.1	4.2	4.1	4.1	4.0	
25 to 54 years	5.0	4.5	4.7	4.5	4.4	4.5	4.4	4.4	4.5	4.4	4.3	4.4	4.3	4.2	4.2	
55 years and over	3.3	3.1	3.2	2.9	3.0	3.3	3.0	3.1	3.2	2.9	2.8	2.8	3.0	3.1	3.1	
Men, 16 years and over	6.2	5.5	5.5	5.7	5.4	5.6	5.3	5.3	5.6	5.4	5.4	5.4	5.3	5.5	5.2	
16 to 24 years	12.6	11.4	11.4	11.9	11.2	11.5	11.0	11.3	11.4	11.3	11.8	10.9	11.1	12.8	11.1	
16 to 19 years	17.8	16.0	15.8	17.4	15.9	16.3	15.4	16.3	16.0	16.4	16.5	14.8	15.4	18.6	16.7	
16 to 17 years	20.2	18.2	17.6	18.6	17.6	17.4	17.5	18.1	17.7	20.8	18.5	17.3	17.3	20.6	19.6	
18 to 19 years	16.0	14.6	14.9	16.6	14.7	15.3	14.3	14.4	14.5	13.5	15.0	13.0	13.5	17.9	15.1	
20 to 24 years	9.9	8.9	9.0	9.0	8.7	8.9	8.5	8.5	8.9	8.5	9.2	8.8	8.7	9.6	8.1	
25 years and over	4.8	4.2	4.3	4.3	4.1	4.3	4.1	4.0	4.4	4.1	4.0	4.2	4.1	4.0	4.0	
25 to 54 years	5.0	4.4	4.5	4.5	4.3	4.4	4.2	4.2	4.5	4.3	4.2	4.4	4.3	4.2	4.1	
55 years and over	3.5	3.3	3.4	3.4	3.2	3.5	3.2	3.2	3.4	2.9	3.0	3.2	3.3	3.0	3.4	
Women, 16 years and over	6.2	5.6	5.9	5.6	5.6	5.6	5.5	5.7	5.5	5.5	5.3	5.3	5.4	5.4	5.0	
16 to 24 years	11.7	10.6	10.9	11.2	11.1	10.9	10.0	10.5	10.4	10.5	9.9	10.3	10.7	10.9	9.7	
16 to 19 years	15.9	14.4	15.1	15.2	15.6	15.0	12.6	13.8	14.8	14.5	13.3	13.3	14.2	14.0	12.8	
16 to 17 years	18.0	16.6	17.7	16.7	17.7	16.0	14.1	16.8	19.2	18.2	15.8	14.1	15.8	15.9	16.8	
18 to 19 years	14.3	12.9	13.3	14.0	13.5	14.2	12.1	11.6	12.8	12.0	11.6	12.8	13.1	12.7	10.0	
20 to 24 years	9.4	8.5	8.5	9.0	8.6	8.6	8.6	8.6	8.0	8.2	7.9	8.6	8.7	9.1	8.0	
25 years and over	4.8	4.3	4.6	4.1	4.3	4.4	4.3	4.4	4.3	4.3	4.2	4.2	4.1	4.1	3.9	
25 to 54 years	5.1	4.6	4.9	4.5	4.6	4.6	4.6	4.6	4.7	4.6	4.5	4.5	4.4	4.3	4.2	
55 years and over	3.0	2.8	3.0	2.4	2.8	3.1	2.8	2.9	2.8	2.9	2.4	2.4	2.6	3.1	2.5	

9. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Reason for unemployment	Annual average		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
Job losers	3,566	3,092	3,182	3,131	2,968	3,201	3,070	3,085	3,112	3,079	2,951	3,031	3,066	3,121	2,876	
On layoff	943	851	877	882	844	806	861	853	890	833	844	814	819	827	774	
Other job losers	2,623	2,241	2,305	2,249	2,124	2,395	2,209	2,232	2,232	2,246	2,107	2,217	2,247	2,294	2,102	
Job leavers	965	983	969	1,059	985	942	953	923	986	985	984	963	998	985	985	
Reentrants	1,974	1,809	1,916	1,792	1,804	1,804	1,747	1,883	1,843	1,767	1,747	1,766	1,725	1,835	1,740	
New entrants	920	816	855	871	886	811	800	799	800	761	747	799	799	780	765	
PERCENT OF UNEMPLOYED																
Job losers	48.0	46.1	46.0	45.7	44.7	47.4	46.7	46.1	46.2	46.7	45.9	46.2	46.5	46.4	45.2	
On layoff	12.7	12.7	12.7	12.9	12.7	11.9	13.1	12.8	13.1	12.6	13.1	12.4	12.4	12.3	12.2	
Other job losers	35.3	33.4	33.3	32.8	32.0	35.4	33.6	33.4	33.1	34.1	32.8	33.8	34.1	34.1	33.0	
Job leavers	13.0	14.7	14.0	15.5	14.8	13.9	14.5	13.8	14.6	14.9	15.3	14.7	15.1	14.7	15.5	
Reentrants	26.6	27.0	27.7	26.1	27.2	26.7	26.6	28.1	27.3	26.8	27.2	26.9	26.2	27.3	27.3	
New entrants	12.4	12.2	12.4	12.7	13.3	12.0	12.2	11.9	11.9	11.5	11.6	12.2	12.1	11.6	12.0	
PERCENT OF CIVILIAN LABOR FORCE																
Job losers	3.0	2.5	2.6	2.6	2.4	2.6	2.5	2.5	2.6	2.5	2.4	2.5	2.5	2.5	2.3	
Job leavers .....	.8	.8	.8	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8
Reentrants	1.6	1.5	1.6	1.5	1.5	1.5	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.4	
New entrants .....	.8	.7	.7	.7	.7	.7	.7	.7	.7	.6	.6	.7	.7	.6	.6

10. Duration of unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Weeks of unemployment	Annual average		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
Less than 5 weeks	3,246	3,084	3,097	3,057	3,093	3,072	3,093	2,985	3,158	3,116	3,059	3,117	3,029	3,181	3,247	
5 to 14 weeks	2,196	2,007	2,093	2,060	1,969	2,068	1,910	2,041	1,956	1,896	1,835	1,935	2,039	2,081	1,865	
15 weeks and over	1,983	1,610	1,732	1,693	1,582	1,614	1,543	1,619	1,636	1,568	1,554	1,502	1,495	1,512	1,304	
15 to 26 weeks	943	801	842	851	756	789	749	826	831	775	788	787	758	757	665	
27 weeks and over	1,040	809	890	842	826	825	794	793	805	793	766	715	737	755	639	
Mean duration in weeks	14.5	13.5	14.1	13.8	13.5	13.8	13.2	13.5	13.5	13.5	13.4	12.6	12.8	12.7	12.1	
Median duration in weeks	6.5	5.9	6.3	6.4	5.8	5.9	5.9	6.2	5.9	5.7	5.7	5.6	5.8	5.7	5.3	

11. Unemployment rates of civilian workers by State, data not seasonally adjusted

State	Jan. 1988	Jan. 1989	State	Jan. 1988	Jan. 1989
Alabama	8.0	8.5	Montana	9.5	7.3
Alaska	10.9	10.4	Nebraska	5.2	3.5
Arizona	5.7	5.8	Nevada	7.2	5.9
Arkansas	9.3	7.9	New Hampshire	3.3	2.9
California	5.6	5.4	New Jersey	4.5	4.6
Colorado	7.8	7.3	New Mexico	8.9	7.1
Connecticut	3.7	3.7	New York	5.0	5.6
Delaware	4.5	3.4	North Carolina	5.1	4.4
District of Columbia	6.1	5.3	North Dakota	7.0	5.7
Florida	5.0	5.9	Ohio	7.1	6.9
Georgia	6.4	5.6	Oklahoma	7.6	6.6
Hawaii	3.9	3.5	Oregon	7.1	6.1
Idaho	9.2	7.1	Pennsylvania	6.2	5.0
Illinois	7.4	6.4	Rhode Island	4.0	3.2
Indiana	6.6	5.1	South Carolina	6.1	4.6
Iowa	7.1	4.9	South Dakota	4.7	4.8
Kansas	5.6	5.2	Tennessee	7.0	6.5
Kentucky	9.5	8.1	Texas	8.4	7.6
Louisiana	12.2	11.8	Utah	6.7	4.4
Maine	5.5	4.6	Vermont	4.1	3.3
Maryland	5.2	4.0	Virginia	4.3	4.3
Massachusetts	3.8	3.8	Washington	8.2	6.8
Michigan	10.7	7.8	West Virginia	13.8	8.4
Minnesota	6.1	5.1	Wisconsin	7.1	4.6
Mississippi	10.7	9.4	Wyoming	8.9	8.0
Missouri	6.8	6.5			

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	Jan. 1988	Dec. 1988	Jan. 1989 ^P	State	Jan. 1988	Dec. 1988	Jan. 1989 ^P
Alabama	1,516.9	1,567.2	1,548.7	Nebraska	665.4	705.4	692.8
Alaska	195.2	207.1	199.2	Nevada	509.5	556.2	549.9
Arizona	1,397.6	1,434.8	1,411.0	New Hampshire	514.1	543.3	530.4
Arkansas	829.4	873.1	858.9	New Jersey	3,544.1	3,700.0	3,611.2
California	11,767.3	12,378.3	12,194.9	New Mexico	525.5	549.6	539.0
Colorado	1,404.8	1,444.9	1,420.2	New York	7,977.0	8,335.9	8,116.0
Connecticut	1,642.9	1,709.2	1,671.1	North Carolina	2,884.5	3,030.8	2,984.9
Delaware	317.4	338.0	333.9	North Dakota	248.1	259.0	253.1
District of Columbia	654.7	682.2	670.9	Ohio	4,546.1	4,781.8	4,671.4
Florida	4,954.3	5,257.1	5,220.1	Oklahoma	1,106.3	1,145.1	1,125.5
Georgia	2,806.8	2,949.9	2,924.4	Oregon	1,101.5	1,183.3	1,157.8
Hawaii	465.4	490.1	483.0	Pennsylvania	4,891.6	5,106.8	4,993.7
Idaho	390.0	357.2	348.2	Rhode Island	444.4	464.4	448.7
Illinois	4,958.9	5,136.7	5,082.8	South Carolina	1,393.4	1,479.4	1,457.9
Indiana	2,317.0	2,450.1	2,413.1	South Dakota	253.5	265.5	258.0
Iowa	1,105.9	1,185.6	1,158.3	Tennessee	2,011.0	2,073.1	2,045.3
Kansas	1,001.9	1,052.2	1,030.0	Texas	6,501.6	6,755.0	6,697.4
Kentucky	1,396.6	1,395.4	1,373.2	Utah	636.9	682.7	661.8
Louisiana	1,476.2	1,517.0	1,497.5	Vermont	248.9	264.3	259.3
Maine	497.1	530.1	514.9	Virginia	2,683.6	2,860.7	2,804.7
Maryland	2,022.1	2,139.4	2,078.5	Washington	1,855.0	1,984.5	1,955.4
Massachusetts	3,034.7	3,182.3	3,100.2	West Virginia	590.0	616.9	602.4
Michigan	3,706.5	3,890.2	3,806.9	Wisconsin	2,072.6	2,185.0	2,139.5
Minnesota	1,951.2	2,059.2	2,011.4	Wyoming	177.7	177.9	174.6
Mississippi	870.6	910.2	897.4	Puerto Rico	792.1	836.6	823.7
Missouri	2,171.3	2,269.6	2,219.4	Virgin Islands	40.6	41.5	40.6
Montana	270.2	280.8	273.9				

^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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
TOTAL	102,310	106,039	104,729	105,020	105,281	105,489	106,057	106,271	106,425	106,737	106,973	107,419	107,641	108,056	108,345	
PRIVATE SECTOR	85,295	88,653	87,475	87,700	87,973	88,139	88,678	88,941	89,066	89,205	89,481	89,855	90,100	90,515	90,739	
GOODS-PRODUCING	24,784	25,565	25,271	25,330	25,435	25,466	25,592	25,663	25,639	25,648	25,743	25,849	25,889	26,044	26,012	
Mining	721	733	731	733	737	739	740	740	739	734	729	722	719	716	714	
Oil and gas extraction	405	417	415	419	421	425	425	424	423	419	413	406	402	399	398	
Construction	4,998	5,293	5,150	5,192	5,238	5,237	5,308	5,330	5,340	5,365	5,366	5,413	5,430	5,535	5,513	
General building contractors	1,326	1,396	1,377	1,383	1,400	1,394	1,412	1,400	1,401	1,404	1,393	1,406	1,414	1,440	1,435	
Manufacturing	19,065	19,539	19,390	19,405	19,460	19,490	19,544	19,593	19,560	19,549	19,648	19,714	19,740	19,793	19,785	
Production workers	12,995	13,338	13,249	13,251	13,280	13,302	13,341	13,382	13,352	13,332	13,412	13,465	13,481	13,524	13,524	
Durable goods	11,218	11,516	11,404	11,411	11,459	11,477	11,515	11,566	11,547	11,537	11,595	11,637	11,651	11,688	11,674	
Production workers	7,453	7,677	7,599	7,598	7,632	7,649	7,676	7,720	7,705	7,689	7,733	7,765	7,776	7,806	7,801	
Lumber and wood products	740	758	756	755	758	757	757	756	753	753	760	767	771	776	770	
Furniture and fixtures	518	538	535	534	535	537	537	541	537	538	540	541	540	540	542	
Stone, clay, and glass products	582	587	584	585	587	585	587	589	586	585	588	590	592	592	593	
Primary metal industries	749	782	770	772	773	776	781	789	785	787	794	796	794	796	794	
Blast furnaces and basic steel products	269	281	280	281	281	281	281	282	281	280	282	282	280	281	281	
Fabricated metal products	1,407	1,455	1,438	1,439	1,444	1,448	1,457	1,464	1,458	1,460	1,469	1,474	1,479	1,487	1,490	
Machinery, except electrical	2,023	2,138	2,091	2,099	2,111	2,121	2,134	2,151	2,156	2,159	2,173	2,185	2,190	2,196	2,203	
Electrical and electronic equipment	2,084	2,120	2,112	2,115	2,117	2,115	2,120	2,122	2,126	2,124	2,126	2,130	2,123	2,120	2,115	
Transportation equipment	2,048	2,042	2,031	2,025	2,045	2,048	2,047	2,052	2,044	2,032	2,045	2,050	2,051	2,066	2,050	
Motor vehicles and equipment	865	850	837	835	848	851	850	857	855	849	859	860	858	871	857	
Instruments and related products	696	713	705	705	706	709	713	715	718	716	719	721	726	729	729	
Miscellaneous manufacturing industries	370	383	382	382	383	381	382	387	384	383	381	383	385	386	388	
Nondurable goods	7,847	8,023	7,986	7,994	8,001	8,013	8,029	8,027	8,013	8,012	8,053	8,077	8,089	8,105	8,111	
Production workers	5,543	5,662	5,650	5,653	5,648	5,653	5,665	5,662	5,647	5,643	5,679	5,700	5,705	5,718	5,723	
Food and kindred products	1,624	1,645	1,649	1,647	1,648	1,643	1,645	1,631	1,630	1,632	1,654	1,661	1,656	1,664	1,658	
Tobacco manufactures	54	53	54	54	54	52	53	52	52	51	52	53	53	52	52	
Textile mill products	725	726	732	729	727	728	727	726	719	722	722	723	722	725	724	
Apparel and other textile products	1,100	1,097	1,104	1,106	1,100	1,100	1,097	1,096	1,089	1,087	1,086	1,093	1,096	1,096	1,100	
Paper and allied products	679	689	686	687	687	689	691	692	691	688	691	691	692	691	691	
Printing and publishing	1,507	1,565	1,544	1,548	1,554	1,559	1,565	1,567	1,572	1,575	1,581	1,583	1,592	1,597	1,599	
Chemicals and allied products	1,026	1,063	1,049	1,052	1,056	1,060	1,065	1,067	1,070	1,069	1,071	1,073	1,076	1,081	1,082	
Petroleum and coal products	165	167	165	164	165	166	167	167	167	168	169	169	168	167	168	
Rubber and misc. plastics products	823	873	856	860	864	870	873	882	878	874	882	887	890	887	892	
Leather and leather products	144	146	147	147	146	146	146	147	145	146	145	144	144	145	145	
SERVICE-PRODUCING	77,525	80,475	79,458	79,690	79,846	80,023	80,465	80,608	80,786	81,089	81,230	81,570	81,752	82,012	82,333	
Transportation and public utilities	5,385	5,584	5,513	5,530	5,543	5,556	5,582	5,598	5,605	5,618	5,631	5,658	5,670	5,711	5,723	
Transportation	3,166	3,336	3,272	3,285	3,298	3,308	3,332	3,345	3,351	3,366	3,380	3,407	3,422	3,453	3,465	
Communication and public utilities	2,218	2,248	2,241	2,245	2,245	2,248	2,250	2,253	2,254	2,252	2,251	2,251	2,248	2,258	2,258	
Wholesale trade	5,872	6,156	6,035	6,061	6,089	6,115	6,148	6,174	6,192	6,219	6,246	6,275	6,301	6,332	6,362	
Durable goods	3,449	3,666	3,573	3,591	3,610	3,635	3,660	3,681	3,696	3,714	3,736	3,758	3,779	3,796	3,815	
Nondurable goods	2,423	2,490	2,462	2,470	2,479	2,480	2,488	2,493	2,496	2,505	2,510	2,517	2,522	2,536	2,547	
Retail trade	18,509	19,206	19,045	19,050	19,093	19,130	19,205	19,261	19,279	19,291	19,327	19,401	19,429	19,557	19,631	
General merchandise stores	2,432	2,540	2,561	2,543	2,546	2,541	2,549	2,545	2,539	2,533	2,520	2,533	2,544	2,580	2,600	
Food stores	3,957	3,089	3,029	3,044	3,049	3,053	3,080	3,097	3,106	3,110	3,143	3,157	3,177	3,195	3,202	
Automotive dealers and service stations	2,004	2,079	2,047	2,055	2,064	2,070	2,076	2,088	2,095	2,095	2,103	2,106	2,106	2,108	2,115	
Eating and drinking places	6,127	6,360	6,291	6,319	6,326	6,336	6,352	6,369	6,377	6,384	6,415	6,440	6,449	6,466	6,493	
Finance, insurance, and real estate	6,549	6,679	6,636	6,651	6,650	6,656	6,679	6,684	6,689	6,692	6,708	6,725	6,741	6,732	6,743	
Finance	3,275	3,305	3,305	3,306	3,302	3,299	3,304	3,300	3,298	3,300	3,308	3,314	3,325	3,320	3,325	
Insurance	2,022	2,075	2,053	2,060	2,065	2,067	2,074	2,077	2,081	2,083	2,089	2,092	2,101	2,095	2,099	
Real estate	1,252	1,299	1,278	1,285	1,283	1,290	1,301	1,307	1,310	1,309	1,311	1,319	1,315	1,317	1,319	
Services	24,196	25,464	24,975	25,078	25,163	25,216	25,472	25,561	25,662	25,737	25,826	25,947	26,070	26,139	26,268	
Business services	5,172	5,478	5,385	5,405	5,420	5,443	5,480	5,500	5,512	5,538	5,553	5,563	5,605	5,578	5,619	
Health services	6,828	7,228	7,056	7,088	7,126	7,153	7,203	7,238	7,271	7,323	7,365	7,414	7,466	7,497	7,544	
Government	17,015	17,387	17,254	17,320	17,308	17,350	17,379	17,330	17,359	17,532	17,492	17,564	17,541	17,541	17,606	
Federal	2,943	2,971	2,972	2,970	2,963	2,957	2,951	2,951	2,956	2,989	2,989	2,989	2,990	2,973	2,975	
State	3,963	4,051	4,014	4,031	4,041	4,050	4,049	4,059	4,070	4,086	4,070	4,074	4,071	4,061	4,079	
Local	10,109	10,365	10,268	10,319	10,304	10,343	10,379	10,320	10,333	10,457	10,433	10,501	10,480	10,507	10,552	

^o = 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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. ^P	Feb. ^P	
PRIVATE SECTOR	34.8	34.8	34.8	34.6	34.9	34.7	34.7	34.9	34.6	34.7	34.9	34.8	34.7	34.8	34.7	
MANUFACTURING	41.0	41.1	41.0	40.9	41.2	41.0	41.1	41.1	41.0	41.2	41.2	41.2	40.8	41.0	41.0	
Overtime hours	3.7	3.9	3.7	3.7	3.9	3.9	3.9	3.9	3.9	3.9	4.0	3.9	3.9	3.9	3.9	
Durable goods	41.5	41.8	41.5	41.5	42.0	41.8	41.8	41.8	41.6	41.9	41.9	41.9	41.5	41.8	41.6	
Overtime hours	3.8	4.1	3.8	3.8	4.2	4.2	4.1	4.0	4.1	4.0	4.2	4.2	4.1	4.1	4.0	
Lumber and wood products	40.6	40.3	40.3	40.1	40.6	40.1	40.2	40.5	40.0	39.9	40.7	40.3	40.3	40.3	39.6	
Furniture and fixtures	40.0	39.4	39.5	39.3	39.5	39.5	39.4	39.7	39.0	39.6	39.4	39.4	39.2	40.0	39.6	
Stone, clay, and glass products	42.3	42.3	42.3	42.3	42.5	42.3	42.4	42.1	42.1	42.3	42.5	42.6	42.4	42.6	41.8	
Primary metal industries	43.1	43.6	43.1	43.3	43.5	43.6	43.6	43.4	43.5	44.0	43.8	43.7	43.4	43.7	43.3	
Blast furnaces and basic steel products	43.4	44.0	43.8	43.7	43.8	43.9	44.3	44.0	44.0	44.6	44.3	44.0	43.7	43.9	43.7	
Fabricated metal products	41.5	41.8	41.6	41.6	42.0	41.9	42.0	41.7	41.8	42.0	41.9	42.2	41.7	41.8	41.7	
Machinery except electrical	42.2	42.6	42.6	42.5	42.8	42.6	42.5	43.0	42.4	42.7	42.6	42.5	42.3	42.4	42.4	
Electrical and electronic equipment	40.9	41.0	40.9	40.9	41.2	41.0	41.1	41.0	40.8	41.0	41.0	41.0	40.7	40.7	40.7	
Transportation equipment	42.0	42.7	42.0	42.1	43.0	43.0	43.0	42.6	42.7	43.3	43.3	43.3	42.4	42.7	42.8	
Motor vehicles and equipment	42.2	43.5	42.3	42.3	44.1	44.0	44.2	42.5	43.6	44.5	44.2	44.6	43.0	43.4	43.6	
Instruments and related products	41.4	41.5	41.3	41.4	41.8	41.4	41.3	41.8	41.5	41.6	41.9	41.6	41.0	41.7	41.7	
Miscellaneous manufacturing	39.4	39.2	39.3	39.2	39.4	39.2	39.3	39.2	39.2	39.2	39.1	39.2	38.9	39.5	39.6	
Nondurable goods	40.2	40.2	40.2	40.1	40.3	40.0	40.1	40.2	40.1	40.2	40.2	40.2	39.9	40.1	40.1	
Overtime hours	3.6	3.7	3.6	3.6	3.6	3.6	3.6	3.7	3.6	3.7	3.8	3.6	3.6	3.6	3.7	
Food and kindred products	40.2	40.4	40.3	40.1	40.1	40.1	40.3	40.5	40.4	40.3	40.6	40.6	40.3	40.1	40.2	
Textile mill products	41.8	41.1	41.6	41.2	41.6	40.8	40.7	41.1	41.1	41.1	41.0	41.0	40.5	40.8	40.7	
Apparel and other textile products	37.0	36.9	37.0	37.0	37.4	36.8	36.9	36.9	36.8	37.1	36.8	37.0	36.6	37.0	37.0	
Paper and allied products	43.4	43.2	43.3	43.2	43.3	43.3	43.2	43.2	43.2	43.3	43.2	43.1	43.1	43.1	43.3	
Printing and publishing	38.0	38.0	38.1	38.1	38.2	37.7	38.0	38.0	38.0	38.1	38.0	37.8	37.7	38.0	37.9	
Chemicals and allied products	42.3	42.3	42.4	42.5	42.1	42.0	42.4	42.3	42.1	42.1	42.5	42.4	42.3	42.5	42.5	
Rubber and miscellaneous plastics products	41.6	41.6	41.6	41.7	42.0	41.7	41.6	41.6	41.5	41.6	41.5	41.7	41.2	41.6	41.6	
Leather and leather products	38.2	37.5	37.8	37.9	37.3	37.3	36.9	37.0	37.6	37.5	37.9	37.3	37.7	38.3	38.6	
TRANSPORTATION AND PUBLIC UTILITIES	39.2	39.3	39.1	38.8	39.5	39.4	39.3	39.5	39.3	39.4	39.4	39.2	39.4	39.5	39.3	
WHOLESALE TRADE	37.5	37.4	38.2	38.1	38.3	38.0	37.9	38.2	37.8	38.1	38.1	38.0	38.0	38.2	38.1	
RETAIL TRADE	29.2	29.1	29.1	29.0	29.2	29.0	29.1	29.3	29.0	28.9	29.2	29.0	29.2	29.2	29.1	
SERVICES	32.5	32.6	32.7	32.4	32.7	32.5	32.5	32.7	32.4	32.6	32.8	32.6	32.6	32.8	32.5	

