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In this issue:
Special section on *Productivity at Home and Abroad,* including productivity in the cosmetics industry

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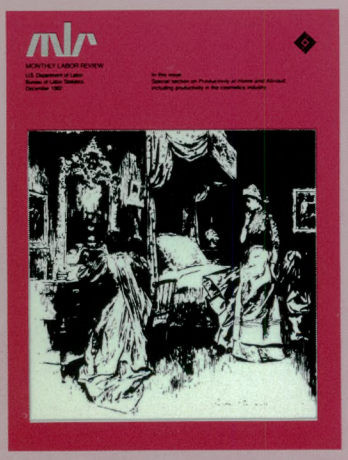

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Henry Lowenstern, Editor-in-Chief
Robert W. Fisher, Executive Editor

PRODUCTIVITY AT HOME AND ABROAD

DEPARTMENTS

Labor Month In Review

JOB SAFETY. The Bureau of Labor Statistics reported results of its annual survey of job-related injuries and illnesses. The data, collected during 1982, show that occupational injuries and illnesses declined in 1981. The all-industry incidence rate was 8.3 injuries and illnesses per 100 full-time workers, compared with 8.7 in 1980.

The latest survey shows that the numbers of injuries and illnesses both with and without loss of worktime declined in the private sector. Because the number of employees on the job and the hours they worked changed little between 1980 and 1981, the injuries and illnesses rate also declined.

In 1981, there were 4,370 work-related deaths in units employing 11 workers or more, compared with 4,400 in 1980. The corresponding fatality rate was essentially unchanged—7.6 per 100,000 workers in 1981 versus 7.7 in 1980.

Release of the 1981 survey results marks the 10th full year of data collection under the Occupational Safety and Health Act of 1970. Over these years, during which employment expanded by about 15 million, injuries declined from about 1 in every 10 workers in 1972 to 1 in every 13 in 1981. The rate for lost-time injuries, which rose between 1972 and 1979, declined in the last 2 years; however, the rate of injuries without loss of worktime has fallen steadily over the 10-year period.

Occupational injuries. Work-related injuries occurred at a rate of 8.1 per 100 full-time workers during 1981—down from 8.5 in 1980.

Among industry divisions, increases in the injury incidence rates occurred in the agriculture, forestry, and fishing industries and in mining. Finance, insurance, and real estate and retail trade showed no change, and the injury rate fell in construction, manufacturing, transportation and public utilities, wholesale trade, and services. The rate for establishments in construction, which is the highest of all industry divisions, declined from 15.5 in 1980 to 14.9 in 1981. In manufacturing, the rate declined from 11.8 to 11.1 The lowest rate (1.9) occurred in finance, insurance, and real estate.

The incidence rate of injuries involving lost workdays declined in 5 of the 9 industry divisions. While establishments in the agriculture, forestry, and fishing division showed a small increase, finance, insurance, and real estate, retail trade, and services showed no change in the rate.

Of the 72 major industry groups, incidence rates decreased in 50, increased in 14, and remained unchanged in 8. Incidence rates for injuries involving lost workdays decreased in 43, increased in 16, and were unchanged in 13 of the 72 industries.

The severity of injuries is reflected in the incidence rate of lost workdays. In 1981, there were 60.4 lost workdays per 100 full-time workers—down from 63.7 in 1980. The lost workdays incidence rate in mining continues to be the highest among all industry divisions and has been more than twice the national average since 1977. But because the number of lost workdays associated with each injury in mining declined, the lost workdays rate declined, from 162.8 in 1980 to 145.7 in 1981, the largest drop in any industry division.

The injury incidence rate fell from 1980 to 1981 in all employment-size groups, except for establishments with 50 to 99 employees, which showed no change. As in previous years, rates in establishments with fewer than 50 workers or with 1,000 workers or more were lower than mid-size establishment rates. Rates continued to be highest in the 100-to-249-employee size firms. Only in the manufacturing division did the incidence rate drop for each size category.

Occupational illnesses. Occupational illnesses include any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. The incidence of occupational illnesses measured by the annual survey refers to the number of new illness cases occurring during a year and does not measure continuing conditions of illness reported in previous surveys. Illnesses are recorded only for the year in which they are recognized and diagnosed as work-related.

From both statistical and procedural points of view, occupational illness estimates generated from the annual survey provide a valid measure of recognized acute cases. However, current statistics do not adequately reflect that portion of occupational illnesses which are chronic or long-latent because of problems of detection and recognition.

About 126,100 occupational illnesses were recognized in 1981; the number recognized in 1980 was 130,200. In both years, illnesses accounted for only 2.3 percent of total injuries and illnesses. Skin diseases or disorders continued to account for the majority of all illnesses—about 4 of every 10 cases. This is largely because they are easier to recognize and diagnose than other diseases.

Background of survey. The Annual Survey of Occupational Injuries and Illnesses is a Federal/State cooperative program in which State agencies participate with the Bureau of Labor Statistics of the U.S. Department of Labor. Response to the 1981 survey was mandatory. The sample consisted of approximately 280,000 units in the private sector. The occupational injury and illness data reported through the annual survey are based on the records which employers maintain under the Occupational Safety and Health Act of 1970.

TABLES SHOWING THE survey results appear in the news release, USDL 82-423, available from the Inquiries and Correspondence Section, Bureau of Labor Statistics, Washington, D.C. 20212. A BLS bulletin with full survey details is in preparation. □

International trends in productivity and labor costs

Output per employee hour in manufacturing generally improved and unit labor cost trends moderated in the U.S. and 10 other nations in 1981; relative productivity and labor cost indexes are introduced

PATRICIA CAPDEVIELLE, DONATO ALVAREZ, AND BRIAN COOPER

Manufacturing productivity increased in 1981 in the United States, Japan, and most European countries studied, with gains ranging from about 2 to 4 percent in the United States, Japan, France, Germany,[1] Italy, and the Netherlands, to almost 6 percent in the United Kingdom and Denmark, and more than 7 percent in Belgium. In Canada and Sweden, productivity remained essentially unchanged.

These productivity changes occurred in what was for most countries the second year of recession. In most European countries, productivity rose because employment and hours declined more than output. In the United States, Canada, and Japan, productivity gains were accompanied by modest output growth—temporary recoveries from 1980 declines in the United States and Canada.

Unit labor cost increases, which reflect changes in both productivity and hourly compensation costs, ranged from 2 to 5 percent in Japan, Germany, Belgium, Denmark, and the Netherlands, up to 15 percent in France and 18 percent in Italy. When measured in U.S. dollars, however, unit labor costs declined substantially in all the European countries—5 to 20 percent—because of the sharp appreciation of the dollar, while rising 7 to 8 percent in Canada and Japan as well as in the United States.

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While the 1981 appreciation of the dollar partially offset the lower long-term U.S. cost trend, unit labor costs in the United States nevertheless declined 29 percent between 1970 and 1981, relative to the average costs of our trade competitors. Unit labor costs in Canada, Belgium, Denmark, the Netherlands, and Italy also declined relative to those of their trade competitors while those of Japan, France, Germany, the United Kingdom, and Sweden increased.

This article describes developments in manufacturing productivity (as measured by output per hour), hourly compensation, and unit labor costs in 1981, and compares the 1980–81 trends with those of the 1974–75 recession, for the United States, Canada, Japan, France, Germany, Italy, the United Kingdom, and four smaller European countries—Belgium, Denmark, the Netherlands, and Sweden.[2] Percent changes in productivity, labor costs, and related measures for selected periods and for each year from 1973 are shown in tables 1 through 3;[3] percent changes are also presented for the eight European countries and for the 10 foreign countries combined.[4] (Annual indexes for the years 1950 to 1981 are available from the authors.) The data for 1981 are based on preliminary underlying statistics, while those for other recent years reflect revised underlying statistics for several countries.

Although the productivity measure relates output to the hours of persons employed in manufacturing, it does not measure the specific contributions of labor as a single factor of production. Rather, it reflects the joint effects of many influences, including new technology,

capital investment, the level of output, capacity utilization, energy use, and managerial effectiveness, as well as the skills and efforts of the work force.

This article also introduces new measures of relative trends in productivity and labor costs. Table 5 presents indexes of relative output per hour, hourly compensation, and unit labor costs in national currency and in U.S. dollars for the 11 countries. Each relative index represents the ratio of a country's own index to a weighted geometric average of the corresponding indexes for the other 10 countries; the weights used to combine the other country indexes reflect the relative importance of each country as a manufacturing trade competitor (table 4).

Productivity trends

In 1981, manufacturing productivity increased by more than 7 percent in Belgium, almost 6 percent in the United Kingdom and Denmark, and about 2 to 4 percent in the United States, Japan, France, Germany, Italy, and the Netherlands. In Canada and Sweden, it rose less than 0.5 percent. (See table 1.)

For the United States, the 1981 productivity gain was the largest annual increase since 1976. And for Belgium and the United Kingdom, the 1981 gains were the largest in many years. For Japan and Italy, the 1981 increases represent substantial slowdowns from large 1980 gains, but for most other countries, they were improvements over small gains or productivity declines in the previous year.

Output. With the exception of a small gain in Denmark, manufacturing output fell in each of the European countries in 1981—by more than 6 percent in the United Kingdom and about 1 to 4 percent in the other countries. In the non-Scandinavian countries, productivity increased because employment and hours declined even more than output. Most of Denmark's productivity gain also resulted from decreases in employment and hours. In Sweden, hours and output fell equally.

The 1981 drop in British output followed an even larger 1980 decline of 9 percent. For France and Belgium, 1981 marked the second consecutive year of declining output, but the 1980 declines were under 1 percent. Germany, Denmark, Sweden, and the Netherlands had zero or only slight 1980 output increases—under 1 percent—while Italy had a more substantial gain. In most countries, output turned down during the first half of 1980, and showed little if any recovery by late 1981 or early 1982. Only in Italy did output recover in late 1980 and turn down again in 1981.

In the United States and Canada, 1980 manufacturing output levels declined about 3 to 4 percent from previous year levels, but 1981 annual output levels were up 2 percent. In both countries, manufacturing production dropped in the second quarter of 1980, recovered in the fourth quarter, then turned down again during the second half of 1981. In Japan, manufacturing output increased more than 9 percent in 1980, and rose another 3 percent in 1981, but then turned down during the first half of 1982.

Table 1. Annual percent changes in manufacturing productivity and output, 11 countries, 1960–81

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Sweden	Eight European countries	Ten foreign countries
Output per hour:													
1960–81	2.7	3.6	9.2	5.5	5.2	5.8	3.6	7.2	6.1	7.1	5.0	5.3	5.9
1960–73	3.0	4.5	10.7	6.0	5.5	6.9	4.3	7.0	6.4	7.6	6.7	5.8	6.4
1973–81	1.7	1.4	6.8	4.6	4.5	3.7	2.2	6.2	4.1	5.1	2.2	4.1	4.7
1974	−2.4	2.2	2.4	3.5	5.4	4.9	.8	5.8	3.3	8.3	3.6	4.1	3.8
1975	2.9	−2.6	3.9	3.1	5.3	−4.4	−2.0	4.4	10.4	−1.8	−.4	1.6	2.0
1976	4.4	5.3	9.4	8.2	7.1	8.6	4.0	10.4	3.8	12.8	1.0	7.2	7.5
1977	2.5	4.0	7.2	5.1	4.9	1.1	1.6	6.5	2.1	4.1	−1.5	3.3	4.3
1978	.9	1.6	7.9	5.7	3.3	3.0	3.3	5.0	2.4	6.6	4.3	4.0	4.9
1979	.7	1.7	8.9	4.9	4.9	7.3	3.3	6.5	5.8	4.9	8.4	5.3	6.1
1980	.2	−3.3	6.8	1.6	1.4	5.8	.6	3.1	1.4	1.3	1.2	2.8	3.6
1981	2.8	.3	3.2	1.6	2.7	3.4	5.9	7.3	5.6	3.1	.1	3.8	3.3
Output:													
1960–81	3.6	4.8	10.0	5.2	3.8	5.4	1.6	5.0	4.0	4.7	3.2	4.0	5.3
1960–73	4.7	6.3	13.0	6.6	5.2	6.8	3.0	6.5	5.2	6.4	5.1	5.4	6.8
1973–81	2.3	2.0	6.5	2.3	1.9	3.3	−1.7	1.1	1.8	1.7	−.3	1.5	2.9
1974	−4.2	3.6	−2.0	3.2	−.3	6.4	−1.2	4.6	1.5	4.4	4.8	1.8	−.9
1975	−7.1	−5.9	−4.0	−2.1	−4.8	−9.7	−7.0	−7.4	−2.1	−6.7	−1.5	−5.2	−5.0
1976	9.6	5.9	13.3	7.0	8.0	12.6	2.0	8.6	4.8	8.0	−.4	7.0	8.5
1977	6.9	2.0	7.3	3.7	2.4	2.1	1.9	.7	.6	.9	−5.6	2.1	3.5
1978	5.3	5.0	7.3	3.2	1.3	1.8	.6	.9	.7	2.8	−1.3	1.6	3.4
1979	2.7	4.7	9.9	2.6	4.8	6.7	.2	3.7	6.5	2.7	6.9	3.8	5.6
1980	−4.3	−3.1	9.4	−.1	.5	6.3	−9.1	−1.4	.0	.9	.0	−.4	2.4
1981	2.3	1.6	3.2	−2.7	−1.4	−1.0	−6.3	−2.5	.5	−.9	−3.6	−2.4	−.4

NOTE: Rates of change computed from the least squares trend of the logarithms of the index numbers.

Employment and hours. Manufacturing employment and aggregate hours both increased only in Canada in 1981; in Japan, employment rose slightly but total hours were essentially unchanged. In 1980, hours had increased slightly in Canada and by more than 2 percent in Japan. In the United States, employment and hours declined only slightly in 1981, after falling more than 3 percent in 1980. (See table 2.)

In Europe, employment declined 10 percent in the United Kingdom and 2 to 6 percent in the other countries in 1981. Those declines followed 1980 drops of 6 percent in the United Kingdom and 1 to 2 percent in most of the other countries. Employment had increased slightly in Germany in 1980 and was essentially unchanged in Italy and Sweden. Aggregate hours fell even more than employment in 1981—except in Denmark—as average hours were also reduced.

Comparisons with 1974–75. Comparisons of developments during the years 1980 and 1981 with the recession of 1974–75 cannot be precise, particularly when dealing with annual average data, because of differences among countries in the extent and timing of the 1974–75 recession and the 1980–81 downturns. Nevertheless, certain broad comparisons can be made.

Over the 1974–75 period, manufacturing output fell in one or both years in all 11 countries studied. During 1980–81, neither Japan nor Denmark experienced annual average declines in output, although Denmark had virtually no output growth over the period and Japanese output slowed sharply in 1981; most of the other countries had smaller output declines than in 1974–75. However, there were exceptions. The recent output declines in the United Kingdom were substantially greater than during 1974–75, and those in France and Sweden also appear to have been larger. Only in the United States did output regain its pre-1974 average rate of growth during the 1976–79 recovery period.

As in the case of output, manufacturing employment and hours declined less sharply during 1980–81 than during 1974–75 in most of the countries studied. For example, German employment declined about 2 percent in 1980–81, compared with 9 percent in 1974–75, and total hours declined 5 percent versus 15 percent. Again, major exceptions were France, where employment and hours declined somewhat more in 1980–81, and the United Kingdom, where the recent declines—16 percent for employment and 21 percent for total hours—were substantially greater than those in 1974–75. In Sweden, the employment effects of the 1974–75 recession were delayed; therefore, direct comparison between the two periods is not appropriate.

Although employment losses over the 2-year period of 1980–81 were less severe in most countries than in 1974–75, employment in most of Europe also declined during the intervening 1976–79 period. The rate of decline ranged from about 1 percent per year in France and Germany to almost 4 percent annually in Belgium. Only in Denmark and Italy was employment essentially stable during the recovery period. By 1981, employment in manufacturing was down 6, 11, and 14 percent from 1973 levels in Sweden, France, and Germany; 17 percent in Denmark and the Netherlands; and almost 25 percent in Belgium and the United Kingdom. In contrast, employment in the United States and Canada was higher in 1981 than in 1973.

All European countries have taken actions, through collective bargaining or government programs, to shorten average hours worked to preserve manufacturing jobs. Most countries have partial unemployment benefit programs to provide wage replacement to employees on short work schedules for economic reasons. In addition, minimum annual holiday (vacation) entitlements have been increased in Denmark, Germany, the Netherlands, Sweden, and the United Kingdom (and are scheduled to increase in France) as a job creation measure as well as a fringe benefit improvement. (In Italy, on the other hand, several national holidays were abolished in 1977 as a labor cost cutting measure, although many employees receive extra annual holidays in lieu of the national holidays.) In Belgium, the standard workweek was shortened through collective bargaining from 40 hours in 1977 to 38 hours for most employees in 1981; the shorter hours are provided as either a shorter workweek or a longer annual holiday.

Given the relative output and employee-hours changes, manufacturing productivity increased in most countries during both the 1974–75 recession and in 1980–81. The following tabulation shows average annual productivity changes over the two periods:

	1974–75	*1980–81*
United States	0.2	1.5
Canada	–.2	–1.5
Japan	3.2	5.0
France	3.3	1.6
Germany	5.4	2.1
Italy	.2	4.6
United Kingdom	–.6	3.2
Belgium	5.1	5.2
Denmark	6.8	3.5
Netherlands	3.2	2.2
Sweden	1.6	.7

In the United States, Japan, Italy, and the United Kingdom, the productivity trend was higher during 1980–81, while productivity gains were higher during 1974–75 in France, Germany, Denmark, the Netherlands, and Sweden. In Belgium, productivity rose equally in both periods. In Canada, productivity declined in both periods.

Hourly compensation

Hourly compensation increases in 1981 varied considerably among the 11 countries studied. The

Table 2. Annual percent changes in manufacturing employment and hours, 11 countries, 1960–81

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Sweden	Eight European countries	Ten foreign countries
Aggregate hours:													
1960–81	0.9	1.1	0.7	−0.2	−1.3	−0.4	−1.9	−2.1	−2.0	−2.3	−1.7	−1.2	−.6
1960–73	1.6	1.7	2.1	.6	−.2	−.1	−1.2	−.5	−1.1	−1.1	−1.5	−.4	.4
1973–81	.6	.5	−.3	−2.2	−2.5	−.4	−3.8	−4.8	−2.2	−3.2	−2.5	−2.4	−1.7
								−1.2					
1974	−1.9	1.4	−4.3	−.3	−5.4	1.4	−2.0		−1.7	−3.6	1.2	−2.2	−2.7
1975	−9.7	−3.4	−7.6	−5.0	−9.6	−5.5	−5.1	−11.3	−11.3	−5.0	−1.1	−6.7	−6.8
1976	4.9	.5	3.6	−1.1	.8	3.8	−1.9	−1.7	1.0	−4.3	−1.5	−.2	1.0
1977	4.2	−2.0	.1	−1.3	−2.4	1.0	.2	−5.4	−1.4	−3.0	−4.1	−1.2	−.8
1978	4.4	3.4	−.5	−2.3	−1.9	−1.2	−2.6	−3.9	−1.7	−3.6	−5.4	−2.3	−1.5
1979	2.0	2.9	1.0	−2.2	−.1	−.6	−3.0	−2.6	.7	−2.1	−1.3	−1.5	−.5
1980	−4.5	.2	2.5	−1.7	−.9	.5	−9.6	−4.3	−1.4	−.4	−1.2	−3.1	−1.1
1981	−.5	1.3	−.1	−4.3	−4.0	−4.3	−11.5	−9.2	−4.8	−3.8	−3.7	−6.0	−3.7
Employment:													
1960–81	.9	1.4	1.5	.5	−.4	1.1	−1.1	−.7	−.7	−1.0	−.3	−.2	.3
1960–73	1.5	1.9	3.0	1.2	.5	1.4	−.5	.6	.2	.0	−.2	.5	1.1
1973–81	.7	.8	−.4	−1.4	−1.6	.0	−2.9	−3.6	−1.8	−2.4	−1.0	−1.7	−1.2
1974	−.4	2.0	.2	1.3	−2.6	2.5	1.9	1.1	−3.6	−.4	2.4	.3	.4
1975	−8.6	−2.2	−5.1	−2.7	−6.7	−.4	−3.8	−6.1	−8.4	−3.2	.9	−3.9	−4.2
1976	3.7	.4	.4	−1.0	−2.4	.2	−2.2	−4.1	.6	−4.0	−.2	−1.7	−1.0
1977	3.6	−2.0	−.2	−.5	−.8	.1	−.4	−3.9	−.5	−2.7	−3.5	−.7	−.6
1978	4.2	3.2	−1.1	−1.6	−.6	−1.0	−2.4	−4.1	−.5	−2.5	−2.8	−1.5	−1.2
1979	2.6	3.7	−.1	−1.8	.3	.5	−2.5	−2.7	.8	−1.0	.3	−.9	−.5
1980	−3.4	.3	2.5	−1.3	.6	.2	−6.0	−1.9	−2.0	−1.2	−.1	−1.6	−.3
1981	−.5	1.8	.5	−3.6	−2.4	−1.9	−10.1	−5.5	−4.8	−3.3	−3.2	−4.5	−2.8
Average hours:													
1960–81	−.1	−.3	−.8	−.7	−.9	−1.4	−.9	−1.4	−1.3	−1.2	−1.4	−1.0	−.8
1960–73	.1	−.2	−.9	−.5	−.8	−1.5	−.7	−1.0	−1.4	−1.1	−1.3	−.9	−.8
1973–81	−.2	−.3	.1	−.8	−.9	−.3	−1.0	−1.2	−.5	−.8	−1.5	−.9	−.5
1974	−1.5	−.6	−4.5	−1.5	−2.9	−1.1	−3.8	−2.2	2.0	−3.2	−1.1	−2.5	−3.1
1975	−1.2	−1.1	−2.6	−2.3	−3.1	−5.1	−1.3	−5.6	−3.2	−1.8	−2.0	−2.9	−2.8
1976	1.2	.1	3.2	−.1	3.2	3.5	.3	2.5	.4	−.3	−1.3	1.5	2.0
1977	.6	.0	.3	−.9	−1.6	.9	.6	−1.6	−.9	−.3	−.7	−.4	−.2
1978	.2	.3	.6	−.7	−1.4	−.2	−.2	.3	−1.2	−1.1	−2.6	−.8	−.3
1979	−.6	−.7	1.1	−.4	−.4	−1.0	−.5	.1	−.1	−1.1	−1.6	−.6	.0
1980	−1.0	−.1	−.1	−.3	−1.5	.3	−3.9	−2.5	.7	.8	−1.1	−1.5	−.8
1981	.0	−.5	−.6	−.7	−1.6	−2.4	−1.6	−3.8	.0	−.6	−.6	−1.6	−.9

NOTE: Rates of change computed from the least squares trend of the logarithms of the index numbers.

smallest gain was 5 percent in the Netherlands and the largest, 22 percent in Italy. In the United Kingdom and France, the increases were also large—over 16 percent. In Japan and Germany, the gains were relatively small—under 8 percent—while in the United States, Canada, Belgium, Denmark, and Sweden, they were 9 to 12 percent. (See table 3.)

Four countries—the United States, Germany, Denmark, and the United Kingdom—showed some degree of moderation in hourly compensation gains for 1981. In the United Kingdom, there was a substantial slowdown from the 24 percent recorded in 1980. (In the Netherlands, a significant slowdown occurred in 1980.) In Canada, Japan, Italy, and Sweden, however, the 1981 increases were higher than those of the previous year, and in France, Belgium, and the Netherlands, the increases in both years were virtually the same.

Compared with the hourly compensation trend during the 1974–75 recession, annual rates of increase during the 1980–81 period were considerably lower in every country except the United States and France. In the United States, however, the 1974–75 increases were relatively small. The moderation in wage gains and other labor costs occurred even though consumer price trends were generally about as high in 1980–81 as in 1974–75—with Japan and Belgium as principal exceptions. However, growing concern with moderating labor costs and containing inflation, as well as preserving manufacturing jobs, had a significant impact on recent compensation trends.

Concerted action was taken in several countries to moderate wage settlements during 1980–81. Temporary pay freezes were imposed in Belgium and the Netherlands and a temporary price freeze was undertaken in Sweden. The Dutch government subsequently imposed statutory pay controls. In several countries with wage indexation systems, the price indexes used were adjusted to exclude fuel and energy prices, or the cost-of-living allowances (COLA's) normally payable were reduced or rescinded.

In Japan and Germany, annual wage agreements in 1980 and 1981 continued the moderate pattern of recent years. In Japan, the average manufacturing settlement was 6.7 percent in 1980 and 7.6 percent in 1981, and in Germany, the average settlements were 6.7 percent in 1980 and 4.6 percent in 1981. In the United States and

the United Kingdom, wage-and-salary concessions were made in some impacted companies or industries.

In the Netherlands, a pay freeze was imposed from January through April 1980, followed by statutory controls which were later extended through 1981. No basic wage increases were allowed. Furthermore, the June 1980 cost-of-living adjustment was restricted to a flat-rate amount, and the January 1981 adjustment was reduced by 2 percent. In 1981, holiday bonuses were lowered slightly, and extra annual holidays delayed.

The Belgian Government imposed a pay freeze in January 1981. The national wage agreement signed in February, under threat of statutory pay controls, provided either a 1-percent wage rate increase or an extra hour off the standard workweek by 1983. Wages are indexed for consumer price increases in Belgium, however, and the indexation system was not changed. The emphases of recent wage settlements in Belgium have not been basic wage increases but reductions of standard hours. Standard weekly hours were reduced from 40 hours per week in 1977 to 38 hours for most workers by 1980, and the 1981 national agreement allowed additional reductions. Because wage rates are adjusted to compensate for the shorter workweek, the hours reductions are measured as hourly compensation gains.

Wage rates are also indexed for consumer price increases in Italy, and cost-of-living allowances are paid under collective agreements in Denmark, Sweden, and the United Kingdom. In Italy as in Belgium, the indexation system continued unchanged during 1980–81. In Denmark and Sweden, COLA payments were restricted. In Denmark, the index used to compute the COLA's was changed in December 1979 to exclude fuel and energy prices, and was also rebased. As a result, one of the COLA's was eliminated in 1980. In Sweden, the 1981 pay agreements specified exclusion of energy prices from the consumer price index used in COLA computation. The government imposed a price freeze in September 1981 and cut value-added taxes in November, and thereby kept the price rise below the COLA threshold (trigger) specified in the pay agreement.

In Denmark, early 1981 wage settlements at the industry level provided moderate wage increases and restricted additional company-level wage negotiations. In

Table 3. Annual percent changes in hourly compensation and unit labor costs in manufacturing, 11 countries, 1960–81

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Sweden	Eight European countries	Ten foreign countries
Hourly compensation:													
1960–81	6.9	8.7	14.8	11.9	10.1	16.2	13.1	12.6	13.2	12.9	12.0	12.0	11.9
1960–73	5.0	6.4	14.6	9.2	9.3	12.3	8.6	10.7	11.8	12.8	10.4	9.8	10.1
1973–81	9.6	11.1	9.7	15.1	9.4	19.8	19.1	12.1	12.5	9.7	13.0	13.7	12.4
1974	10.6	15.8	31.2	19.6	15.0	24.6	25.0	22.5	21.0	19.2	17.6	18.3	21.4
1975	11.9	14.2	17.0	19.0	12.4	28.9	29.9	21.4	19.3	14.3	21.2	18.4	18.0
1976	8.0	14.2	6.7	14.1	7.8	19.8	17.2	13.2	11.7	12.5	18.5	13.0	11.2
1977	8.3	11.0	9.7	13.7	10.5	18.8	12.6	12.0	10.6	8.6	9.2	12.0	11.3
1978	8.3	6.7	5.9	12.7	8.5	14.5	16.5	8.0	10.2	8.7	11.3	11.6	9.8
1979	9.7	10.1	6.5	13.8	7.3	17.6	18.9	7.7	11.8	7.8	7.8	12.4	10.7
1980	11.8	9.1	6.5	16.6	8.6	18.5	23.6	9.6	10.9	5.0	10.9	14.9	12.0
1981	10.2	11.1	7.4	16.5	7.5	22.3	16.2	9.6	9.3	5.3	12.4	13.8	11.5
Unit labor costs:													
1960–81	4.1	4.8	5.1	6.1	4.6	9.8	9.2	5.1	6.8	5.5	6.7	6.3	5.8
1960–73	1.9	1.8	3.5	3.1	3.7	5.1	4.1	3.5	5.1	4.8	3.5	3.8	3.5
1973–81	7.7	9.5	2.7	10.0	4.7	15.5	16.6	5.6	8.0	4.4	10.6	9.2	7.4
1974	13.3	13.3	28.1	15.6	9.1	18.7	24.1	15.7	17.1	10.0	13.5	13.7	17.0
1975	8.8	17.2	12.6	15.4	6.8	34.9	32.5	16.3	8.0	16.4	21.7	16.6	15.6
1976	3.4	8.4	−2.5	5.5	.6	10.4	12.7	2.5	7.6	−.3	17.3	5.5	3.5
1977	5.7	6.7	2.4	8.2	5.3	17.5	10.8	5.2	8.4	4.3	11.0	8.4	6.7
1978	7.4	5.0	−1.8	6.6	5.0	11.2	12.8	2.9	7.6	1.9	6.7	7.2	4.7
1979	9.0	8.3	−2.2	8.5	2.4	9.6	15.0	1.1	5.7	2.8	−.5	6.7	4.3
1980	11.6	12.8	−.2	14.8	7.0	12.1	22.9	6.4	9.4	3.7	9.6	11.8	8.1
1981	7.2	10.7	4.0	14.6	4.7	18.3	9.7	2.1	3.5	2.1	12.3	9.7	7.9
Unit labor costs in U.S. dollars:													
1960–81	4.1	4.4	7.9	6.5	9.1	7.6	7.1	7.8	7.9	8.7	7.7	7.6	7.2
1960–73	1.9	1.9	4.9	2.8	6.1	5.4	2.6	4.6	5.0	6.1	4.2	4.2	3.9
1973–81	7.7	6.5	7.2	9.4	9.1	8.1	15.0	8.6	7.7	8.0	9.6	9.9	8.8
1974	13.3	15.8	19.0	6.7	11.9	6.2	18.5	15.5	16.0	13.9	11.5	11.4	13.5
1975	8.8	12.7	10.7	29.6	12.3	34.5	25.8	23.2	14.6	23.8	30.2	22.6	19.3
1976	3.4	11.9	−2.4	−5.4	−1.8	−13.3	−8.5	−2.5	2.1	−4.8	11.5	−5.0	−3.8
1977	5.7	−1.0	13.3	5.1	14.2	10.5	7.1	13.3	9.1	12.3	8.2	10.0	9.9
1978	7.4	−2.1	26.2	16.5	21.6	15.6	24.0	17.3	17.3	15.8	5.6	18.8	19.3
1979	9.0	5.4	−6.5	14.7	12.0	12.0	27.3	8.4	10.6	10.7	4.8	14.5	8.2
1980	11.6	13.0	−3.5	15.7	8.1	8.9	34.6	6.8	2.2	4.8	11.1	13.6	8.6
1981	7.2	8.0	6.7	−10.5	−15.7	−10.6	−4.5	−19.5	−18.0	−18.5	−5.7	−12.0	−7.4

NOTE: Rates of change computed from the least squares trend of the logarithms of the index numbers.

France, there were no government restrictions on wage increases during 1980–81, and wage rate increases followed the consumer price index although there is no formal indexation system. Minimum-wage increases above the price index rate raised average wages further in some lower wage industries. In Italy, the major wage agreements were concluded in 1979 and expired in late 1981. Their wage rate provisions and the indexation system were not limited, although there were discussions of labor cost reductions and indexation changes for 1982. In Italy and several other European countries, actions were taken to cut employers' social security tax rates, although in other cases tax rates were raised to finance system deficits.

Unit labor costs

Unit labor costs, which reflect the interplay between hourly compensation and output per hour, increased about 7 percent in the United States and 10 to 12 percent in Canada, Sweden, and the United Kingdom in 1981, compared with more than 14 percent in France and 18 percent in Italy, but only 2 to 5 percent in Denmark, Japan, Germany, Belgium, and the Netherlands. (See table 3.)

In every country except Japan, France, Italy, and Sweden, unit labor costs increased less in 1981 than in the previous year. In the United Kingdom, the slowdown from the 23 percent recorded in 1980 was substantial, and reflected both a smaller compensation increase and a larger productivity gain. In most other countries also, the moderation in unit labor costs reflects a slowdown in hourly compensation and improvements in productivity. In France, the 1981 increase in unit labor costs, as well as in productivity and hourly compensation, was essentially the same as the previous year's. In Japan and Italy, the acceleration in unit labor costs primarily reflects their productivity slowdowns.

The 1980–81 increases in unit labor costs were generally much smaller than those of 1974–75 because hourly compensation gains were relatively moderate, in contrast to the substantial wage gains during the 1974–75 recession. The average annual unit labor cost increases for the two periods are shown in the following tabulation:

	1974–75	*1980–81*
United States	11.0	9.4
Canada	15.2	11.8
Japan	20.3	1.9
France	15.5	14.7
Germany	7.9	5.9
Italy	26.8	15.2
United Kingdom	28.3	16.3
Belgium	16.0	4.2
Denmark	12.5	6.4
Netherlands	13.2	2.9
Sweden	17.6	10.9

For some countries—Japan, Belgium, Denmark, and the Netherlands—the differences are substantial. Even for the countries with the largest unit labor cost increases in 1980–81—Italy and the United Kingdom—the recent increases are down considerably from 1974–75 peaks. The differences are less marked for the United States and Germany, which had the smallest 1974–75 unit labor cost increases.

In U.S. dollars. In comparing trends in unit labor costs among countries, an important analytical element is the shift in relative currency values through international exchange rate adjustments. In recent years, the number and extent of such adjustments have been so great as to constitute a major variable in competitive assessment.

The relationship between exchange rate shifts and unit labor cost trends is partial and indirect but nonetheless important. The two are linked by the price mechanism, a main determinant of trade directions and competitive relationships. Because labor cost is the principal cost factor in the production of manufactured goods, it exerts a strong influence on the price at which goods can be offered in international markets. Relative changes in exchange rates alter the effect of relative changes in costs in national currency. Consequently, in assessing relative changes in unit labor costs in competitive terms, changes in exchange rates need to be taken into account.

Changes in currency exchange rates in 1981 had a significant effect on relative changes in unit labor costs measured in U.S. dollars. The dollar appreciated substantially—from about 15 percent to more than 30 percent—relative to the European currencies. (By September 1982, the dollar had further appreciated—compared with the annual average for 1981—10 percent versus the German mark and Dutch guilder, and 8 to 30 percent versus the other European currencies.) The dollar also appreciated somewhat relative to the Canadian dollar, but declined slightly versus the Japanese yen. (By September 1982, however, the dollar had appreciated 19 percent versus the yen, as well as another 3 percent versus the Canadian dollar.)

Therefore, when measured in U.S. dollars, unit labor costs in the European countries fell about 5 percent in Sweden and the United Kingdom; 11 percent in France and Italy; 16 percent in Germany; and 18 to 20 percent in Belgium, the Netherlands, and Denmark. In U.S. dollars, unit labor costs increased 8 percent in Canada and 7 percent in Japan—about the same rate as for U.S. costs. (See table 3.)

The largest contrast was between Japan and Germany. On a national currency basis, they had increases of 4 and 5 percent, respectively. On a U.S. dollar basis, Japanese unit labor costs rose 7 percent while German unit labor costs fell 16 percent.

While the 5-percent decline in the United Kingdom was not as large as in the other European countries, it was the sharpest trend reversal among all the countries, for British unit labor costs had increased 35 percent in 1980. Unit labor costs in Japan had posted a small decline in 1980; among the other countries, they had risen 2 to 16 percent.

The trend in unit labor costs in U.S. dollars for the 1980–81 period differs significantly from that for the years 1974–75 in most countries covered. First, unit labor costs in national currency increased much less during 1980–1981 in most countries. Secondly, the U.S. dollar appreciated versus all European currencies and the Canadian dollar in 1981, while in 1974–75, the dollar appreciated versus the Japanese yen, Italian lira, and British pound but depreciated versus all the other currencies. Therefore, unit labor costs in U.S. dollars increased substantially more in most other countries than in the United States during the 1974–75 recession, while in the 1980–81 period, unit labor costs in U.S. dollars declined in all European countries covered.

Relative productivity and cost trends

Indexes of manufacturing productivity and labor costs are often used in analyses of changes in the relative competitive position of countries in the international trade of manufactures. Unit labor costs are an important element in determining the underlying price competitiveness of manufactured products, with relative productivity and hourly compensation trends determining unit labor cost performance. The International Monetary Fund (IMF) and Organization for Economic Cooperation and Development (OECD) publish indexes for key cost and price measures—including unit labor costs in U.S. dollars—which show the trend of each country's own indicators relative to those of other industrial (competitor) countries.[5] The BLS unit labor cost measures are used in the computation of the IMF and OECD indicators for most countries they cover. The following section introduces indexes of trade-weighted relative trends in manufacturing productivity, hourly compensation, and unit labor costs in national currency, as well as unit labor costs in U.S. dollars.

Because trade involves individual products, the use of aggregate manufacturing measures as indicators of trade competitiveness has certain limitations. In general, labor productivity growth rates in export sectors probably exceed those for manufacturing as a whole. On the other hand, hourly compensation tends to grow at similar rates in all manufacturing sectors within a country. Overall, therefore, trend measures for the total manufacturing sector would be expected to overstate, to some extent, the growth of unit labor costs for the export sector. However, this would probably be true for every country, and, in any case, the measures are intended to represent relative changes only. In addition, exchange rate changes have a significant effect on relative unit labor cost developments, and these affect unit labor costs in all manufacturing industries equally.

Index calculation methods. The indexes of relative trends in manufacturing productivity and labor costs represent ratios of each country's own indexes to weighted geometric averages of the corresponding indexes for the other 10 "competitor" countries.

The weights used to combine the other 10 countries' indexes into an average "competitors" index reflect the relative importance of each country as a manufacturing trade competitor. The weights are those developed by the IMF for computation of their own relative cost and price indicators—except that they have been adjusted from the 14-country coverage of the IMF series to the 11-country coverage of the BLS series.[6] The weights are based on disaggregated trade data for manufacturers in 1975. They take into account the relative importance of each country's trading partners in its direct bilateral trade with them and the relative importance of those partners in competition in "third country" markets, ad-

Table 4. Trade weights used to compute competitor indexes

[In percent]

Reference country	Competitor country										
	United States	Canada	Japan	Belgium	Denmark	France	Germany	Italy	Netherlands	Sweden	United Kingdom
United States	—	19.3	17.3	3.3	1.1	13.1	18.8	7.4	4.9	3.2	11.6
Canada	76.9	—	5.1	.9	.2	2.5	5.3	1.7	.9	2.0	4.5
Japan	36.2	2.9	—	3.8	1.4	11.3	18.2	7.4	4.4	3.7	10.8
Belgium	5.7	.5	6.2	—	.9	22.9	34.1	7.7	9.5	2.4	10.1
Denmark	12.7	.9	10.3	2.9	—	9.6	23.4	6.4	4.7	13.2	15.9
France	16.7	1.1	11.9	4.0	1.3	—	31.1	13.3	5.0	3.0	12.5
Germany	17.5	1.5	12.1	7.8	1.2	21.0	—	12.8	8.1	5.3	12.8
Italy	16.3	1.4	12.2	4.5	1.4	10.8	34.3	—	4.9	2.8	11.5
Netherlands	11.9	.7	9.1	8.7	1.5	16.5	33.9	4.2	—	2.7	10.7
Sweden	18.0	3.5	11.6	3.3	4.8	10.3	23.4	6.5	3.8	—	14.8
United Kingdom	25.0	2.0	11.6	5.4	2.1	13.7	22.5	7.8	5.3	4.7	—

NOTE: Because of rounding, sums of individual items may not equal 100.0.

justed for the importance of foreign trade to the manufacturing sector as a whole in each country.[7] Table 4 shows the weights used for each of the 11 countries.

The relative indexes of output per hour, hourly compensation, and unit labor costs in national currency and in U.S. dollars are shown in table 5. The underlying "own country" and "competitor countries" indexes used to compute the relative indexes, and indexes of trade-weighted exchange rates, not shown in table 5, are available from the authors.

Chart 1 shows the trends from 1970 to 1981 in U.S. manufacturing output per hour, hourly compensation, and unit labor costs compared with those for its trade-weighted competitors, as well as relative U.S. versus competitors trends. Charts 2 and 3 show the relative unit labor cost trends in national currency and in U.S. dollars for four countries—the United States, Japan, Germany, and the United Kingdom; the three foreign countries shown are important U.S. trade partners, and each also represents different relative cost trends.