^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, seasonally adjusted

Industry	Annual average		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. ^P	Feb. ^P
PRIVATE SECTOR (in current dollars)¹	\$8.98	\$9.29	\$9.13	\$9.16	\$9.23	\$9.27	\$9.27	\$9.32	\$9.32	\$9.37	\$9.43	\$9.42	\$9.45	\$9.50	\$9.51
Construction	12.69	12.97	12.82	12.90	12.93	12.91	12.93	13.03	12.99	13.04	13.03	13.01	13.09	13.13	13.17
Manufacturing	9.91	10.17	10.03	10.05	10.11	10.15	10.18	10.17	10.20	10.26	10.28	10.29	10.31	10.32	10.35
Excluding overtime	9.48	9.71	9.59	9.61	9.65	9.69	9.72	9.71	9.74	9.78	9.81	9.83	9.84	9.86	9.88
Transportation and public utilities	12.03	12.32	12.19	12.21	12.29	12.35	12.33	12.37	12.39	12.37	12.43	12.37	12.36	12.50	12.43
Wholesale trade	9.59	9.92	9.72	9.76	9.88	9.88	9.86	9.97	9.93	10.01	10.13	10.04	10.08	10.19	10.16
Retail trade	6.11	6.31	6.20	6.22	6.25	6.28	6.29	6.33	6.32	6.34	6.37	6.42	6.42	6.43	6.46
Finance, insurance, and real estate	8.73	9.10	8.91	8.90	8.99	9.08	9.00	9.10	9.09	9.18	9.36	9.26	9.37	9.43	9.33
Services	8.48	8.90	8.72	8.75	8.81	8.88	8.86	8.92	8.93	8.99	9.06	9.04	9.09	9.14	9.18
PRIVATE SECTOR (in constant (1977) dollars)¹	4.86	4.84	4.84	4.83	4.85	4.85	4.84	4.84	4.82	4.83	4.84	4.82	4.82	4.82	-

¹ Includes mining, not shown separately.

- Data not available.

^P = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

16. Average hourly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry

Industry	Annual average		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. ^P	Feb. ^P
PRIVATE SECTOR	\$8.98	\$9.29	\$9.17	\$9.18	\$9.23	\$9.26	\$9.23	\$9.25	\$9.24	\$9.40	\$9.45	\$9.46	\$9.46	\$9.54	\$9.54
MINING	12.52	12.69	12.71	12.59	12.60	12.54	12.55	12.66	12.62	12.75	12.72	12.83	12.97	13.11	13.03
CONSTRUCTION	12.69	12.97	12.82	12.87	12.88	12.87	12.85	12.91	12.95	13.13	13.13	13.04	13.16	13.21	13.16
MANUFACTURING	9.91	10.17	10.05	10.07	10.12	10.14	10.16	10.16	10.12	10.25	10.24	10.30	10.37	10.37	10.37
Durable goods	10.43	10.70	10.58	10.59	10.65	10.67	10.69	10.67	10.64	10.78	10.78	10.85	10.90	10.90	10.90
Lumber and wood products	8.40	8.60	8.53	8.45	8.50	8.54	8.60	8.65	8.58	8.67	8.76	8.68	8.75	8.70	8.69
Furniture and fixtures	7.67	7.92	7.74	7.76	7.81	7.87	7.91	7.97	8.00	8.07	8.04	8.00	8.04	8.07	8.06
Stone, clay, and glass products	10.25	10.48	10.33	10.36	10.41	10.45	10.48	10.54	10.46	10.55	10.58	10.61	10.58	10.60	10.60
Primary metal industries	11.94	12.15	12.03	12.07	12.11	12.13	12.15	12.22	12.11	12.25	12.20	12.23	12.27	12.27	12.23
Blast furnaces and basic steel products	13.78	13.98	13.89	13.89	13.94	13.96	13.96	14.09	13.96	14.08	14.04	14.01	14.07	13.99	13.96
Fabricated metal products	10.00	10.24	10.13	10.14	10.22	10.23	10.26	10.18	10.20	10.32	10.32	10.35	10.43	10.44	10.44
Machinery, except electrical	10.70	10.97	10.82	10.84	10.88	10.90	10.93	10.94	10.93	11.05	11.07	11.17	11.20	11.16	11.20
Electrical and electronic equipment	9.88	10.13	10.02	10.04	10.09	10.12	10.15	10.13	10.15	10.19	10.16	10.24	10.29	10.27	10.25
Transportation equipment	12.95	13.36	13.17	13.20	13.28	13.31	13.35	13.23	13.26	13.49	13.49	13.60	13.65	13.63	13.61
Motor vehicles and equipment	13.55	14.07	13.85	13.93	14.09	14.10	14.16	13.86	13.90	14.17	14.16	14.25	14.31	14.29	14.26
Instruments and related products	9.71	9.95	9.92	9.88	9.89	9.87	9.88	9.93	9.91	9.97	10.05	10.10	10.10	10.17	10.24
Miscellaneous manufacturing	7.75	7.98	7.90	7.91	7.92	7.94	7.93	7.94	7.93	7.99	8.07	8.09	8.17	8.22	8.20
Nondurable goods	9.18	9.42	9.31	9.33	9.37	9.38	9.39	9.45	9.40	9.50	9.48	9.53	9.60	9.62	9.62
Food and kindred products	8.94	9.11	9.06	9.07	9.14	9.15	9.12	9.13	9.04	9.12	9.04	9.16	9.26	9.28	9.30
Tobacco manufactures	14.03	14.56	14.01	14.42	14.98	15.24	15.78	15.66	14.84	13.98	13.92	14.43	14.18	14.33	14.71
Textile mill products	7.17	7.37	7.30	7.31	7.35	7.31	7.33	7.31	7.37	7.43	7.45	7.47	7.52	7.59	7.60
Apparel and other textile products	5.93	6.10	6.02	6.03	6.04	6.05	6.08	6.02	6.07	6.19	6.20	6.23	6.27	6.29	6.28
Paper and allied products	11.43	11.64	11.50	11.52	11.60	11.64	11.65	11.71	11.63	11.70	11.67	11.72	11.79	11.77	11.80
Printing and publishing	10.28	10.53	10.40	10.45	10.40	10.43	10.43	10.49	10.55	10.70	10.68	10.68	10.71	10.73	10.69
Chemicals and allied products	12.37	12.67	12.55	12.53	12.57	12.59	12.60	12.70	12.63	12.76	12.79	12.87	12.91	12.84	12.92
Petroleum and coal products	14.59	15.05	14.96	14.98	15.00	14.93	15.04	14.99	14.91	15.08	15.22	15.25	15.28	15.30	15.34
Rubber and miscellaneous plastics products	8.91	9.11	9.00	9.00	9.04	9.04	9.07	9.11	9.14	9.18	9.20	9.22	9.27	9.32	9.29
Leather and leather products	6.08	6.28	6.19	6.23	6.29	6.27	6.27	6.20	6.23	6.31	6.34	6.42	6.45	6.49	6.53
TRANSPORTATION AND PUBLIC UTILITIES	12.03	12.32	12.23	12.19	12.27	12.28	12.27	12.33	12.35	12.41	12.43	12.46	12.43	12.51	12.48
WHOLESALE TRADE	9.59	9.92	9.78	9.78	9.88	9.87	9.85	9.93	9.88	10.01	10.08	10.05	10.12	10.22	10.22
RETAIL TRADE	6.11	6.31	6.23	6.24	6.26	6.28	6.26	6.28	6.26	6.37	6.38	6.43	6.42	6.47	6.49
FINANCE, INSURANCE, AND REAL ESTATE	8.73	9.10	9.02	8.97	9.03	9.09	8.98	9.03	9.04	9.14	9.29	9.27	9.32	9.48	9.45
SERVICES	8.48	8.90	8.81	8.80	8.82	8.84	8.78	8.79	8.79	8.98	9.07	9.10	9.15	9.24	9.27

^P = preliminary

NOTE: See "Notes on the data" for a description of the most recent

benchmark revision.

17. Average weekly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry

Industry	Annual average		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. ^P	Feb. ^P	
PRIVATE SECTOR																
Current dollars	\$312.50	\$323.29	\$316.37	\$315.79	\$320.28	\$320.40	\$322.13	\$324.68	\$323.40	\$327.12	\$329.81	\$328.26	\$330.15	\$329.13	\$327.22	
Seasonally adjusted	-	-	317.72	316.94	322.13	321.67	321.67	325.27	322.47	325.14	329.11	327.82	327.92	330.60	330.00	
Constant (1977) dollars	169.28	168.29	168.01	167.08	168.57	167.92	168.13	168.75	167.30	168.10	168.96	167.99	168.70	167.41	-	
MINING	530.85	536.79	531.28	527.52	539.28	529.19	533.38	535.52	530.04	538.05	543.14	537.58	553.82	549.31	542.05	
CONSTRUCTION	479.68	491.56	462.80	481.34	488.15	491.63	497.30	497.04	499.87	504.19	512.07	491.61	489.55	480.84	476.39	
MANUFACTURING																
Current dollars	406.31	417.99	409.04	411.86	414.92	414.73	418.59	413.51	412.90	423.33	422.91	427.45	431.39	425.17	422.06	
Constant (1977) dollars	220.10	217.59	217.23	217.92	218.38	217.36	218.47	214.92	213.61	217.54	216.66	218.76	220.43	216.26	-	
Durable goods	432.85	447.26	436.95	440.54	444.11	444.94	448.98	439.60	439.43	452.76	452.76	457.87	462.16	454.53	451.26	
Lumber and wood products	341.04	346.58	339.49	337.16	345.10	345.87	351.74	348.60	345.77	348.53	358.28	347.20	353.50	344.52	339.78	
Furniture and fixtures	306.80	312.05	301.09	302.64	305.37	307.72	311.85	310.03	314.40	323.61	322.40	318.40	325.62	316.34	314.34	
Stone, clay, and glass products	433.58	443.30	426.63	435.12	442.43	447.26	448.54	446.90	444.55	451.54	454.94	451.99	446.48	439.90	432.48	
Primary metal industries	514.61	529.74	519.70	523.84	526.79	527.66	530.96	525.46	521.94	539.00	531.92	536.90	541.11	537.43	530.78	
Blast furnaces and basic steel products	598.05	615.12	609.77	606.99	613.36	612.84	621.22	619.96	608.66	629.38	616.36	616.44	621.89	614.16	610.05	
Fabricated metal products	415.00	428.03	418.37	421.82	426.17	426.59	431.95	417.38	423.30	433.44	433.44	439.88	445.36	436.39	432.22	
Machinery, except electrical	451.54	467.32	459.85	462.87	463.49	462.16	465.82	462.76	459.06	471.84	470.48	478.08	486.08	474.30	473.76	
Electrical and electronic equipment	404.09	415.33	406.81	410.64	411.67	411.88	417.17	409.25	412.09	417.79	416.56	423.94	430.12	420.04	414.10	
Transportation equipment	543.90	570.47	553.14	561.00	569.71	572.33	574.05	551.69	554.27	580.07	581.42	592.96	595.14	586.09	582.51	
Motor vehicles and equipment	571.81	612.05	587.24	598.99	621.37	624.63	625.87	576.58	587.97	624.90	623.04	635.55	636.80	625.90	623.16	
Instruments and related products	401.99	412.93	408.70	411.01	410.44	406.64	409.03	408.12	408.29	414.75	419.09	422.10	424.20	424.09	425.98	
Miscellaneous manufacturing	305.35	312.82	307.31	310.07	309.67	309.66	311.65	305.69	309.27	314.01	319.57	321.17	324.35	323.05	321.44	
Nondurable goods	369.04	378.68	370.54	373.20	373.86	374.26	377.48	377.06	377.88	384.75	382.04	385.97	388.80	383.84	381.91	
Food and kindred products	359.39	368.04	358.78	359.17	361.03	366.92	367.54	368.85	368.83	373.01	368.83	374.64	378.73	371.20	367.35	
Tobacco manufactures	547.17	579.49	540.79	566.71	576.73	601.98	628.04	613.87	595.08	575.98	574.90	581.53	565.78	543.11	551.63	
Textile mill products	299.71	302.91	301.49	299.71	301.35	297.52	300.53	295.32	304.38	307.60	306.94	309.26	309.07	308.15	307.80	
Apparel and other textile products	219.41	225.09	220.93	223.11	222.27	222.64	226.18	220.33	223.98	229.03	229.40	232.38	232.62	230.84	230.48	
Paper and allied products	496.06	502.85	494.50	494.21	498.80	501.68	502.12	502.36	498.93	511.29	505.31	508.65	518.76	508.46	507.40	
Printing and publishing	390.64	400.14	393.12	399.19	395.20	391.13	392.17	396.52	403.01	411.95	406.91	406.91	411.26	404.52	401.94	
Chemicals and allied products	523.25	535.94	530.87	532.53	529.20	528.78	534.24	533.40	527.93	539.75	541.02	548.26	553.84	545.70	547.81	
Petroleum and coal products	641.96	668.22	647.77	654.63	666.00	658.41	678.30	679.05	664.99	674.08	680.33	674.05	676.90	662.49	664.22	
Rubber and miscellaneous plastics products	370.66	378.98	372.60	375.30	377.87	376.06	378.22	373.51	377.48	381.89	382.72	386.32	389.34	388.64	384.61	
Leather and leather products	232.26	235.50	227.79	233.00	232.73	235.75	237.63	231.26	234.87	236.63	240.29	240.11	247.04	245.97	245.53	
TRANSPORTATION AND PUBLIC UTILITIES	471.58	484.18	475.75	470.53	480.98	481.38	484.67	490.73	490.30	490.20	490.99	489.68	490.99	489.14	487.97	
WHOLESALE TRADE	365.38	377.95	370.66	370.66	377.42	375.06	375.29	380.32	375.44	381.38	385.06	381.90	386.58	388.36	386.32	
RETAIL TRADE	178.41	183.62	177.56	178.46	180.91	181.49	184.04	188.40	186.55	184.73	185.66	185.18	190.03	184.40	184.97	
FINANCE, INSURANCE, AND REAL ESTATE	316.90	326.69	328.33	321.13	326.89	325.42	321.48	326.89	322.73	327.21	334.44	330.94	333.66	343.18	338.31	
SERVICES	275.60	290.14	287.21	284.24	287.53	286.42	287.11	290.07	288.31	291.85	296.59	295.75	297.38	301.22	300.35	

- Data not available.
P = preliminary

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

18. Diffusion indexes of employment change, seasonally adjusted

(In percent)

Time span and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Private nonagricultural payrolls, 349 industries												
Over 1-month span:												
1987	57.4	58.3	59.9	64.6	61.3	61.6	68.6	60.6	62.3	67.6	63.9	65.0
1988	60.3	64.6	64.0	63.0	58.9	66.6	62.3	56.2	54.0	62.5	68.9	61.7
1989	64.8	57.3	-	-	-	-	-	-	-	-	-	-
Over 3-month span:												
1987	61.3	62.2	67.3	68.9	69.3	69.8	71.5	72.5	72.1	73.4	74.5	68.2
1988	70.6	68.8	68.3	67.2	69.1	69.8	68.8	61.9	62.6	68.3	71.9	74.4
1989	69.1	-	-	-	-	-	-	-	-	-	-	-
Over 6-month span:												
1987	69.2	66.3	66.3	70.1	72.5	75.2	76.9	77.4	78.5	74.2	74.4	75.6
1988	72.2	71.5	70.8	74.2	72.2	69.1	68.8	74.5	71.1	72.6	72.6	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Over 12-month span:												
1987	68.1	70.3	71.1	74.1	76.6	77.2	77.4	77.8	79.1	78.7	77.8	80.5
1988	77.2	78.1	74.2	73.9	75.6	75.6	78.4	76.5	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Manufacturing payrolls, 143 industries												
Over 1-month span:												
1987	46.8	52.5	53.9	56.4	58.9	55.7	67.7	56.0	64.2	64.2	64.2	61.0
1988	58.2	55.7	55.7	60.6	57.4	61.3	60.3	44.0	46.8	61.7	68.1	57.4
1989	61.0	51.8	-	-	-	-	-	-	-	-	-	-
Over 3-month span:												
1987	50.7	50.7	58.5	63.8	63.5	68.4	69.5	73.8	70.2	74.1	74.5	67.0
1988	66.0	61.0	62.8	64.5	66.7	68.8	61.3	52.1	53.5	65.6	70.9	70.9
1989	62.1	-	-	-	-	-	-	-	-	-	-	-
Over 6-month span:												
1987	58.5	57.1	57.1	66.7	69.1	74.5	75.5	76.6	79.4	74.1	72.7	72.3
1988	68.4	67.0	66.0	70.9	66.0	63.8	62.1	68.8	66.0	66.7	69.9	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Over 12-month span:												
1987	59.6	63.5	64.5	68.8	73.0	73.8	75.2	75.2	75.9	75.9	75.2	79.1
1988	74.1	72.3	68.8	70.6	72.0	70.9	72.3	69.9	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-

- Data not available.

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing

employment. 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	1980	1981	1982	1983	1984	1985	1986	1987	1988
Noninstitutional population	169,349	171,775	173,939	175,891	178,080	179,912	182,293	184,490	186,322
Labor force:									
Total (number)	108,544	110,315	111,872	113,226	115,241	117,167	119,540	121,602	123,378
Percent of population	64.1	64.2	64.3	64.4	64.7	65.1	65.6	65.9	66.2
Employed:									
Total (number)	100,907	102,042	101,194	102,510	106,702	108,856	111,303	114,177	116,677
Percent of population	59.6	59.4	58.2	58.3	59.9	60.5	61.1	61.9	62.6
Resident Armed Forces	1,604	1,645	1,668	1,676	1,697	1,706	1,706	1,737	1,709
Civilian									
Total	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968
Agriculture	3,364	3,368	3,401	3,383	3,321	3,179	3,163	3,208	3,169
Nonagricultural industries	95,938	97,030	96,125	97,450	101,685	103,971	106,434	109,232	111,800
Unemployed:									
Total (number)	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701
Percent of labor force	7.0	7.5	9.5	9.5	7.4	7.1	6.9	6.1	5.4
Not in labor force (number)	60,806	61,460	62,067	62,665	62,839	62,744	62,752	62,888	62,944

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total employment	90,406	91,156	89,566	90,200	94,496	97,519	99,525	102,310	106,039
Private sector	74,166	75,126	73,729	74,330	78,472	81,125	82,832	85,295	88,653
Goods-producing	25,658	25,497	23,813	23,334	24,727	24,859	24,558	24,784	25,565
Mining	1,027	1,139	1,128	952	966	927	777	721	733
Construction	4,346	4,188	3,905	3,948	4,383	4,673	4,816	4,998	5,293
Manufacturing	20,285	20,170	18,781	18,434	19,378	19,260	18,965	19,065	19,539
Service-producing	64,748	65,659	65,753	66,866	69,769	72,660	74,967	77,525	80,475
Transportation and public utilities	5,146	5,165	5,082	4,954	5,159	5,238	5,255	5,385	5,584
Wholesale trade	5,275	5,358	5,278	5,268	5,555	5,717	5,753	5,872	6,156
Retail trade	15,035	15,189	15,179	15,613	16,545	17,356	17,930	18,509	19,206
Finance, insurance, and real estate	5,160	5,298	5,341	5,468	5,689	5,955	6,283	6,549	6,679
Services	17,890	18,619	19,036	19,694	20,797	22,000	23,053	24,196	25,464
Government	16,241	16,031	15,837	15,869	16,024	16,394	16,693	17,015	17,387
Federal	2,866	2,772	2,739	2,774	2,807	2,875	2,899	2,943	2,971
State	3,610	3,640	3,640	3,662	3,734	3,832	3,893	3,963	4,051
Local	9,765	9,619	9,458	9,434	9,482	9,687	9,901	10,109	10,365