Relative productivity trends. The countries in which manufacturing productivity grew more rapidly than that of trade competitors since 1970 were Japan, Belgium,

Table 5. Relative indexes of output per hour, hourly compensation, and unit labor costs in manufacturing, 11 countries, 1970–81

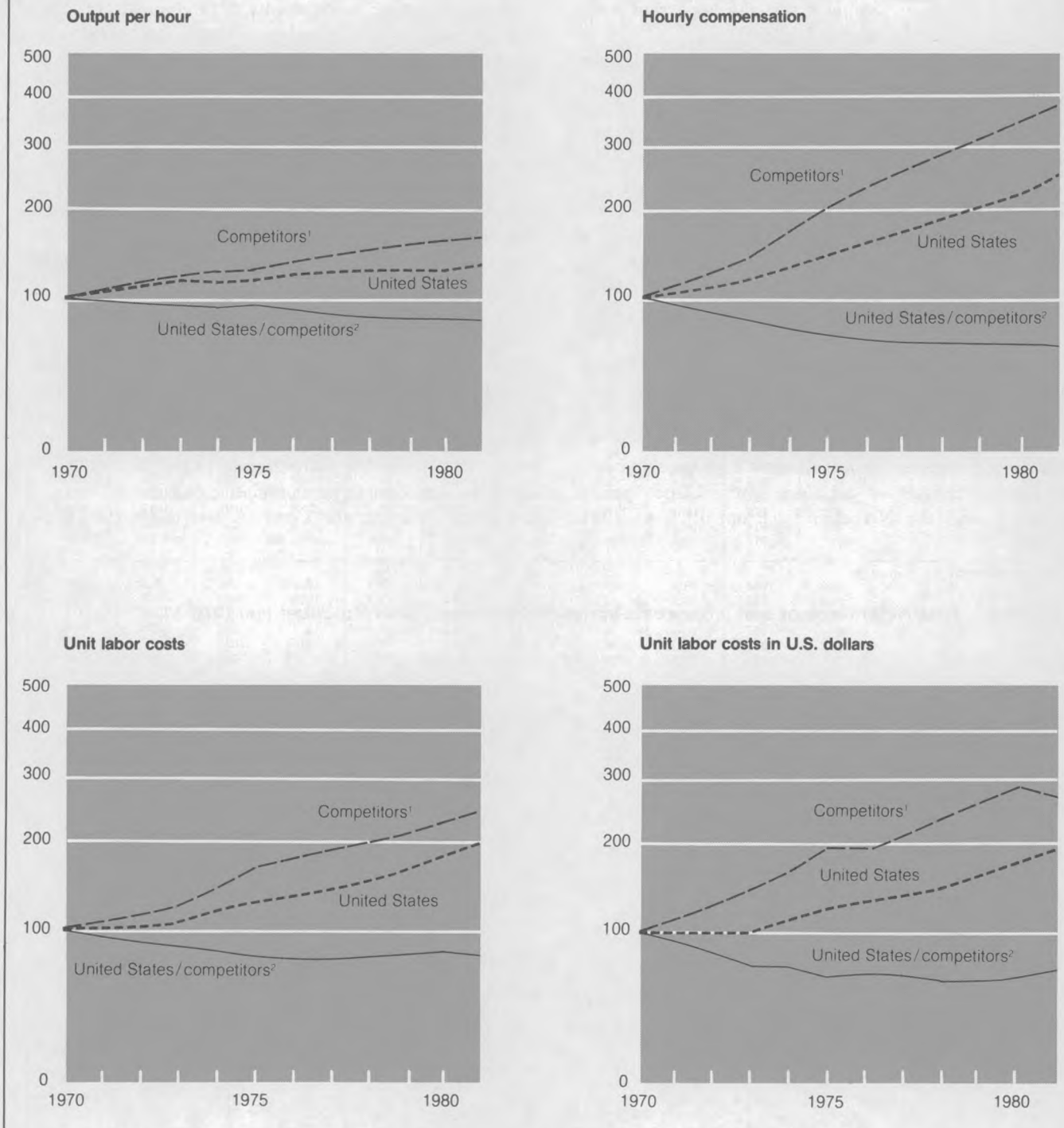
[1970=100]

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Sweden
Output per hour:											
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1971	100.7	101.2	101.0	100.4	98.9	98.1	98.7	101.4	101.2	101.7	100.0
1972	98.5	100.0	105.9	98.9	98.0	99.0	99.4	105.6	102.2	102.4	98.2
1973	96.5	100.3	109.5	96.9	96.2	103.8	98.4	109.2	105.2	105.5	98.3
1974	91.0	103.6	110.2	97.2	98.7	105.8	96.5	111.1	105.5	110.6	99.2
1975	92.6	98.4	112.3	98.4	102.9	98.1	92.1	113.4	114.6	105.4	96.5
1976	90.3	98.7	115.9	99.6	102.8	99.6	89.5	116.5	112.0	111.2	91.4
1977	88.8	99.8	120.4	101.0	104.2	96.6	87.5	119.2	110.7	111.0	86.6
1978	85.9	99.6	126.3	103.0	103.2	95.8	87.1	120.0	109.1	113.9	87.2
1979	82.3	99.4	132.9	103.0	103.1	98.3	86.0	121.7	109.8	113.9	90.4
1980	81.0	95.4	140.3	102.3	102.1	102.1	84.8	123.1	109.2	113.1	89.8
1981	81.1	93.0	140.5	100.6	101.6	102.3	87.4	128.5	111.9	112.9	87.0
Hourly compensation:											
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1971	94.2	99.8	104.8	99.3	99.8	103.0	102.9	101.8	102.2	101.8	100.2
1972	88.7	99.9	110.5	99.2	98.7	106.1	105.1	105.6	101.3	104.6	100.7
1973	82.4	100.7	120.8	98.4	96.3	118.3	102.5	107.4	107.8	109.4	98.8
1974	75.4	103.0	136.3	98.7	91.8	124.4	108.7	110.5	109.3	109.7	97.4
1975	71.4	103.5	136.5	99.7	86.1	137.9	121.7	114.2	109.9	106.7	100.3
1976	68.6	108.4	130.6	102.3	82.0	149.7	128.8	115.6	109.2	108.1	106.8
1977	66.6	110.4	129.4	104.4	80.9	161.0	130.8	115.9	108.7	105.4	105.0
1978	65.8	108.2	124.3	107.0	79.2	168.3	139.5	113.2	108.4	104.1	106.1
1979	65.2	108.3	119.2	110.2	75.9	180.4	151.2	109.9	109.4	101.7	103.1
1980	65.3	105.5	112.5	114.8	72.6	192.1	168.4	107.2	107.8	95.2	101.6
1981	64.5	106.1	108.1	120.5	69.0	213.5	176.6	105.3	105.6	90.2	102.7
Unit labor costs in national currency:											
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1971	93.6	98.6	103.7	98.9	101.0	105.0	104.3	100.4	101.0	100.1	100.2
1972	90.0	99.9	104.4	100.3	100.7	107.2	105.8	100.0	99.1	102.1	102.4
1973	85.4	100.4	110.3	101.6	100.1	113.9	104.2	98.4	102.5	103.7	100.5
1974	82.9	99.4	123.6	101.6	93.0	117.7	112.7	99.5	103.6	99.1	98.2
1975	77.1	105.2	121.5	101.3	83.6	140.6	132.1	100.7	95.9	101.3	103.9
1976	76.0	109.9	112.8	102.7	79.7	150.3	143.9	99.2	97.5	97.2	116.9
1977	75.0	110.6	107.5	103.4	77.7	166.5	149.6	97.2	98.2	94.9	121.2
1978	76.6	108.6	98.4	103.9	76.7	175.6	160.1	94.3	99.3	91.4	121.7
1979	79.3	108.9	89.7	107.0	73.7	183.5	175.7	90.3	99.7	89.3	114.1
1980	80.5	110.6	80.2	112.2	71.1	188.1	198.5	87.1	98.7	84.2	113.2
1981	79.6	114.0	76.9	119.8	68.0	208.6	202.2	82.0	94.3	79.9	118.1
Unit labor costs in U.S. dollars:											
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1971	91.1	101.3	105.2	96.6	104.3	103.7	104.2	100.0	100.0	101.1	99.5
1972	81.5	102.6	116.1	100.3	106.4	104.6	101.2	102.0	97.7	104.4	102.6
1973	71.1	99.9	129.0	106.0	119.2	100.3	88.9	101.4	107.0	109.9	101.1
1974	70.9	102.1	136.6	99.9	118.6	93.8	93.8	104.9	109.8	111.2	99.4
1975	64.9	103.3	128.8	110.2	109.1	108.5	100.8	107.5	105.0	116.4	110.3
1976	68.1	113.5	127.4	107.6	111.0	95.9	93.5	109.1	109.2	113.9	126.4
1977	66.4	105.2	133.5	102.2	116.9	96.1	91.5	112.2	108.6	116.1	125.0
1978	61.7	93.5	148.2	101.0	122.7	94.2	98.4	111.1	109.0	113.7	112.4
1979	61.8	90.2	123.6	105.1	124.3	95.5	115.4	107.2	108.8	113.2	106.1
1980	62.4	91.5	105.7	110.3	120.2	94.1	143.2	102.8	99.2	106.7	105.9
1981	70.8	95.4	118.7	106.6	107.8	91.1	146.0	92.5	87.6	95.6	106.8

NOTE: Relative indexes are calculated from the ratio of the reference country index to a trade-weighted average index for the other 10 countries.

Chart 1. U.S. productivity and labor costs relative to 10 competitor countries, 1970-81

[1970=100]



[1]Weighted geometric average of the indexes for 10 competitor countries.

[2]Relative index calculated from the ratio of the U.S. index to the competitors' index.

the Netherlands, and Denmark. Productivity had risen 11 to 12 percent more in Denmark and the Netherlands and 16 percent more in Japan and Belgium by 1976. By 1981, their relative trends had diverged: For Japan, productivity gains were 41 percent higher and for Belgium, 29 percent, while in Denmark and the Netherlands the gains were 12 and 13 percent higher.

In France, Germany, and Italy, productivity increased at about the same rate as that of trade competitors from 1970 to 1981. Their relative rates of change varied during the period, however. In the early 1970's, productivity in France and Germany rose somewhat less rapidly, and in Italy it rose more rapidly, but during the late 1970's, the relative rates were reversed.

Productivity rose less rapidly than in competitor countries for the United States, Canada, Sweden, and the United Kingdom. From 1970 to 1981, U.S. relative productivity had increased 19 percent less, while in Sweden and the United Kingdom, gains were 13 percent lower, and in Canada, 7 percent lower. The slower gains were quite consistent throughout the entire period.

Relative compensation trends. Hourly compensation rose less than in competitor countries in the United States, Germany, and the Netherlands. From 1970 to 1981, compensation increased about 35 percent less in the United States, 30 percent less in Germany, and 10 percent less in the Netherlands. For the United States and Germany, the slower relative trend was fairly consistent over the whole period. For the Netherlands, however, compensation rose more rapidly than competitors' during the early 1970's, then less rapidly after 1976, with the greatest relative declines occurring in 1980–81, following the imposition of wage controls.

Hourly compensation rose more rapidly than in competitor countries in Italy, the United Kingdom, Japan, and France. From 1970 to 1981, compensation had increased about 100 percent more in Italy and about 75 percent more in the United Kingdom. Almost without exception, both had consistently larger gains than their competitors throughout the 1970–81 period. Hourly compensation in Japan rose more rapidly during the early 1970's—by 1975, Japanese compensation had increased about 35 percent more than that of competitors—but grew less rapidly after 1975. By 1981, Japanese compensation gains were only 8 percent higher than competitors'. In France, hourly compensation rose at about the same rate as in competitor countries until the mid-1970's, then rose more rapidly to end in 1981 with about a 20-percent larger cumulative increase.

Canada, Belgium, and Denmark also ended the 1970–

Chart 2. Relative indexes of unit labor costs in national currency, selected countries, 1970-81

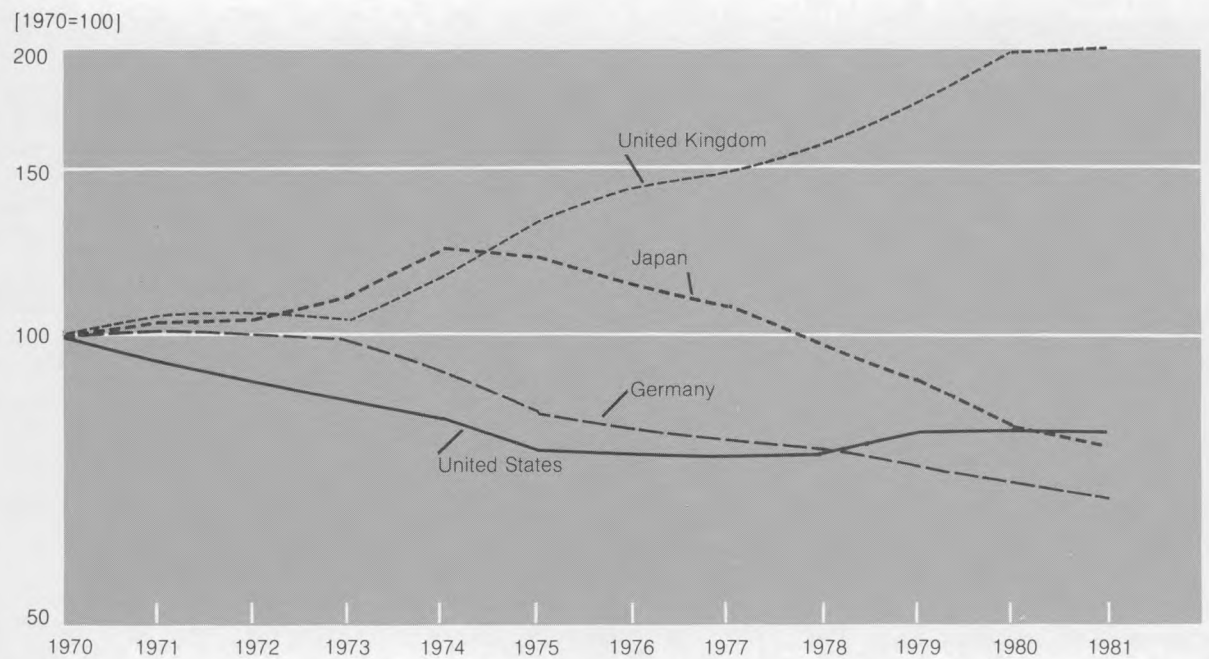
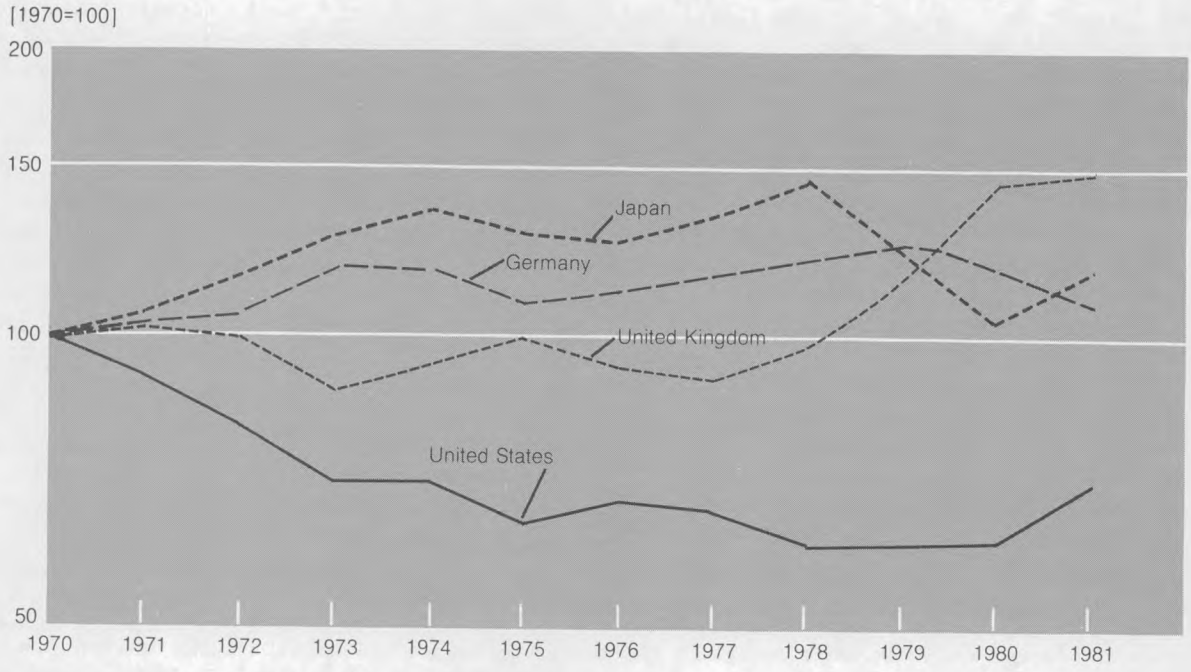


Chart 3. Relative indexes of unit labor costs in U.S. dollars, selected countries, 1970-81



81 period with somewhat larger compensation increases. But in each country, the 1981 relative gains were down from previous peaks—in Canada, 6 percent down from 10 percent in 1977; in Belgium, 5 percent down from 16 percent in 1976–77; and in Denmark, 6 percent down from 9 percent in 1974–79. In Sweden, hourly compensation generally rose at about the same rate as competitor countries' over the 1970–81 period.

Relative unit labor cost trends. Unit labor costs in national currency increased less from 1970 to 1981 in six countries—the United States, Japan, Germany, Belgium, Denmark, and the Netherlands—than in their competitor countries. The relative trend was 6 percent lower in Denmark by 1981, and about 20 to 30 percent lower in the other countries.

The relative change for the United States was down because hourly compensation had fallen more than output per hour. In Japan, Belgium, and Denmark, relative productivity gains more than offset relative compensation increases; in Germany, the relative productivity trend was about level, but relative compensation was sharply down; and the Netherlands had both productivity and hourly compensation advantages.

The relative trend for the United States was steadily downward from 1970 to 1977, up moderately from 1977 to 1980, and down again slightly in 1981. Relative unit labor costs in Japan rose over 20 percent more than those of competitors by 1974–75, then declined steadily to 23 percent less than competitors' by 1981. Relative unit labor costs declined steadily in Germany from 1973, in Belgium and the Netherlands from 1975, and in Denmark from 1979. For the Netherlands, the most significant relative cost declines occurred during 1980 and 1981.

Unit labor costs in national currency increased by at least 100 percent more than competitors' in Italy and the United Kingdom and by about 15 to 20 percent more in Canada, France, and Sweden. The large relative increases in Italy and the United Kingdom are attributable to hourly compensation gains as the relative productivity trend was down in the United Kingdom and essentially level in Italy. In Canada and France, hourly compensation was up slightly, and the productivity trend was down in Canada and even in France. In Sweden, hourly compensation trends were equal to those of competitors, but productivity fell from 1970 relative levels.

In U.S. dollars. After adjustment for the relative change in the foreign exchange rate of the dollar, U.S. unit labor costs showed a decline of nearly 30 percent versus those of competitors from 1970 to 1981, compared with about 20 percent in national currency. In 1980, relative

unit labor costs adjusted for the dollar exchange rate were down almost 40 percent. However, the U.S. dollar appreciated 10 percent against trade-weighted U.S. competitor currencies from 1980 to 1981. This primarily reflected the dollar's appreciation relative to the German mark, French franc, and British pound, because, on a trade-weighted basis, the 2.5-percent appreciation of the Japanese yen was balanced by a 2.5-percent depreciation of the Canadian dollar.

Unit labor costs adjusted for relative exchange rates for Canada, Italy, Belgium, the Netherlands, and Denmark were also down—5 to 12 percent—versus competitors. For Canada, a 16-percent decline in the exchange rate, primarily against the U.S. dollar, offset higher increases in unit labor costs in Canadian dollars. For Italy, the exchange rate posted a 55-percent decline versus U.S. and German currencies. On the other hand, trade-weighted exchange rates were up 13 and 20 percent for Belgium and the Netherlands; therefore, relative unit labor costs in dollars declined less than in national currency terms.

For Germany and Japan, unit labor costs in U.S. dollars increased 8 and 19 percent more than those of trade competitors (principally the United States for Japan, and France and the United States for Germany) even though unit labor costs in national currency were down about 25 to 30 percent, because their relative exchange rates rose 55 to 60 percent over the 1970–81 period.

In the United Kingdom, relative unit labor costs increased 100 percent in national currency terms, but 46 percent in U.S. dollars, because the British pound declined 28 percent overall against competitor currencies—primarily the dollar and the German mark. In France and Sweden, unit labor costs in U.S. dollars posted 1970–81 relative increases of 7 percent, as costs in national currency rose nearly 20 percent more than those of competitors, but trade-weighted exchange rates declined about 10 percent versus competitor currencies. □

FOOTNOTES

[1] The Federal Republic plus West Berlin.

[2] The data relate to all employed persons, including the self-employed, in the United States and Canada, and to all wage and salary employees in the other countries. Hours refer to hours paid in the United States, hours worked in the other countries.

Compensation includes all payments made by employers directly to their employees (before deductions), plus employer contributions to legally required insurance programs and to contractual and private welfare plans for the benefit of employees. Labor costs include, in addition to compensation, employer expenditures for recruitment and training; the cost of cafeterias, medical facilities, and other plant facilities and services; and taxes (other than social security taxes, which are part of compensation) levied on payrolls or employment rolls. Annual data are not available for total labor costs. As used in this article, labor costs approximate more closely the concept of compensation. However, compensation has been adjusted to include all significant changes in taxes that are regarded as labor costs. For the United States and Canada, compensation of self-employed workers is measured by assuming that their hourly compensation is equal to the average for wage and salary employees.

[3] Percent changes for 1960–81, 1960–73, and 1973–81 shown in the tables are computed using the least squares method—that is, from the least squares trend of the logarithms of index numbers—in order to remove much of the effect of cyclical changes on the average rates of change, and thereby estimate the underlying trends.

[4] To compute the series for the eight European countries and 10 foreign countries, the data have been combined by aggregating the output, compensation, and hours figures for each year, adjusting where necessary for compatibility of coverage and concept. Average exchange rates for 1974–81 were used to aggregate the output and compensation data. The use of 1974–81 exchange rates, however, does not imply that these rates reflect the comparative real value of currencies for manufacturing output. Moreover, the use of exchange rates for a different period would have little effect on the combined series.

[5] The IMF publishes annual and quarterly indexes of relative unit labor costs and relative normalized unit labor costs in manufacturing—as well as relative value-added deflators, relative wholesale prices, and relative export unit values in manufacturing—for 14 industrial countries, in their monthly statistical publication *International Financial Statistics.* The OECD publishes quarterly indexes in chart form of relative unit labor costs in manufacturing, relative export unit values (prices) for manufactures, and relative consumer prices for 15 industrial countries in their monthly statistical publication *Main Economic Indicators.*

Series descriptions, data sources, and compilation methods for the IMF measures are described in "Intercountry Cost and Price Comparisons," a paper by Michael C. Deppler, Research Department, International Monetary Fund (November 1979); the OECD measures are described in *The International Competitiveness of Selected OECD Countries,* OECD Economic Outlook Occasional Studies, July 1978.

[6] The IMF weights were derived from disaggregated 5-digit Standard International Trade Classification data (up to 1,400 individual commodity classes) for each of the 14 countries covered by their series. The IMF weights have been simply adjusted to the 11-country BLS comparative series by eliminating the weights for the three uncovered countries—Austria, Norway, and Switzerland—and proportionately increasing the weights for the remaining 11 countries so that they equal 100 percent. The result should be little different from a comprehensive reweighting based on trade data for the 11 countries alone, because the omitted countries account for no more than 8.1 percent of the total 14-country weight for any of the 11 countries, and for a total of only 4 percent in the case of the United States.

[7] The weighting system is described in detail in Deppler, "Intercountry Cost and Price Comparisons."

Productivity increased in 1981 in most industries measured

Although productivity growth slowed during 1976–81 for most measured industries, a majority of significant industries show productivity gains in 1981

ARTHUR S. HERMAN

Productivity, as measured by output per employee hour, increased in 1981 in more than half of the industries for which the Bureau of Labor Statistics regularly publishes data. The growth in industry productivity was consistent with the gain in the nonfarm business sector of the economy, which grew 1.4 percent. In 1980, however, productivity declined in a majority of the measured industries.

Table 1 shows productivity trends in industries measured by the Bureau and includes measures for additional industries: millwork, office furniture (including separate measures for wood office furniture and metal office furniture), cosmetics, hand and edge tools, farm and garden machinery (including separate measures for farm machinery and equipment, and lawn and garden equipment), pumps and compressors (including separate measures for pumps and pumping equipment and air and gas compressors), and commercial banking.[1]

Changes by industry

Manufacturing. The steel industry, one of the more economically significant industries covered, gained 9.0 percent in productivity after two consecutive annual declines. This industry had a very good first half in 1981, buoyed by strong sales to the oil and gas industry. Despite a falloff in demand from many steel markets in the second half, output was up 9.8 percent while hours grew only 0.7 percent, leading to the significant productivity advance. Motor vehicle manufacturing, another key industry, had a notable gain in productivity of 4.7 percent in 1981 after three consecutive declines. Output was up 5.9 percent and hours grew 1.2 percent, as compared to a very poor previous year, when output fell 27.2 percent.

In tire manufacturing, productivity was up 13.3 percent. Output had a large gain of 8.6 percent, sustained by demand from the replacement market, while hours continued declining (−4.2 percent) in 1981. Many old and inefficient tire plants were closed in 1980, aiding the sharp productivity gain in 1981. Other large manufacturing industries with productivity increases included synthetic fibers (6.3 percent), gray iron foundries (5.9 percent), machine tools (4.6 percent), soft drinks (2.9 percent), corrugated and solid fiber boxes (2.7 percent), and pulp and paper (2.0 percent). All of these industries, except machine tools, experienced output growth in 1981.

Productivity declines were also recorded in a number of manufacturing industries in 1981. Many of these were construction related, such as construction machinery, brick and structural clay tile, and hydraulic cement. Output was down in these industries as overall construction activity continued to fall off during the year. Among other manufacturing industries with declining productivity, large drops were recorded by steel foundries (−5.5 percent), sugar (−5.2 percent), aluminum rolling and drawing (−4.0 percent), footwear (−3.6 percent), and folding paperboard boxes (−3.3 percent).

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Table 1. Indexes of output per employee hour in selected industries, 1976–81, and percent changes, 1980–81 and 1976–81

[1977 = 100]

SIC code[1]	Industry	1976	1977	1978	1979	1980	1981[2]	Percent change, 1980–81	Average annual percent change, 1976–81
	Mining								
1011	Iron mining, crude ore	113.5	100.0	116.8	125.5	129.0	138.3	7.2	5.3
1011	Iron mining, usable ore	115.9	100.0	119.2	125.6	127.5	136.1	6.7	4.6
1021	Copper mining, crude ore	99.2	100.0	109.6	103.8	100.3	100.6	0.3	0.1
1021	Copper mining, recoverable metal	94.7	100.0	107.6	97.8	91.3	96.3	5.5	−0.8
111,121	Coal mining	103.1	100.0	106.4	99.4	112.5	122.9	9.2	3.4
121	Bituminous coal and lignite mining	103.0	100.0	106.7	99.6	112.6	123.3	9.5	3.4
14	Nonmetallic minerals, except fuels	96.2	100.0	104.6	102.4	96.3	97.9	1.7	−0.1
142	Crushed and broken stone	93.7	100.0	109.0	108.4	103.3	104.1	0.8	1.8
	Manufacturing								
2026	Fluid milk	99.5	100.0	108.1	116.2	124.8	130.7	4.7	6.2
203	Preserved fruits and vegetables	100.1	100.0	104.4	99.3	101.2	[3]	[3]	[4] 0.1
2033	Canned fruits and vegetables	102.3	100.0	103.7	101.4	100.6	[3]	[3]	[4] −0.2
204	Grain mill products	91.1	100.0	100.4	102.2	107.5	[3]	[3]	[4] 3.6
2041	Flour and other grain mill products	85.1	100.0	101.5	98.5	99.8	103.9	4.1	2.8
2043	Cereal breakfast foods	100.0	100.0	101.7	107.6	106.5	[3]	[3]	[4] 2.0
2044	Rice milling	88.7	100.0	92.7	96.3	111.8	[3]	[3]	[4] 4.3
2045	Blended and prepared flour	110.9	100.0	92.5	91.0	104.8	[3]	[3]	[4] −2.1
2046	Wet corn milling	83.2	100.0	102.0	110.8	129.2	[3]	[3]	[4] 10.3
2047,48	Prepared feeds for animals and fowls	90.1	100.0	100.8	102.0	106.2	[3]	[3]	[4] 3.5
205	Bakery products	93.9	100.0	97.2	94.1	92.3	98.0	6.2	−0.2
2061,62,63	Sugar	95.8	100.0	101.0	108.6	109.1	103.4	−5.2	2.1
2061,62	Raw and refined cane sugar	92.5	100.0	100.8	107.3	107.8	[3]	[3]	[4] 3.8
2063	Beet sugar	101.7	100.0	101.2	110.9	111.7	[3]	[3]	[4] 3.0
2082	Malt beverages	95.5	100.0	100.0	107.4	112.1	117.0	4.4	4.2
2086	Bottled and canned soft drinks	94.2	100.0	104.5	105.6	109.8	113.0	2.9	3.5
2111,21,31	All tobacco products	97.8	100.0	102.8	102.2	102.2	101.4	−0.8	0.7
2111,31	Cigarettes, chewing and smoking tobacco	96.7	100.0	103.8	102.1	101.1	99.5	−1.6	0.5
2121	Cigars	99.9	100.0	98.2	103.7	110.3	114.5	3.8	3.0
2251,52	Hosiery	106.4	100.0	101.8	106.5	105.3	113.4	7.7	1.5
2281	Nonwool yarn mills	93.5	100.0	104.2	103.9	99.8	100.1	0.3	1.0
2421	Sawmills and planing mills, general	103.2	100.0	101.4	104.8	102.0	99.3	−2.6	−0.3
2431	Millwork	99.1	100.0	91.5	93.9	93.7	[3]	[3]	[4] −1.7
2435,36	Veneer and plywood	97.9	100.0	101.7	95.7	98.5	[3]	[3]	[4] −0.3
2435	Hardwood veneer and plywood	89.1	100.0	100.7	101.2	100.5	[3]	[3]	[4] 2.6
2436	Softwood veneer and plywood	102.1	100.0	102.1	93.4	98.2	[3]	[3]	[4] −1.5
251	Household furniture	99.7	100.0	104.6	101.3	99.7	[3]	[3]	[4] 0.1
2511,17	Wood household furniture	101.3	100.0	104.9	101.6	97.1	[3]	[3]	[4] −0.7
2512	Upholstered household furniture	98.1	100.0	108.8	104.9	101.9	[3]	[3]	[4] 1.2
2514	Metal household furniture	96.3	100.0	97.4	89.9	93.1	[3]	[3]	[4] −1.7
2515	Mattresses and bedsprings	99.2	100.0	101.5	102.7	111.9	[3]	[3]	[4] 2.7
252	Office furniture	89.7	100.0	100.1	107.3	108.9	[3]	[3]	[4] 4.7
2521	Wood office furniture	81.9	100.0	100.7	110.7	109.2	[3]	[3]	[4] 7.0
2522	Metal office furniture	94.8	100.0	99.9	104.8	108.6	[3]	[3]	[4] 3.2
2611,21,31,61	Paper, paperboard, and pulp mills	95.0	100.0	103.2	105.4	105.4	107.5	2.0	2.3
2643	Paper and plastic bags	100.5	100.0	99.9	97.6	94.0	[3]	[3]	[4] −1.6
2651	Folding paperboard boxes	102.8	100.0	102.8	101.4	97.1	93.9	−3.3	−1.6
2653	Corrugated and solid fiberboard boxes	101.5	100.0	103.5	107.1	111.3	114.3	2.7	2.7
2823,24	Synthetic fibers	89.5	100.0	105.2	115.0	115.7	123.0	6.3	6.2
2834	Pharmaceutical preparations	98.4	100.0	99.0	106.4	108.2	[3]	[3]	[4] 2.6
2841	Soaps and detergents	100.1	100.0	105.2	104.0	108.4	[3]	[3]	[4] 2.0
2844	Cosmetics and other toiletries	94.4	100.0	99.3	93.1	82.5	[3]	[3]	[4] −3.4
2851	Paints and allied products	97.3	100.0	104.7	105.7	101.8	102.6	0.8	0.9
2911	Petroleum refining	93.0	100.0	101.3	94.9	94.2	[3]	[3]	[4] −0.3
3011	Tires and inner tubes	99.8	100.0	108.8	109.5	105.6	119.6	13.3	3.1
314	Footwear	102.1	100.0	102.5	100.2	101.2	97.6	−3.6	−0.6
3221	Glass containers	98.2	100.0	101.4	106.7	112.0	113.9	1.7	3.3
3241	Hydraulic cement	92.4	100.0	101.3	96.0	87.0	84.9	−2.4	−2.5
325	Structural clay products	94.9	100.0	102.6	96.1	97.6	93.6	−4.1	−0.6
3251,3,9	Clay construction products	94.2	100.0	102.6	92.1	94.6	85.1	−10.0	−2.2
3251	Brick and structural clay tile	102.2	100.0	96.5	85.8	85.6	76.1	−11.1	−5.7
3253	Ceramic wall and floor tile	89.0	100.0	115.3	111.8	120.3	[3]	[3]	[4] 7.4
3255	Clay refractories	97.1	100.0	102.9	109.1	108.0	123.3	14.2	4.3
3271,72	Concrete products	95.0	100.0	98.6	94.6	93.2	[3]	[3]	[4] −0.9
3273	Ready-mixed concrete	98.8	100.0	103.1	99.9	93.1	[3]	[3]	[4] −1.2
331	Steel	99.0	100.0	108.3	106.9	102.9	112.2	9.0	2.0
3321	Gray iron foundries	96.4	100.0	102.1	96.8	90.8	96.2	5.9	−1.0
3324,25	Steel foundries	105.7	100.0	98.1	99.4	99.1	93.6	−5.5	−1.8
3331,32,33	Primary copper, lead, and zinc	96.0	100.0	96.5	106.5	103.5	118.3	14.1	3.6
3331	Primary copper	95.2	100.0	99.4	113.4	105.0	127.4	21.0	5.1
3334	Primary aluminum	101.4	100.0	99.6	99.7	100.0	100.9	0.9	−0.1
3351	Copper rolling and drawing	86.1	100.0	99.5	98.8	94.3	101.1	7.2	1.8
3353,54,55	Aluminum rolling and drawing	101.7	100.0	104.6	101.5	101.3	97.2	−4.0	−0.6

See footnotes at end of table.

Table 1. Continued—Indexes of output per employee hour in selected industries, 1976–81, and percent changes, 1980–81 and 1976–81

[1977 = 100]

SIC code[1]	Industry	1976	1977	1978	1979	1980	1981[2]	Percent change, 1980–81	Average annual percent change, 1976–81
	Manufacturing—Continued								
3411	Metals cans	93.4	100.0	102.3	103.6	102.6	110.9	7.2	2.6
3423	Hand and edge tools	97.6	100.0	100.6	104.3	99.0	[3]	[3]	[4]0.7
3441	Fabricated structural metal	98.9	100.0	100.4	102.0	101.9	106.7	4.7	1.3
352	Farm and garden machinery	101.1	100.0	100.8	103.2	96.3	[3]	[3]	[4]−0.7
3523	Farm machinery	102.2	100.0	98.4	100.2	94.0	[3]	[3]	[4]−1.6
3524	Lawn and garden machinery	94.3	100.0	108.6	113.9	107.4	[3]	[3]	[4]4.0
3531	Construction machinery and equipment	96.3	100.0	105.8	100.3	97.4	92.1	−5.4	−1.0
3541,42	Machine tools	98.4	100.0	102.5	101.9	98.7	103.2	4.6	0.6
3541	Metal cutting machine tools	97.3	100.0	103.6	103.1	100.9	106.7	5.7	1.4
3542	Metal forming machine tools	101.7	100.0	99.9	98.4	92.4	92.8	0.4	−2.0
3561,63	Pumps and compressors	96.8	100.0	102.6	102.5	99.8	[3]	[3]	[4]0.9
3561	Pumps and pumping equipment	92.7	100.0	101.1	100.7	97.2	[3]	[3]	[4]1.0
3562	Ball and roller bearings	106.4	100.0	105.5	106.0	105.7	[3]	[3]	−1.5
3563	Air and gas compressors	99.0	100.0	105.6	105.3	94.7	92.0	−2.9	[4]0.5
3612	Transformers	90.1	100.0	103.4	108.5	110.7	[3]	[3]	[4]5.1
3621	Motors and generators	95.9	100.0	98.6	97.9	94.9	96.1	1.3	−0.4
3631,2,3,9	Major household appliances	96.6	100.0	100.5	108.7	106.0	108.7	2.5	2.4
3631	Household cooking equipment	100.7	100.0	100.3	108.5	103.7	116.4	12.2	2.6
3632	Household refrigerators and freezers	94.0	100.0	98.4	112.2	114.6	113.2	−1.2	4.3
3633	Household laundry equipment	99.0	100.0	102.3	108.2	102.2	97.8	−4.3	0.2
3639	Household appliances, N.E.C.	93.0	100.0	104.0	104.3	101.6	100.8	−0.8	1.3
3641	Electric lamps	102.9	100.0	103.0	106.2	104.7	107.5	2.7	1.1
3645,46,47,48	Lighting fixtures	95.1	100.0	100.6	94.9	94.1	[3]	[3]	−0.7
3651	Radio and television receiving sets	100.8	100.0	113.1	118.1	115.0	[3]	[3]	[4]4.4
371	Motor vehicles and equipment	93.9	100.0	99.7	98.5	92.2	96.5	4.7	−0.3
	Other								
401	Railroad transportation—revenue traffic	95.4	100.0	104.5	104.7	107.3	112.9	5.2	3.1
401	Railroad transportation—car miles	100.1	100.0	102.8	102.9	106.4	[3]	[3]	[4]1.5
4111,31,414 pt	Class I bus carriers	93.8	100.0	99.7	101.5	104.8	[3]	[3]	[4]2.4
4213 pt	Intercity trucking[5]	100.3	100.0	99.8	98.6	94.3	98.7	4.7	0.8
4213 pt	Intercity trucking—general freight[5]	96.1	100.0	98.6	96.6	87.9	92.5	5.2	−1.7
4511,4521 pt	Air transportation[5]	95.5	100.0	109.3	113.1	106.2	105.9	−0.3	2.1
4612,13	Petroleum pipelines	95.2	100.0	101.7	101.7	93.0	85.3	−8.3	−2.2
4811	Telephone communications	93.3	100.0	105.8	110.8	118.1	124.5	5.4	5.8
491,492,493	Gas and electric utilities	98.2	100.0	98.2	97.6	96.2	94.8	−1.5	−0.8
491,493 pt	Electric utilities	95.6	100.0	96.8	95.4	94.0	93.3	−0.7	−0.9
492,493 pt	Gas utilities	103.5	100.0	101.4	103.4	102.0	98.1	−3.8	−0.5
54	Retail food stores[6]	102.0	100.0	95.4	97.3	99.7	101.2	1.5	−0.1
5511	Franchised new-car dealers	98.6	100.0	98.6	94.6	99.5	100.3	0.8	0.2
5541	Gasoline service stations[6]	94.3	100.0	102.8	106.8	104.1	105.4	1.2	2.1
58	Eating and drinking places[6]	101.4	100.0	97.7	96.0	94.6	92.8	−1.9	−1.8
5912	Drug and proprietary stores[6]	97.1	100.0	102.1	102.7	105.3	102.5	−2.7	1.2
602	Commercial banking	95.0	100.0	100.7	98.5	92.7	[3]	[3]	[4]−0.6
7011	Hotels, motels, and tourist courts[6]	95.7	100.0	103.1	102.4	96.1	94.3	−1.9	−0.6
721	Laundry and cleaning services[6]	97.4	100.0	100.6	94.0	87.7	84.9	−3.2	−3.2

[1] As defined in the *1972 Standard Industrial Classification Manual* published by the Office of Management and Budget.
[2] Preliminary.
[3] Not available.
[4] Percent change 1976–80.
[5] Output per employee.
[6] Output per hour of all persons.

NOTE: Although the output per employee hour measures relate output to the hours of all employees engaged in each industry, they do not measure the specific contribution of labor, capital, or any other single factor of production. Rather, they reflect the joint effects of many influences, including new technology, capital investment, the level of output, capacity utilization, energy use, and managerial skills, as well as the skills and efforts of the work force. Some of these measures use a labor input series that is based on hours paid and some use a labor input series that is based on plant hours.
N.E.C. = Not elsewhere classified.

Mining. All the mining industries measured experienced productivity gains in 1981. Coal mining posted its second consecutive large gain, growing 9.2 percent. Although coal output was down slightly (−1.3 percent) from the previous year, hours continued to decline sharply, resulting in the productivity gain. Productivity advances in the other mining industries were not as great as for coal. Iron mining (usable ore) rose 6.7 percent, copper mining (recoverable metal) increased 5.5 percent, and nonmetallic minerals gained 1.7 percent. Both copper and iron mining had large output increases in contrast to sharp declines in 1980. The productivity gain in nonmetallic minerals, however, was based on a drop in output, because of poor demand from the construction industry, and an even larger decline in hours.

Transportation and utilities. Productivity changes varied among transportation and utility industries. In railroads (revenue traffic), productivity gained 5.2 percent. Output in the railroad industry declined for the second straight year, dropping 0.7 percent, while hours continued to fall by 5.6 percent. Although output in the trucking industry fell 4.9 percent, employment dropped even more, resulting in a 4.7-percent productivity gain.

By contrast, productivity fell 0.3 percent in air transportation, as output continued to decline, by 2.8 percent, while employment dropped 2.5 percent.

In telephone communications, productivity was up 5.4 percent as output grew 5.6 percent. However, productivity fell in both gas (−3.8 percent) and electric utilities (−0.7 percent). Output was down in gas utilities, as many consumers curtailed usage because of rising prices, while hours increased owing to the growing number of customers. Output was up only 0.8 percent in electric utilities, well below the long-term rate of 6.6 percent, while hours grew 1.6 percent, resulting in the productivity falloff. Productivity dropped sharply (−8.3 percent) in petroleum pipelines as output fell for the second consecutive year because of declining demand for petroleum products, while hours increased.

Trade and services. Productivity changes also were varied among trade and service industries. Productivity grew 1.5 percent in retail food stores, as output was up 1.9 percent and hours grew 0.4 percent. New-car dealer productivity was up 1.4 percent. Gasoline service station productivity rose 1.2 percent. Output was down 2.1 percent in this industry, as demand was off because of increased gasoline prices and higher mileage cars, while hours fell even more, as marginal stations were closed and self-service stations became more prevalent. Productivity declined 1.9 percent in both eating and drinking places and hotels and motels, as small gains in output were compensated for by larger gains in hours. In drug stores, productivity fell 2.7 percent as output declined 1.9 percent and hours were up slightly. In the laundry and cleaning industry, productivity fell 3.2 percent because of a continued decline in demand for the industry's services which resulted in a 7.2-percent decrease in output, while hours fell 4.2 percent.

Trends, 1976–81

With the exception of the metal forming machine tools industry, all of the measured industries recorded gains over the long term (generally 1947–81 or 1958–81). Over the more recent period, 1976–81, a large number of the industries had declining productivity rates. In addition, about three-quarters of the industries had lower productivity during 1976–81 than over the preceding long-term period (1947–76 or 1958–76). This slowdown in productivity is consistent with the trends in the nonfarm business sector of the economy, where productivity increased at a rate of only 0.1 percent during 1976–81, compared with 2.3-percent growth from 1947–76.

Gains. In recent years the wet corn milling industry had the highest rate of productivity increase, growing 10.3 percent per year from 1976 to 1980 (1981 data are not yet available). Output in this industry grew at the high rate of 8.6 percent, as demand for high-fructose syrup, one of the industry's major products, continued to expand. At the same time, the industry continued to build new plants utilizing highly automatic equipment and hours declined at a rate of 1.6 percent.