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	1980	1981	1982	1983	1984	1985	1986	1987	1988
Private sector									
Average weekly hours	35.3	35.2	34.8	35.0	35.2	34.9	34.8	34.8	34.8
Average hourly earnings (in dollars)	6.66	7.25	7.68	8.02	8.32	8.57	8.76	8.98	9.29
Average weekly earnings (in dollars)	235.10	255.20	267.26	280.70	292.86	299.09	304.85	312.50	323.29
Mining									
Average weekly hours	43.3	43.7	42.7	42.5	43.3	43.4	42.2	42.4	42.3
Average hourly earnings (in dollars)	9.17	10.04	10.77	11.28	11.63	11.98	12.46	12.52	12.69
Average weekly earnings (in dollars)	397.06	438.75	459.88	479.40	503.58	519.93	525.81	530.85	536.79
Construction									
Average weekly hours	37.0	36.9	36.7	37.1	37.8	37.7	37.4	37.8	37.9
Average hourly earnings (in dollars)	9.94	10.82	11.63	11.94	12.13	12.32	12.48	12.69	12.97
Average weekly earnings (in dollars)	367.78	399.26	426.82	442.97	458.51	464.46	466.75	479.68	491.56
Manufacturing									
Average weekly hours	39.7	39.8	38.9	40.1	40.7	40.5	40.7	41.0	41.1
Average hourly earnings (in dollars)	7.27	7.99	8.49	8.83	9.19	9.54	9.73	9.91	10.17
Average weekly earnings (in dollars)	288.62	318.00	330.26	354.08	374.03	386.37	396.01	406.31	417.99
Transportation and public utilities									
Average weekly hours	39.6	39.4	39.0	39.0	39.4	39.5	39.2	39.2	39.3
Average hourly earnings (in dollars)	8.87	9.70	10.32	10.79	11.12	11.40	11.70	12.03	12.32
Average weekly earnings (in dollars)	351.25	382.18	402.48	420.81	438.13	450.30	458.64	471.58	484.18
Wholesale trade									
Average weekly hours	38.5	38.5	38.3	38.5	38.5	38.4	38.3	38.1	38.1
Average hourly earnings (in dollars)	6.96	7.56	8.09	8.55	8.89	9.16	9.35	9.59	9.92
Average weekly earnings (in dollars)	267.96	291.06	309.85	329.18	342.27	351.74	358.11	365.38	377.95
Retail trade									
Average weekly hours	30.2	30.1	29.9	29.8	29.8	29.4	29.2	29.2	29.1
Average hourly earnings (in dollars)	4.88	5.25	5.48	5.74	5.85	5.94	6.03	6.11	6.31
Average weekly earnings (in dollars)	147.38	158.03	163.85	171.05	174.33	174.64	176.08	178.41	183.62
Finance, insurance, and real estate									
Average weekly hours	36.2	36.3	36.2	36.2	36.5	36.4	36.4	36.3	35.9
Average hourly earnings (in dollars)	5.79	6.31	6.78	7.29	7.63	7.94	8.36	8.73	9.10
Average weekly earnings (in dollars)	209.60	229.05	245.44	263.90	278.50	289.02	304.30	316.90	326.69
Services									
Average weekly hours	32.6	32.6	32.6	32.7	32.6	32.5	32.5	32.5	32.6
Average hourly earnings (in dollars)	5.85	6.41	6.92	7.31	7.59	7.90	8.18	8.48	8.90
Average weekly earnings (in dollars)	190.71	208.97	225.59	239.04	247.43	256.75	265.85	275.60	290.14

22. Employment Cost Index, compensation,¹ by occupation and industry group

(June 1981 = 100)

Series	1986		1987				1988				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended	
										Dec. 1988		
Civilian workers²	133.8	135.0	135.9	137.5	138.6	140.6	142.1	144.0	145.5	1.0	5.0	
Workers, by occupational group:												
White-collar workers	136.9	138.5	139.3	141.2	142.2	144.2	145.7	147.9	149.7	1.2	5.3	
Blue-collar workers	128.4	129.1	130.1	131.3	132.5	134.7	136.2	137.2	138.2	.7	4.3	
Service occupations	136.6	138.0	138.5	139.9	140.8	142.9	144.3	147.2	148.5	.9	5.5	
Workers, by industry division:												
Goods-producing	129.5	130.2	131.1	132.2	133.5	135.8	137.3	138.2	139.3	.8	4.3	
Manufacturing	130.1	130.7	131.5	132.7	134.1	136.8	138.1	139.0	140.1	.8	4.5	
Service-producing	136.5	138.1	138.9	140.8	141.7	143.6	145.1	147.6	149.2	1.1	5.3	
Services	143.6	145.2	145.8	149.2	150.6	152.8	153.8	157.7	159.7	1.3	6.0	
Health services	-	-	-	-	-	-	-	-	-	1.3	5.7	
Hospitals	-	-	-	-	-	-	-	-	-	1.3	5.9	
Public administration ³	141.6	144.1	144.7	146.4	148.1	150.3	151.2	154.0	154.4	.3	4.3	
Nonmanufacturing	135.4	136.9	137.8	139.6	140.5	142.3	143.9	146.1	147.7	1.1	5.1	
Private industry workers	131.6	132.9	133.8	135.1	136.0	138.1	139.8	141.2	142.6	1.0	4.9	
Workers, by occupational group:												
White-collar workers	134.3	136.1	137.0	138.5	139.3	141.2	143.0	144.6	146.3	1.2	5.0	
Professional specialty and technical occupations	-	-	-	-	-	-	-	-	-	.6	4.9	
Executive, administrative, and managerial occupations	-	-	-	-	-	-	-	-	-	1.3	4.1	
Sales occupations	-	-	-	-	-	-	-	-	-	2.4	6.8	
Administrative support occupations, including clerical	-	-	-	-	-	-	-	-	-	.7	5.0	
Blue-collar workers	127.8	128.4	129.5	130.6	131.8	134.1	135.6	136.5	137.6	.8	4.4	
Precision production, craft, and repair occupation	-	-	-	-	-	-	-	-	-	.7	3.8	
Machine operators, assemblers, and inspectors	-	-	-	-	-	-	-	-	-	1.1	5.2	
Transportation and material moving occupations	-	-	-	-	-	-	-	-	-	.3	4.7	
Handlers, equipment cleaners, helpers, and laborers	-	-	-	-	-	-	-	-	-	.7	4.5	
Service occupations	133.5	134.7	135.2	135.9	136.7	138.6	140.1	142.2	143.9	1.2	5.3	
Workers, by industry division:												
Goods-producing	129.2	129.9	130.8	131.9	133.2	135.6	137.1	137.9	139.0	.8	4.4	
Construction	-	-	-	-	-	-	-	-	-	.8	4.2	
Manufacturing	130.1	130.7	131.5	132.7	134.1	136.8	138.1	139.0	140.1	.8	4.5	
Durables	-	-	-	-	-	-	-	-	-	.7	4.5	
Nondurables	-	-	-	-	-	-	-	-	-	1.1	4.4	
Service-producing	133.5	135.3	136.3	137.7	138.4	140.2	142.1	143.8	145.5	1.2	5.1	
Transportation and public utilities	-	-	-	-	-	-	-	-	-	.0	2.8	
Transportation	-	-	-	-	-	-	-	-	-	.4	2.1	
Public utilities	-	-	-	-	-	-	-	-	-	.8	5.2	
Wholesale and retail trade	-	-	-	-	-	-	-	-	-	.5	4.2	
Wholesale trade	-	-	-	-	-	-	-	-	-	1.0	5.7	
Retail trade	-	-	-	-	-	-	-	-	-	3.5	6.5	
Finance, insurance, and real estate	-	-	-	-	-	-	-	-	-	1.1	5.7	
Service	-	-	-	-	-	-	-	-	-	1.4	6.0	
Health services	-	-	-	-	-	-	-	-	-	1.5	6.1	
Hospitals	-	-	-	-	-	-	-	-	-			
Nonmanufacturing	132.4	134.1	135.1	136.4	137.1	138.9	140.8	142.4	143.9	1.1	5.0	
State and local government workers	144.7	145.9	146.3	149.7	151.1	153.1	153.6	157.8	159.6	1.1	5.6	
Workers, by occupational group:												
White-collar workers	146.0	147.2	147.5	151.2	152.7	154.8	155.2	159.6	161.8	1.4	6.0	
Blue-collar workers	139.5	140.8	141.3	143.3	144.3	145.9	145.9	148.4	149.1	.5	3.3	
Workers, by industry division:												
Services	146.6	147.3	147.6	151.8	153.1	155.2	155.6	160.5	163.0	1.6	6.5	
Hospitals and other services ⁴	141.1	142.5	143.3	145.1	146.3	150.3	150.4	153.2	155.2	1.3	6.1	
Health services	-	-	-	-	-	-	-	-	-	.8	4.8	
Schools	148.4	148.9	149.1	154.1	155.5	156.8	157.3	163.1	165.7	1.6	6.6	
Elementary and secondary	150.3	150.5	150.7	156.5	157.8	158.9	159.4	165.4	168.3	1.8	6.7	
Public administration ⁵	141.6	144.1	144.7	146.4	148.1	150.3	151.2	154.0	154.4	.3	4.3	

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.

⁵ - Data not available.

23. Employment Cost Index, wages and salaries, by occupation and industry group

(June 1981 = 100)

Series	1986		1987				1988				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended	
	Dec. 1988											
Civilian workers ¹	131.5	132.8	133.5	135.2	136.1	137.4	138.7	140.5	141.9	1.0	4.3	
Workers, by occupational group:												
White-collar workers	135.0	136.6	137.3	139.4	140.2	141.5	143.0	145.2	146.8	1.1	4.7	
Blue-collar workers	125.6	126.2	127.1	128.3	129.4	130.4	131.6	132.5	133.4	.7	3.1	
Service occupations	132.8	134.2	134.7	136.0	136.6	138.0	139.3	141.8	142.9	.8	4.6	
Workers, by industry division												
Goods-producing	127.0	127.8	128.5	129.8	131.0	132.2	133.4	134.1	135.1	.7	3.1	
Manufacturing	127.9	128.7	129.5	130.8	132.2	133.3	134.4	135.1	136.2	.8	3.0	
Service-producing	134.2	135.8	136.5	138.5	139.2	140.5	141.9	144.2	145.8	1.1	4.7	
Services	141.1	142.7	143.4	146.8	148.2	149.5	150.4	154.0	155.7	1.1	5.1	
Health services	-	-	-	-	-	-	-	-	-	-	1.3	
Hospitals	-	-	-	-	-	-	-	-	-	-	1.3	
Public administration ²	138.1	140.5	141.0	142.6	143.8	145.5	146.4	148.9	149.4	.3	3.9	
Nonmanufacturing	133.0	134.5	135.2	137.1	137.8	139.0	140.5	142.7	144.1	1.0	4.6	
Private industry workers	129.5	130.8	131.7	133.0	133.8	135.1	136.6	137.9	139.3	1.0	4.1	
Workers, by occupational group:												
White-collar workers	132.7	134.6	135.4	137.0	137.6	139.0	140.8	142.4	144.0	1.1	4.7	
Professional specialty and technical occupations	136.4	138.4	139.1	141.2	142.6	144.0	145.8	148.1	148.9	.5	4.4	
Executive, administrative, and managerial occupations	133.5	135.6	136.4	138.6	139.2	139.9	141.3	142.5	144.4	1.3	3.7	
Sales occupations	124.9	126.7	127.1	127.0	126.1	127.5	130.8	131.5	134.4	2.2	6.6	
Administrative support occupations, including clerical	132.7	134.3	135.5	137.1	138.1	140.2	141.2	143.2	144.1	.6	4.3	
Blue-collar workers	125.1	125.6	126.6	127.7	128.9	129.9	131.1	131.9	132.9	.8	3.1	
Precision production, craft, and repair occupations	127.4	127.9	128.8	130.2	131.1	132.1	133.4	134.0	134.9	.7	2.9	
Machine operators, assemblers, and inspectors	124.9	125.5	126.7	127.5	129.2	129.9	131.2	131.9	133.3	1.1	3.2	
Transportation and material moving occupations	120.1	120.5	121.5	122.3	122.9	123.7	125.4	126.7	126.9	.2	3.3	
Handlers, equipment cleaners, helpers, and laborers	121.4	121.9	122.6	123.7	125.0	126.7	127.5	128.4	129.3	.7	3.4	
Service occupations	130.1	131.4	131.9	132.6	133.2	134.5	135.8	137.6	139.1	1.1	4.4	
Workers, by industry division:												
Goods-producing	126.8	127.5	128.3	129.6	130.8	132.0	133.2	133.9	134.9	.7	3.1	
Construction	120.8	121.7	122.7	123.8	124.7	125.9	127.6	128.6	129.4	.6	3.8	
Manufacturing	127.9	128.7	129.5	130.8	132.2	133.3	134.4	135.1	136.2	.8	3.0	
Durables	127.2	127.7	128.7	129.7	131.1	132.1	133.1	133.7	134.6	.7	2.7	
Nondurables	129.3	130.5	131.0	132.8	134.1	135.6	136.7	137.6	139.1	1.1	3.7	
Service-producing	131.6	133.4	134.3	135.7	136.2	137.5	139.3	141.0	142.6	1.1	4.7	
Transportation and public utilities	127.5	128.1	129.3	130.0	130.2	131.3	132.5	133.5	133.4	-.1	2.5	
Transportation	-	-	-	-	-	-	-	-	-	-	4.2	
Public utilities	-	-	-	-	-	-	-	-	-	-	2.6	
Wholesale and retail trade	126.9	127.9	129.9	130.6	130.7	131.9	134.6	136.0	136.9	.7	4.7	
Wholesale trade	133.1	134.8	137.2	137.8	138.5	139.0	141.7	143.2	143.6	.3	3.7	
Retail trade	124.5	125.2	127.1	127.8	127.7	129.2	131.7	133.2	134.3	.8	5.2	
Finance, insurance, and real estate	130.0	133.5	131.5	131.8	131.6	132.9	134.9	134.9	139.9	3.7	6.3	
Services	139.5	141.8	142.8	145.9	147.1	148.6	149.8	152.9	154.4	1.0	5.0	
Health services	-	-	-	-	-	-	-	-	-	-	1.3	
Hospitals	-	-	-	-	-	-	-	-	-	-	1.4	
Nonmanufacturing	130.4	131.9	132.8	134.2	134.8	136.0	137.8	139.4	140.8	1.0	4.5	
State and local government workers	141.4	142.5	142.8	146.1	147.4	148.7	149.1	153.0	154.5	1.0	4.8	
Workers, by occupational group												
White-collar workers	142.8	143.9	144.1	147.7	149.3	150.5	150.8	154.9	156.8	1.2	5.0	
Blue-collar workers	135.1	136.3	136.9	139.0	139.6	141.1	141.1	143.5	144.1	.4	3.2	
Workers, by industry division												
Services	143.3	143.9	144.2	148.2	149.5	150.7	151.1	155.6	157.6	1.3	5.4	
Hospitals and other services ³	137.3	138.6	139.4	141.2	142.2	144.5	144.7	147.4	148.7	.9	4.6	
Health services	-	-	-	-	-	-	-	-	-	-	1.0	
Schools	145.1	145.5	145.6	150.3	151.8	152.6	153.0	158.0	160.3	1.5	5.6	
Elementary and secondary	146.4	146.5	146.6	152.0	153.4	154.0	154.3	159.7	162.1	1.5	5.7	
Public administration ²	138.1	140.5	141.0	142.6	143.8	145.5	146.4	148.9	149.4	.3	3.9	

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	1986		1987				1988				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended	
										Dec. 1988		
COMPENSATION												
Workers, by bargaining status¹												
Union	129.8	130.5	131.2	132.0	133.4	135.6	136.9	137.9	138.6	0.5	3.9	
Goods-producing	127.5	128.0	128.7	129.5	131.3	134.1	135.3	136.2	137.2	.7	4.5	
Service-producing	133.4	134.4	135.2	135.9	136.7	138.0	139.4	140.5	140.9	.3	3.1	
Manufacturing	127.9	128.0	128.7	129.5	131.5	135.0	136.2	137.0	138.2	.9	5.1	
Nonmanufacturing	131.5	132.6	133.5	134.3	135.1	136.2	137.5	138.6	138.9	.2	2.8	
Nonunion	132.1	133.6	134.6	136.1	136.9	138.9	140.7	142.2	143.9	1.2	5.1	
Goods-producing	130.0	130.8	131.8	133.1	134.1	136.2	137.8	138.7	139.9	.9	4.3	
Service-producing	133.4	135.3	136.4	137.9	138.6	140.5	142.5	144.4	146.3	1.3	5.6	
Manufacturing	131.4	132.2	133.2	134.6	135.6	137.8	139.2	140.1	141.3	.9	4.2	
Nonmanufacturing	132.5	134.3	135.3	136.8	137.5	139.4	141.5	143.2	145.0	1.3	5.5	
Workers, by region¹												
Northeast	135.2	137.4	138.6	140.3	141.9	143.7	145.9	147.8	150.4	1.8	6.0	
South	131.4	132.1	133.2	134.2	135.4	137.1	139.3	140.4	141.3	.6	4.4	
Midwest (formerly North Central)	128.1	129.1	130.2	131.2	131.7	134.4	135.5	136.7	138.0	1.0	4.8	
West	132.8	134.1	134.2	135.8	136.3	138.3	139.5	140.6	141.5	.6	3.8	
Workers, by area size¹												
Metropolitan areas	132.2	133.5	134.4	135.8	136.7	138.9	140.5	142.0	143.6	1.1	5.0	
Other areas	127.9	129.0	130.2	131.3	132.0	133.6	135.5	136.2	136.8	.4	3.6	
WAGES AND SALARIES												
Workers, by bargaining status¹												
Union	127.2	127.7	128.3	129.1	130.5	131.0	132.0	132.9	133.4	.4	2.2	
Goods-producing	124.8	125.0	125.8	126.5	128.5	128.7	129.7	130.4	131.2	.6	2.1	
Service-producing	130.9	131.7	132.2	132.9	133.6	134.4	135.4	136.7	136.8	.1	2.4	
Manufacturing	125.5	125.6	126.2	127.0	129.3	129.6	130.4	131.0	132.1	.8	2.2	
Nonmanufacturing	128.7	129.5	130.1	130.8	131.5	132.1	133.3	134.5	134.6	.1	2.4	
Nonunion	130.3	131.8	132.8	134.3	135.0	136.4	138.1	139.5	141.1	1.1	4.5	
Goods-producing	127.8	128.8	129.6	131.1	132.1	133.6	135.0	135.7	136.8	.8	3.6	
Service-producing	131.7	133.6	134.6	136.2	136.7	138.0	140.0	141.8	143.6	1.3	5.0	
Manufacturing	129.5	130.6	131.5	133.0	133.9	135.5	136.7	137.4	138.6	.9	3.5	
Nonmanufacturing	130.6	132.4	133.4	134.9	135.4	136.8	138.8	140.4	142.2	1.3	5.0	
Workers, by region¹												
Northeast	133.1	135.4	136.6	138.3	139.7	140.9	142.9	144.6	147.3	1.9	5.4	
South	129.4	130.1	131.1	132.1	133.0	134.0	136.1	137.1	137.8	.5	3.6	
Midwest (formerly North Central)	126.2	127.4	128.5	129.6	129.9	131.3	132.1	133.3	134.5	.9	3.5	
West	130.1	131.2	131.1	133.1	133.5	134.9	136.0	137.4	138.1	.5	3.4	
Workers, by area size¹												
Metropolitan areas	130.2	131.6	132.4	133.7	134.6	135.8	137.3	138.7	140.2	1.1	4.2	
Other areas	125.6	126.6	127.8	129.1	129.8	130.9	133.0	133.5	133.7	.1	3.0	

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							
	1986	1987	1987				1988			
			I	II	III	IV	I	II ^P	III ^P	IV ^P
Specified adjustments:										
Total compensation ¹ adjustments, settlements covering 5,000 workers or more:										
First year of contract	1.1	3.0	1.1	4.1	2.5	3.4	1.8	3.1	3.4	3.8
Annual rate over life of contract	1.6	2.6	2.1	3.9	2.1	2.4	1.8	2.4	3.2	2.2
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract	1.2	2.2	.8	2.6	2.1	2.4	2.1	2.6	2.7	2.7
Annual rate over life of contract	1.8	2.1	1.6	2.9	2.0	1.8	2.3	2.2	2.8	2.3
Effective adjustments:										
Total effective wage adjustment	2.3	3.1	.4	1.0	.9	.8	.4	.9	.8	.5
From settlements reached in period .....	.5	.7	(⁴)	.2	.2	.3	.1	.3	.2	.1
Deferred from settlements reached in earlier periods	1.7	1.8	.3	.7	.6	.3	.3	.5	.4	.2
From cost-of-living-adjustments clauses .....	.2	.5	.1	.2	.1	.2	.1	.1	.2	.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--							
	1987				1988			
	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	1.2	1.8	2.7	3.0	3.1	3.0	3.1	3.1
Annual rate over life of contract	1.7	2.1	2.6	2.6	2.5	2.3	2.5	2.5
Specified wage adjustments, settlements covering 1,000 workers or more:								
All industries								
First year of contract	1.2	1.5	2.0	2.2	2.4	2.4	2.5	2.6
Contracts with COLA clauses	2.0	1.8	2.1	2.3	2.2	2.4	2.4	2.4
Contracts without COLA clauses .....	.8	1.3	2.0	2.1	2.5	2.4	2.6	2.7
Annual rate over life of contract	1.8	2.0	2.2	2.1	2.2	2.0	2.2	2.4
Contracts with COLA clauses	1.8	1.7	1.7	1.5	1.4	1.5	1.5	1.8
Contracts without COLA clauses	1.8	2.1	2.5	2.5	2.7	2.5	2.8	2.8
Manufacturing								
First year of contract	-1.5	-8	1.1	2.1	2.4	2.5	2.5	2.2
Contracts with COLA clauses	1.3	1.3	2.1	2.4	2.4	2.5	2.4	2.1
Contracts without COLA clauses	-3.5	-2.7	-1	1.3	2.4	2.5	3.0	2.5
Annual rate over life of contract	(²)	.3	1.0	1.3	1.5	1.6	1.9	2.1
Contracts with COLA clauses .....	.8	.8	1.0	1.0	1.0	1.3	1.4	1.8
Contracts without COLA clauses	-6	-2	1.2	2.1	2.7	2.5	3.1	2.6
Nonmanufacturing								
First year of contract	2.2	2.3	2.4	2.3	2.3	2.3	2.4	2.8
Contracts with COLA clauses	2.2	2.1	2.1	1.9	1.6	2.2	2.4	2.9
Contracts without COLA clauses	2.1	2.3	2.6	2.4	2.5	2.4	2.5	2.7
Annual rate over life of contract	2.4	2.6	2.8	2.7	2.7	2.4	2.4	2.5
Contracts with COLA clauses	2.2	2.2	2.4	2.7	2.4	1.9	1.8	1.7
Contracts without COLA clauses	2.5	2.7	2.9	2.7	2.7	2.6	2.7	2.8
Construction								
First year of contract	2.4	2.7	3.0	2.9	2.9	2.6	2.1	2.2
Contracts with COLA clauses	1.6	3.7	(¹)	(¹)	(¹)	.0	.0	.0
Contracts without COLA clauses	2.4	2.7	(¹)	(¹)	(¹)	2.6	2.1	2.2
Annual rate over life of contract	2.5	2.9	3.2	3.1	(¹)	2.7	2.4	2.6
Contracts with COLA clauses	1.4	3.8	(¹)	(¹)	(¹)	.0	.0	.0
Contracts without COLA clauses	2.6	2.9	(¹)	(¹)	.0	2.7	2.4	2.6

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--						
	1987			1988			
	II	III	IV	I	II ^P	III ^P	IV ^P
For all workers:¹							
Total	2.2	2.6	3.1	3.2	3.0	2.9	2.6
From settlements reached in period .....	.3	.4	.7	.8	1.0	1.0	.7
Deferred from settlements reached in earlier period	1.6	1.7	1.8	1.8	1.6	1.4	1.3
From cost-of-living-adjustments clauses .....	.3	.4	.5	.5	.5	.5	.6
For workers receiving changes:							
Total	2.8	3.2	3.6	3.8	3.7	3.5	3.3
From settlements reached in period .....	.9	1.8	2.9	2.9	2.9	2.9	3.1
Deferred from settlements reached in earlier period	3.5	3.3	3.3	3.3	3.3	3.0	3.0
From cost-of-living-adjustments clauses	1.8	2.3	2.6	2.7	2.3	2.5	2.7

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		
	1986	1987	1988 ^P
Specified adjustments:			
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:			
First year of contract	6.2	4.9	5.4
Annual rate over life of contract	6.0	4.8	5.3
Wage adjustments, settlements covering 1,000 workers or more:			
First year of contract	5.7	4.9	5.1
Annual rate over life of contract	5.7	5.1	5.3
Effective adjustments:			
Total effective wage adjustment ³	5.5	4.9	4.7
From settlements reached in period	2.4	2.7	2.3
Deferred from settlements reached in earlier periods	3.0	2.2	2.4
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.