The second highest rate of gain was recorded by the ceramic wall and floor tile industry, in which productivity grew at a rate of 7.4 percent from 1976 to 1980. Output increased 9.2 percent, while hours grew 1.7 percent. A new technique for firing tile became widespread, which, coupled with changes in materials handling, resulted in significant labor savings. The wood office furniture industry recorded a productivity gain averaging 7.0 percent during 1976–80. Output grew at the very high rate of 19.3 percent, as demand shifted from metal to wood office furniture, while hours grew at a rate of 11.5 percent.

Other industries with high rates of gain included synthetic fibers and fluid milk, both 6.2 percent from 1976 to 1981, and telephone communications, with 5.8-percent growth over the same period.

Declines. Among the many industries posting declining productivity from 1976 to 1981, the brick and structural clay tile industry had the largest average falloff, down 5.7 percent. Output dropped at a rate of 7.1 percent, because of declining demand from the construction industry, while hours fell 1.5 percent. Other industries with significant declines over this period included cosmetics (−3.4 percent during 1976–80), laundries (−3.2 percent), hydraulic cement (−2.5 percent), and clay construction products and petroleum pipelines (both −2.2 percent).

A full report, *Productivity Measures for Selected Industries, 1954–81*, BLS Bulletin 2155, is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. □

——*FOOTNOTES*——

[1] For a detailed report on these industries, see the following *Monthly Labor Review* articles: Jack Veigle and Horst Brand, "Millwork industry shows slow growth in productivity," September 1982, pp. 21–26; Arthur S. Herman and John W. Ferris, "Productivity growth average in farm machinery manufacturing," October 1982, pp. 6–10; and, Mary K. Farris and James D. York, "Hand and edge tools industry experiences slow rise in productivity," October 1982, pp. 11–14. Articles on the cosmetics, office furniture, pumps and compressors, and commercial banking industries appear elsewhere in this issue.

Productivity in commercial banking: computers spur the advance

Nevertheless, output per employee hour paralleled the trend of the economy during 1967–80, with the annual rate of growth decelerating after 1973

HORST BRAND AND JOHN DUKE

The computer was among the major forces that spurred labor productivity advance in commercial banking in 1967–80. The computer also facilitated great increases in banking output. Labor requirements per unit of output, however, declined rather slowly during the period.

Output per employee hour in commercial banking rose at an average annual rate of 1.3 percent between 1967 and 1980—nearly the same as for the nonfarm business sector as whole (1.4 percent).[1] Data for a productivity measure for years prior to 1967 are inadequate, and none was calculated. Output over the period examined rose at a rate of 6.0 percent per year, employee hours, at a rate of 4.6 percent. The rise in banking productivity was associated with strongly expanding customer services and with advances in computer technology and their rapid diffusion throughout the industry. However, the spread of branch banking, while enhancing access to banking services, somewhat retarded productivity improvement, partly because scale economies became less favorable.[2]

The labor productivity trend in banking paralleled not only the long-term rate for nonfarm business but also the significant differences in rates of change between the 1967–73 and 1973–80 periods. Over the earlier span, productivity in banking rose at an average annual rate of 2.1 percent, compared with 1.9 percent for all of nonfarm business. Subsequently, the rate decelerated to 0.7 percent a year; for nonfarm business, to 0.9 percent.

Year-to-year swings in the productivity trend were pronounced, ranging from a drop of 6.9 percent in 1974 to a spurt of 6.1 percent in 1976. During the 12-year period, years of decline occurred 4 times, characterized by employment increases in the face of slowed advances (1969 and 1979) or declines in output (1974 and 1980). In such years, restrictive monetary policy (as in 1969 and 1979) or recession (as in 1974 and 1980) constrained the demand for funds. In years when productivity gains ran substantially ahead of the long-term trend average, strong cyclical recoveries or peaks in the demand for banking services occurred (as in 1971, 1973, 1976, and 1977).[3]

Measuring productivity

The labor productivity measure for commercial banking has been developed in accordance with the usual procedures of the Bureau of Labor Statistics for measuring changes in the relation between the output of an industry and the employee hours expended in producing that output. Commercial banking produces a variety of outputs, that is, services to the public. These services have been summed on the basis of weights which reflect —or are close substitutes for—labor requirements per unit of service. The output index was then divided by

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an index of employee hours for commercial banking, so as to obtain an index of output per employee hour, or labor productivity. The labor productivity measure for banking, then, measures the change over time in the ratio of the weighted output of the composite of services to the public to employee hours.

Output has been defined in terms of the three major banking activities: (1) demand deposit transactions, involving the crediting and debiting of checks written by the public, and time and savings deposits transactions, involving deposits upon and withdrawals from accounts held by the public; (2) lending for commercial, consumer, and real estate purposes; and (3) fiduciary, involving the administration of trusts and estates, and the purchase and sale of securities on their account.

The output measure for constructing the indexes of labor productivity in banking has been obtained from data on the quantity of these various services rendered by the banks to the public. As noted, in aggregating these services, the labor requirement per unit of each of the major categories of service in a base period was used as the basis for combining the dissimilar activities. Where labor requirement data were not available, proxies were employed.

The labor inputs used in constructing the productivity measure for commercial banking have been derived from BLS data for employment and employee hours, as reported by banking establishments on the basis of their payroll records. The labor input series, therefore, is an hours paid, rather than an hours worked, measure. No adjustment has been made for differences in skill, experience, or other factors of labor quality, data for such adjustments not being available.[4]

Output of banking services

Output of commercial banks as measured by BLS rose at an average annual rate of 6.0 percent between 1967 and 1980—twice as fast as output of the total private business sector. Sources of the strong growth were the boom conditions of the early seventies and the financial needs they generated; rapid increases in check transactions; relatively greater reliance by business on external funds; and continuously heavy demand for consumer and real estate credit. Also, commercial banks expanded their share of major types of such credit, as well as of time deposits. Moreover, they emphasized the retailing aspects of their services and consequently accelerated branching. Trust department functions also grew apace as pension and other employee benefit funds proliferated.

Banking output rose at a higher rate during the 1967–73 period (7.8 percent a year) than during the 1973–80 span (4.6 percent annually). Output was dampened considerably more in the recession that bottomed in 1975 than in 1970. Loan demand rose more rapidly prior to the 1975 recession than after. The rate of deposit transactions, especially demand deposits, also lost some momentum during the second half of the seventies.

Deposits. Periods of speedup and slowdown aside, demand and time deposits rose rapidly over the long term. The number of demand deposit transactions more than doubled. The velocity of transactions (measured by the number of times a dollar of debits is charged against deposits in a given period) nearly tripled.[5] Furthermore, the importance of demand deposits, a major source of lendable funds, declined in relation to the banks' total liabilities, from 43 percent in 1967 to 27 percent in 1979.[6] Intensifying demand deposit activity, especially during 1967–73, contributed to pressures to introduce such labor-saving procedures and equipment as electronic funds transfers (EFT).[7] Thus, according to a study conducted by the Federal Reserve Bank of Atlanta, the number of checks written by the public rose at an average annual rate of 7.2 percent during the first half of the 1970's and declined to a rate of 5.6 percent during the second half.[8]

In addition to the cash-economizing efforts by the public, evident from the tendency to hold relatively low check balances after the mid-sixties,[9] certain kinds of financial transactions have generated large amounts of account activity. For example, the number of shares traded on the New York Stock Exchange in the seventies averaged nearly 3 times the volume of the sixties. Such trading usually involves multiple funds transfers through the banking system. The number of commodity futures contracts traded on commodity exchanges nearly tripled between the first and the second half of the 1967–79 period.[10] Such trading also entails numerous funds transfers through the banks. The underwriting of stock and bond issues, usually by syndicates, which also rose in the mid- and late seventies, spells the pooling of lender funds and ultimate transfer to the borrower; "(Debits) totaling several times the amount of the financing involved may be recorded in this process. . . ."[11]

There were some developments that tended to retard the growth of transactions and check volume—for example, mergers, which cause book credit and debits to replace bank transactions; bank credit cards, which tend to consolidate individual payments; and the long-term trend towards the output of services relative to goods, making for fewer intermediate transactions. These tendencies were largely offset, however, by the upswings in manufacturing and construction, which result in numerous intermediate transactions.

Time deposits generally expanded rapidly following the progressive liberalization of permissible rates under the Federal Reserve's Regulation Q. Liberalization strengthened the banks' position in retaining and attracting funds which would otherwise have been invested elsewhere. Savings and other time deposits held at the commercial banks by individuals, partnerships,

and corporations climbed 106 percent between 1968 and 1980, while demand deposits rose 52 percent. Time deposits accounted for 60 percent of total commercial banking deposits in 1980, as against 54 percent in 1968 (and 35 percent in 1960). Some observers have noted that, in view of such technological advances as electronic funds transfers, the distinction between time and demand deposit accounts has become less significant.[12]

Loans. Expansion of loan output was another source of output growth. The rate of increase of loan output had begun to accelerate prior to 1967, and some of the underlying factors—for example, the emphasis on retail banking—have, of course, a long history. Loan volume being highly susceptible to the impact of the business cycle and of monetary policy on the demand for funds, year-to-year movements proved to be much more erratic for lending than for the volume of deposit transactions. The long-term trend was influenced by the increasing propensity of business to contract for term loans (that is, loans with maturities of more than 1 year); the continued accent upon retail banking; and banks' growing share of mortgage and consumer credit.

Nonfinancial business became more dependent upon funds raised in credit markets than it had been earlier (when corporations had relied more heavily upon internally generated funds). Between 1967 and 1980, the ratio of credit market borrowing by nonfinancial business to its capital expenditures averaged 44 percent, compared with 29 percent for the earlier sixties. The composition of commercial and industrial loans shifted toward term loans, indicating that banks were financing a growing proportion of the plant and equipment outlays as well as of inventories of nonfinancial business.[13]

Banks also stepped up their consumer credit operations. Here, too, growth, of course, originated in earlier years. The share of disposable income devoted to installment borrowing began to rise in the early sixties; at 16 percent in 1967, it continued to rise gradually to 20 percent in 1979. (In 1980, a recession year, the ratio dropped.) Furthermore, the commercial banks expanded their share of holdings of total consumer credit outstanding from 42 percent in 1967 to 49 percent in 1973, remaining at about that level from then on. This gain was linked in part to a shift away from retail store credit, together with growing consumer acceptance of bank credit cards and check credit.[14]

Growth in banks' real estate loans was in large part tied to the expansion in residential and commercial construction of the early seventies and to the strong recovery of both after their slump in the mid-seventies. Banks also captured a larger share of total mortgage holdings, rising from 19 percent in 1967 to 25 percent in 1979 (as the share of insurance companies, in particular, declined). Growth in this area of lending was in recent years also strongly influenced by household borrowing against equity in existing homes.[15]

Table 1. Productivity and related indexes for commercial banking, 1967–80

[1977 = 100]

Year	Output per employee hour	Output	Employee hours	Employees
1967	83.8	52.2	62.3	63.0
1968	85.3	56.3	66.0	66.7
1969	84.0	60.0	71.4	72.0
1970	85.5	64.5	75.4	76.6
1971	88.6	69.1	78.0	79.0
1972	90.3	74.3	82.3	82.9
1973	95.9	83.2	86.8	87.5
1974	89.8	82.9	92.3	92.6
1975	90.0	84.6	94.0	94.2
1976	95.0	91.8	96.6	96.8
1977	100.0	100.0	100.0	100.0
1978	100.7	105.4	104.7	104.9
1979	98.5	108.1	109.7	110.5
1980	92.7	106.1	114.5	115.7
1967–80 average annual rate of change (in percent)	1.3	6.0	4.6	4.5

Trust services. Long-term gains in the trust department output of commercial banks have been associated with the growth in the number of fiduciary accounts and the activity these accounts generate.

Between 1968 (when pertinent data first became available) and 1980, the number of such accounts rose 54 percent.[16] The increase was linked to a more than threefold rise in employee benefit accounts, reflecting the spread of corporate retirement and other employee benefit plans, as well as of pension plans initiated by self-employed persons (Keogh plans).[17] The number of personal trust accounts rose by two-thirds; they still constitute the single most important trust department service, representing more than three-fifths of bank-administered trust accounts. Their rise has in part been related to the desire to shelter current income from taxation, notably as inflation has tended to push incomes into more heavily taxed brackets.[18]

Employment and changing skills

Employment in commercial banking, currently numbering 1.5 million persons, rose 84 percent between 1967 and 1980, or at an average annual rate of 4.5 percent. Average weekly hours tended to decline somewhat, from 37.1 in the first 5 years of the period to 36.5 since then—owing chiefly to the employment of more part-time workers.[19] In no year did aggregate employee hours decline, but their most vigorous rise occurred over the first half of the review period (5.6 percent annually). That high rate was not equaled even during the cyclical recovery following the 1975 slump. From 1974 to 1980, gains averaged 3.8 percent annually.

Nonsupervisory jobs accounted for nearly four-fifths of commercial banking employment in 1980. Of these jobs, office and clerical positions again accounted for four-fifths of employment in the top 100 banks, or 37 percent of total banking employment in 1980. Women staffed 85 percent of these jobs and about one-third of all officer positions. They accounted for two-thirds of banking personnel in 1980, compared with 41 percent of all payroll employment.[20] The prevalence of relatively low-skilled jobs in banking is reflected by the ratio of average hourly earnings in the industry to average hourly earnings in the private economy. Despite the growth of positions in computer programming and systems analysis, that ratio has tended to decline, from 0.87 in the sixties to 0.73 in 1980.

Supervisory jobs in commercial banking have increased in both absolute and relative terms. Such jobs accounted for 23 percent of employment in 1980, as against 17 percent in 1967, an increase of 144 percent. Nonsupervisory jobs rose 65 percent. The ratio of nonsupervisory to supervisory employees thus dropped from 5:1 in 1967 to slightly more than 3:1 in 1980. The increase in supervisory workers was in large part linked with the expansion of branching and the attendant needs for managerial personnel. It was also related to a rise in the number of loan officers, especially for installment loans, and of credit analysts, who are frequently charged with supervisory responsibilities in addition to their regular work.

Skills needed by commercial banking employees have changed considerably, even during the relatively short period examined here. For example, the number of bookkeeping operators has dropped by more than one half since 1969 (and by more than 90 percent since 1960)—owing to the spread of electronic bookkeeping machines and computers, which require substantially fewer operators.[21] Also, tellers have tended to become less specialized as branch banking has spread. The six usual teller classifications—note, commercial-savings, commercial, savings, vault, and all-round—have in many banks been reduced to one all-round teller classification. The practice of classifying tellers by commercial or saving transactions has been declining.[22]

Most bank employees perform tasks related mainly to the banks' depository functions and loan administration. A high school education is generally considered adequate preparation for entry level jobs. Bank officers, on the other hand, usually supervise the various financial and customer services. Loan officers, in particular, are expected to be knowledgeable about the industries from which the individual bank draws its customers and to be sensitive to the often unique problems customers present—problems which frequently require handling on a personal basis. Officers usually have a college degree or an MBA.[23]

The labor inputs of commercial banks thus vary widely in terms of education, training, and skill complexity. Also, wide differences exist between the tasks that can be automated and tasks that cannot be, with the work of loan officers being least susceptible to standardization and automation. However, even in this area, a growing number of supplementary tasks have been computerized.[24]

Fixed investment and technology

Between 1967 and 1979, banks' fixed capital, including structures, furniture, and equipment, rose by a factor of three, while the stock of fixed nonresidential capital in the private business economy as a whole rose by a factor of nearly four.[25] Price indexes to deflate the banks' physical capital stock are not available, so no firm estimate of movements in constant-dollar value can be offered. When the deflators for the total capital stock of business are applied to that of the banks, a rise of about one-third in real terms would result.

About 40 percent of the banks' spending on fixed capital went for equipment and furniture during the review period. In 1980, roughly half of the banks' expenditures for fixed capital other than structures was spent on computers and computer equipment.[26] Fixed capital per employee in commercial banking, at about $16,000 in 1979, ran at three-fifths of the comparable figure for the business economy.[27]

Computer breakthrough. At the root of equipment spending has been the transformation of technology by electronic data processing (EDP). While banks progressively mechanized their routine operations throughout the forties and fifties, the resulting efficiencies improved but gradually. Some students of the field, in fact, attributed these efficiencies more to the specialization of labor and economies of scale in the industry than to mechanization.[28] A 1960 study by the Federal Reserve Bank of Philadelphia stated, "Since World War II, banks apparently have expanded operations more by hiring extra people than by using better equipment."[29] According to the study, the technology used in banks had scarcely changed during most of the first half of the 20th century. The same basic types of cash registers, punched card tabulators, billing and duplicating machines, and check signing equipment found in banks in 1914 were still the mainstay of banking technology at the end of World War II.

Although computer developments during the fifties embodied the principle of machine readability, it was the introduction of magnetic ink character recognition (MICR) in 1958 that made the breakthrough of electronic data processing in banking possible. The computer became an indispensable and major factor in improving banking productivity. Moreover, computer technology

has rapidly spread throughout the industry. The first bank automation survey conducted by the American Bankers Association in 1963 showed only 7 percent of all commercial banks to be users of on-premise or off-premise computers. By 1968, 49 percent were users, and in 1980, when the latest available survey was conducted, 97 percent were. The pressures of cost efficiencies, organizational changes, and competition had reduced the proportion of surveyed banks without plans to automate from 84 percent in 1963, to 42 percent in 1968, to virtually nil in 1980.[30] While the larger banks—those with $100 million-plus in deposits—generally maintain their own computer operations, smaller banks have increasingly used their correspondent relations with the larger banks to gain access to computers. As of 1980, 26 percent of all banks operated on-premise computers, while 71 percent used off-premise computers, mostly at correspondent banks.[31] Thus, size of bank, as measured by the dollar value of deposits, does not appear to have seriously inhibited the diffusion of EDP technology in the industry.

The computer has had its greatest impact upon the deposit function, particularly upon check handling. Its full potential, however, is only beginning to be realized, inasmuch as optimally most payments transfers could be processed electronically, that is, without checks. But only a small proportion of payments is so processed at present. Each check is, in effect, "a special piece of currency, created for one transaction only, that has to pass through complex and repeated identification, verification, accounting, and sorting operations before it is retired."[32] Until the mid-seventies, the enormous and steadily growing volume of checks (estimated at 32 billion in 1979) was expected to become too expensive to handle, even by computer. But evolving technology has expanded the check-processing capacity of computers, such that they are thought to be able to "handle any conceivable number" of checks.[33]

The currently most advanced (or "third-generation") computer has a built-in reader-sorter processing capacity of 120,000 checks per hour. Manual reading and sorting of checks, which for many years has involved some machine processing such as high-speed readers, averages 1,200 to 1,400 checks, so that computer use for this phase of the check-handling process represents "order of magnitude" reductions in labor requirements.[34] For other phases of check-handling, comparable productivity advances have not been attained, although so-called rejects or exception items, which in earlier years required laborious interbank correspondence, have come to be processed with great efficiency thanks to cooperative agreements. According to surveys by the Bank Administration Institute, the average labor requirements for all phases of handling checks were reduced by well over one-half between 1970 and 1979 among surveyed banks, mainly because of computerized reading and sorting of checks and more efficient handling of exception items.[35]

In loan operations, EDP has been used for information retrieval, as well as in the administration and bookkeeping operations of such loan categories as installment loans. Credit information, mortgage servicing, bank credit card billing, and accounting have also been among major computer applications. The proportion of personnel in installment loan operations has tended to decline, but the available data do not clearly point to improved productivity in this area of banking. Staff employed in handling bank credit cards—also a type of consumer credit—has expanded in recent years.[36] Business loan operations, which require a comparatively small proportion of bank personnel, have remained relatively labor-intensive—largely owing to their specialized nature and the need for maintaining close customer contact. Even here, however, the computer is playing an increasing role. It is used to provide up-to-date credit analyses and to serve as a bankruptcy predictor. For the larger banks, it makes credit information on a worldwide basis rapidly available. It also facilitates the collection and arraying of data to meet the requirements of regulatory authorities, a task that is otherwise highly labor-intensive.[37]

Computer technology has also contributed to improved productivity in trust departments. It has been primarily applied to information retrieval for purposes of controlling individual accounts.[38] But it has been increasingly used as well in stock trading by trust departments for customer accounts. With trust departments holding the largest share of assets in stocks (49 percent in 1980 by value), such trading accounts for the major part of their activity. The basis of automated stock trading has been a numbering system first devised by the American Bankers Association's Committee for Security Identification Procedures in 1968. The use of committee numbers on stock certificates was mandated by the Securities and Exchange Commission in 1971. This and similar systems have tended to standardize stock identification and have contributed to the transfer of stock without the physical handling of stock certificates. These certificates are "immobilized," that is, they remain in central depositories. Costly errors and redundant bookkeeping entries have been nearly eliminated when trust departments have adopted the technology on which the bankers' stock transfer system is based.[39] Payments and credits involving stock transfers likewise use the system. Relative to output, trust department personnel requirements have been evidently reduced as a result of these and other computer applications.[40]

Electronic Funds Transfer. Potentially the most important use of the computer in banking remains electronic

funds transfer (EFT). Although the technology for EFT has existed for nearly two decades, its acceptance by the public has been comparatively slow. Also, a large part of the costs of the check collection system and of demand deposit transactions was absorbed by the Federal Reserve and the banks, rather than passed on to users. Nevertheless, EFT has been increasingly adopted by the banks since the mid-seventies. Competition among financial institutions, as well as the developing cost advantages of EDP over conventional transfer activities, are likely further to speed adoption of EFT technology.[41]

EFT has been increasingly applied in interbank settlements through automated clearinghouses and in basic kinds of teller operations involving customer services, such as deposits and withdrawals, direct deposit of payrolls or other recurring payments, direct bill payment, and transfer of funds from savings accounts to demand deposit accounts and *vice versa.* Point-of-sale terminals, linking merchants with a network of local banks, have also been spreading, although their acceptance and use have remained limited.[42]

Automated clearinghouses have spread rather gradually, although they have not replaced the conventional clearinghouse process as they handle only paperless credit and debit entries between banks. Originating in San Francisco in 1972, automated clearinghouses currently link an estimated 14,000 financial institutions and their offices; they process an estimated 300 million items annually.[43] This number represents but a small fraction of the total number of checks drawn on banks other than the payor's own bank, but it is expected that automated clearinghouses will account for a rising proportion of all items in the clearing process. Among reasons for this expectation have been the success of the direct deposit of social security payments and of a growing number of public and private payrolls; the associated savings in mailing costs; less work incident to replacing lost checks, and the cost pressures linked to the handling of paper items (which despite the increasing efficiency of the process has been more and more complemented or replaced by EFT).[44]

Teller machines. Automated teller machines spread rapidly in the late seventies. Providing customer access by means of a magnetic-stripe bank card and unique identification entered upon a keyboard, the machines receive deposits and payments and dispense cash. Twenty-four hour access is a frequent feature, enhancing customer convenience and reducing waiting lines. Thus, automated teller machines in effect extend banking hours, although banks also view them as "peaking" equipment, helping to reduce lobby traffic during peak hours of business. The machines substitute capital for labor, but for many medium- and smaller size banks, the relatively high fixed costs of the equipment are not offset by savings in labor costs at current volumes of business—a factor that tends somewhat to retard the diffusion of the devices.[45] According to one authority, 19,000 automated teller machines were in use at the end of 1980, each averaging about 4,600 transactions per month, more than 2.5 times the volume 4 years earlier—signifying rapid consumer acceptance of this technology.[46]

The banks have also installed much technologically advanced equipment other than computers and teller machines. For example, word-processing equipment is now being operated in four-fifths of the larger and two-fifths of the smaller banks. Optical character recognition equipment—used, for example, in the processing of credit card charge slips, checks, and direct bill payments—has likewise been installed in most larger banks.[47]

The growth of branch banking

The number of commercial banking firms barely rose 5 percent between 1967 and 1979. But the total of banking offices increased 62 percent, mostly reflecting a doubling in the number of bank branches, and a continuing shift of offices towards the suburban population centers of metropolitan areas. The average population served per bank office declined from nearly 6,000 persons in 1970 to 4,400 in 1980.[48] The decline suggests that banking services became more widely and conveniently available to the public. Current-dollar disposable income per capita nearly tripled during 1967–80 (as did personal consumption expenditures), and households generated an expanding volume of banking business, supporting the spread of branch banking.