^P = preliminary.

29. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. ^P	Feb. ^P
Number of stoppages:															
Beginning in period	46	40	5	3	0	5	7	4	7	2	3	1	0	3	0
In effect during period	51	43	8	11	7	11	15	14	18	14	9	5	1	4	2
Workers involved:															
Beginning in period (in thousands)	174.4	118.0	17.5	17.9	.0	14.5	13.6	21.0	11.7	4.0	8.6	2.3	.0	7.4	0
In effect during period (in thousands)	377.7	121.4	21.1	39.0	23.9	31.4	34.8	47.4	46.9	34.0	25.9	10.6	2.5	9.9	7.7
Days idle:															
Number (in thousands)	4,455.6	4,381.0	236.6	505.0	331.7	344.5	490.5	725.9	713.1	510.0	293.2	77.9	52.5	152.7	137.8
Percent of estimated working time ¹ .....	.02	.02	.01	.02	.02	.02	.02	.03	.03	.02	.01	(²)	(²)	.01	.01

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.

² Less than 0.005 percent.

^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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:																
All items	113.6	118.3	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	121.1	121.6	
All items (1967=100)	340.4	354.3	347.4	349.0	350.8	352.0	353.5	354.9	356.6	358.9	360.1	360.5	360.9	362.7	364.1	
Food and beverages	113.5	118.2	115.8	116.0	116.7	117.1	117.6	118.8	119.4	120.1	120.3	120.2	120.6	122.0	122.7	
Food	113.5	118.2	115.7	115.9	116.6	117.0	117.6	118.8	119.4	120.2	120.3	120.2	120.7	122.2	122.9	
Food at home	111.9	116.6	113.9	113.9	114.6	115.1	115.8	117.3	118.1	119.0	119.0	118.7	119.1	121.2	122.0	
Cereals and bakery products	114.8	122.1	118.7	118.9	119.8	120.3	120.8	122.1	124.0	124.7	125.6	125.9	126.6	127.9	128.9	
Meats, poultry, fish, and eggs	110.5	114.3	110.6	111.2	111.5	112.1	114.6	116.5	117.3	117.4	116.8	116.4	116.1	118.5	118.2	
Dairy products	105.9	108.4	107.3	107.2	107.1	107.4	107.2	107.6	108.2	108.9	109.9	110.6	111.4	112.6	113.4	
Fruits and vegetables	119.1	128.1	124.7	123.0	126.0	127.1	126.1	129.0	129.9	133.2	131.7	129.5	131.0	134.8	137.1	
Other foods at home	110.5	113.1	111.8	112.0	112.1	112.3	112.4	113.1	113.6	114.0	114.8	114.9	115.3	116.6	117.8	
Sugar and sweets	111.0	114.0	112.2	112.6	112.3	112.5	113.3	114.0	114.8	115.6	116.0	115.9	116.7	117.2	117.8	
Fats and oils	108.1	113.1	109.5	110.3	110.3	111.2	111.5	112.6	114.9	115.9	117.1	117.1	118.5	119.6	120.5	
Nonalcoholic beverages	107.5	107.5	107.7	107.7	107.8	107.5	107.1	107.2	107.0	107.4	108.1	108.2	107.8	109.6	111.3	
Other prepared foods	113.8	118.0	116.1	116.3	116.6	117.0	117.1	118.3	118.7	119.1	119.9	120.1	120.7	121.9	123.0	
Food away from home	117.0	121.8	119.7	120.2	120.7	121.0	121.5	122.1	122.5	123.0	123.4	123.7	124.1	124.7	125.2	
Alcoholic beverages	114.1	118.6	116.8	117.4	118.0	118.2	118.7	119.2	119.3	119.6	119.8	119.9	119.9	120.3	121.1	
Housing	114.2	118.5	116.6	117.0	117.3	117.7	118.6	119.1	119.5	119.9	119.9	119.9	120.2	120.7	121.1	
Shelter	121.3	127.1	125.0	125.6	125.8	126.2	126.6	127.4	128.2	128.4	128.8	129.1	129.3	129.8	130.3	
Renters' costs (12/82=100)	128.1	133.6	131.3	132.9	132.9	133.1	133.7	134.7	135.6	134.7	134.8	134.2	134.1	135.2	136.3	
Rent, residential	123.1	127.8	126.3	126.4	126.6	126.9	127.3	127.8	128.4	129.1	129.4	129.8	130.1	130.5	130.9	
Other renters' costs	127.4	134.8	130.4	136.6	136.0	135.7	137.0	139.2	141.3	135.5	134.8	131.1	130.0	132.7	136.2	
Homeowners' costs (12/82=100)	124.8	131.1	129.0	129.2	129.4	129.9	130.4	131.0	131.8	132.6	133.1	133.9	134.0	134.4	134.7	
Owners' equivalent rent (12/82=100)	124.8	131.1	129.0	129.2	129.5	130.0	130.4	131.1	131.9	132.7	133.1	133.9	134.0	134.4	134.7	
Household insurance (12/82=100)	124.0	129.0	127.1	127.8	128.2	128.2	128.9	129.7	130.1	130.2	130.4	130.2	130.6	130.9	131.2	
Maintenance and repairs	111.8	114.7	114.3	113.3	115.3	114.3	114.7	114.5	115.0	115.3	115.0	115.4	115.8	116.1	117.1	
Maintenance and repair services	114.8	117.9	117.9	116.4	119.4	117.8	118.1	117.9	118.1	118.1	117.6	118.2	118.4	118.7	119.9	
Maintenance and repair commodities	107.8	110.4	109.5	109.2	109.7	109.8	110.1	110.8	111.7	111.6	111.7	112.4	112.8	113.4		
Fuel and other utilities	103.0	104.4	102.8	102.7	102.8	103.5	105.9	106.0	106.1	106.4	105.4	104.3	105.0	106.0	105.9	
Fuels	97.3	98.0	96.0	95.8	95.7	96.5	100.8	100.8	100.9	101.0	98.6	96.8	97.4	98.7	98.6	
Fuel oil, coal, and bottled gas	77.9	78.1	80.9	80.5	80.2	80.0	79.1	76.9	76.3	75.9	74.6	75.0	76.8	80.5	81.4	
Gas (piped) and electricity	103.8	104.6	101.9	101.7	101.6	102.6	107.8	108.1	108.3	108.5	105.8	105.8	104.1	105.1	104.9	
Other utilities and public services	120.1	122.9	121.8	121.7	122.3	122.6	122.3	122.4	122.6	123.3	124.5	124.4	125.5	125.9	126.0	
Household furnishings and operations	107.1	109.4	107.7	108.3	109.1	109.3	109.6	109.8	109.7	110.1	110.3	110.6	110.6	110.9	110.9	
Housefurnishings	103.6	105.1	103.7	104.7	104.9	104.9	105.3	105.5	105.3	105.7	105.9	106.1	105.9	106.0	105.9	
Housekeeping supplies	111.5	114.7	113.2	112.9	113.8	114.1	114.7	115.2	114.8	115.5	115.6	116.5	117.0	117.5	117.7	
Housekeeping services	110.6	114.3	111.6	111.7	114.7	114.8	114.8	115.0	115.1	115.5	115.5	115.7	115.9	116.6	116.8	
Apparel and upkeep	110.6	115.4	110.2	114.3	117.0	116.3	114.6	112.7	112.6	117.8	120.7	119.9	118.0	115.3	115.3	
Apparel commodities	108.9	113.7	108.3	112.7	115.5	114.8	112.9	110.8	110.7	116.2	119.3	118.4	116.3	113.3	113.3	
Men's and boys' apparel	109.1	113.4	109.1	111.6	112.9	113.6	112.5	111.9	111.6	115.2	117.6	118.2	117.3	115.1	114.2	
Women's and girls' apparel	110.4	114.9	107.8	115.3	119.6	117.3	114.1	109.8	109.9	118.1	121.9	120.2	116.5	111.6	111.4	
Infants' and toddlers' apparel	112.1	116.4	111.4	114.0	117.1	117.7	116.5	116.2	118.2	119.0	118.1	117.2	117.3	115.6	118.8	
Footwear	105.1	109.9	105.8	107.3	109.4	109.7	109.2	108.2	107.4	112.2	115.9	114.5	113.5	112.2	112.7	
Other apparel commodities	108.0	116.0	113.1	113.6	114.6	114.9	114.6	116.5	116.2	117.4	119.4	119.5	119.1	119.2	120.4	
Apparel services	119.6	123.7	122.0	122.2	122.6	122.8	123.1	123.4	124.0	124.4	125.5	126.3	126.7	127.3	127.8	
Transportation	105.4	108.7	106.8	106.5	107.2	108.1	108.5	108.9	109.6	109.7	110.0	110.7	110.8	111.1	111.6	
Private transportation	104.2	107.6	105.7	105.4	106.0	107.0	107.4	107.8	108.6	108.6	109.0	109.6	109.6	109.8	110.3	
New vehicles	114.4	116.5	116.0	115.7	115.6	115.9	116.1	116.1	115.9	116.2	117.2	118.4	119.0	119.4	119.5	
New cars	114.6	116.9	116.2	116.0	115.9	116.3	116.5	116.5	116.3	116.8	117.7	118.7	119.1	119.5	119.6	
Used cars	113.1	118.0	116.0	116.1	116.6	117.0	117.6	117.9	119.2	119.4	119.9	119.7	120.2	120.5	120.5	
Motor fuel	80.2	80.9	78.3	77.5	79.4	81.4	81.4	82.3	84.1	83.1	81.8	81.5	80.3	79.6	80.3	
Gasoline	80.1	80.8	78.1	77.3	79.2	81.3	81.3	82.3	84.2	83.1	81.6	81.4	80.3	79.4	80.1	
Maintenance and repair	114.8	119.7	117.7	118.5	118.8	119.3	119.7	120.0	120.3	120.9	121.1	121.5	121.5	122.4	123.3	
Other private transportation	120.8	127.9	125.0	124.9	125.0	126.3	127.2	127.5	128.7	129.3	131.0	132.1	132.5	133.5	134.3	
Other private transportation commodities	96.9	98.9	98.1	98.3	98.2	98.9	98.8	98.2	99.2	99.7	99.3	99.4	100.3	101.0	101.2	
Other private transportation services	125.6	133.9	130.6	130.3	130.5	132.0	133.1	133.7	134.8	135.5	137.7	139.1	139.3	140.4	141.4	
Public transportation	121.1	123.3	120.8	121.4	122.4	123.2	123.7	123.7	124.0	124.2	125.3	126.5	127.5	128.1		
Medical care	130.1	138.6	135.5	136.3	136.9	137.5	138.2	139.3	139.9	140.4	141.2	141.8	142.3	143.8	145.2	
Medical care commodities	131.0	139.9	136.1	137.0	138.1	139.0	139.4	140.5	141.1	142.0	143.2	143.3	144.2	145.0	145.8	
Medical care services	130.0	138.3	135.3	136.1	136.6	137.2	137.9	139.0	139.6	140.1	140.8	141.5	141.9	143.5	145.1	
Professional services	128.8	137.5	134.5	135.4	136.0	136.4	137.5	138.4	139.7	139.2	139.8	140.4	140.8	142.2	143.5	
Hospital and related services	131.8	143.9	139.0	140.0	140.7	141.8	142.1	144.3	145.9	146.9	148.5	149.7	150.8	152.9	155.1	
Entertainment	115.3	120.3	118.3	119.0	119.6	119.7	120.1	120.5	120.7	121.3	121.8	122.2	122.8	123.8	124.3	
Entertainment commodities	110.5	115.0	112.9	113.4	114.2	114.5	114.8	115.3	115.4	116.0	116.3	117.2	117.5	118.1	118.4	
Entertainment services	122.0	127.7	125.7	126.5	127.0	126.9	127.3	127.7	128.1	128.6	129.4	129.3	130.0	131.6	132.3	
Other goods and services	128.5	137.0	134.2	134.6	134.8	135.1	135.5	136.5	137.5	140.0	140.6	141.0	141.3	143.4	144.1	
Tobacco products	133.6	145.8	142.2	142.8	142.9	143.2	143.6	147.5</								

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		1988										1989		
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
All items	113.6	118.3	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	121.1	121.6
Commodities	107.7	111.5	109.1	109.8	110.7	111.1	111.1	111.5	111.9	113.0	113.5	113.5	113.5	113.9	114.3
Food and beverages	113.5	118.2	115.8	116.0	116.7	117.1	117.6	118.8	119.4	120.1	120.3	120.2	120.6	122.0	122.7
Commodities less food and beverages	104.0	107.3	105.0	105.9	106.9	107.2	107.1	107.0	107.3	108.5	109.2	109.4	109.0	108.9	109.1
Nondurables less food and beverages	101.1	105.2	101.9	103.4	105.0	105.4	104.9	104.7	105.2	107.1	107.8	107.7	106.9	106.4	106.9
Apparel commodities	108.9	113.7	108.3	112.7	115.5	114.8	112.9	110.8	110.7	116.2	119.3	118.4	116.3	113.3	113.3
Nondurables less food, beverages, and apparel	99.5	103.2	101.0	101.0	102.0	103.0	103.2	104.0	104.8	104.9	104.5	104.6	104.5	105.3	106.1
Durables	108.2	110.4	109.4	109.5	109.7	109.9	110.2	110.3	110.3	110.6	111.1	111.8	112.2	112.5	112.4
Services	120.2	125.7	123.4	123.8	124.1	124.6	125.5	126.1	126.7	127.3	127.6	127.8	128.1	128.9	129.4
Rent of shelter (12/82=100)	125.9	132.0	129.8	130.4	130.6	131.0	131.5	132.3	133.1	133.4	133.8	134.1	134.3	134.8	135.4
Household services less rent of shelter (12/82=100)	113.1	115.3	113.1	113.0	113.7	114.3	116.6	116.9	117.0	117.4	116.6	115.6	116.2	117.0	116.9
Transportation services	121.9	128.0	125.2	125.4	125.8	126.7	127.6	128.1	128.8	129.3	130.6	131.6	132.1	133.0	133.9
Medical care services	130.0	138.3	135.3	136.1	136.6	137.2	137.9	139.0	139.6	140.1	140.8	141.5	141.9	143.5	145.1
Other services	125.7	132.6	130.2	130.7	131.0	131.1	131.6	131.9	132.8	134.9	135.5	135.7	136.2	137.3	137.8
Special indexes:															
All items less food	113.6	118.3	116.0	116.6	117.2	117.6	118.1	118.4	118.9	119.7	120.2	120.3	120.4	120.8	121.3
All items less shelter	111.6	115.9	113.5	114.0	114.7	115.2	115.7	116.1	116.5	117.5	117.9	118.0	118.1	118.7	119.2
All items less homeowners' costs (12/82=100)	115.1	119.5	117.1	117.7	118.4	118.8	119.3	119.8	120.3	121.1	121.5	121.5	121.6	122.3	122.9
All items less medical care	112.6	117.0	114.8	115.3	115.9	116.3	116.8	117.2	117.8	118.6	118.9	119.0	119.1	119.7	120.1
Commodities less food	104.3	107.7	105.4	106.3	107.3	107.6	107.4	107.7	108.9	109.5	109.7	109.4	109.2	109.5	
Nondurables less food	101.8	105.8	102.7	104.1	105.6	106.0	105.5	105.4	105.9	107.7	108.3	108.2	107.5	107.1	
Nondurables less food and apparel	100.3	104.0	101.9	101.9	102.9	103.8	104.0	104.8	105.5	105.6	105.2	105.4	105.3	106.0	
Nondurables	107.5	111.8	109.0	109.8	111.0	111.4	111.4	111.9	112.4	113.7	114.2	114.1	113.9	114.3	
Services less rent of shelter (12/82=100)	123.1	128.3	125.8	126.0	126.5	127.1	128.4	128.9	129.4	130.3	130.5	130.6	131.1	132.1	
Services less medical care	119.1	124.3	122.1	122.4	122.8	123.2	124.1	124.7	125.3	125.9	126.2	126.3	126.6	127.3	
Energy	88.6	89.3	87.0	86.5	87.3	88.7	91.0	91.4	92.3	91.9	89.9	88.9	88.7	89.0	
All items less energy	117.2	122.3	120.0	120.6	121.2	121.5	121.8	122.3	122.8	123.8	124.4	124.7	124.8	125.5	
All items less food and energy	118.2	123.4	121.1	121.9	122.4	122.7	123.0	123.3	123.8	124.7	125.5	125.8	126.0	126.4	
Commodities less food and energy	111.8	115.8	113.3	114.6	115.5	115.5	115.4	115.2	115.2	116.9	118.0	118.2	118.0	117.9	
Energy commodities	80.2	80.8	78.8	78.0	79.7	81.4	81.4	81.9	83.4	82.5	81.0	80.9	80.1	79.9	
Services less energy	122.0	127.9	125.7	126.1	126.5	126.9	127.4	128.0	128.8	129.3	129.9	130.3	130.6	131.4	
Purchasing power of the consumer dollar:															
1982-84=\$1.00	88.0	84.6	86.2	85.8	85.4	85.1	84.7	84.4	84.0	83.5	83.2	83.1	83.0	82.6	
1967=\$1.00	29.4	28.2	28.8	28.7	28.5	28.4	28.3	28.2	28.0	27.9	27.8	27.7	27.6	27.5	
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:															
All items	112.5	117.0	114.7	115.1	115.7	116.2	116.7	117.2	117.7	118.5	118.9	119.0	119.2	119.7	
All items (1967=100)	335.0	348.4	341.6	343.0	344.7	346.1	347.6	349.1	350.7	353.0	354.2	354.6	355.0	356.7	
Food and beverages	113.3	117.9	115.5	115.7	116.3	116.8	117.4	118.5	119.1	119.8	120.0	119.9	120.3	121.7	
Food	113.3	117.9	115.4	115.6	116.2	116.7	117.3	118.5	119.2	119.9	120.1	119.9	120.4	121.9	
Food at home	111.7	116.2	113.5	113.5	114.2	114.7	115.5	116.9	117.8	118.7	120.1	118.4	118.8	120.8	
Cereals and bakery products	114.8	122.2	118.8	118.9	119.9	120.4	120.8	122.1	124.1	124.8	125.7	126.0	126.7	128.0	
Meats, poultry, fish, and eggs	110.4	114.1	110.5	111.1	111.4	112.0	114.5	116.3	117.1	117.3	116.6	116.1	115.8	118.3	
Dairy products	105.7	108.1	107.0	106.9	106.9	107.2	107.0	107.3	107.9	108.6	109.7	110.4	111.2	112.4	
Fruits and vegetables	118.8	127.6	124.0	122.2	125.2	126.4	125.5	128.4	129.6	132.8	131.4	129.1	130.8	134.3	
Other foods at home	110.4	113.0	111.7	111.9	112.0	112.2	112.3	113.0	113.5	113.9	114.7	114.8	115.1	116.5	
Sugar and sweets	110.9	113.9	112.1	112.4	112.2	112.4	113.1	113.9	114.8	115.6	115.9	115.7	116.7	117.3	
Fats and oils	107.9	113.0	109.5	110.3	110.2	111.0	111.4	112.5	114.8	115.8	117.0	117.0	118.3	119.5	
Nonalcoholic beverages	107.5	107.7	107.9	108.0	107.9	107.7	107.3	107.4	107.2	107.6	108.3	108.4	107.8	109.8	
Other prepared foods	113.6	117.8	115.8	116.0	116.4	116.8	116.9	118.1	118.5	118.8	119.7	119.9	120.5	121.7	
Food away from home	116.9	121.6	119.6	120.0	120.6	120.9	121.4	122.0	122.3	122.8	123.2	123.5	124.0	124.6	
Alcoholic beverages	113.9	118.3	116.6	117.3	117.9	118.0	118.4	118.9	118.9	119.2	119.5	119.5	119.5	119.8	
Housing	112.8	116.8	115.0	115.4	115.6	116.0	116.9	117.4	117.8	118.2	118.2	118.3	118.5	119.0	
Shelter	118.8	124.3	122.4	122.9	123.0	123.4	123.9	124.5	125.3	125.6	126.0	126.4	126.5	126.9	
Renters' costs (12/84=100)	114.6	119.2	117.3	118.4	118.4	118.6	119.3	120.0	120.7	120.2	120.4	120.1	120.0	120.7	
Rent, residential	122.9	127.5	126.1	126.2	126.3	126.6	126.9	127.5	128.0	128.7	129.0	129.4	129.7	130.1	
Other renters' costs	128.2	135.2	130.0	136.9	136.1	136.2	138.8	140.8	143.0	136.1	135.1	131.4	129.2	131.8	
Homeowners' costs (12/84=100)	113.8	119.5	117.6	117.8	118.0	118.4	118.8	119.4	120.2	120.9	121.3	122.0	122.2	122.8	
Owners' equivalent rent (12/84=100)	113.7	119.5	117.6	117.8	118.0	118.5	118.8	119.5	120.2	120.9	121.4	122.1	122.2	122.5	
Household insurance (12/84=100)	114.1	118.2	116.7	117.2	117.3	117.3	118.0	118.6	119.0	119.1	119.3	119.2	119.6	119.9	
Maintenance and repairs	111.3	114.0	113.6	112.8	114.7	113.7	113.9	113.8	114.2	114.4	114.1	114.6	115.2	115.6	
Maintenance and repair services	114.7	117.7	117.6	116.6	119.8	117.6	117.9	117.6	118.0	117.7	117.0	117.6	117.8	118.3	
Maintenance and repair commodities	106.0	108.3	107.5	107.1	107.5	107.9	107.9	108.0	108.3	109.1	109.2	109.7	110.6	110.9	
Fuel and other utilities	102.7	104.1	102.5	102.3	102.5	103.0	105.5	105.6	105.8	106.1	105.1	104.1	104.8	105.7	
Fuels	97.1	97.7	95.6	95.4	95.4	96.1	100.5	100.5	100.6	100.8	98.3	96.6	97.2	98.4	
Fuel oil, coal, and bottled gas	77.6	77.9	80.6	80.2	79.9	79.7	78.9	76.7	76.2	75.9	74.6	75.0	76.7	80.3	
Gas (pipel) and electricity	103.6	104.4	101.6	101.4	101.4	102.2	107.5	107.8	108.0	108.2	105.5	103.5	103.9	104.8	
Other utilities and public services	120.1	122.9	121.8	121.7	122.3	122.5	122.2	122.4	122.5	123.3	124.7	124.6	125.6	126.2	
Household furnishings and operations	106.7	108.9	107.2	107.8	108.7	108.8	109.1	109.4	109.1	109.6	109.9	110.2	110.2	110.4	
Housefurnishings	103.1	104.5	103.1	104.1	104.2	104.2	104.6	104.9	104.5	105.1	105.4	105.6	105.4	105.5	
Housekeeping supplies	111.8	115.1	113.6	113.4	114.3	114.5	115.1	115.5	115.1	115.8					

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		1988												1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
Apparel commodities	108.8	113.4	108.3	112.4	114.9	114.3	112.6	110.6	110.5	115.8	118.9	118.1	116.0	113.0	112.8	
Men's and boys' apparel	108.5	112.8	108.7	111.1	112.2	113.0	112.1	111.5	111.0	114.4	116.9	117.5	116.5	114.4	113.4	
Women's and girls' apparel	110.3	114.5	107.9	114.9	118.8	116.7	113.5	109.5	109.5	117.6	121.5	119.9	116.2	111.3	110.7	
Infants' and toddlers' apparel	114.0	118.6	113.3	116.0	119.1	119.7	118.8	118.6	120.4	121.5	120.6	120.1	120.3	118.5	121.8	
Footwear	105.5	110.4	106.4	107.7	109.6	109.9	109.6	108.7	108.0	112.7	116.3	115.0	114.0	112.8	113.1	
Other apparel commodities	107.4	114.9	112.0	112.8	113.9	114.0	113.5	115.2	114.9	116.2	117.9	118.2	117.8	117.8	119.0	
Apparel services	119.2	123.0	121.5	121.6	122.0	122.2	122.4	122.7	123.3	123.7	124.7	125.4	125.8	126.4	126.8	
Transportation	105.1	108.3	106.4	106.2	106.8	107.8	108.2	108.6	109.4	109.4	109.8	110.3	110.4	110.7	111.2	
Private transportation	104.1	107.5	105.6	105.3	105.9	107.0	107.3	107.7	108.6	108.6	109.0	109.5	109.5	109.7	110.3	
New vehicles	114.0	116.2	115.7	115.3	115.3	115.6	115.8	115.8	115.5	115.8	116.9	118.1	118.8	119.2	119.3	
New cars	114.3	116.6	116.0	115.7	115.7	116.0	116.2	116.2	116.0	116.4	117.5	118.5	118.9	119.3	119.5	
Used cars	113.1	117.9	116.0	116.1	116.6	116.9	117.5	117.8	119.0	119.2	119.8	119.5	120.1	120.3	120.4	
Motor fuel	80.3	80.9	78.3	77.5	79.4	81.4	81.4	82.3	84.3	84.3	83.2	81.6	81.5	80.4	80.3	
Gasoline	80.2	80.8	78.1	77.3	79.2	81.3	81.3	82.3	84.3	83.2	81.6	81.5	80.4	79.5	80.2	
Maintenance and repair	115.1	119.8	117.8	118.6	118.9	119.4	119.8	120.1	120.5	121.0	121.3	121.5	121.5	122.4	123.3	
Other private transportation	119.0	125.8	123.2	123.1	123.0	124.3	125.2	125.4	126.5	127.2	128.9	130.0	130.4	131.4	132.3	
Other private transportation commodities	96.7	98.6	98.0	98.1	97.9	98.6	98.5	97.9	98.8	99.3	98.8	99.0	99.9	100.5	100.7	
Other private transportation services	123.4	131.7	128.5	128.2	128.3	129.7	130.8	131.3	132.5	133.2	135.5	136.8	137.1	138.2	139.2	
Public transportation	120.4	122.5	120.4	120.8	121.7	121.8	122.3	123.0	123.0	123.1	123.5	124.3	125.4	126.1	126.8	
Medical care	130.2	139.0	135.8	136.5	137.1	137.8	138.5	139.6	140.3	140.8	141.7	142.2	142.8	144.2	145.6	
Medical care commodities	130.2	139.0	135.4	136.1	137.2	138.0	138.3	139.4	140.0	141.0	142.1	142.2	143.1	143.9	144.7	
Medical care services	130.3	139.0	135.8	136.6	137.1	137.7	138.5	139.6	140.3	140.8	141.6	142.2	142.7	144.2	145.8	
Professional services	129.0	137.7	134.7	135.5	136.1	136.6	137.7	138.5	138.9	139.3	139.9	140.6	141.0	142.4	143.7	
Hospital and related services	131.1	143.3	138.4	139.3	140.1	141.2	141.5	143.8	145.4	146.3	147.8	148.9	150.0	151.9	154.2	
Entertainment	114.8	119.7	117.6	118.2	118.9	119.0	119.4	119.8	120.1	120.6	121.2	121.7	122.2	123.1	123.6	
Entertainment commodities	110.6	115.1	112.9	113.5	114.2	114.6	114.9	115.4	115.5	116.0	116.5	117.1	117.6	118.1	118.4	
Entertainment services	121.8	127.2	125.2	126.0	126.5	126.3	126.8	127.2	127.6	128.1	128.9	129.0	129.7	131.3	131.9	
Other goods and services	127.8	136.5	133.6	134.0	134.2	134.5	135.0	136.3	137.2	139.3	139.9	140.3	140.6	143.0	143.7	
Tobacco products	133.7	146.0	142.3	143.0	143.1	143.4	143.8	147.9	148.9	149.2	149.5	149.9	150.2	156.9	158.2	
Personal care	115.0	119.3	117.5	117.7	118.1	118.5	118.8	119.1	119.0	120.3	120.9	121.7	122.3	122.7	123.0	
Toilet goods and personal care appliances	113.9	118.0	116.2	116.5	117.0	117.1	117.4	117.8	117.4	118.8	119.9	120.6	121.5	121.7	121.9	
Personal care services	116.1	120.5	118.9	119.0	119.3	119.9	120.2	120.4	120.7	121.9	122.0	122.7	123.0	123.6	124.2	
Personal and educational expenses	138.2	147.4	144.3	144.6	144.7	145.2	145.8	146.0	147.4	151.1	151.7	152.0	152.3	153.3	153.7	
School books and supplies	137.9	147.1	145.3	145.2	145.4	145.4	145.6	145.6	146.0	150.0	150.8	150.9	151.1	152.0	153.9	
Personal and educational services	138.4	147.7	144.5	144.8	144.9	145.4	146.0	146.3	147.8	151.5	152.0	152.3	152.7	153.7	154.0	
All items	112.5	117.0	114.7	115.1	115.7	116.2	116.7	117.2	117.7	118.5	118.9	119.0	119.2	119.7	120.2	
Commodities	107.3	111.0	108.7	109.3	110.1	110.5	110.7	111.1	111.6	112.5	113.0	113.1	113.0	113.5	113.9	
Food and beverages	113.3	117.9	115.5	115.7	116.3	116.8	117.4	118.5	119.1	119.8	120.0	119.9	120.3	121.7	122.4	
Commodities less food and beverages	103.6	106.8	104.5	105.3	106.3	106.7	106.5	106.6	107.0	108.1	108.7	108.9	108.6	108.4	108.7	
Nondurables less food and beverages	100.8	104.6	101.4	102.7	104.3	104.8	104.3	104.9	106.6	107.2	107.1	106.3	105.9	106.3		
Apparel commodities	108.8	113.4	108.3	112.4	114.9	114.3	112.6	110.6	110.5	115.8	118.9	118.1	116.0	113.0	112.8	
Nondurables less food, beverages, and apparel	99.2	102.9	100.5	100.4	101.6	102.6	102.8	103.7	104.7	104.7	104.1	104.3	104.1	104.9	105.6	
Durables	106.6	108.9	107.9	108.0	108.1	108.4	108.7	108.8	108.8	109.1	109.7	110.4	110.7	111.0	111.0	
Services	119.4	124.7	122.5	122.8	123.1	123.6	124.5	125.1	125.7	126.3	126.7	126.9	127.2	127.9	128.4	
Rent of shelter (12/84=100)	114.0	119.4	117.5	118.0	118.2	118.5	119.0	119.6	120.3	120.7	121.1	121.4	121.5	121.9	122.4	
Household services less rent of shelter (12/84=100)	104.0	105.9	103.9	103.8	104.4	104.9	107.2	107.4	107.6	108.0	107.2	106.2	106.8	107.5	107.4	
Transportation services	120.8	127.1	124.4	124.5	124.8	125.8	126.6	127.1	127.8	128.4	129.9	130.9	131.2	132.2	133.1	
Medical care services	130.3	139.0	135.8	136.6	137.1	137.7	138.5	139.6	140.3	140.8	141.6	142.2	142.7	144.2	145.8	
Other services	124.7	131.4	129.0	129.5	129.8	130.0	130.5	130.8	131.6	133.6	134.2	134.5	135.0	136.1	136.5	
Special indexes:																
All items less food	112.2	116.7	114.4	115.0	115.5	116.0	116.5	116.8	117.3	118.1	118.6	118.8	118.8	119.2	119.6	
All items less shelter	111.0	115.2	112.8	113.2	113.9	114.4	115.0	115.4	115.9	116.8	117.2	117.3	117.4	118.0	118.5	
All items less homeowners' costs (12/84=100)	106.4	110.4	108.1	108.6	109.2	109.7	110.2	110.7	111.1	111.9	112.2	112.3	112.4	113.0	113.4	
All items less medical care	111.5	115.8	113.6	114.0	114.6	115.0	115.6	116.0	116.6	117.3	117.7	117.8	117.9	118.5	118.9	
Commodities less food	103.9	107.2	104.9	105.7	106.6	107.0	106.9	107.0	107.3	108.4	109.0	109.2	108.9	108.8	109.0	
Nondurables less food	101.4	105.3	102.2	103.4	104.9	105.4	105.0	105.1	105.6	107.2	107.8	107.6	106.9	106.8	107.0	
Nondurables less food and apparel	100.0	103.7	101.4	101.4	102.5	103.4	103.6	104.5	105.3	105.3	104.9	105.1	104.9	105.6	106.4	
Nondurables	107.2	111.5	108.7	109.4	110.5	111.0	111.1	111.6	112.3	113.4	113.8	113.7	113.5	114.0	114.6	
Nondurables less rent of shelter (12/84=100)	110.8	115.6	113.2	113.4	113.9	114.4	115.1	115.6	116.1	116.6	117.3	117.6	117.6	118.1	119.0	
Services less medical care	118.2	123.3	121.1	121.4	121.7	122.2	123.1	123.6	124.3	124.9	125.2	125.3	125.6	126.3	126.7	
Services less medical care	88.0	88.6	86.3	85.8	86.7	87.1	87.9	88.1	90.3	90.7	91.8	91.3	89.3	88.4	88.3	
Energy	116.0	121.0	118.7	119.3	119.9	120.2	120.5	121.0	121.5	122.4	123.1	123.4	123.6	124.2	124.7	
All items less energy	116.8	121.9	119.6	120.3	120.8	121.1	121.4	121.7	122.2	123.1	124.0	124.3	124.4	124.8	125.3	
All items less food and energy	110.8	114.7	112.4	113.5	114.3	114.4	114.3	114.2	114.3	115.8	116.9	117.1	117.0	116.9	117.1	
Commodities less food and energy	80.3	80.9	78.7	77.9	79.7	81.5	81.4	82.1	83.8	82.7	81.2	81.2	80.3	79.9	80.6	
Energy commodities	121.2	127.0	124.8	125.2	125.6	126.0	126.5	127.1	127.8	128.4	129.1	129.5	129.8	130.5	131.1	
Services less energy																

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	All Urban Consumers						Urban Wage Earners							
		1988					1989	1988					1989		
		Feb.	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.
U.S. city average	M	116.0	116.5	120.2	120.3	120.5	121.1	121.6	114.7	115.1	118.9	119.0	119.2	119.7	120.2
Region and area size³															
Northeast urban	M	119.2	119.6	124.1	124.4	124.5	125.4	125.8	118.1	118.4	122.9	123.2	123.3	124.1	124.5
Size A - More than 1,200,000	M	119.9	120.4	124.9	125.1	125.3	126.1	126.5	118.0	118.5	122.9	123.1	123.2	124.0	124.3
Size B - 500,000 to 1,200,000	M	117.0	117.5	122.5	122.9	122.2	123.1	123.9	116.0	116.4	121.2	121.6	121.0	121.9	122.7
Size C - 50,000 to 500,000	M	117.2	117.2	121.7	122.7	123.3	124.4	124.3	119.8	119.8	124.2	125.1	125.7	126.8	126.7
North Central urban	M	113.7	114.3	118.1	118.1	118.2	118.7	119.3	111.8	112.3	116.1	116.2	116.3	116.8	117.3
Size A - More than 1,200,000	M	114.7	115.1	119.1	119.1	119.2	119.8	120.4	112.1	112.5	116.4	116.5	116.6	117.1	117.7
Size B - 360,000 to 1,200,000	M	113.5	114.2	118.2	118.0	118.2	118.3	118.6	111.1	111.8	115.7	115.7	115.8	116.0	116.2
Size C - 50,000 to 360,000	M	113.4	114.6	117.7	118.4	118.2	118.8	119.5	112.3	113.4	116.5	117.3	117.1	117.7	118.4
Size D - Nonmetropolitan (less than 50,000)	M	110.5	111.1	114.2	114.1	114.0	114.5	115.1	110.2	110.6	113.9	113.9	113.8	114.3	114.8
South urban	M	114.4	114.8	118.2	118.3	118.5	118.9	119.2	113.8	114.2	117.7	117.8	118.0	118.3	118.7
Size A - More than 1,200,000	M	115.2	115.5	118.9	118.9	119.2	119.7	120.1	114.4	114.7	118.1	118.0	118.4	118.8	119.3
Size B - 450,000 to 1,200,000	M	115.1	115.8	119.5	119.6	119.7	119.9	120.3	113.0	113.6	117.5	117.7	117.8	117.9	118.2
Size C - 50,000 to 450,000	M	113.4	114.0	117.1	117.4	117.6	117.8	118.0	113.8	114.3	117.7	117.9	118.1	118.4	118.6
Size D - Nonmetropolitan (less than 50,000)	M	112.7	112.7	116.0	116.3	116.3	116.9	117.4	113.4	113.4	116.8	117.0	117.0	117.7	118.1
West urban	M	116.9	117.5	120.7	120.7	120.9	121.7	122.3	115.6	116.2	119.4	119.4	119.6	120.3	120.9
Size A - More than 1,250,000	M	118.2	118.9	122.2	122.3	122.5	123.3	123.7	115.6	116.2	119.6	119.6	119.7	120.5	121.0
Size B - 330,000 to 1,250,000	M	115.6	115.9	-	-	119.3	-	-	115.7	116.0	-	-	119.4	-	-
Size C - 50,000 to 330,000	M	115.9	116.2	119.4	119.0	119.0	119.8	120.5	115.3	115.6	118.7	118.4	118.4	119.3	119.9
Size classes:															
A (12/86)	M	105.3	105.7	109.2	109.2	109.4	110.0	110.5	105.2	105.6	109.1	109.1	109.3	109.9	110.3
B	M	115.2	115.8	119.7	119.7	119.8	120.1	120.8	113.8	114.3	118.3	118.4	118.5	118.8	119.3
C	M	114.6	115.1	118.5	118.9	119.1	119.6	120.0	114.9	115.4	118.9	119.3	119.4	120.0	120.4
D	M	113.1	113.5	116.8	117.0	116.8	117.5	118.0	113.4	113.7	117.1	117.3	117.1	117.8	118.3
Selected local areas															
Chicago, IL-															
Northwestern IN	M	116.6	116.9	121.6	121.0	121.3	121.5	122.2	112.9	113.2	117.8	117.4	117.7	117.9	118.4
Los Angeles-Long Beach, Anaheim, CA	M	119.7	120.6	124.0	124.1	124.2	124.6	125.5	116.6	117.5	121.0	120.9	121.1	121.4	122.3
New York, NY-															
Northeastern NJ	M	121.1	121.5	126.2	125.9	126.0	127.0	127.6	119.3	119.7	124.3	124.1	124.1	125.1	125.5
Philadelphia, PA-NJ	M	119.3	119.6	124.6	125.3	125.6	125.7	125.4	119.0	119.5	124.4	125.0	125.2	125.5	125.4
San Francisco-															
Oakland, CA	M	117.9	119.1	122.3	122.2	122.6	124.0	124.0	117.0	117.9	121.3	121.1	121.5	122.8	122.9
Baltimore, MD	1	-	117.7	-	121.2	-	121.3	-	-	117.3	-	120.8	-	120.9	-
Boston, MA	1	-	122.1	-	127.4	-	129.0	-	-	121.8	-	127.4	-	128.9	-
Cleveland, OH	1	-	115.1	-	118.0	-	118.9	-	-	110.2	-	113.0	-	113.8	-
Miami, FL	1	-	115.1	-	118.3	-	120.0	-	-	114.3	-	117.2	-	118.8	-
St. Louis, MO-IL	1	-	114.2	-	118.3	-	118.4	-	-	113.8	-	117.8	-	118.0	-
Washington, DC-MD-VA	1	-	119.2	-	123.2	-	124.3	-	-	118.5	-	122.6	-	123.7	-
Dallas-Ft. Worth, TX	2	114.0	-	117.9	-	117.2	-	117.5	113.8	-	117.7	-	117.0	-	117.2
Detroit, MI	2	113.7	-	118.6	-	118.3	-	120.1	110.9	-	115.6	-	115.7	-	117.3
Houston, TX	2	108.0	-	111.1	-	111.3	-	112.7	108.1	-	111.4	-	111.4	-	112.9
Pittsburgh, PA	2	113.3	-	116.3	-	116.7	-	117.9	108.9	-	111.7	-	112.2	-	113.4

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	1980	1981	1982	1983	1984	1985	1986	1987	1988
Consumer Price Index for All Urban Consumers:									
All items:									
Index	82.4	90.9	96.5	99.6	103.9	107.6	109.6	113.6	118.3
Percent change	13.5	10.3	6.2	3.2	4.3	3.6	1.9	3.6	4.1
Food and beverages:									
Index	86.7	93.5	97.3	99.5	103.2	105.6	109.1	113.5	118.2
Percent change	8.5	7.8	4.1	2.3	3.7	2.3	3.3	4.0	4.1
Housing:									
Index	81.1	90.4	96.9	99.5	103.6	107.7	110.9	114.2	118.5
Percent change	15.7	11.5	7.2	2.7	4.1	4.0	3.0	3.0	3.8
Apparel and upkeep:									
Index	90.9	95.3	97.8	100.2	102.1	105.0	105.9	110.6	115.4
Percent change	7.1	4.8	2.6	2.5	1.9	2.8	.9	4.4	4.3
Transportation:									
Index	83.1	93.2	97.0	99.3	103.7	106.4	102.3	105.4	108.7
Percent change	17.9	12.2	4.1	2.4	4.4	2.6	-3.9	3.0	3.1
Medical care:									
Index	74.9	82.9	92.5	100.6	106.8	113.5	122.0	130.1	138.6
Percent change	11.0	10.7	11.6	8.8	6.2	6.3	7.5	6.6	6.5
Entertainment:									
Index	83.6	90.1	96.0	100.1	103.8	107.9	111.6	115.3	120.3
Percent change	9.0	7.8	6.5	4.3	3.7	3.9	3.4	3.3	4.3
Other goods and services:									
Index	75.2	82.6	91.1	101.1	107.9	114.5	121.4	128.5	137.0
Percent change	9.1	9.8	10.3	11.0	6.7	6.1	6.0	5.8	6.6
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	82.9	91.4	96.9	99.8	103.3	106.9	108.6	112.5	117.0
Percent change	13.4	10.3	6.0	3.0	3.5	3.5	1.6	3.6	4.0

33. Producer Price Indexes, by stage of processing

(1982=100)

Grouping	Annual average		1988										1989	
	1987	1988	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Finished goods	105.4	108.0	106.3	107.0	107.5	107.7	108.6	108.7	108.6	109.4	109.7	110.0	111.0	111.7
Finished consumer goods	103.6	106.2	104.4	105.1	105.7	105.9	107.0	107.1	107.0	107.6	107.9	108.2	109.3	110.2
Finished consumer foods	109.5	112.6	110.1	110.3	111.2	112.3	113.6	113.6	115.1	114.6	114.9	115.1	116.5	117.3
Finished consumer goods excluding foods	100.7	103.1	101.5	102.6	103.0	102.8	103.8	103.9	103.0	104.1	104.5	104.8	105.8	106.6
Nondurable goods less food	94.9	97.3	95.6	97.0	97.4	97.1	98.3	98.4	97.6	97.7	98.4	98.8	99.9	101.0
Durable goods	111.5	113.7	112.6	112.8	113.1	113.2	113.6	113.8	112.8	116.4	115.8	116.0	116.6	116.7
Capital equipment	111.7	114.3	113.2	113.6	113.8	113.9	114.2	114.5	114.3	116.0	116.0	116.3	117.0	117.4
Intermediate materials, supplies, and components	101.5	107.1	104.7	105.6	106.3	107.4	108.2	108.4	108.7	108.6	109.0	109.5	110.5	110.9
Materials and components for manufacturing	105.3	113.2	110.5	111.6	112.3	112.9	114.0	114.3	114.9	115.5	116.2	116.8	117.8	118.2
Materials for food manufacturing	100.8	105.9	101.6	102.6	104.0	106.9	109.9	108.9	109.5	108.3	107.4	108.3	109.9	109.8
Materials for nondurable manufacturing	102.2	112.9	109.6	110.9	111.7	112.2	113.8	114.5	115.2	116.0	116.8	117.5	118.9	119.7
Materials for durable manufacturing	106.2	118.8	114.7	116.8	117.7	118.5	119.3	119.7	120.3	121.8	123.5	124.4	125.3	125.3
Components for manufacturing	108.8	112.3	111.1	111.5	111.9	112.1	112.4	112.8	113.2	113.5	113.8	114.1	114.9	115.2
Materials and components for construction	109.8	116.1	114.4	115.0	115.4	115.8	116.5	116.7	117.1	117.5	118.2	118.8	119.3	119.8
Processed fuels and lubricants	73.3	71.3	69.6	70.5	71.5	73.9	73.6	73.5	72.6	69.7	69.5	70.3	71.5	72.0
Containers	114.5	120.1	117.4	118.4	119.5	120.0	120.5	121.3	122.3	122.4	122.7	122.7	123.0	124.1
Supplies	107.7	113.7	111.1	111.7	112.3	113.8	115.2	115.1	115.6	116.0	116.2	116.1	117.1	117.4
Crude materials for further processing ...	93.7	95.9	94.1	95.6	97.2	97.9	97.3	96.9	96.7	95.9	94.0	97.0	101.0	101.0
Foodstuffs and feedstuffs	96.2	106.0	99.8	101.1	104.7	108.6	110.1	110.4	112.0	111.9	107.7	109.5	112.4	111.0
Crude nonfood materials	87.9	85.5	86.4	88.0	88.2	87.0	85.1	84.4	83.0	81.9	81.4	85.1	89.5	90.3
Special groupings														
Finished goods, excluding foods	104.0	106.5	105.1	105.9	106.2	106.1	106.9	107.1	106.4	107.7	108.0	108.3	109.1	109.8
Finished energy goods	61.8	59.8	58.2	60.9	61.6	60.3	61.3	61.1	58.8	58.7	59.8	59.3	60.9	61.9
Finished goods less energy	112.3	115.8	114.1	114.3	114.8	115.3	116.2	116.4	116.7	117.7	117.8	118.2	119.1	119.8
Finished consumer goods less energy	112.5	116.3	114.4	114.6	115.2	115.8	116.9	117.0	117.5	118.3	118.4	118.9	119.9	120.6
Finished goods less food and energy	113.3	117.0	115.7	115.9	116.2	116.4	117.1	117.4	117.2	118.8	118.9	119.4	120.0	120.6
Finished consumer goods less food and energy	114.2	118.5	117.1	117.3	117.6	117.9	118.8	119.1	118.9	120.5	120.5	121.2	121.8	122.6
Consumer nondurable goods less food and energy	116.3	122.0	120.4	120.6	120.9	121.3	122.7	123.0	123.3	123.6	124.0	125.0	125.8	126.9
Intermediate materials less foods and feeds	101.7	107.0	104.8	105.7	106.4	107.2	107.8	108.1	108.3	108.3	108.8	109.3	110.2	110.8
Intermediate foods and feeds	99.2	109.5	102.0	103.4	104.8	111.8	116.6	114.5	115.5	114.7	113.3	112.8	115.2	113.8
Intermediate energy goods	73.0	71.0	69.3	70.2	71.2	73.5	73.3	73.1	72.3	69.4	69.2	70.0	71.2	71.6
Intermediate goods less energy	107.3	114.6	112.1	113.0	113.6	114.4	115.5	115.7	116.3	116.8	117.4	117.8	118.7	119.1
Intermediate materials less foods and energy	107.8	115.2	112.9	113.8	114.4	114.9	115.7	116.1	116.7	117.3	118.0	118.6	119.4	119.9
Crude energy materials	75.0	67.8	68.7	70.6	71.4	70.0	67.3	66.1	64.7	63.3	62.6	66.7	71.2	72.0
Crude materials less energy	100.9	112.5	108.1	109.0	111.1	114.0	115.5	116.0	117.1	117.0	114.1	115.6	118.5	117.7
Crude nonfood materials less energy	115.7	132.7	133.4	133.1	131.3	131.2	132.9	133.9	133.4	133.4	134.0	134.9	137.7	138.5