Most banks are comparatively small. Those holding total deposits of up to $50 million represent 79 percent of all commercial banks, but in 1979 accounted for only 15 percent of total deposits. Smaller banks usually maintain correspondent relations with the larger banks, and this relation amounts to a "form of multi-office banking."[49] Some of the efficiencies or customer utilities associated with large-scale banking are likely, therefore, to be shared throughout most of the industry.

The larger banks, however, are dominant. The share of deposits held by the Nation's largest banks—those with deposits of $500 million or more—was 62 percent in 1979. These banks constitute little more than 2 percent of total banks. Moreover, in metropolitan areas, the two largest banking organizations usually hold between 55 percent and 67 percent of deposits (the ratio tends to be lower in unit banking States, higher in statewide branching States).[50] Adoption of computer technology has been shown to be closely associated with bank size, as well as with holding company affiliation.[51]

As might be expected, banking employment is also concentrated in the bigger banks. Banks holding $500

million or more in deposits employed 56 percent of all banking personnel in 1979. Banks with less than $100 million in total deposits—89 percent of all banks—employed 27 percent of all personnel.[52]

Among changes in the competitive pattern of financial institutions that have affected banks has been the spread of NOW (negotiable order of withdrawal) accounts at thrift institutions; their effect on the share of time deposit accounts at commercial banks, however, cannot be assayed yet. In some other areas, the role of commercial banks has been eroded. More efficient corporate cash management, spurred by high interest rates and advanced information technology, has diminished the relative importance of demand deposits. Also, commercial banks have evidently been unable to expand their share of credit cards (15 percent of 600 million outstanding cards in recent years). Also, business and consumer credit extended by very large department store chains, automotive companies, farm equipment makers, and EDP manufacturers grew in importance until the early seventies, although their share of financial assets has apparently stabilized since.[53]

Outlook for the industry

The diffusion of EFT is likely to help improve labor productivity in commercial banks in the years ahead. During the late seventies, doubts about its widespread acceptance were expressed in some quarters.[54] Resistance by consumers to abandoning payment by check and their fear of loss of control over balances were cited as two reasons. Regulatory questions concerning the off-premises installation of automated teller machines were another. Also, smaller banks were believed to have opposed EFT because of possible competition from big money-center banks. These obstacles to the diffusion of EFT have so far been only partly overcome. However, cost considerations seem likely to compel its more rapid adoption. To illustrate, in a study of the benefits of electronic government payments done in 1977, the Federal Reserve found the costs of EFT to run nearly two-thirds below the costs of processing checks.[55] The ratio has lessened since then, for the scale economies of EFT have continued to improve, and processing and mailing costs of checks to rise.

Direct deposit of payrolls and of other recurring payments, and direct bill payment will likely also expand, partly owing to the costs of float, which banks must assess as an explicit cost under recent legislation, as well as because banks must offset the cost of handling checks against interest on demand deposits (where such interest is offered). Thus, resistance to EFT is likely to lessen as costs of processing paper items rise—speeding its diffusion.

Continued technological advances and the labor savings expected from them will probably also arise from intensified competition by nonbank financial institutions. Thus, money market funds have come to compete with time and saving deposits for both the small and large investor's dollar, and this, too, may contribute to restricting commercial banks' output growth.[56] Also, more than 80 percent of all household and virtually all business firms had checking accounts in 1977, so that the expansion of banking services from including additional households is quite limited. A partially offsetting factor may be a continued rise in cash withdrawals from automated teller machines, which are believed to be smaller and more frequent than withdrawals by cashing checks.[57] The convenience in the use of banking services made possible by the machines may encourage the banks to adopt product lines similarly appealing to customer convenience.[58]

With the spread of EFT, and other computerized and automated transactions, banks' labor requirements per unit of output are bound to continue to decline. Moreover, new branch staffing needs should be decreasing, partly because of the technological developments discussed, partly because of the already low level of population served per branch, and the consequent abatement in the number of new branches opened. Hence, commercial banks will probably become less important as a source of added employment in the years ahead—also indicated by BLS projections to 1990, which imply a slower rate of banking employment growth than over the past decade. □

FOOTNOTES

[1] Commercial banks are establishments primarily engaged in accepting deposits from the public and making loans and investments. They are designated as No. 602 in the Standard Industrial Classification (SIC) Manual of the Office of Management and Budget. The industry is part of SIC 60—banking, which also includes Federal Reserve Banks, mutual savings banks, trust companies not engaged in deposit banking, and establishments performing functions closely related to banking. Nonbanking subsidiaries of bank holding companies are not included; they are separately classified by primary activity. See *Federal Reserve Bulletin*, December 1972. Commercial banks account for approximately 90 percent of the employment of the total SIC 60 group.

A detailed description of banking output and of the procedures followed in measuring banking productivity, output, and employee-hours, as well as the weighting scheme underlying the output measure, is available upon request.

[2] There is wide agreement among industry observers that scale economies in banking have declined with the spread of branching—that is, more resources, including labor inputs, are required per unit of output. Among definitive studies are *Costs in Commercial Banking*, by Frederick W. Bell and Neil B. Murphy (Federal Reserve Bank of Boston Research Report No. 41, April 1968), and "Economies of Scale and Marginal Costs in Banking Operations," by George J. Benston (*The National Banking Review*, June 1965), reprinted in that report. Industry observers confirm that the tendencies analyzed in these works have persisted.

[3] Professor Charles F. Haywood of the College of Business and Economics, University of Kentucky, interprets the swings in commercial banks' labor productivity as follows: ". . . (At) the beginning of an upswing, banks have some slack in manpower and can increase output somewhat without increasing the rate of new hires. At some point in the upswing, the rate of new hires has to be increased. By the time these new hires are in place, the upswing in the economy is near its end and recession soon follows. There may also be some variation in labor turnover rates related to cyclical variation in the economy that affects input-output relationships in banks . . . (As) turnover rates are high in banking, cyclical variation in such rates could have significant effects on productivity." Communication to the BLS Office of Productivity and Technology.

[4] Among authorities upon whose conception of the banks' functions and output the BLS definition is partially based is Professor Donald Hodgman of the University of Illinois. Hodgman has viewed banking activity as consisting of a bundle of services, grouped into three categories: management of the national payments mechanism; intermediation between borrowers and lenders; and specialized financial services (of which trust activities are by far the most important ones). See Donald Hodgman, *Commercial Bank Loan and Investment Policy* (Urbana, University of Illinois, 1963), p. 165 ff; and John Gorman, *Comment*, "Real Output and Productivity of Banks," in Victor R. Fuchs, ed., *Production and Productivity in the Service Industries* (New York, National Bureau of Economic Research, 1969), p. 189 ff.

[5] See *Banking and Monetary Statistics, 1941–1970*, Board of Governors, Federal Reserve System, p. 321 ff., for a detailed explanation of the turnover rate of demand deposits.

[6] These and other data on commercial banks' shares in financial assets or liabilities were calculated from data from *Flow of Funds Accounts* (Board of Governors, Federal Reserve System), various recent issues.

[7] "Earliest concern with the payment system was rooted in the fear that growing check volumes posed a threat to the continued satisfactory performance of the system. Studies sponsored by the Federal Reserve System and by several national associations of commercial banks in the 1960's placed virtually their entire emphasis on two areas: measuring the national check volume, the pattern of the flows of checks into and through the banking system, and check processing costs; and offering technical and economic feasibility assessments of electronic alternatives of the time to check clearing and collection system. The emphasis throughout was on the use of electronic means to replace checks, or to reduce check handling, through systems created and cooperatively operated by groups of commercial banks, with a key role implied or advocated for the Federal Reserve System." Edwin B. Cox, "Developing an Electronic Funds Transfer System: Incentives and Obstacles," *The Economics of a National Electronic Funds Transfer System*, proceedings of a conference held in October 1974 (Federal Reserve Bank of Boston), p. 16.

[8] *A Quantitative Description of the Check Collection System*: Vol. 1, a report of research findings on the check collection system, cosponsored by the American Bankers Association, Bank Administration Institute, and Federal Reserve System (Atlanta, Ga., Federal Reserve Bank, 1981), p. 1.

[9] See also Bryan Higgins, "Velocity—Money's Second Dimension," *Monthly Review*, Federal Reserve Bank of Kansas City, June 1978, and George Garvy and Martin R. Blyn, *The Velocity of Money* (New York, Federal Bank of New York, 1970), p. 69.

[10] New York Stock Exchange, *Fact Book 1980*, and U.S. Commodity Futures Trading Commission, *Annual Report* (1980).

[11] Garvy and Blyn, *The Velocity of Money*, p. 43.

[12] "Increasing Competition between Financial Institutions," *Economic Perspectives* (Federal Reserve Bank of Chicago), May/June 1977, p. 23 ff.

[13] Term loans rose from 40 percent of total commercial bank loans in 1967 to 44 percent in 1973 and 48 percent in 1978.

[14] For some reasons why banks attempt to expand their credit card systems, see "EFT in the United States, Policy Recommendations and the Public Interest," The Final Report of the National Commission on Electronic Fund Transfers (Washington, October 1977), p. 134. See also *Bank Credit-Card and Check-Credit Plans* (Board of Governors, Federal Reserve System, July 1968). Banks' adoption and operation of credit plans of their own has had significant implications for their output: although credit cards result in consolidation of payments and, therefore, reduce the number of check transactions, they generate sales drafts which must be cleared through merchant's deposit accounts. Thus, they augment "the paperwork burden to the extent that (they replace) cash in a retail transaction" (p. 63.)

[15] David F. Seiders, *Mortgage Borrowing Against Equity in Existing Homes: Measurement, Generation, and Implications for Economic Activity* (Board of Governors, Federal Reserve System, 1978), Staff Economic Studies 96.

[16] See *Trust Assets of Banks and Trust Companies* (Board of Governors, Federal Reserve System; Federal Deposit Insurance Corporation; and Office of the Comptroller of the Currency), 1980 and earlier years.

[17] Indicative of the increase in corporate pension and welfare plans is the rise in the number of such plans reported by the U.S. Department of Labor. As of January 1, 1970, 157,400 such plans were reported, the number rising to 554,000 by 1977. The bulk of the assets in which the plan administrators invest consists of stocks and bonds. See *Welfare and Pension Plan Statistics, 1967, 1969, and 1971* (U.S. Department of Labor, Labor-Management Services Administration), and information from LMSA.

[18] Interview with a banking representative.

[19] Part-time workers accounted for almost one-sixth of all nonsupervisory office workers in surveyed commercial banks in 1980, up from one-eighth in 1976, according to *Industry Wage Survey: Banking, February 1980*, Bulletin 2099 (Bureau of Labor Statistics), p. 3.

[20] Equal Employment Opportunity Commission Summary Statistics, Top 100 Full Service Banks.

[21] *Technological Change and Manpower Trends in Six Industries*, p. 51, and *Industry Wage Survey: Banking*, p. 4.

[22] *Industry Wage Survey: Banking*, p. 4.

[23] See *Banking and Insurance Occupations*, Bulletin 2075–7 (Bureau of Labor Statistics).

[24] David M. Coit, "Automated Financial Analysis: A New Tool for Commercial Lending," *The Journal of Commercial Bank Lending*, March 1977.

[25] *Assets and Liabilities of all Commercial Banks in the United States, Annual Report for 1980 and Earlier Years* (Washington, Federal Deposit Insurance Corp.).

[26] Information on the average annual expenditures per bank for computer equipment, 1980–82, is provided in table 224 of *National Operations/Automation Survey, 1981* (Washington, American Bankers Association).

[27] The prices for computer hardware, as well as for calculating and accounting machinery, widely used by the banks, rose much more slowly than producer durables prices generally or tended to decline over part or all of the review period. See Robert B. Archibald and William S. Reece, "Partial Subindexes of Input Prices: The Case of Computer Services," *Southern Economic Journal*, October 1979, pp. 528–40. The authors show that second generation computers, manufactured for large business uses by IBM, dropped in price by 85 percent between 1970 and 1975. Reasons for the drop are discussed by them. At present, the BLS imputes movements in the value of computer hardware to the office and store machines and equipment group.

[28] See Bell and Murphy, *Costs in Commercial Banking*, discussion in chapter VII, p. 105 ff.

[29] "How Banking Tames its Paper Tiger," *Business Review* (Federal Reserve Bank of Philadelphia), June 1960.

[30] See *National Operations/Automation Survey 1981* (Washington, American Bankers Association), p. 7.

[31] *Ibid.*

[32] John E. Sheehan, "Higher Productivity Demand Deposits," in *The 1972 National Operations and Automation Conference Proceedings* (Washington, American Bankers Association), p. 363.

[33] John S. Reed, executive vice president of Citibank, quoted in "Electronic Banking: A Retreat from the Cashless Society," *Business Week*, Apr. 18, 1977. See also Sanford Rose, "Checkless Banking is

Bound to Come," *Fortune*, June 1977, p. 118 ff.

[34] Information from Bank Administration Institute and Federal Reserve.

[35] See *1979 Survey of the Check Collection System* (Park Ridge, Ill., Bank Administration Institute, 1980).

[36] *Functional Cost Analysis, 1979 Average Banks.* Based on data furnished by 751 participating banks in 12 Federal Reserve districts. Computer processing of bank credit card transactions has remained similar to that of checks and therefore is technologically not as advanced as computer processing of transactions under credit cards issued by the big oil companies, where optical character recognition has been part of the computer operation. (Conversation with ABA representatives.)

[37] "Automated Financial Analysis."

[38] *Third Trust Operations and Automation Workshop, 1972 Proceedings* (Washington, American Bankers Association). See also *The Bottom Line: Proceedings, 1976 National Trust Operations and Automation Workshop, New York, March 21–24, 1976*, remarks by William Schladebeck, p. 216 ff.

[39] *Third Trust Operations—Proceedings*, p. 58.

[40] H. Russell Morrison, "CUSIP Report—Beyond Apr. 1, 1972," *Third Trust Operations & Proceedings*, p. 58.

[41] See N. Sue Ford, "Electronic Funds Transfer: Revolution Postponed," *Economic Perspectives* (Federal Reserve Bank of Chicago), November–December 1980, p. 16 ff. Competition between different types of financial institutions has been fostered by high interest rates together with NOW (negotiable order of withdrawal) accounts at thrift institutions, and of share drafts at credit unions. Such instruments have been authorized on a national basis by the Deregulation and Monetary Control Act of 1980. A detailed analysis of this law may be found in *Economic Perspectives*, September–October 1980, p. 3 ff.

[42] Ford, "Electronic Funds Transfer," p. 18.

[43] Haywood, communication to the BLS. See Philip E. Coldwell, "The ACH in Perspective" (*Remarks at the 4th Annual NACHA Surepay Conference, Houston, Tex., Mar. 13, 1979*), p. 3.

[44] Ford, "Electronic Funds Transfer," p. 16. See also Carl M. Gambs, "Automated Clearinghouses—Current Status and Prospects," *Economic Review* (Federal Reserve Bank of Kansas City, May 1978), p. 3 ff.

[45] ATM's often "substitute . . . for a more costly full-service brick-and-mortar branch." Haywood, communication to BLS. Another observer has stated that, "The ATM also reduced the need for tellers, lowering not only the salary cost to the bank, but also of employee benefits and pension plans." Ford, "Electronic Funds Transfer", p. 17. See also David A. Walker, *An Analysis of Changes in EFTS Activity Levels, Costs and Structure in the U.S.: 1975 to 1977* (Washington, Federal Deposit Insurance Corp.), Working Paper No. 77–3, especially p. 7.

[46] Linda Fenner Zimmer, "ATM Acceptance Grows, Builds Customer Base for Other EFT Services," *The Magazine of Bank Administration*, May 1981, p. 31. Cited in *Statistical Information on the Financial Services Industry* (Washington, American Bankers Association, 1981), p. 107.

[47] American Bankers Association, 1978 Survey, *op. cit.* On the productivity effects of such equipment, see also David Cockroft, "New Office Technology and Employment," *International Labour Review*, November–December 1980, p. 689 ff.

[48] *Statistical Information on the Financial Services Industry*, p. 89.

[49] Carter H. Golembe, "Growth of Bank Holding Companies," in Herbert V. Prochnow, ed., *The Changing World of Banking* (New York, Harper & Row, 1974), p. 23.

[50] "Recent Changes in the Structure of Commercial Banking," *Federal Reserve Bulletin*, March 1970, p. 207.

[51] See Charles F. Haywood, "Regulation, Technological Change and Productivity in Commercial Banking," in *Productivity Measurement in Regulated Industries* (New York, Academic Press, 1981), p. 300–01.

[52] Based on unpublished data of the Federal Deposit Insurance Corporation.

[53] Will R. Sparks, *Financial Competition and the Public Interest* (New York, Citicorp., 1978), p. 23, also pp. 16, 17.

[54] Reed, "Electronic Banking." See also William Ford, *The Payments System of the 1980's*, presented at the Second Annual Shared EFT Systems Conference, Atlanta, Ga., Feb. 5, 1981 (Federal Reserve Bank of Atlanta).

[55] *Costs, Savings and Benefits of Electronic Government Payments* (Unpublished study by the Division of Federal Reserve Bank Operations, Board of Governors, Federal Reserve system, June 1977).

[56] See "The Changing Environment for Banking," an address by J. Charles Partee, before the American Institute of Certified Public Accountants Annual National Conference on Banking, Capitol Hilton, Washington, D.C., Dec. 4, 1980. Also, "America's New Financial Structures," *Business Week*, Nov. 17, 1980, p. 138 ff.; and Constance Dunham, "The Growth of Money Market Funds," *New England Economic Review* (Federal Reserve Bank of Boston), September–October 1980, p. 20 ff.

[57] On the factors influencing the evolution of EFT and the check payments system, see *The Payments System of the 1980's*, op. cit.

[58] Some nonbank services built into ATM's are noted in "Diebold's Shift to Automated Tellers Works," by Margaret Yao, *The Wall Street Journal*, July 15, 1982, p. 45.

Cosmetics industry achieves long-term productivity gains

But recent declines have beset an industry in which productivity has grown rapidly since 1958; gains have been associated with more efficient plants, improved technology, and an expanding line of products which serve changing markets

PATRICIA S. WILDER

As measured by output per employee hour, productivity in the cosmetics and other toiletries industry rose at an average annual rate of 4.0 percent from 1958 to 1980. The rate of growth was substantially higher than the 2.8-percent gain for all manufacturing.[1]

The rise in productivity resulted from a rapid expansion in output, which increased at an average annual rate of 7.3 percent, and a more moderate increase in employee hours, 3.1 percent. Productivity gains have resulted primarily from a trend toward fewer and larger plants producing a greater level of output, and continued improvements in production and packaging operations, such as those of lipstick and toothpaste.