34. Producer Price indexes, by durability of product

(1982 = 100)

Grouping	Annual average		1988										1989	
	1987	1988	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
	Total durable goods	109.9	114.7	113.3	113.8	114.1	114.4	114.8	115.1	115.2	116.4	116.7	117.1	117.9	118.2
Total nondurable goods	97.5	101.1	98.8	99.8	100.8	101.8	102.6	102.6	102.7	102.2	102.1	102.9	104.6	105.2
Total manufactures	104.4	109.1	107.1	107.9	108.6	109.0	109.8	110.0	110.1	110.5	111.0	111.3	112.3	112.8
Durable	109.6	114.0	112.6	113.2	113.5	113.7	114.1	114.4	114.5	115.6	116.0	116.3	117.0	117.3
Nondurable	99.2	104.1	101.7	102.7	103.7	104.3	105.4	105.6	105.6	105.4	106.0	106.3	107.6	108.3
Total raw or slightly processed goods	94.2	95.9	93.8	94.9	95.6	97.5	97.8	97.2	97.5	96.5	94.7	96.9	99.8	100.1
Durable	122.6	147.4	146.2	146.1	143.1	144.2	149.3	150.6	149.5	150.1	151.8	153.8	158.4	159.0
Nondurable	92.9	93.5	91.4	92.5	93.3	95.3	95.3	94.7	95.0	93.9	92.1	94.2	97.0	97.3

35. Annual data: Producer Price Indexes, by stage of processing

(1982 = 100)

Index	1979	1980	1981	1982	1983	1984	1985	1986	1987
Finished goods:									
Total	77.6	88.0	96.1	100.0	101.6	103.7	104.7	103.2	105.4
Consumer goods	77.5	88.6	96.6	100.0	101.3	103.3	103.8	101.4	103.6
Capital equipment	77.5	85.8	94.6	100.0	102.8	105.2	107.5	109.7	111.7
Intermediate materials, supplies, and components:									
Total	78.4	90.3	98.6	100.0	100.6	103.1	102.7	99.1	101.5
Materials and components for manufacturing	80.9	91.7	98.7	100.0	101.2	104.1	103.3	102.2	105.3
Materials and components for construction	84.2	91.3	97.9	100.0	102.8	105.6	107.3	108.1	109.8
Processed fuels and lubricants	61.6	85.0	100.6	100.0	95.4	95.7	92.8	72.7	73.3
Containers	79.4	89.1	96.7	100.0	100.4	105.9	109.0	110.3	114.5
Supplies	80.2	89.9	96.9	100.0	101.8	104.1	104.4	105.6	107.7
Crude materials for further processing:									
Total	85.9	95.3	103.0	100.0	101.3	103.5	95.8	87.7	93.7
Foodstuffs and feedstuffs	100.0	104.6	103.9	100.0	101.8	104.7	94.8	93.2	96.2
Nonfood materials except fuel	69.6	84.6	101.8	100.0	100.7	102.2	96.9	81.6	87.9
Fuel	57.3	69.4	84.8	100.0	105.1	105.1	102.7	92.2	84.1

36. U.S. export price indexes by Standard International Trade Classification

(1985 = 100, unless otherwise indicated)

Category	1974 SITC	1986			1987				1988			
		June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
ALL COMMODITIES		99.1	97.9	99.0	99.9	102.2	102.8	104.9	106.5	109.5	111.7	111.5
Food	0	97.1	86.0	90.1	87.3	89.9	86.7	94.6	95.2	103.4	118.7	114.2
Meat and meat preparations	01	105.2	111.3	114.5	115.0	121.2	118.8	116.8	122.8	131.0	137.0	130.0
Fish and crustaceans	03	108.6	111.9	115.9	117.1	125.8	131.1	138.5	140.9	145.0	175.9	174.0
Grain and grain preparations	04	89.0	66.3	72.5	68.3	71.0	67.8	77.4	79.8	87.2	108.5	102.0
Vegetables and fruit	05	108.6	114.6	117.5	115.3	112.4	101.1	100.5	97.5	104.3	109.9	110.2
Animal feeds, excluding unmilled cereals	08	114.8	123.9	119.7	117.0	123.8	123.1	145.2	134.6	158.1	161.0	156.9
Miscellaneous food products	09	97.0	98.7	99.9	100.1	100.6	100.3	100.3	102.3	102.8	105.2	104.9
Beverages and tobacco (6/83 = 100)	1	97.4	97.3	102.6	102.6	105.0	105.5	107.0	109.6	110.6	112.0	111.7
Tobacco and tobacco products	12	97.1	97.0	102.6	102.6	105.0	105.5	107.0	109.8	110.7	112.1	111.8
Crude materials	2	102.2	99.6	102.4	105.7	114.5	118.7	125.2	130.0	139.9	140.8	136.0
Raw hides and skins	21	117.1	108.3	115.9	131.9	149.6	147.7	157.1	171.4	166.8	156.7	137.4
Oilseeds	22	98.1	97.5	95.2	90.4	101.6	95.1	109.6	115.6	143.0	154.7	135.7
Crude rubber	23	99.9	99.6	98.9	99.9	101.0	102.8	105.3	104.5	106.1	109.1	111.0
Wood	24	101.2	102.9	107.9	111.2	116.2	141.7	146.0	150.2	149.6	150.0	148.5
Pulp and waste paper	25	116.4	129.0	129.4	144.2	149.9	153.0	160.4	171.2	179.5	181.7	182.9
Textile fibers	26	98.0	73.0	90.9	97.8	112.4	116.5	111.6	107.5	109.9	100.8	103.6
Crude minerals	27	98.4	98.0	96.8	94.4	94.0	91.6	91.6	92.8	94.2	94.8	94.8
Metal ores and metal scrap	28	98.0	100.4	96.8	98.8	107.0	117.4	125.9	131.8	146.0	145.0	150.3
Fuels and related products	3	76.8	77.4	77.8	81.3	82.8	84.6	82.5	79.3	82.1	79.5	79.3
Coal and coke	32	94.0	93.5	92.0	92.6	88.2	91.0	89.8	90.6	92.0	92.9	93.4
Crude petroleum and petroleum products	33	-	-	-	-	-	-	100.0	90.8	97.2	89.2	88.1
Fats and oils	4	-	-	-	-	-	-	-	-	-	-	-
Animal oils and fats	41	82.3	62.2	79.9	81.1	86.7	86.7	88.7	101.3	101.6	104.3	95.7
Fixed vegetable oils and fats	42	70.6	60.2	64.6	67.3	71.9	71.2	75.4	85.7	93.7	99.1	87.1
Chemicals and related products	5	98.0	95.7	95.2	99.6	106.7	107.7	112.9	117.9	121.6	124.9	125.4
Organic chemicals	51	93.1	91.6	92.4	101.9	118.4	116.1	123.5	135.1	144.6	153.3	150.8
Dyeing, tanning, and coloring materials	53	99.4	101.1	101.4	103.6	104.2	105.5	108.5	109.1	110.1	111.5	113.0
Medicinal and pharmaceutical products (12/85 = 100)	54	101.4	101.2	100.8	101.0	101.4	102.2	105.4	109.3	106.3	105.9	107.3
Essential oils, polish, and cleaning preparations	55	105.2	104.5	104.2	105.5	105.7	107.3	108.4	111.2	113.6	120.2	122.4
Fertilizers, manufactured	56	93.0	85.1	77.4	85.6	91.6	100.9	106.5	110.6	109.8	116.4	119.9
Artificial resins, plastics and cellulose	57	99.5	98.2	99.5	104.8	111.9	116.4	124.8	129.4	137.5	138.2	132.3
Chemical materials and products, n.e.s.	58	101.8	97.6	97.3	97.5	97.7	97.1	98.2	100.3	101.7	104.1	105.1
Intermediate manufactured products	6	102.5	103.8	104.2	106.4	107.9	110.3	111.2	114.4	117.7	119.6	120.8
Leather and furskins	61	103.8	104.2	107.8	123.6	126.9	128.7	118.0	125.7	125.1	128.6	125.0
Rubber manufactures	62	100.1	100.5	100.9	102.0	102.5	103.9	104.1	105.2	108.8	109.4	109.7
Paper and paperboard products	64	104.7	109.1	110.8	114.7	117.0	120.1	122.4	126.2	129.0	130.2	131.2
Textiles	65	102.9	101.9	101.8	103.3	103.7	104.1	105.2	106.5	107.9	108.6	112.7
Non-metallic mineral manufactures (9/85 = 100)	66	102.4	104.7	108.0	106.8	108.7	110.4	111.3	113.4	114.1	115.6	117.0
Iron and steel	67	100.2	102.3	101.9	102.9	102.9	100.7	102.9	106.1	110.8	111.4	112.1
Nonferrous metals	68	103.1	105.3	102.6	106.6	113.0	123.0	124.4	134.0	143.5	149.1	150.4
Metal manufactures, n.e.s.	69	100.8	100.8	100.8	101.5	101.3	102.3	103.4	104.5	107.6	109.9	110.9
Machinery and transport equipment, excluding military and commercial aircraft	7	100.8	101.0	101.6	101.7	101.8	102.1	102.4	103.2	104.0	104.5	105.5
Power generating machinery and equipment	71	102.4	102.5	103.7	104.6	103.7	104.8	105.2	107.0	108.4	108.5	109.3
Machinery specialized for particular industries	72	100.3	100.4	100.6	100.0	100.1	100.5	100.9	102.1	103.6	104.7	106.0
Metalworking machinery	73	102.0	103.0	104.2	105.8	106.7	107.8	108.2	109.3	110.8	111.0	114.5
General industrial machines and parts, n.e.s.	74	101.6	102.5	103.3	104.2	104.5	104.6	105.4	106.7	108.1	109.3	110.4
Office machines and automatic data processing equipment	75	99.0	98.8	98.2	96.0	96.1	95.7	95.5	95.8	95.7	96.8	96.3
Telecommunications, sound recording and reproducing equipment	76	98.9	99.7	101.3	101.9	101.4	101.4	101.9	102.8	104.6	104.1	105.1
Electrical machinery and equipment	77	99.2	99.7	100.3	101.7	102.1	102.5	101.8	103.1	103.4	103.2	103.6
Road vehicles and parts	78	101.7	101.9	103.3	103.1	103.5	103.8	104.6	104.5	104.9	105.4	107.1
Other transport equipment, excluding military and commercial aviation	79	103.1	102.8	103.5	104.5	105.5	105.8	106.6	107.4	109.6	109.7	111.8
Miscellaneous manufactured articles	8	103.5	103.4	103.8	104.6	105.2	105.4	105.6	106.9	108.1	108.9	110.5
Furniture and parts	82	-	-	-	-	-	-	-	-	-	-	-
Professional, scientific, and controlling instruments and apparatus	87	103.1	103.0	103.5	104.4	105.5	106.3	107.1	110.0	111.1	112.5	114.0
Photographic apparatus and supplies, optical goods, watches, and clocks	88	102.6	102.4	102.1	102.7	102.5	99.0	97.9	97.6	100.1	99.4	99.9
Miscellaneous manufactured articles, n.e.s.	89	-	-	-	-	-	-	-	-	-	-	-

- Data not available.

37. U.S. import price indexes by Standard International Trade Classification

(1985 = 100, unless otherwise indicated)

Category	1974 SITC	1986		1987				1988				
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.		
ALL COMMODITIES (9/82=100)		102.3	106.5	110.0	110.9	112.5	113.8	116.8	115.3	117.1		
All commodities, excluding fuels		110.9	113.7	116.5	117.5	120.8	123.7	126.7	126.1	129.1		
Food and live animals	0	109.1	105.2	108.3	109.1	112.5	114.1	114.0	112.7	113.9		
Meat and meat preparations	01	109.2	105.0	108.0	114.4	113.4	111.5	107.0	111.2	108.7		
Dairy products and eggs	02	113.8	119.3	122.3	121.7	125.1	125.6	125.0	122.2	125.8		
Fish and crustaceans	03	119.1	121.8	126.0	130.4	131.0	132.5	129.3	125.9	126.6		
Bakery goods, pasta products, grain, and grain preparations	04	118.8	122.3	126.2	124.8	130.7	135.8	139.8	136.9	142.8		
Fruits and vegetables	05	104.3	101.9	110.1	110.0	116.2	115.4	120.3	123.7	126.4		
Sugar, sugar preparations, and honey	06	106.5	107.4	109.6	109.0	107.0	109.6	110.0	112.1	110.7		
Coffee, tea, cocoa	07	104.9	89.9	87.0	85.1	90.6	94.3	93.3	87.4	90.1		
Beverages and tobacco	1	106.8	107.8	112.8	112.2	113.5	116.0	116.2	115.3	116.0		
Beverages	11	109.5	112.1	114.2	114.8	116.2	118.7	120.0	118.9	119.8		
Crude materials	2	109.1	115.1	116.2	120.3	122.1	129.2	137.8	135.4	142.9		
Crude rubber (including synthetic and reclaimed)	23	98.4	98.4	103.7	110.7	120.1	121.7	151.1	133.3	121.5		
Cork and wood	24	104.8	113.5	110.2	117.4	108.8	112.4	111.4	109.7	107.4		
Pulp and waste paper	25	116.9	127.0	132.0	133.4	141.0	151.0	160.5	169.6	174.7		
Textile fibers	26	102.9	110.9	118.4	128.1	135.2	137.8	145.5	141.9	145.6		
Crude fertilizers and crude minerals	27	98.6	98.2	99.6	99.2	99.9	100.4	101.0	97.2	100.2		
Metalliferous ores and metal scrap	28	118.3	122.8	124.5	128.7	137.9	151.2	167.6	172.2	205.3		
Crude animal and vegetable materials, n.e.s.	29	111.9	113.0	109.0	107.6	118.3	135.8	148.2	122.0	138.1		
Fuels and related products	3	55.9	67.4	74.1	74.3	67.2	60.6	63.4	57.7	53.2		
Crude petroleum and petroleum products	33	55.0	67.4	74.4	75.2	67.8	60.4	63.6	57.7	52.7		
Fats and oils	4	83.4	82.9	87.9	96.4	102.1	106.4	111.2	114.0	112.6		
Fixed vegetable oils and fats (9/87=100)	42	-	-	-	100.0	105.7	111.1	116.1	119.2	117.6		
Chemicals and related products	5	99.0	102.6	104.8	105.6	110.1	114.2	116.4	119.2	122.0		
Organic chemicals	51	87.5	96.1	99.8	98.2	103.0	105.8	107.3	111.3	115.2		
Inorganic chemicals	52	94.6	90.5	89.8	89.8	90.1	92.0	92.3	93.0	95.2		
Medicinal and pharmaceutical products	54	113.6	120.1	123.4	124.3	126.3	135.3	140.3	145.4	146.5		
Essential oils and perfumes	55	106.9	117.6	117.8	119.2	123.0	125.7	126.2	127.5	130.5		
Manufactured fertilizers	56	89.9	92.9	94.6	109.3	133.6	133.7	136.3	136.5	139.3		
Artificial resins and plastics and cellulose	58	110.3	110.0	114.7	114.4	117.6	121.6	124.3	127.6	129.4		
Chemical materials and products, n.e.s.	59	112.7	115.1	117.7	120.6	124.8	138.7	148.5	153.4	156.5		
Intermediate manufactured products	6	106.7	108.6	112.5	116.3	119.8	124.4	132.2	132.3	135.5		
Leather and furskins	61	107.2	110.9	116.6	117.8	124.4	131.8	137.0	136.6	134.9		
Rubber manufactures, n.e.s.	62	101.8	104.3	104.6	103.2	104.6	106.0	107.7	109.1	111.1		
Cork and wood manufactures	63	117.4	118.0	124.3	128.3	128.2	133.8	138.2	136.1	134.1		
Paper and paperboard products	64	104.9	104.8	104.9	110.3	112.3	117.2	118.3	119.5	119.9		
Textiles	65	107.9	110.4	111.8	114.6	118.6	120.0	120.6	119.1	120.1		
Nonmetallic mineral manufactures, n.e.s.	66	117.9	120.5	126.7	130.4	133.4	137.4	142.5	139.7	144.2		
Iron and steel	67	100.9	102.7	106.6	109.4	114.0	120.0	127.2	129.9	130.2		
Nonferrous metals	68	101.5	102.5	112.4	120.9	125.8	132.7	159.7	158.9	171.0		
Metal manufactures	69	108.3	112.1	112.7	114.6	117.8	121.1	126.9	127.5	130.9		
Machinery and transport equipment	7	114.4	117.5	119.9	119.9	123.1	125.4	127.3	126.7	129.9		
Machinery (including SITC 71-77)		-	-	-	-	-	-	-	-	-		
Machinery specialized for particular industries	72	123.0	130.4	136.1	134.3	142.1	146.8	149.8	143.7	149.5		
Metalworking machinery	73	120.9	126.4	128.1	130.2	135.5	139.9	142.4	139.7	144.2		
General industrial machinery and parts, n.e.s.	74	120.9	127.9	130.8	130.1	137.0	140.4	143.7	139.8	144.1		
Office machines and automatic data processing equipment	75	108.9	110.0	114.0	114.8	118.3	118.1	119.5	118.7	119.1		
Telecommunications, sound recording and reproducing apparatus	76	108.9	110.5	110.3	110.2	112.1	112.8	113.8	113.9	115.8		
Electrical machinery and equipment	77	109.8	112.4	115.8	115.1	118.2	122.2	124.2	125.9	129.2		
Road vehicles and parts	78	116.1	118.6	120.5	120.6	122.6	125.5	127.6	127.1	130.8		
Miscellaneous manufactured articles	8	110.3	114.5	117.8	118.5	121.8	124.2	125.7	124.2	126.4		
Plumbing, heating, and lighting fixtures	81	110.8	111.6	117.0	116.2	121.0	123.4	126.9	124.5	125.5		
Furniture and parts	82	112.3	114.8	119.8	119.0	124.3	125.4	129.6	128.0	129.2		
Travel goods, handbags, and similar goods (6/85 = 100)	83	87.5	96.1	99.8	98.2	103.0	105.8	107.3	111.3	115.2		
Clothing	84	102.6	106.4	109.2	111.9	112.3	115.6	114.9	116.7	117.2		
Footwear	85	112.3	114.8	119.8	119.0	124.3	125.4	129.6	128.0	129.2		
Professional, scientific, and controlling instruments and apparatus	87	122.5	131.3	135.9	132.7	138.7	140.0	142.5	135.8	141.8		
Photographic apparatus and supplies, optical goods, watches, and clocks	88	119.0	123.7	126.0	122.1	127.3	129.2	129.3	125.4	130.5		
Miscellaneous manufactured articles, n.e.s.	89	-	-	-	-	-	-	-	-	-		

- Data not available.

38. U.S. export price indexes by end-use category

(1985 = 100 unless otherwise indicated)

Category	Per-centage of 1980 trade value	1986	1987				1988			
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Foods, feeds, and beverages	16.294	90.2	87.4	91.5	88.0	96.6	98.5	110.1	124.5	117.3
Industrial supplies and materials	30.696	96.3	100.8	106.1	109.1	111.8	114.2	118.3	118.7	118.8
Capital goods	21.327	101.1	101.4	101.6	101.8	102.1	103.4	104.3	104.9	105.7
Automotive	9.368	103.5	103.4	103.6	104.0	104.5	104.3	104.8	105.3	106.8
Consumer goods	30.186	105.2	105.9	106.3	106.9	108.0	110.1	110.6	111.3	112.9
Consumer nondurables, manufactured, except rugs	7.483	104.3	105.4	104.3	104.6	106.3	107.4	108.7	109.3	109.7
Consumer durables, manufactured	7.467	104.9	105.5	106.6	107.3	107.9	110.4	110.4	110.7	112.6
Agricultural (9/88=100)	3.965	-	-	-	-	-	-	-	108.8	102.8
All exports, excluding agricultural (9/88=100)	3.501	-	-	-	-	-	-	-	-	-

- Data not available.

39. U.S. import price indexes by end-use category

(1985 = 100)

Category	Per-centage of 1980 trade value	1986	1987				1988			
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
All imports, excluding petroleum (6/88 = 100)	7.477	-	-	-	-	-	-	102.7	102.1	104.5
Foods, feeds, and beverages	31.108	108.4	105.2	107.8	109.0	112.1	113.7	113.7	112.7	113.9
Industrial supplies and materials	19.205	81.6	88.4	93.5	95.3	93.7	92.7	97.8	95.2	94.9
Petroleum and petroleum products, excluding natural gas	9.391	54.7	67.2	74.1	74.7	67.6	60.3	63.5	57.5	52.8
Industrial supplies and materials, excluding petroleum	9.814	-	-	-	-	-	-	-	-	-
Capital goods, except automotive	13.164	114.2	118.7	122.2	121.9	126.6	128.6	131.0	129.0	132.2
Automotive vehicles, parts and engines	11.750	114.6	116.5	118.4	118.4	120.6	123.7	125.8	126.0	129.1
Consumer goods except automotive	14.250	110.5	114.2	116.9	118.2	121.4	124.2	126.3	125.0	127.5
Nondurables, manufactured	5.507	-	-	-	-	-	-	-	-	-
Durables, manufactured	8.743	-	-	-	-	-	-	-	-	-

- Data not available.