The movements in output per employee hour have not been steady. From 1958, annual increases in productivity ranged from 14.9 percent to 0.4 percent. Declines in productivity occurred in 6 years, the most recent and largest in 1980, when it dropped 11.4 percent. (See table 1.)

Productivity growth can be divided into three distinct subperiods, 1958–65, 1965–70, and 1970–80. The first period was marked by substantial growth in the industry. Larger capacity plants came on line and productivity grew at a rate of 7.5 percent annually. The growth was associated with a rapid rate of increase in output of 10.9 percent. However, employee hours increased at a slower pace—averaging 3.1 percent.

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From 1965 to 1970, productivity growth slowed significantly, averaging only 0.2 percent a year. Although output continued to expand at a high rate of 7.0 percent per year, employee hours increased at almost the same rate, 6.8 percent. The industry at this time was undergoing a more pronounced period of expansion. Data available for 1963 and 1972 show a 91-percent increase in employment in establishments with 500 persons or more. The increase in the number of these large establishments (from 15 to 27) with the normal staffing and startup problems no doubt retarded productivity growth temporarily.

After 1970, productivity growth resumed at a rapid pace, averaging 5.7 percent annually through 1977. Beginning in 1978, three successive declines in productivity occurred. The decrease recorded in 1978 was less than 1 percent. However, a decline of 6.2 percent in 1979, followed by a drop of 11.4 percent in 1980, reduced the average annual gain in productivity to 2.7 percent during 1970–80. The decreases in 1979 and in 1980, a recession year, were related to similar large declines in output. However, employee hours did not follow output, but instead increased 2.3 percent in 1979 and 1.3 percent in 1980.

Output increases fourfold

Productivity growth in the cosmetics and other toiletries industry is closely linked to output growth, which has increased fourfold since 1958. Factors affcting this growth have been a larger population, the growing

number of working women, and extensive advertising and sales promotions.[2]

The industry is highly competitive, and this competition has spurred manufacturers' efforts to expand the range of their products. Many new products and lines have been introduced to meet changing consumer needs and preferences. For example, because of the increased number of women entering the work force, more products have been developed to meet their needs. Also, greater acceptance of the industry's products by men has been a factor in output growth. They are purchasing more fragrances and skin care products such as colognes, after-shave lotions, and moisturizers. Output growth has also been spurred by new products specifically designed for ethnic populations and for older consumers. Growth has also occurred in skin treatment and sun care products because of an increased concern about aging skin and the rise in the incidence of skin cancer and its relationship to ultraviolet sunrays.[3]

Another factor that has contributed to output expansion has been the greater use of synthetic substances in cosmetic and toiletry preparations. Increased use of synthetics, which are often less expensive, to supplement or replace some of the scarce natural products derived from plants and animals and to serve as the bases for new products has enabled the industry to meet demand and to expand its market.

Because demand for cosmetics and toiletries has been high, some analysts had considered the industry to be nearly recession-proof.[4] Indeed, until 1979, only two decreases in output were noted in this study and both were less than 1 percent. However, in 1979, output declined 4.1 percent and in 1980 a further drop of 10.3 percent occurred. These two decreases in output had the effect of reducing the long-term average annual rate of growth in output from 8.0 percent (through 1978) to 7.3 percent.

Plant size and employment

An important factor affecting productivity growth in the industry has been the trend toward larger, more efficient establishments. This is reflected in the steady increase in the number of establishments with 500 employees or more. During 1958–80, the number of these establishments tripled (from 11 to 33), as did employment in these plants. An insight into their efficiency is gained from information on value added per employee. In 1977, the most recent year for which data are available, value added per employee in the large establishments was more than $100,000. This was about 37 percent greater than the level in plants having fewer than 500 employees. The trend toward larger plants with their greater production volume has resulted in significant economies of scale, which in turn has aided the industry's productivity growth.[5] Large establishments now account for about 65 percent of the industry's

Table 1. Productivity and related indexes for the cosmetics and other toiletries industry, 1958–80

[1977=100]

Year	Output per hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1958	40.0	39.0	41.7	22.7	56.8	58.2	54.5
1959	43.9	41.9	47.7	26.5	60.3	63.3	55.5
1960	45.1	44.1	46.7	26.9	59.7	61.0	57.6
1961	46.9	47.0	46.6	29.1	62.1	61.9	62.4
1962	49.6	49.7	49.6	32.0	64.5	64.4	64.5
1963	57.0	58.1	55.4	38.2	67.0	65.7	68.9
1964	63.8	65.3	61.4	42.6	66.8	65.2	69.4
1965	65.7	66.6	64.5	47.6	72.4	71.5	73.8
1966	65.2	65.1	65.4	52.1	79.9	80.0	79.7
1967	62.5	63.1	61.6	51.8	82.9	82.1	84.1
1968	67.5	67.4	67.7	59.8	88.6	88.7	88.3
1969	64.8	64.7	65.1	62.0	95.7	95.9	95.3
1970	65.9	68.9	61.6	66.8	101.4	97.0	108.5
1971	73.3	80.4	64.2	68.0	92.8	84.6	106.0
1972	82.5	89.1	73.9	77.8	94.3	87.3	105.3
1973	87.2	97.4	74.9	84.7	97.1	87.0	113.1
1974	91.6	95.2	86.4	88.1	96.2	92.5	102.0
1975	94.0	95.6	91.6	87.5	93.1	91.5	95.5
							101.0
1976	94.4	94.3	94.6	95.5	101.2	101.3	
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	99.3	98.6	100.6	104.5	105.2	106.0	103.9
1979	93.1	93.8	92.0	100.2	107.6	106.8	108.9
1980	82.5	80.2	86.5	89.9	109.0	112.1	103.9
	Average annual rates of change (in percent)						
1958–80	4.0	4.2	3.8	7.3	3.1	2.9	3.3
1976–80	−3.4	−3.8	−2.6	−1.2	2.2	2.7	1.4

value of shipments, compared with 35 percent in 1958.

Overall employment in the industry expanded by more than 90 percent between 1958 and 1980, rising at an average annual rate of 3.1 percent. Employment, at 29,900 in 1958, had risen to 57,200 by 1980. Total employee hours grew at the same rate as employment.

The largest increase in employment occurred during 1965–70, when the industry was expanding more rapidly. Although employment rose 28 percent from 1958 to 1965, it grew 39 percent during 1965–70. Employment growth from 1970–80 moderated substantially, declining in 5 years. The overall increase in employment during the last period was only 7.9 percent.

Compared with all manufacturing, the number of female employees in the industry is high. They accounted for 57 percent of total employment in 1958, increasing to 60 percent in 1980. By contrast, women made up 26 percent of manufacturing employment in 1958 and 31 percent in 1980.

The proportion of nonproduction workers in the industry is higher than in most other manufacturing industries—37 percent of total employment in 1980, compared with 30 percent for all manufacturing. The higher proportion reflects the larger number of professional, technical, clerical, and sales personnel employed.

Although data on the occupational composition of employees in the industry are not available, some insights can be obtained from the broader aggregation, soaps and cosmetics.[6] In 1978, an estimated 5 percent of all workers employed in the manufacture of soaps and cosmetics were chemical and industrial engineers, chemists, and chemical technicians. Sales and clerical personnel accounted for 26 percent of total employment. The industry also employs many semiskilled workers, such as packers, wrappers, examiners, assemblers, and mixers, who made up 33 percent of the work force in 1978.

Technological advances

The industry produces a vast array of products, including shaving preparations, perfumes, colognes, hair preparations, dentifrices, mouthwashes, lipsticks, deodorants, nail products, creams, and lotions. Standards for the materials used in these products have been upgraded and many are now equal to the material specifications for the pharmaceutical industry.[7]

Although the basic processes involved in the production of cosmetics and toiletries have changed little over the period, there have been improvements in the equipment and methods used. Many of these changes have occurred on an in-house basis, with individual plants developing some of their own equipment and modifying or integrating production lines to improve efficiency. An improvement that is widespread throughout the industry is the increased speed of filling and packaging lines.

One of the major processes involved in the production of cosmetics and toiletries is batch preparation of the products prior to packaging. Some improvements have occurred that have increased efficiency in preparing the batches. As volume warrants, the more frequently used raw materials are stored in large tanks and then transferred directly to the mixing tanks via a pipeline system. Previously, the raw materials were received in drums and were manually dumped into the mixing tanks. Semiautomatic controls allow the operator to easily select the necessary raw materials. The final product is moved via pipes to stainless steel storage tanks, where air-controlled pumping systems transfer the batches to the filling lines.

Manufacturers have developed and adopted high-speed filling and packaging equipment for use with large-volume production runs. Small-volume runs or products requiring complex or delicate operations are generally less automated. Much of the equipment used in high-speed production can automatically perform such operations as bottle feeding, product coding, and packing of bottles and boxes into cartons for shipment. One recent innovation in this area is the automatic unscrambler and bottle feeder. Bottles, jars, or caps are automatically sorted and fed directly to the filling lines.

Products in the form of sticks. For lipsticks and other items such as eye shadow, deodorant, and perfume, the basic processing method first involves melting and mixing the base products. Next, the forms, castings, or molds are filled and cooled. Most products are then removed from the forms and are placed into holders. In a few cases, particularly deodorant sticks, filling directly into the holders for molding is possible.[8]

One of the more complicated operations is the production of lipsticks. Preparation of bulk material for lipstick production is done using batch processing. The most complex step is molding the sticks. Their production was formerly performed as a manual operation; however, many manufacturers have adopted automatic or semiautomatic equipment. The equipment consists of a storage container with an attached dosing device and a circular molding table with interchangeable molds that can handle different shapes and sizes of lipsticks. The equipment also includes a feeding table for lipstick bases, and pressurized-air equipment for pushing solidified sticks into the bases. Lipstick covers and bottom labels are automatically put onto the bases. Automatic equipment places the completed sticks into cartons.[9]

Toothpaste production. In the manufacture of toothpaste, automated equipment is now being used that makes the batch process almost one continuous operation—reducing labor requirements. The filling process is done using high-speed equipment and an automated tube feeder. With the high-speed equipment, a dental cream line can

now be operated with two persons; previously four or five were needed.

There has also been a change in the material used for toothpaste tubes. The trend has been to switch from metal to laminated plastic tubes, which are generally easier to handle and can be processed about 10 percent faster. Heat sealing the laminated tubes is quicker than crimping metal, thus increasing production speed.[10]

Tubes leaving the filling line are packaged using automatic case packers and palletizers. It now requires two or three fewer people to strap cases, and this equipment has increased the number of pallets that can be packed. The entire pallet load is now automatically wrapped with shrink film (a form of clear plastic wrap).

Fragrances. The production process for perfumes and colognes has changed little because of the unique storage requirements for aging. The batch process is not a continuous operation because, prior to filling and completion, these products must be pumped into storage tanks and left for 3 to 7 days to age. However, some improvements have occurred in the equipment used in filtration and in filling. After aging, perfumes and colognes are chilled to a temperature near freezing. To obtain a crystal-clear product, they are processed through a filter press to remove sediments. The liquids are then pumped to the filling lines through pipelines. Advanced equipment is being more widely used to assure proper filtration and filling. The filling and packaging equipment that is used for other cosmetic products is also used for perfumes and colognes. Considerable labor reductions have occurred because of the availability of more sophisticated high-speed equipment.[11]

Aerosol products. A technological innovation which became widespread in the industry in the 1960's was the aerosol dispenser. Substantial improvements to the aerosol unit, which have reduced labor requirements, have occurred during the last several years. Valves and stems are automatically placed into the aerosol units on the filling line. Previously, this operation was done manually. The valves are then mechanically crimped to allow pressurization. After filling, the aerosol units pass through an explosion-proof area for pressurization and safety checking. The units are also inspected for leakage and are automatically scanned for liquid content.

Scientific instrumentation. For new product development and quality control, the industry now utilizes sophisticated instrumentation such as gas and high-pressure liquid chromatography, mass spectroscopy, and nuclear magnetic resonance.[12] This equipment has reduced labor requirements and increased the speed of the chemical analytical process.

Computer technology has aided productivity growth in several ways. Computers are increasingly being used for jobs such as flow and measurement of raw materials, formula calculations, mixing operations, and are already widely used in the batch operations for verification of the individual batches. Also, computers have assisted in reducing the turnaround time for products and in decreasing the amount of paperwork.[13] They are being used more often in warehouses to perform such tasks as product location, inventory control, and shipping documentation. In the important area of sales, marketing analysis is more easily accomplished with computer-based information systems.

PRODUCTIVITY GROWTH should continue because of improvements in the production processes and in the equipment used. Increased utilization of computer technology may also contribute to productivity gains.

Demand for the industry's products is expected to rise. According to industry analysts, some of the fastest growing categories are facial treatments, hair straighteners, manicuring products, after-shampoo products, sun care products, and men's fragrances. Factors which are believed to be important for future industry growth include increased use of cosmetics and fragrances by men, growth in products promoted for the ethnic populations, more products to meet the needs of older consumers, and the growing awareness of skin care. □

FOOTNOTES

[1] The cosmetics and other toiletries industry comprises establishments primarily engaged in manufacturing perfumes (natural and synthetic), cosmetics, and other toilet preparations. This industry also includes establishments primarily engaged in blending and compounding perfume bases; and those manufacturing shampoos and shaving products, whether from soap or synthetic detergents. The industry is designated as SIC 2844 in the Office of Management and Budget's *Standard Industrial Classification Manual, 1972.* Data prior to 1958 are not comparable. All average annual rates of change are based on the linear least squares trends of the logarithms of the index numbers. Extensions of the indexes will appear in the annual BLS Bulletin, *Productivity Measures for Selected Industries.*

[2] *U. S. Industrial Outlook,* various issues. See also, "Beauty Chemicals '80," *Chemical Marketing Reporter,* June 23, 1980, p. 29.

[3] *Industrial Outlook,* 1980, p. 155.

[4] "Chemical Finance," *Chemical Business,* Aug. 24, 1981, pp. 39–45. See also, "Beauty Chemicals '80," *Chemical Marketing Reporter,* June 23, 1980, pp. 29–47.

[5] Based on conversations with officials of the Noxell Corporation and Helene Curtis Industries, Inc.

[6] *The National Industry-Occupation Employment Matrix,* 1970, 1978, and Projected 1990, Vol. 1, Bulletin 2086, Bureau of Labor Statistics, April 1981, pp. 155–58. The data cited relate to soaps and cosmetics (SIC 2841 and 2844). However, because cosmetics employs 63 percent of the total work force in both industries, these data should be representative for cosmetics.

[7] *Industrial Outlook,* 1970, p. 184.

[8] Peter Weckerle, "Molding Process for the Production of Lipsticks," *Cosmetics and Toiletries*, Vol. 95, May 1980, p. 81.

[9] Wendel Dinkel, "Processing of Lipsticks," *Cosmetics and Toiletries*, Vol. 92, February 1977, pp. 30–34.

[10] The discussion on toothpaste production is based on conversations with representatives of Colgate-Palmolive Co. and Lever Brothers Co.

[11] The discussion on perfumes and colognes is based on conversations with Heinz J. Eiermann, director, Division of Cosmetics Technology, Food and Drug Administration, Washington, D. C.

[12] *Industrial Outlook*, 1977, p. 152. Also conversations with Heinz J. Eiermann, Food and Drug Administration.

[13] Information contained in a statement by Kenneth R. Cerra, quality control director, Noxell Corporation, before the Society of Cosmetic Chemists Annual Scientific Seminar, reprinted in *FDC Reports, Toiletries, Fragrances and Skin Care*, May 25, 1981, p. 6.

APPENDIX: Measurement techniques and limitations

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

The preferred output index for manufacturing industries would be obtained from data on quantities of the various goods produced by the industry, each weighted (multiplied) by the employee hours required to produce one unit of each good in some specified base period. Thus, those goods which require more labor time to produce are given more importance in the index.

In the absence of physical quantity data, the output index for the cosmetics and other toiletries industry was constructed using a deflated value technique. The value of shipments of the various product classes were adjusted for price changes by appropriate Producer Price Indexes to derive real output measures. These, in turn, were combined with employee hour weights to derive the overall output measure. These procedures result in a final output index that is conceptually close to the preferred output measure.

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

The office furniture industry: patterns in productivity

Product proliferation and short production runs limited the use of laborsaving equipment in office furniture establishments; as a result, productivity grew only moderately during 1958–80

J. EDWIN HENNEBERGER

Productivity growth (as measured by output per employee hour) in the office furniture industry[1] has been low, in large part because of relatively short production runs engendered by product proliferation. Between 1958 and 1980, the industry posted an average annual productivity gain of 1.8 percent, substantially below the 2.8-percent rate for all manufacturing industries. The gain resulted from growth in output of 5.5 percent, annually, and employee hours of 3.6 percent.

In many industries, declines or small gains in output are associated with reduced or even negative growth in productivity. This seems to be true of the office furniture industry as a whole. (See table 1.) Thus, in the 9 years in which output either declined or grew at a less than average rate, productivity either fell or grew at a less than average rate in 5 of these years.

The trend in productivity for the overall office furniture industry must be viewed in light of the underlying trend movements of the two component industries—wood office furniture and metal office furniture. Metal furniture is the dominant industry in the office furniture group, employing about two-thirds of the 53,000 workers and accounting for roughly the same percent of shipments. Although both industries exhibited nearly the same growth in productivity between 1958 and 1980 (1.7 percent for wood furniture and 1.8 percent for metal furniture), the growth in output and employee hours was more diverse, with both output and hours growing at much higher rates in the wood component (7.2 percent and 5.5 percent) than in metal (4.6 percent and 2.8 percent).

The metal office furniture industry, which experienced five output downturns between 1958 and 1980, was, nevertheless, able to maintain productivity growth in all but 2 of these years. This suggests that the industry's work force is flexible and can be rapidly reduced if industry sales are declining. However, the wood office furniture industry was never able to maintain positive productivity during the six declines in output from 1958 to 1980. The more highly skilled work force, utilizing craftworkers, in the wood segment may be more difficult to periodically layoff and rehire.

Productivity trends have varied

The industry's long-term productivity growth can be divided into three periods (table 1). From 1958 to 1966, productivity grew at a rate of 3.6 percent annually. Slowing dramatically, productivity growth advanced by only 0.1 percent per year during the middle time span —1966 to 1975. However, from 1975 to 1980, the rate of advance increased to 5.1 percent per year.

Recession-induced falloffs were particularly acute from 1966 to 1975. During the 1970 recession, industry output dropped 17 percent while employee hours were reduced by 6.6 percent. Consequently, productivity in 1970 fell by more than 11 percent. During the 1974–75 recession, output declined 5.3 percent in 1974 and 17.7 percent in 1975 while productivity posted its largest falloff in 1974 (−8.3 percent). More recently, productivity exhibited positive growth during the short reces-

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Table 1. Productivity and related indexes for the office furniture industry, 1958–80

[1977 = 100]

Year	Output per employee hour	Output	All employee hours	Employees
1958	64.0	33.1	51.7	51.8
1959	69.8	37.5	53.7	52.9
1960	70.4	39.4	56.0	54.7
1961	72.5	38.4	53.0	51.8
1962	74.4	42.1	56.6	55.8
1963	75.9	45.6	60.1	58.7
1964	82.1	50.8	61.9	60.0
1965	84.2	57.5	68.3	64.9
1966	86.7	67.9	78.3	74.7
1967	86.5	69.7	80.6	78.2
1968	85.2	70.9	83.2	78.7
1969	88.0	81.4	92.5	88.9
1970	78.2	67.6	86.4	82.7
1971	83.9	64.8	77.2	74.9
1972	91.8	82.7	90.1	87.3
1973	90.6	87.5	96.6	94.4
1974	83.1	82.9	99.8	98.9
1975	85.5	68.2	79.8	81.8
1976	89.7	75.8	84.5	85.6
1977	100.0	100.0	100.0	100.0
1978	100.1	108.1	108.0	107.8
1979	107.3	121.1	112.9	110.9
1980	108.9	125.9	115.6	118.4
	Average annual rates of change			
1958–80	1.8	5.5	3.6	3.8
1958–66	3.6	8.4	4.6	4.1
1966–75	0.1	1.4	1.4	2.0
1975–80	5.1	13.9	8.3	8.0

sion in 1980. However, this gain in productivity (1.5 percent) was somewhat less than the industry's long-term growth (1.8 percent per year).

Among the component industries, the same midterm pattern of productivity slowdown is evident. (See table 2.) From 1958 to 1966, productivity advanced in both industries at about 3.6 percent per year. But from 1966 to 1975, productivity fell at an annual rate of 1.1 percent in the wood component while advancing by only 0.5 percent per year in the metal furniture industry. Rebounding from the recession-marked middle period, productivity advanced sharply from 1975 to 1980 in the wood and metal industries—7.2 and 3.8 percent, respectively. Output in this recovery period was up sharply in both industries, paced by the nearly 22-percent average annual growth in wood furniture. Lagging somewhat behind wood furniture, the output of metal furniture increased by about 10 percent per year during this later period, as market share was lost to the more natural look and feel of wood.

Office furniture demand growing

Between 1958 and 1980, output of the office furniture industry grew at an average annual rate of 5.5 percent per year, substantially above the 3.8-percent average rate for all manufacturing industries. A number of factors have shaped the demand for office furniture and the industry's output growth. Some of these factors have included the amount of available office space, growth of the white-collar work force, replacement demand, and the introduction of new products.