40. U.S. export price indexes by Standard Industrial Classification ¹

(1985 = 100)

Industry group	1986	1987				1988			
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Manufacturing:									
Food and kindred products	100.2	102.0	107.4	107.1	116.3	120.8	125.1	128.9	123.5
Lumber and wood products, except furniture	108.8	112.8	116.2	138.9	142.5	146.1	145.4	146.1	143.9
Furniture and fixtures	104.1	108.0	108.6	108.7	111.2	112.5	112.9	112.9	115.6
Paper and allied products	104.9	109.3	112.3	115.5	119.3	124.6	129.8	133.1	135.9
Chemicals and allied products	95.8	100.5	107.6	108.7	113.8	118.4	122.3	125.4	125.7
Petroleum and coal products	67.6	73.5	80.5	81.4	78.8	73.0	77.8	73.7	75.1
Primary metal products	106.9	110.6	117.2	122.3	126.6	126.9	133.8	133.5	134.2
Machinery, except electrical	100.1	99.6	99.4	99.4	99.7	100.6	101.3	102.2	102.7
Electrical machinery	100.8	101.9	102.1	102.5	102.2	102.9	103.7	103.5	103.8
Transportation equipment	106.0	106.2	106.7	106.9	107.8	108.1	109.1	109.4	111.1
Scientific instruments; optical goods; clocks	105.3	105.8	106.8	106.6	107.1	109.2	110.8	112.0	113.4

¹ SIC - based classification.

41. U.S. import price indexes by Standard Industrial Classification ¹

(1985 = 100)

Industry group	1986	1987				1988			
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Manufacturing:									
Food and kindred products	103.0	103.8	106.3	108.4	110.6	114.0	114.4	115.0	115.4
Textile mill products	110.6	114.1	116.1	119.4	124.3	127.4	128.9	127.0	127.1
Apparel and related products	103.0	107.0	109.4	112.3	113.4	116.6	115.8	117.0	117.5
Lumber and wood products, except furniture	109.0	114.8	115.0	120.3	115.4	119.5	120.3	118.6	116.8
Furniture and fixtures	111.6	116.1	117.0	118.3	118.9	122.2	124.0	124.8	128.0
Paper and allied products	103.3	105.1	105.9	110.9	113.6	119.1	121.3	123.8	125.2
Chemicals and allied products	102.6	105.7	106.2	107.2	112.2	116.8	121.3	123.5	130.5
Petroleum refining and allied products	100.0	120.2	136.4	138.4	127.4	114.5	119.2	110.8	109.0
Rubber and miscellaneous plastics products	107.9	110.6	113.6	112.3	115.7	117.2	119.0	117.7	121.4
Leather and leather products	106.4	109.3	113.3	113.3	118.4	120.8	124.6	123.7	123.8
Stone, clay, glass, and concrete products	115.8	121.6	130.0	129.6	133.9	138.2	141.5	140.5	144.2
Primary metal products	101.3	102.7	110.4	115.2	120.0	122.6	137.0	136.2	140.8
Fabricated metal products	111.7	116.7	117.5	119.8	123.2	127.3	133.3	133.0	136.5
Machinery, except electrical	118.9	123.4	127.4	127.8	133.9	135.9	138.2	135.0	138.2
Electrical machinery	107.0	109.4	110.7	110.2	112.5	114.7	116.1	116.7	119.2
Transportation equipment	117.3	119.9	122.1	122.5	124.6	127.3	129.5	129.3	132.8
Scientific instruments; optical goods; clocks	122.4	128.8	132.5	128.8	134.0	135.8	137.0	132.2	137.7
Miscellaneous manufactured commodities	112.2	115.1	118.1	121.4	123.8	127.7	133.1	130.6	133.7

¹ SIC based classification.

42. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

(1977 = 100)

Item	Quarterly Indexes											
	1986			1987				1988				
	II	III	IV	I	II	III	IV	I	II	III	IV	
Business:												
Output per hour of all persons	110.4	110.0	109.8	109.9	110.6	111.7	111.8	112.8	111.8	112.3	111.8	
Compensation per hour	182.0	184.0	186.2	187.3	189.0	191.1	194.0	195.8	198.1	201.1	203.4	
Real compensation per hour	101.1	101.6	102.1	101.4	101.1	101.3	101.9	101.9	102.0	102.4	102.4	
Unit labor costs	164.9	167.3	169.6	170.5	170.8	171.1	173.5	173.5	177.1	179.0	182.0	
Unit nonlabor payments	165.2	166.6	163.7	165.6	168.7	171.5	168.9	170.0	170.4	172.7	173.5	
Implicit price deflator	165.0	167.0	167.5	168.7	170.1	171.2	171.9	172.3	174.7	176.8	179.0	
Nonfarm business:												
Output per hour of all persons	108.4	108.0	107.8	107.8	108.6	109.6	109.9	110.8	110.1	110.7	110.7	
Compensation per hour	181.2	183.1	185.4	186.4	187.9	190.0	192.9	194.6	196.6	199.4	202.2	
Real compensation per hour	100.7	101.2	101.7	100.9	100.5	100.7	101.4	101.3	101.3	101.5	101.8	
Unit labor costs	167.1	169.5	172.1	172.9	173.0	173.3	175.6	175.7	178.6	180.2	182.6	
Unit nonlabor payments	166.6	168.1	164.9	167.2	169.8	173.0	170.9	171.6	171.8	173.9	176.8	
Implicit price deflator	167.0	169.0	169.5	170.9	171.9	173.2	174.0	174.2	176.2	178.0	180.6	
Nonfinancial corporations:												
Output per hour of all employees	109.3	109.6	110.3	110.1	110.9	112.2	112.2	113.3	112.9	112.7	-	
Compensation per hour	178.5	180.2	182.2	182.9	184.3	186.1	188.5	189.9	191.9	194.5	-	
Real compensation per hour	99.2	99.5	100.0	99.0	98.6	98.7	99.0	98.9	98.8	99.0	-	
Total unit costs	166.7	168.4	168.8	169.9	170.3	170.2	172.0	171.5	173.8	176.4	-	
Unit labor costs	163.3	164.3	165.1	166.2	166.1	165.9	168.1	167.5	170.0	172.6	-	
Unit nonlabor costs	176.9	180.3	179.6	180.8	182.6	183.0	183.6	183.4	185.1	187.8	-	
Unit profits	132.7	133.6	129.7	128.5	129.8	136.4	128.3	132.5	132.6	129.6	-	
Unit nonlabor payments	161.4	164.0	162.1	162.5	164.1	166.6	164.2	165.6	166.7	167.4	-	
Implicit price deflator	162.6	164.2	164.1	164.9	165.4	166.1	166.7	166.9	168.8	170.8	-	
Manufacturing:												
Output per hour of all persons	127.2	128.0	128.8	130.0	131.7	132.8	133.2	134.3	135.5	137.2	137.9	
Compensation per hour	182.0	183.6	185.3	185.9	186.3	187.2	188.2	190.7	192.1	194.4	197.0	
Real compensation per hour	101.1	101.4	101.7	100.7	99.7	99.3	98.9	99.3	99.0	99.0	99.2	
Unit labor costs	143.2	143.4	143.8	143.1	141.4	141.0	141.3	142.1	141.8	141.6	142.9	

- Data not available.

43. Annual indexes of multifactor productivity and related measures, selected years

(1977=100)

Item	1960	1970	1973	1977	1979	1981	1982	1983	1984	1985	1986	1987
Private business												
Productivity:												
Output per hour of all persons	67.3	88.4	95.9	100.0	99.5	100.6	100.3	103.0	105.6	107.9	110.3	111.2
Output per unit of capital services	103.7	102.7	105.6	100.0	99.7	92.3	86.6	88.3	92.7	92.9	93.0	93.7
Multifactor productivity	78.5	93.1	99.2	100.0	99.6	97.6	95.2	97.6	100.9	102.4	103.9	104.7
Output	55.3	80.2	93.0	100.0	107.9	108.9	105.4	109.9	119.2	124.3	128.7	133.4
Inputs:												
Hours of all persons	82.2	90.8	96.9	100.0	108.4	108.2	105.2	106.7	112.9	115.2	116.7	120.0
Capital services	53.3	78.1	88.0	100.0	108.2	117.9	121.8	124.4	128.6	133.8	138.5	142.4
Combined units of labor and capital input	70.5	86.1	93.7	100.0	108.3	111.5	110.7	112.6	118.1	121.4	123.9	127.4
Capital per hour of all persons	64.9	86.1	90.8	100.0	99.8	108.9	115.8	116.6	113.9	116.1	118.7	118.6
Private nonfarm business												
Productivity:												
Output per hour of all persons	70.7	89.2	96.4	100.0	99.2	99.6	99.1	102.5	104.7	106.2	108.3	109.1
Output per unit of capital services	104.9	103.5	106.3	100.0	98.9	91.0	85.1	87.3	91.3	91.0	90.8	91.5
Multifactor productivity	81.2	93.8	99.7	100.0	99.1	96.7	94.1	97.0	99.9	100.7	102.0	102.7
Output	54.4	79.9	92.9	100.0	107.9	108.4	104.8	110.1	119.3	124.0	126.3	133.2
Inputs:												
Hours of all persons	77.0	89.6	96.3	100.0	108.8	108.8	105.7	107.4	114.0	116.8	118.5	122.0
Capital services	51.9	77.2	87.3	100.0	109.1	119.1	123.3	126.1	130.6	136.3	141.3	145.5
Combined units of labor and capital input	67.1	85.2	93.2	100.0	108.9	112.2	111.4	113.5	119.4	123.1	125.8	129.6
Capital per hour of all persons	67.4	86.2	90.7	100.0	100.3	109.4	116.6	117.4	114.6	116.7	119.3	119.2
Manufacturing												
Productivity:												
Output per hour of all persons	62.2	80.8	93.4	100.0	101.4	103.6	105.9	112.0	118.1	123.6	127.7	131.9
Output per unit of capital services	103.0	99.1	112.0	100.0	99.5	89.0	81.6	86.7	95.5	97.3	98.4	102.0
Multifactor productivity	72.0	85.3	98.0	100.0	100.9	99.7	99.2	105.0	112.1	116.4	119.5	123.6
Output	52.5	78.6	96.3	100.0	108.1	104.8	98.4	104.7	117.5	122.0	124.7	130.1
Inputs:												
Hours of all persons	84.4	97.3	103.1	100.0	106.5	101.1	92.9	93.5	99.5	98.7	97.7	98.6
Capital services	51.0	79.3	86.0	100.0	108.6	117.8	120.5	120.8	123.0	125.4	126.8	127.6
Combined units of labor and capital inputs	72.9	92.1	98.3	100.0	107.1	105.1	99.2	99.7	104.8	104.8	104.4	105.3
Capital per hour of all persons	60.4	81.5	83.4	100.0	101.9	116.5	129.8	129.3	123.7	127.1	129.8	129.4

44. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

(1977=100)

Item	1960	1970	1973	1977	1979	1981	1982	1983	1984	1985	1986	1987	1988
Business:													
Output per hour of all persons	67.6	88.4	95.9	100.0	99.6	100.7	100.3	103.0	105.5	107.7	110.1	111.0	112.1
Compensation per hour	33.6	57.8	70.9	100.0	119.1	143.7	154.9	161.4	167.9	175.5	183.1	190.4	199.5
Real compensation per hour	68.9	90.3	96.8	100.0	99.4	95.8	97.3	98.2	97.9	98.8	101.2	101.5	102.2
Unit labor costs	49.7	65.4	73.9	100.0	119.5	142.7	154.5	156.7	159.1	162.9	166.3	171.5	177.9
Unit nonlabor payments	46.4	59.4	72.5	100.0	112.5	134.6	136.6	146.4	156.5	160.9	165.0	168.7	171.7
Implicit price deflator	48.5	63.2	73.4	100.0	117.0	139.8	148.1	153.0	158.2	162.2	165.8	170.5	175.7
Nonfarm business:													
Output per hour of all persons	71.0	89.3	96.4	100.0	99.3	99.8	99.2	102.5	104.6	106.1	108.2	109.0	110.5
Compensation per hour	35.3	58.2	71.2	100.0	118.9	143.6	154.8	161.5	167.8	174.9	182.3	189.4	198.2
Real compensation per hour	72.3	90.9	97.2	100.0	99.2	95.8	97.2	98.3	97.9	98.5	100.8	101.0	101.5
Unit labor costs	49.7	65.2	73.9	100.0	119.7	144.0	156.0	157.6	160.4	164.9	168.6	173.8	179.3
Unit nonlabor payments	46.3	60.0	69.3	100.0	110.5	133.5	136.5	148.3	156.3	161.9	166.4	170.2	173.6
Implicit price deflator	48.5	63.4	72.3	100.0	116.5	140.3	149.2	154.3	159.0	163.8	167.8	172.5	177.3
Nonfinancial corporations:													
Output per hour of all employees	73.4	91.1	97.5	100.0	99.8	99.6	100.4	103.5	106.0	107.7	109.7	111.3	112.7
Compensation per hour	36.9	59.2	71.6	100.0	118.7	143.3	154.3	159.9	165.8	172.5	179.5	185.5	193.2
Real compensation per hour	75.5	92.5	97.7	100.0	99.1	95.5	96.9	97.3	96.7	97.1	99.2	98.9	99.0
Total unit costs	49.4	64.8	72.7	100.0	118.2	147.7	159.5	159.5	160.8	164.1	167.3	170.6	175.3
Unit labor costs	50.2	65.0	73.4	100.0	119.0	143.8	153.8	154.5	156.5	160.2	163.6	166.6	171.5
Unit nonlabor costs	47.0	64.2	70.7	100.0	115.8	159.1	176.4	174.3	173.6	175.8	178.4	182.5	186.9
Unit profits	59.8	52.3	65.6	100.0	94.5	98.1	78.5	110.9	136.5	133.0	132.4	130.8	129.8
Unit nonlabor payments	51.5	60.1	68.9	100.0	108.4	137.8	142.1	152.1	160.6	160.8	162.3	164.4	166.9
Implicit price deflator	50.7	63.3	71.9	100.0	115.4	141.7	149.8	153.7	157.9	160.4	163.2	165.8	169.9
Manufacturing:													
Output per hour of all persons	62.2	80.8	93.4	100.0	101.4	103.6	105.9	112.0	118.1	123.6	127.7	132.0	136.2
Compensation per hour	36.5	57.4	68.8	100.0	118.6	145.2	157.5	162.4	168.0	176.4	183.0	186.9	193.6
Real compensation per hour	74.8	89.6	93.9	100.0	99.0	96.8	98.9	98.8	98.0	99.3	101.2	99.7	99.2
Unit labor costs	58.7	71.0	73.7	100.0	117.0	140.1	148.7	145.0	142.2	142.7	143.3	141.7	142.1
Unit nonlabor payments	60.0	64.1	70.7	100.0	98.9	111.8	114.0	128.5	138.6	130.4	136.3	139.2	-
Implicit price deflator	59.1	69.0	72.8	100.0	111.7	131.8	138.6	140.2	141.2	139.1	141.3	141.0	-

- Data not available.

45. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		1987			1988			
	1987	1988	II	III	IV	I	II	III	IV
Total labor force basis									
United States	6.1	5.4	6.2	5.9	5.8	5.6	5.4	5.4	5.3
Canada	8.8	7.7	9.0	8.6	8.1	7.8	7.6	7.8	7.7
Australia	8.1	7.2	8.1	8.0	7.9	7.5	7.5	6.9	6.8
Japan	2.9	2.5	3.0	2.8	2.7	2.7	2.5	2.6	2.4
France	10.6	10.3	10.7	10.6	10.3	10.3	10.3	10.4	10.2
Germany	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
Italy ^{1, 2}	7.7	7.8	7.7	7.8	7.9	7.8	7.8	7.8	7.8
Sweden ³	1.9	1.6	1.9	1.9	1.7	1.7	1.6	1.6	1.4
United Kingdom	10.2	8.3	10.5	10.0	9.4	9.0	8.6	8.0	7.5
Civilian labor force basis									
United States	6.2	5.5	6.3	6.0	5.9	5.7	5.5	5.5	5.3
Canada	8.9	7.8	9.0	8.6	8.1	7.8	7.7	7.8	7.7
Australia	8.1	7.2	8.2	8.0	8.0	7.6	7.6	7.0	6.8
Japan	2.9	2.5	3.0	2.8	2.7	2.7	2.5	2.6	2.4
France	10.8	10.5	10.9	10.8	10.6	10.6	10.5	10.6	10.4
Germany	6.9	7.1	7.1	7.2	7.1	7.1	7.2	7.1	7.0
Italy ^{1, 2}	7.9	7.9	7.8	8.0	8.1	7.9	7.9	8.0	7.9
Sweden ³	1.9	1.6	1.9	1.9	1.7	1.7	1.6	1.6	1.4
United Kingdom	10.3	8.3	10.6	10.0	9.5	9.0	8.6	8.0	7.6

¹ Quarterly rates are for the first month of the quarter.

² Many Italians reported as unemployed did not actively seek work in the past 30 days, and they have been excluded for comparability with U.S. concepts. Inclusion of such persons would about double the Italian unemployment rate in 1985 and earlier years and increase it to 11-12 percent for 1986 onward.

³ Break in series beginning in 1987. The 1986 rate based on the new series was 2.2 percent.

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	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Labor force										
United States	104,962	106,940	108,670	110,204	111,550	113,544	115,461	117,834	119,865	121,669
Canada	11,231	11,573	11,904	11,958	12,183	12,399	12,639	12,870	13,121	13,275
Australia	6,519	6,693	6,810	6,910	6,997	7,133	7,272	7,562	7,736	7,949
Japan	55,210	55,740	56,320	56,980	58,110	58,480	58,820	59,410	60,050	60,860
France	22,860	22,800	22,950	23,160	23,140	23,300	23,360	23,450	23,520	-
Germany	26,250	26,520	26,650	26,700	26,650	26,770	26,970	27,110	27,290	27,440
Italy	20,850	21,120	21,320	21,410	21,590	21,670	21,800	22,280	22,340	-
Netherlands	5,100	5,310	5,520	5,570	5,600	5,620	5,710	5,760	5,810	-
Sweden	4,262	4,312	4,327	4,350	4,369	4,385	4,418	4,443	4,480	4,530
United Kingdom	26,350	26,520	26,590	26,740	26,790	27,180	27,370	27,540	27,760	-
Participation rate¹										
United States	63.7	63.8	63.9	64.0	64.0	64.4	64.8	65.3	65.6	65.9
Canada	63.4	64.1	64.8	64.1	64.4	64.8	65.2	65.7	66.2	66.7
Australia	61.6	62.1	61.9	61.7	61.4	61.5	61.8	63.0	63.0	63.4
Japan	62.7	62.6	62.6	62.7	63.1	62.7	62.3	62.1	61.9	61.9
France	57.5	57.2	57.1	57.1	56.6	56.6	56.3	56.1	55.8	-
Germany	53.3	53.2	52.9	52.6	52.3	52.4	52.6	52.8	53.1	-
Italy	48.0	48.2	48.3	47.7	47.5	47.3	47.2	48.2	48.2	-
Netherlands	49.0	50.2	51.4	51.2	50.9	50.5	50.7	50.5	50.3	-
Sweden	66.6	66.9	66.8	66.8	66.7	66.6	66.9	67.1	67.4	67.7
United Kingdom	62.6	62.5	62.2	62.3	62.1	62.6	62.7	62.7	63.0	-
Employed										
United States	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968
Canada	10,395	10,708	11,006	10,644	10,734	11,000	11,311	11,634	11,955	12,244
Australia	6,111	6,284	6,416	6,415	6,300	6,490	6,670	6,952	7,107	7,373
Japan	54,040	54,600	55,060	55,620	56,550	56,870	57,260	57,740	58,320	59,310
France	21,300	21,330	21,200	21,240	21,170	20,980	20,920	20,960	20,970	-
Germany	25,470	25,750	25,560	25,140	24,750	24,800	24,960	25,220	25,400	25,490
Italy	19,930	20,200	20,280	20,250	20,320	20,390	20,490	20,610	20,590	-
Netherlands	4,830	4,980	5,010	4,980	4,890	4,930	5,110	5,200	5,270	-
Sweden	4,174	4,226	4,219	4,213	4,218	4,249	4,293	4,326	4,396	4,458
United Kingdom	24,940	24,670	23,800	23,710	23,600	24,000	24,310	24,450	24,910	-
Employment-population ratio²										
United States	59.9	59.2	59.0	57.8	57.9	59.5	60.1	60.7	61.5	62.3
Canada	58.7	59.3	59.9	57.0	56.7	57.4	58.4	59.4	60.3	61.6
Australia	57.8	58.3	58.4	57.3	55.3	56.0	56.6	57.9	57.9	58.8
Japan	61.4	61.3	61.2	61.2	61.4	61.0	60.6	60.4	60.1	60.4
France	54.0	53.5	52.8	52.3	51.8	51.0	50.4	50.2	49.7	-
Germany	51.7	51.7	50.8	49.6	48.6	48.5	48.7	49.2	49.4	-
Italy	45.9	46.1	45.9	45.2	44.7	44.5	44.4	44.6	44.4	-
Netherlands	46.4	47.0	46.6	45.8	44.5	44.3	45.3	45.6	45.6	-
Sweden	65.3	65.6	65.1	64.7	64.4	64.5	65.0	65.4	66.2	66.7
United Kingdom	59.2	58.1	55.7	55.3	54.7	55.3	55.7	55.7	56.6	-
Unemployed										
United States	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701
Canada	836	865	898	1,314	1,448	1,399	1,328	1,236	1,167	1,031
Australia	408	409	394	495	697	642	602	610	629	575
Japan	1,170	1,140	1,260	1,360	1,560	1,610	1,560	1,670	1,730	1,550
France	1,360	1,470	1,750	1,920	1,970	2,320	2,440	2,490	2,550	-
Germany	780	770	1,090	1,560	1,900	1,970	2,010	1,890	1,890	1,950
Italy	920	920	1,040	1,160	1,270	1,280	1,310	1,680	1,760	-
Netherlands	270	330	510	590	710	690	600	560	540	-
Sweden	88	86	108	137	151	136	125	117	84	72
United Kingdom	1,420	1,850	2,790	3,030	3,190	3,180	3,060	3,090	2,850	-
Unemployment rate										
United States	5.8	7.1	7.6	9.7	9.6	7.5	7.2	7.0	6.2	5.5
Canada	7.4	7.5	7.5	11.0	11.9	11.3	10.5	9.6	8.9	7.8
Australia	6.3	6.1	5.8	7.2	10.0	9.0	8.3	8.1	8.1	7.2
Japan	2.1	2.0	2.2	2.4	2.7	2.8	2.6	2.8	2.9	2.5
France	6.0	6.4	7.6	8.3	8.5	10.0	10.4	10.6	10.8	10.5
Germany	3.0	2.9	4.1	5.8	7.1	7.4	7.5	7.0	6.9	7.1
Italy	4.4	4.4	4.9	5.4	5.9	5.9	6.0	7.5	7.9	7.9
Netherlands	5.3	6.2	9.2	10.6	12.7	12.3	10.5	9.7	9.3	-
Sweden	2.1	2.0	2.5	3.1	-	3.1	2.8	2.6	1.9	1.6
United Kingdom	5.4	7.0	10.5	11.3	11.9	11.7	11.2	11.2	10.3	8.3

¹ Labor force as a percent of the civilian working-age population.

- Data not available.

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	1976	1977	1978	1980	1981	1982	1983	1984	1985	1986	1987
Output per hour														
United States	62.2	80.8	93.4	97.1	100.0	101.5	101.4	103.6	105.9	112.0	118.1	123.6	127.7	132.0
Canada	50.7	75.6	90.3	94.8	100.0	101.1	98.2	102.9	98.3	105.4	114.4	117.3	117.7	120.5
Japan	23.2	64.8	83.1	94.3	100.0	108.0	122.7	127.2	135.0	142.3	152.5	161.1	163.8	170.5
Belgium	33.0	60.4	78.8	95.3	100.0	106.1	119.2	127.6	135.2	148.2	154.3	159.0	165.3	170.3
Denmark	37.2	65.6	83.3	98.2	100.0	101.5	112.3	114.2	114.6	120.2	119.6	117.6	113.5	114.9
France	37.4	71.4	83.8	94.4	100.0	104.6	110.6	113.9	122.0	125.1	127.6	131.0	134.9	139.2
Germany	40.3	71.2	84.0	96.4	100.0	103.1	108.6	111.0	112.6	119.2	123.7	128.4	128.4	130.3
Italy	35.4	72.7	90.9	98.9	100.0	103.0	116.9	124.8	129.6	138.6	147.8	151.7	152.9	157.8
Netherlands	32.4	64.3	81.5	95.8	100.0	106.4	113.9	116.9	119.4	127.5	140.5	145.5	144.8	145.5
Norway	54.3	81.3	94.4	100.4	100.0	101.2	107.4	108.0	109.2	117.2	124.1	126.8	125.9	134.9
Sweden	42.3	80.7	94.8	101.7	100.0	102.8	112.7	113.2	116.5	125.5	131.0	136.1	136.0	141.8
United Kingdom	55.9	80.4	95.5	99.1	100.0	101.5	101.9	107.0	113.5	123.2	130.0	134.7	138.3	147.8
Output														
United States	52.5	78.6	96.3	93.1	100.0	106.0	103.2	104.8	98.4	104.7	117.5	122.0	124.7	130.1
Canada	41.3	73.5	93.5	96.5	100.0	104.6	103.6	107.4	93.6	99.6	112.5	118.8	121.9	128.5
Japan	19.2	69.9	91.9	94.8	100.0	106.7	124.1	129.8	137.3	148.2	165.4	177.0	178.0	184.1
Belgium	41.9	78.6	96.4	99.7	100.0	101.4	106.8	105.7	110.1	114.8	117.5	119.9	122.0	123.1
Denmark	49.2	82.0	95.9	99.6	100.0	99.7	110.1	106.6	108.3	115.6	121.0	123.0	123.9	120.5
France	36.5	75.5	90.5	95.6	100.0	102.3	104.6	102.9	104.0	103.8	102.6	101.5	102.1	103.3
Germany	50.0	86.6	96.1	98.0	100.0	101.8	106.6	104.9	102.4	103.6	106.4	110.0	110.8	111.6
Italy	36.4	78.0	90.5	97.9	100.0	101.8	115.4	115.1	113.4	114.3	119.0	121.8	125.8	131.2
Netherlands	44.8	84.4	95.8	99.0	100.0	102.8	106.6	106.7	105.0	107.0	113.3	116.7	118.1	118.7
Norway	54.8	86.5	99.2	102.1	100.0	97.7	99.5	98.6	96.8	97.2	102.7	106.5	106.9	108.3
Sweden	52.6	92.5	100.3	106.1	100.0	97.3	104.0	100.6	100.1	105.2	111.5	115.3	114.7	119.2
United Kingdom	71.2	95.0	104.8	98.2	100.0	100.6	91.7	86.2	86.4	88.9	92.6	95.2	95.4	100.6
Total hours														
United States	84.4	97.3	103.1	95.9	100.0	104.4	101.7	101.1	92.9	93.5	99.5	98.7	97.7	98.6
Canada	81.4	97.2	103.6	101.8	100.0	103.4	105.5	104.3	95.2	94.5	98.3	101.2	103.6	106.6
Japan	82.7	107.9	110.7	100.6	100.0	98.8	101.2	102.0	101.7	104.2	108.5	109.8	108.7	108.0
Belgium	127.1	130.2	122.3	104.6	100.0	95.5	89.6	82.8	81.4	77.5	76.1	75.4	73.8	72.3
Denmark	132.4	125.1	115.2	101.4	100.0	98.3	98.0	93.4	94.5	96.2	101.2	104.6	109.2	104.9
France	97.6	105.7	107.9	101.3	100.0	97.8	94.6	90.3	85.2	83.0	80.4	77.5	75.7	74.2
Germany	123.8	121.7	114.4	101.6	100.0	98.7	98.1	94.6	91.0	86.9	86.1	85.7	86.3	85.7
Italy	102.8	107.4	99.6	99.0	100.0	98.8	98.7	92.2	87.5	82.5	80.5	80.3	82.3	83.2
Netherlands	138.4	131.2	117.6	103.3	100.0	96.6	93.6	91.2	88.0	83.9	80.6	80.2	81.5	81.6
Norway	101.0	106.4	105.1	101.7	100.0	96.5	92.6	91.3	88.6	82.9	82.8	84.0	84.9	80.3
Sweden	124.4	114.6	105.7	104.3	100.0	94.6	92.3	88.9	85.9	83.9	85.1	84.7	84.3	84.0
United Kingdom	127.3	118.1	109.8	99.0	100.0	99.1	90.1	80.6	76.2	72.2	71.2	70.7	69.0	68.0
Compensation per hour														
United States	36.5	57.4	68.8	92.1	100.0	108.2	132.4	145.2	157.5	162.4	168.0	176.4	183.0	186.9
Canada	27.5	47.9	60.0	90.3	100.0	107.6	131.3	151.1	167.0	177.2	185.6	194.4	203.5	214.0
Japan	8.9	33.9	55.1	90.7	100.0	106.6	120.7	129.8	136.6	140.7	144.9	151.4	158.8	161.1
Belgium	13.8	34.9	53.5	89.5	100.0	107.8	130.3	144.5	150.7	159.8	173.1	183.6	190.8	194.5
Denmark	12.6	36.3	56.1	90.4	100.0	110.2	135.9	149.7	162.9	174.2	184.1	196.2	202.7	226.3
France	15.0	36.3	51.9	87.8	100.0	113.0	148.5	172.0	204.0	225.1	245.0	265.4	277.2	285.7
Germany	18.8	48.0	67.5	91.2	100.0	107.8	125.6	134.5	141.0	148.3	155.5	164.6	171.7	178.6
Italy	8.4	26.1	43.7	84.2	100.0	114.5	160.2	198.4	238.3	282.9	316.5	348.0	359.4	380.5
Netherlands	12.5	39.0	60.5	91.9	100.0	108.4	123.6	129.1	137.5	144.0	150.0	157.4	162.2	166.5
Norway	15.8	37.9	54.5	88.8	100.0	110.0	128.0	142.8	156.0	173.5	188.3	204.3	224.2	262.6
Sweden	14.7	38.5	54.2	91.5	100.0	111.4	133.6	148.1	158.9	173.3	189.7	212.4	228.7	244.8
United Kingdom	15.2	31.4	47.9	88.4	100.0	116.7	168.6	193.4	211.7	226.6	242.3	258.8	277.9	297.6
Unit labor costs: National currency basis														
United States	58.7	71.0	73.7	94.9	100.0	106.6	130.6	140.1	148.7	145.0	142.2	142.7	143.3	141.7
Canada	54.2	63.4	66.5	95.3	100.0	106.5	133.7	146.7	170.0	168.1	162.3	165.7	172.8	177.5
Japan	38.4	52.3	66.4	96.2	100.0	98.7	98.4	102.0	101.2	98.9	95.0	94.0	97.0	94.5
Belgium	41.7	57.8	67.9	93.9	100.0	101.6	109.3	113.2	111.5	107.8	112.2	115.5	115.5	114.2
Denmark	33.8	55.4	67.4	92.1	100.0	108.6	121.0	131.1	142.2	144.9	153.9	166.8	178.7	197.0
France	40.2	50.8	62.0	93.0	100.0	108.0	134.3	151.0	167.2	179.9	192.0	202.7	205.4	205.2
Germany	46.6	67.4	80.3	94.6	100.0	104.5	115.7	121.2	125.2	124.4	125.8	128.3	133.7	137.1
Italy	23.7	36.0	48.1	85.1	100.0	111.2	137.0	158.9	184.0	204.1	214.1	229.4	235.1	241.2
Netherlands	38.5	60.7	74.3	96.0	100.0	101.8	108.5	110.4	115.2	113.0	106.8	108.1	112.0	114.4
Norway	29.2	46.6	57.8	88.5	100.0	108.7	119.1	132.2	142.9	148.0	151.8	161.1	178.1	194.7
Sweden	34.8	47.7	57.2	90.0	100.0	108.4	118.6	130.9	136.3	138.1	144.8	156.1	168.2	172.6
United Kingdom	27.2	39.1	50.2	89.2	100.0	115.0	165.5	180.7	186.5	184.0	186.4	192.1	200.9	201.3
Unit labor costs: U.S. dollar basis														
United States	58.7	71.0	73.7	94.9	100.0	106.6	130.6	140.1	148.7	145.0	142.2	142.7	143.3	141.7
Canada	59.4	64.5	70.6	102.7	100.0	99.3	121.5	130.0	146.3	144.9	133.2	128.9	132.1	142.3
Japan	28.5	39.1	65.6	86.9	100.0	126.8	116.8	123.8	108.8	111.5	107.2	105.6	154.2	175.0
Belgium	30.0	41.7	62.7	87.2	100.0	115.8	134.2	109.6	87.2	75.6	69.6	69.7	92.6	109.6
Denmark	29.5	44.4	67.2	91.5	100.0	118.4	129.0	110.3	102.3	95.1	89.3	94.5	132.5	172.7
France	40.3	45.2	68.6	95.8	100.0	117.9	156.4	136.4	124.9	116.1	108.1	111.0	145.8	167.8
Germany	25.9	42.9	70.4	87.3	100.0	121.0	147.9	124.9	119.7	113.1	102.6	101.2	143.0	177.0
Italy	33.7	50.6	73.1	90.5	100.0	115.6	141.4	123.2	119.9	118.6	107.6	106.1	139.2	164.2
Netherlands	25.1	41.2	65.6	89.1	100.0	115.7	134.1	108.9	105.8	97.1	81.6	80.0	112.2	138.6
Norway	21.8	34.7	53.5	86.4	100.0	110.4	128.4	122.5	117.8	107.9	99.0	99.8	128.1	153.7
Sweden	30.1	41.1	58.7	92.3	100.0	107.2	125.3	115.4	96.9	80.4	78.2	81.1	105.4	121.5
United Kingdom	43.7	53.7	70.5	92.2	100.0	126.4	220.6	209.6	186.9	159.8	142.8	142.9	169.0	189.2

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								
	1979	1980	1981	1982	1983	1984	1985	1986	1987
PRIVATE SECTOR³									
Total cases	9.5	8.7	8.3	7.7	7.6	8.0	7.9	7.9	8.3
Lost workday cases	4.3	4.0	3.8	3.5	3.4	3.7	3.6	3.6	3.8
Lost workdays	67.7	65.2	61.7	58.7	58.5	63.4	64.9	65.8	69.9
Agriculture, forestry, and fishing³									
Total cases	11.7	11.9	12.3	11.8	11.9	12.0	11.4	11.2	11.2
Lost workday cases	5.7	5.8	5.9	5.9	6.1	6.1	5.7	5.6	5.7
Lost workdays	83.7	82.7	82.8	86.0	90.8	90.7	91.3	93.6	94.1
Mining									
Total cases	11.4	11.2	11.6	10.5	8.4	9.7	8.4	7.4	8.5
Lost workday cases	6.8	6.5	6.2	5.4	4.5	5.3	4.8	4.1	4.9
Lost workdays	150.5	163.6	146.4	137.3	125.1	160.2	145.3	125.9	144.0
Construction									
Total cases	16.2	15.7	15.1	14.6	14.8	15.5	15.2	15.2	14.7
Lost workday cases	6.8	6.5	6.3	6.0	6.3	6.9	6.8	6.9	6.8
Lost workdays	120.4	117.0	113.1	115.7	118.2	128.1	128.9	134.5	135.8
General building contractors:									
Total cases	16.3	15.5	15.1	14.1	14.4	15.4	15.2	14.9	14.2
Lost workday cases	6.8	6.5	6.1	5.9	6.2	6.9	6.8	6.6	6.5
Lost workdays	111.2	113.0	107.1	112.0	113.0	121.3	120.4	122.7	134.0
Heavy construction contractors:									
Total cases	16.6	16.3	14.9	15.1	15.4	14.9	14.5	14.7	14.5
Lost workday cases	6.7	6.3	6.0	5.8	6.2	6.4	6.3	6.3	6.4
Lost workdays	123.1	117.6	106.0	113.1	122.4	131.7	127.3	132.9	139.1
Special trade contractors:									
Total cases	16.0	15.5	15.2	14.7	14.8	15.8	15.4	15.6	15.0
Lost workday cases	6.9	6.7	6.6	6.2	6.4	7.1	7.0	7.2	7.1
Lost workdays	124.3	118.9	119.3	118.6	119.0	130.1	133.3	140.4	135.7
Manufacturing									
Total cases	13.3	12.2	11.5	10.2	10.0	10.6	10.4	10.6	11.9
Lost workday cases	5.9	5.4	5.1	4.4	4.3	4.7	4.6	4.7	5.3
Lost workdays	90.2	86.7	82.0	75.0	73.5	77.9	80.2	85.2	95.5
Durable goods									
Lumber and wood products:									
Total cases	20.7	18.6	17.6	16.9	18.3	19.6	18.5	18.9	18.9
Lost workday cases	10.8	9.5	9.0	8.3	9.2	9.9	9.3	9.7	9.6
Lost workdays	175.9	171.8	158.4	153.3	163.5	172.0	171.4	177.2	176.5
Furniture and fixtures:									
Total cases	17.6	16.0	15.1	13.9	14.1	15.3	15.0	15.2	15.4
Lost workday cases	7.1	6.6	6.2	5.5	5.7	6.4	6.3	6.3	6.7
Lost workdays	99.6	97.6	91.9	85.6	83.0	101.5	100.4	103.0	103.6
Stone, clay, and glass products:									
Total cases	16.8	15.0	14.1	13.0	13.1	13.6	13.9	13.6	14.9
Lost workday cases	8.0	7.1	6.9	6.1	6.0	6.6	6.7	6.5	7.1
Lost workdays	133.7	128.1	122.2	112.2	112.0	120.8	127.8	126.0	135.8
Primary metal industries:									
Total cases	17.3	15.2	14.4	12.4	12.4	13.3	12.6	13.6	17.0
Lost workday cases	8.1	7.1	6.7	5.4	5.4	6.1	5.7	6.1	7.4
Lost workdays	134.7	128.3	121.3	101.6	103.4	115.3	113.8	125.5	145.8
Fabricated metal products:									
Total cases	19.9	18.5	17.5	15.3	15.1	16.1	16.3	16.0	17.0
Lost workday cases	8.7	8.0	7.5	6.4	6.1	6.7	6.9	6.8	7.2
Lost workdays	124.2	118.4	109.9	102.5	96.5	104.9	110.1	115.5	121.9
Machinery, except electrical:									
Total cases	14.7	13.7	12.9	10.7	9.8	10.7	10.8	10.7	11.3
Lost workday cases	5.9	5.5	5.1	4.2	3.6	4.1	4.2	4.2	4.4
Lost workdays	83.6	81.3	74.9	66.0	58.1	65.8	69.3	72.0	72.7
Electric and electronic equipment:									
Total cases	8.6	8.0	7.4	6.5	6.3	6.8	6.4	6.4	7.2
Lost workday cases	3.4	3.3	3.1	2.7	2.6	2.8	2.7	2.7	3.1
Lost workdays	51.9	51.8	48.4	42.2	41.4	45.0	45.7	49.8	55.9
Transportation equipment:									
Total cases	11.6	10.6	9.8	9.2	8.4	9.3	9.0	9.6	13.5
Lost workday cases	5.5	4.9	4.6	4.0	3.6	4.2	3.9	4.1	5.7
Lost workdays	85.9	82.4	78.1	72.2	64.5	68.8	71.6	79.1	105.7
Instruments and related products:									
Total cases	7.2	6.8	6.5	5.6	5.2	5.4	5.2	5.3	5.8
Lost workday cases	2.8	2.7	2.7	2.3	2.1	2.2	2.2	2.3	2.4
Lost workdays	40.0	41.8	39.2	37.0	35.6	37.5	37.9	42.2	43.9
Miscellaneous manufacturing industries:									
Total cases	11.7	10.9	10.7	9.9	9.9	10.5	9.7	10.2	10.7
Lost workday cases	4.7	4.4	4.4	4.1	4.0	4.3	4.2	4.3	4.6
Lost workdays	67.7	67.9	68.3	69.9	66.3	70.2	73.2	70.9	81.5

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									
	1979	1980	1981	1982	1983	1984	1985	1986	1987	
Nondurable goods										
Food and kindred products:										
Total cases	19.9	18.7	17.8	16.7	16.5	16.7	16.7	16.5	17.7	
Lost workday cases	9.5	9.0	8.6	8.0	7.9	8.1	8.1	8.0	8.6	
Lost workdays	141.8	136.8	130.7	129.3	131.2	131.6	138.0	137.8	153.7	
Tobacco manufacturing:										
Total cases	9.3	8.1	8.2	7.2	6.5	7.7	7.3	6.7	8.6	
Lost workday cases	4.2	3.8	3.9	3.2	3.0	3.2	3.0	2.5	2.5	
Lost workdays	64.8	45.8	56.8	44.6	42.8	51.7	51.7	45.6	46.4	
Textile mill products:										
Total cases	9.7	9.1	8.8	7.6	7.4	8.0	7.5	7.8	9.0	
Lost workday cases	3.4	3.3	3.2	2.8	2.8	3.0	3.0	3.1	3.6	
Lost workdays	61.3	62.8	59.2	53.8	51.4	54.0	57.4	59.3	65.9	
Apparel and other textile products:										
Total cases	6.5	6.4	6.3	6.0	6.4	6.7	6.7	6.7	7.4	
Lost workday cases	2.2	2.2	2.2	2.1	2.4	2.5	2.6	2.7	3.1	
Lost workdays	34.1	34.9	35.0	36.4	40.6	40.9	44.1	49.4	59.5	
Paper and allied products:										
Total cases	13.5	12.7	11.6	10.6	10.0	10.4	10.2	10.5	12.8	
Lost workday cases	6.0	5.8	5.4	4.9	4.5	4.7	4.7	4.7	5.8	
Lost workdays	108.4	112.3	103.6	99.1	90.3	93.8	94.6	99.5	122.3	
Printing and publishing:										
Total cases	7.1	6.9	6.7	6.6	6.6	6.5	6.3	6.5	6.7	
Lost workday cases	3.1	3.1	3.0	2.8	2.9	2.9	2.9	2.9	3.1	
Lost workdays	45.1	46.5	47.4	45.7	44.6	46.0	49.2	50.8	55.1	
Chemicals and allied products:										
Total cases	7.7	6.8	6.6	5.7	5.5	5.3	5.1	6.3	7.0	
Lost workday cases	3.5	3.1	3.0	2.5	2.5	2.4	2.3	2.7	3.1	
Lost workdays	54.9	50.3	48.1	39.4	42.3	40.8	38.8	49.4	58.8	
Petroleum and coal products:										
Total cases	7.7	7.2	6.7	5.3	5.5	5.1	5.1	7.1	7.3	
Lost workday cases	3.6	3.5	2.9	2.5	2.4	2.4	2.4	3.2	3.1	
Lost workdays	62.0	59.1	51.2	46.4	46.8	53.5	49.9	67.5	65.9	
Rubber and miscellaneous plastics products:										
Total cases	17.1	15.5	14.6	12.7	13.0	13.6	13.4	14.0	15.9	
Lost workday cases	8.2	7.4	7.2	6.0	6.2	6.4	6.3	6.6	7.6	
Lost workdays	127.1	118.6	117.4	100.9	101.4	104.3	107.4	118.2	130.8	
Leather and leather products:										
Total cases	11.5	11.7	11.5	9.9	10.0	10.5	10.3	10.5	12.4	
Lost workday cases	4.9	5.0	5.1	4.5	4.4	4.7	4.6	4.8	5.8	
Lost workdays	76.2	82.7	82.6	86.5	87.3	94.4	88.3	83.4	114.5	
Transportation and public utilities										
Total cases	10.0	9.4	9.0	8.5	8.2	8.8	8.6	8.2	8.4	
Lost workday cases	5.9	5.5	5.3	4.9	4.7	5.2	5.0	4.8	4.9	
Lost workdays	107.0	104.5	100.6	96.7	94.9	105.1	107.1	102.1	108.1	
Wholesale and retail trade										
Total cases	8.0	7.4	7.3	7.2	7.2	7.4	7.4	7.7	7.7	
Lost workday cases	3.4	3.2	3.1	3.1	3.1	3.3	3.2	3.3	3.4	
Lost workdays	49.0	48.7	45.3	45.5	47.8	50.5	50.7	54.0	56.1	
Wholesale trade:										
Total cases	8.8	8.2	7.7	7.1	7.0	7.2	7.2	7.2	7.4	
Lost workday cases	4.1	3.9	3.6	3.4	3.2	3.5	3.5	3.6	3.7	
Lost workdays	59.1	58.2	54.7	52.1	50.6	55.5	59.8	62.5	64.0	
Retail trade:										
Total cases	7.7	7.1	7.1	7.2	7.3	7.5	7.5	7.8	7.8	
Lost workday cases	3.1	2.9	2.9	2.9	3.0	3.2	3.1	3.2	3.3	
Lost workdays	44.7	44.5	41.1	42.6	46.7	48.4	47.0	50.5	52.9	
Finance, insurance, and real estate										
Total cases	2.1	2.0	1.9	2.0	2.0	1.9	2.0	2.0	2.0	
Lost workday cases .....	.9	.8	.8	.9	.9	.9	.9	.9	.9
Lost workdays	13.3	12.2	11.6	13.2	12.8	13.6	15.4	17.1	14.3	
Services										
Total cases	5.5	5.2	5.0	4.9	5.1	5.2	5.4	5.3	5.5	
Lost workday cases	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.5	2.7	
Lost workdays	38.1	35.8	35.9	35.8	37.0	41.1	45.4	43.0	45.8	

¹ Total cases include fatalities.
² The incidence rate represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as:

$$(NEH) \times 200,000$$

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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