The most important factor influencing the long-term growth of office furniture undoubtedly has been the growth of the white-collar or office work force. Between 1958 and 1980, white-collar workers have grown from about 27 to nearly 53 million. Currently, officeworkers account for slightly more than one-half of the total employed work force.[2] This translates into a 2.9-percent average annual increase. Available office space also is a determinant of office furniture demand. The amount of public and private detached office space doubled between 1958 and 1980.[3]

As the stock of existing office furniture grows, the demand for replacement of wornout or obsolete equipment grows also. The data suggest that in recent years roughly one-third of office furniture production has been consumed by the replacement market.[4]

The introduction of new products also stimulates increased demand for office furniture. In the past, office furniture usually consisted of desks, chairs, tables, and storage equipment, sold as individual pieces. Now, modular or systems furniture is sold as complete integrated packages that include movable partitions, storage components, and service modules. Advantages claimed

Table 2. Productivity indexes for the office furniture and two component, 1958–80

[1977=100]

Year	All office furniture	Wood furniture	Metal furniture
1958	64.0	67.1	64.5
1959	69.8	69.5	71.6
1960	70.4	68.0	72.7
1961	72.5	70.5	74.7
1962	74.4	69.9	77.9
1963	75.9	80.4	75.9
1964	82.1	84.5	82.9
1965	84.2	82.8	86.3
1966	86.7	85.9	88.3
1967	86.5	88.1	87.6
1968	85.2	87.7	86.2
1969	88.0	91.9	88.5
1970	78.2	83.9	78.0
1971	83.9	81.2	86.4
1972	91.8	84.5	96.7
1973	90.6	78.5	97.9
1974	83.1	83.0	84.5
1975	85.5	80.5	88.9
1976	89.7	81.9	94.8
1977	100.0	100.0	100.0
1978	100.1	100.7	99.9
1979	107.3	110.7	104.8
1980	108.9	109.2	108.6
	Average annual rates of change		
1958–80	1.8	1.7	1.8
1958–66	3.6	3.5	3.6
1966–75	0.1	−1.1	0.5
1975–80	5.1	7.2	3.8

for systems furniture include design flexibility, more efficient use of floor space, low rearrangement costs, and built-in electrical outlets. In recent years, systems furniture has outpaced the growth of conventional office furniture. Currently, systems furniture accounts for about 20 percent of the total office furniture market. Computers and word processors, which require support furnishings, have also resulted in increased demand for office furniture.

Industry employment more than doubles

The number of employees in the office furniture industry increased from 23,000 in 1958 to about 53,000 in 1980. Sustained expansion of the work force during the 1960's accounted for much of this growth.

While the overall employment growth for the industry was 3.8 percent per year from 1958 to 1980, employment trends varied among the subindustries. The work force in the wood office furniture industry expanded at an average of 6.0 percent per year. The metal furniture industry grew at less than half of that—2.8 percent per year.

Compared with other manufacturing industries, office furniture production is relatively labor intensive. About 10 percent more production worker hours are needed to generate $1 of added value in office furniture than in all manufacturing. Among the component industries, wood office furniture is the most labor intensive.

Production workers accounted for 79 percent of total industry employment in 1980, down slightly from the 81 percent reported in 1958. About 25 percent of the industry's workers in 1980 were women, slightly less than the 31 percent level for all manufacturing. Average hourly earnings of production workers—$5.92 in 1980—were somewhat below that of the all manufacturing rate of $7.27. Over the long term, employee turnover has been slightly below that of the all manufacturing rate.

Industry establishment size increasing

Although office furniture production is geographically dispersed throughout the United States, there is a large concentration of firms in Ohio, Indiana, Illinois, Michigan, and Wisconsin, with many plants clustered in and around Grand Rapids, Mich. Until World War II, the Grand Rapids area had been a major center for household furniture. After the war, the household furniture industry dispersed, and commercial and office furniture manufacturers moved in to fill the void.

From 1958 to 1977, the number of establishments in the industry has been growing. In the wood segment, the number of establishments more than doubled, while in metal furniture, the number increased by only 25 percent. For the industry as a whole, average employment size per establishment increased by about 12 percent. During the same period, companies primarily manufacturing office furniture increased from 289 in 1958 to 486 in 1977—most of this growth occurring in the wood furniture segment. At the same time, the proportion of industry shipments accounted for by the four largest companies in each industry increased modestly.

Between 1975 and 1980, the average annual growth in capital expenditures per employee was lower for the office furniture industry than for all manufacturing. For example, from 1958 to 1975, capital expenditures per employee grew at an annual rate of 6.3 percent in office furniture, while the all manufacturing rate over the same time period was 7.5 percent. Productivity growth over this period was also lower in the office furniture industry than in all manufacturing. From 1975 to 1980, however, capital expenditures per employee accelerated to 29.6 percent per year, compared with a rate of 11.1 percent for all manufacturing. Productivity from 1975 to 1980 increased sharply also, growing at a rate of 5.1 percent. The level of expenditures per employee, however, has been substantially less than all manufacturing. In 1980, the office furniture industry expended roughly $2,900 per employee for new capital equipment while the all manufacturing average was almost $3,700.

Manufacturing innovations limited

Typically, production in the office furniture industry takes place at mechanized work stations with workpiece transfer accomplished by conveyor line, forklift truck, or handcart. The wood furniture industry employs general purpose woodworking machinery such as saws, planers, glue presses, and sanders. Basic operations in the metal furniture industry include metal cutting, stamping, welding, and tubeforming. With minor differences, both industries have common operations such as painting and upholstering. Obviously, many of the processes used for manufacturing wood furniture bear little resemblance to those used for metal furniture. However, even within the component industries, variations in equipment and processes are evident. This is particularly true of wood furniture. Some of the finer grades are produced almost entirely by hand, while the less expensive grades are produced in assembly line fashion.

Product proliferation is a problem within the office furniture industry, and this has hindered the introduction of special purpose and highly efficient machinery and equipment. While the household furniture industry finds it relatively easy to drop product lines and styles, office furniture companies must maintain the capacity to produce old as well as new product lines. This problem is particularly acute in the more expensive wood office furniture lines. Reorders of wood furniture must match style as well as wood grain pattern and color (which may not be the same as when the pieces were new).

Therefore, the potential number of product types, styles, and colors, coupled with the bulkiness of furni-

ture, discourage factories from accumulating large inventories of finished goods. Most office furniture, perhaps as much as 90 percent, is for order rather than inventory. Office furniture dealers do not stock large inventories either; rather, an accumulation of customer orders is periodically sent to the factory. This results in short production runs of individual items.

This diminished ability to control production runs may be one of the reasons productivity growth in the office furniture industry has been less than that of the household furniture industry.[5] The office furniture industry must remain even more flexible in terms of production capabilities than household furniture manufacturers, many of whom are also troubled by short, inefficient production runs and difficulty in incorporating highly specialized and efficient equipment. Nevertheless, some notable advances in the technology of manufacturing office furniture have been introduced.

In the wood office furniture industry, one of the most pronounced trends in innovation has been increased use of particleboard. While the primary impetus for the expanded usage of particleboard has been its lower cost in relation to the cost of solid lumber, the industry has focused considerable attention on new technologies to handle the material. A wide variety of surface laminates and films and application techniques have eliminated several time-consuming production and assembly operations. Groove-folding, a technique whereby V-shaped grooves are cut in the particleboard substrate, but not through the flexible surface material, produces seamless furniture edges which are held in place by the continuous outer wrap.[6]

Although somewhat hampered by increased petrochemical prices in recent years, the use of plastic materials has simplified construction and added strength to furniture components, and can also produce mar-resistant surfaces. Reconstituted wood veneer, another advance in materials, has uniform thickness, grain, and quality and can be evenly stained. Its use eliminates the need for the labor intensive procedure of manually grading, selecting, and removing defects from natural veneers.

In addition to new materials, notable advances have occurred in woodworking machinery. Abrasive planing, introduced in the early 1960's, combines heavy stock removal with direct dimensioning at the sanding machine.[7] Machines which glue and trim veneer strips to the edges of particleboard can eliminate the complicated set of clamps and pressure bands which formerly had to be locked in place until the glue dried.

In the metal office furniture industry, machines have recently been installed that automatically position and cut shapes into the large flat metal blanks that later will be fashioned into desks, file cabinets, and so forth. This equipment is more efficient because it does not require moving the workpiece to a separate machine for each cut. Also, setup time is considerably reduced.

Savings in the time needed to produce tubular shapes have been accomplished by new tubeforming and cutting equipment. Tubemaking, which starts from flat coiled steel, has been speeded up by the use of automatic welders which join the ends of the coils so that the tubeforming equipment need not be shut down while coils are being changed.

Metallic inert gas (MIG) welding has largely supplanted most other forms of welding. Its advantage is that the parts being joined do not have to be as thoroughly cleaned as with brazing. Although robot welders are not common, automatic welding is. Once travel and angle of the welding arm have been adjusted, a worker is required only to load and unload workpieces onto and from the equipment.

Although not designed specifically for the metal office furniture industry, automated parts inventory storage and retrieval systems are being used by several plants in the industry. Operating under the control of a computer which "explodes" or breaks down orders for the required number of finished pieces of furniture into the necessary parts demand, robot crawlers and unmanned forklift trucks retrieve and deliver the parts to various pickup stations where they are transferred to the assembly line in the correct sequence for manufacture.

Upholstering, an operation which is similar in both wood and metal office furniture, is a particularly labor intensive operation and requires a skilled work force. Although still used in many plants, manual pattern layout and fabric cutting have in some cases been phased out, superseded by diecutting of fabric. Computer-controlled cutting equipment, which combines high speed with accuracy and eliminates manual pattern layout, is also available.[8] Steam tables, installed at upholsterers' work stations, expand the cut fabric workpiece. Once removed from the steam and stapled around the foam rubber cushion, the fabric shrinks back to its normal size and becomes taut. Airpowered plunger tables, used to compress the fabric-covered foam shape, have made button insertion and tiedown operations easier.

Electrostatic finishing, used widely by the metal furniture industry, can be used successfully on wooden furniture,[9] resulting in increased labor productivity in the finishing area and a substantial reduction in material and maintenance costs. Automatic electrostatic spray lines allow closer spacing of pieces to be painted and, thus, greater efficiency. With these automatic lines, color changeover is automatic and can be done in 30 seconds rather than the 2 minutes previously required on the nonautomatic electrostatic lines. Electrodeposition lines, which are powdered coatings in a medium of either air or water, are particularly efficient with respect to labor, materials, and solvent emissions.

Likewise, both the metal and wood office furniture industries have shared the advances made in portable, handheld power fastening tools, resulting in added worker efficiency through more power, greater capacity, and less weight and maintenance. Productivity has also been enhanced by improved workflow layout, computerized recordkeeping, and new materials such as quick-setting glues and improved finishes.

Recent trends may continue

If continued, the industry's capital spending surge of the last few years may provide the plant and equipment necessary to maintain the recent above average growth in productivity. However, the current economic downturn may have a negative effect on demand and productivity.

Although the full consequences of the current economic downturn cannot be foreseen, it is worth noting that previous recessions have had only limited effects on the growth of the white-collar work force, one of the key factors in the output growth of the office furniture industry. In fact, even though there have been four recessions since 1958, the total white-collar work force has never declined. With the forecasted continued expansion in the white-collar work force,[10] demand for the industry's products should continue to increase and may, therefore, present the industry with opportunities to expand productivity. Also, the industry's output should be further bolstered if the growth of systems furniture continues.

While the "paperless office" is not as yet a reality,[11] over the long term, the increasing sophistication of electronic office equipment may result in officeworkers becoming more productive. This, in turn, can influence output of the office furniture industry by dampening growth in the white-collar work force and affecting demand and productivity in the office furniture industry. □

FOOTNOTES

[1] The office furniture industry is classified as SIC 252 in the 1972 *Standard Industrial Classification Manual* and its 1977 supplement, issued by the U.S. Office of Management and Budget. The subindustries within the office furniture group include establishments that are primarily engaged in manufacturing furniture commonly used in offices—wood (SIC 2521) and metal (SIC 2522).

[2] *Employment and Training Report of the President,* 1981 Report (The White House, 1981), pp. 148–49; see also table 3, p. 73, of the April 1982 issue of the *Monthly Labor Review.*

[3] See P. W. Daniels, ed., *Spatial Patterns of Office Growth and Location* (New York, John Wiley & Sons, Inc., 1979), pp. 67–69.

[4] "Equipment Purchases Planned by Readers in 1980," *The Office,* January 1980, p. 26.

[5] See J. Edwin Henneberger, "Productivity Growth Below Average in the Household Furniture Industry," *Monthly Labor Review,* November 1978, pp. 23–29.

[6] Darrell Ward, "Groove Folding for Contract and Contemporary," *Woodworking and Furniture Digest,* June 1981, pp. 42–45.

[7] ——, "Abrasive Planing Challenges Your Knife Cutting Techniques," *Hitchcock's Wood Working Digest,* November 1963, pp. 29–32.

[8] Robert Michael, "New Techniques of Computerized Fabric Cutting," *Furniture Methods and Materials,* June 1971, pp. 12–15.

[9] Richard D. Rea, "Electrostatic Disks Win," *Woodworking and Furniture Digest,* April 1982, pp. 22–25.

[10] *Economic Projections to 1990,* Bulletin 2121 (Bureau of Labor Statistics, 1982), pp. 34–47.

[11] See Paul Lieber, "Office Automation: The Job Threat that Never Happened," *The Office,* May 1980, p. 158.

APPENDIX: Measurement techniques and limitations

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

The preferred output index for manufacturing industries would be obtained from data on quantities of the various goods produced by the industry, each weighted (multiplied) by the employee hours required to produce one unit of each good in some specified base period. Thus, those goods which require more labor for production are given more importance in the index.

Because data on physical quantities are not reported for the entire office furniture industry, real output was estimated by a deflated value technique. Changes in price levels were removed from current-dollar values of production by means of appropriate price indexes at various levels of subaggregation for the variety of products in the group. To combine segments of the output index into a total output measure, employee hour weights relating to the individual segments were used, resulting in a final output index that is conceptually close to the preferred output measure.

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

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

Productivity in the pump and compressor industry

During 1958–80, the industry experienced long-term advances, reflecting improvements in metalworking machinery and computer aid; but since 1965, productivity has decelerated, being especially slow from 1973 forward

HORST BRAND AND CLYDE HUFFSTUTLER

Output per employee hour in pump and compressor manufacturing rose at an average annual rate of 2.1 percent between 1958 and 1980—compared with a rate of 2.6 percent for manufacturing as a whole.[1] Output increased 4.7 percent a year, employee hours 2.6 percent. Among the sources of the industry's long-term productivity advance were improvements in metalworking machinery, which lies at the core of the production processes for pumps and compressors, and computer technologies, which were increasingly applied to engineering design.

The labor productivity trend for the industry was marked by strong advances during the early part of the period (from 1958 to 1965), followed by deceleration during 1965–73, and a further slowing thereafter. As the tabulation shows, using average annual rates of change in percent, the trend pattern paralleled manufacturing:

	Pumps and compressors	*Manufacturing*
1958–80	2.1	2.6
1958–65	3.4	2.7
1965–73	2.1	2.4
1973–80	1.0	1.8

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By 1980, the level of labor productivity in the industry had risen 55 percent from 1958, as against 78 percent for all manufacturing.

The long-term productivity trend, in addition to evidencing divergent medium-term movements, was punctuated by sharp year-to-year swings. These swings were generally related to the business cycle, although they show no uniform pattern. Thus, labor productivity fell steeply in 1960 (3.2 percent), 1975 (5.6 percent), and 1980 (2.6 percent). In these years, output either grew more slowly than employee hours (1960), or fell more rapidly (1975), or fell while hours rose (1980). Yet, in 1961, 1967, and 1971, years when the economy slowed, significant increases in productivity occurred (3.9 percent, 1.7 percent, and 1.5 percent)—which, however, stemmed from drops in employee hours exceeding drops in output.

Years of recovery or boom in which productivity soared to more than twice its long-term rate, displayed a more uniform pattern of change in output and employee hours. In 1959 and 1976, gains in productivity were linked with large output increases but slight employee hour declines.

Separate data for pumps and pumping equipment, and for air and gas compressors, are available only from 1972 forward. Average annual rates of change in labor productivity for the two separate industries compare as follows for the 1972–80 span:

	Percent
Pumps and compressors	1.2
Pumps and pumping equipment	1.2
Air and gas compressors	1.1
All manufacturing	1.9

Reflecting contrasting trends in output and employee hours, labor productivity movements in the pump and pumping equipment segment were considerably less volatile than in compressor manufacturing. The former attained a productivity level in 1979 that exceeded 1973 by 7 percent (both years registered cyclical peaks); the latter failed to reattain its 1973 high.

Output increases

Pumps and compressors are used throughout manufacturing and many nonmanufacturing industries, as well as agriculture. Pumps are the second most common machine in use after the electric motor.[2] Compressors generate compressed air, which may be regarded as a form of energy ranking in breadth of use only below electricity, gas, and water, in addition to being indispensable in the transportation of gas.[3]

Between 1958 and 1980, output of pumps and compressors rose 175 percent, or at an average annual rate of 4.7 percent. Manufacturing output grew at a rate of 3.8 percent over the period. Like the long-term trend in the industry's labor productivity, the long-term trend in output rose less after 1965 than earlier, as the following tabulation indicates by showing average annual rates of change in percent:

	Pumps and compressors	*Manufacturing*
1958–80	4.7	3.8
1958–65	6.5	5.9
1965–73	2.5	3.0
1973–80	4.2	2.5

Output of pumps and compressors reached a peak index level of 115 (1977=100) in 1979, from which it receded slightly in 1980. The dip was caused by a decline in compressor manufacturing, which had climbed 51 percent between 1973 and 1979. Pump and pumping equipment output had risen 22 percent between those 2 years of cyclical highs.

Of the total output of pumps and compressors, the former accounted for about two-thirds, according to the *1977 Census of Manufactures*, the latter for the remaining one-third. Industrial pumps represented more than half of the output of pumps and pumping equipment (other than accessories). Hydraulic fluid power pumps, oil well and oilfield pumps, and other pumps and equipment installed in appliances, fire engines, and structures, made up the remaining output. Parts and attachments constituted close to one-quarter of pump manufacturing output in 1977. Given the often difficult climatic and environmental conditions in which pumps must operate, and the abrasiveness of fluids often transferred by them, speedy replacement of worn and damaged parts constitutes a vital function of the manufacturer, and is the reason for the high proportion of shipments of parts and attachments.

Air compressors accounted for well over one-quarter of the shipments of compressor manufacturers, according to the 1977 census, gas compressors for just under one-tenth. They consisted preponderantly of the stationary type. Portable compressors, which are relatively small machines, made up one-fifth of total air and gas compressor shipments. Industrial spraying equipment also added one-fifth to compressor manufacturers' shipments. Compressors, like pumps, are frequently exposed to rough operating and environmental conditions, hence a comparatively high proportion of shipments (20 percent) represented parts and attachments in 1977.

Factors underlying output growth

In general, growth in the output of pumps and compressors was related to expansion in industrial and public utility demand, particularly during the boom years of the early and mid-1960's; gains in residential and associated public works construction, such as sewage and waterworks, during the 1960's and 1970's; and intensified needs of energy-related extractive and pipeline industries, especially during the 1970's. Foreign trade, too, played an important role in sustaining output: about one-fifth of pump and compressor production was exported between 1972 and 1978.

Expansion in the productive activities of a wide array of users lay at the base of output growth of pumps and compressors. No precise statistical link can be established between the former and the latter. However, movements in the plant and equipment expenditures, adjusted for price changes, by major pump and compressor users are indicative, as are put-in-place data for construction.

Among large-scale users of pumps and compressors was the chemical industry, which accounts for about one-tenth of total pump and compressor output.[4] Chemicals nearly doubled plant and equipment outlays (adjusted for price changes) in the early 1960's, then reduced them. After 1973, however, outlays were once again raised, so that in 1979 they stood nearly twice above the 1973 level. The industry has increasingly used pumps made of fiberglas, plastics, and stainless steel to transfer salt solutions, acid, and chlorine.[5]

Steel mills and blast furnaces, whose capital spending patterns compared roughly with that of the chemical industry over the review period, purchase about 7 percent of pump and compressor output. They use a variety of industrial and hydraulic pumps as well as compressors

to move sources of energy such as liquid fuels, as well as water to absorb waste energy. Installation of multistage pumps to achieve higher pressure has, in part, been prompted by the shift from open-hearth to basic-oxygen and electric-arc steelmaking processes. The partial replacement of slabbing mills by continuous casting has required more water, hence a larger number of and more powerful centrifugal pumps.[6]

More than 18 percent of pumps and compressors are bought by energy-related extracting, processing, and distributing industries. Thus, growth in extractive activities spurred the demand for industrial as well as oil well and oilfield pumps. Between 1960 and 1970, the number of crude oil and gas wells drilled dropped sharply (by nearly two-fifths), as did footage drilled (by 27 percent). After 1970, the decline was reversed; in 1978, the two indicators ran 72 percent and 68 percent above 1971 levels. Concomitantly, output of oil well and oilfield pumps, which had risen at an average annual rate of less than 4 percent between 1958 and 1973, soared to a rate of more than 10 percent between 1973 and 1980. Oil extraction also requires reciprocal pumps for mud circulation; submersible centrifugal units to lift the crude oil; and centrifugal pumps for waterflooding (to prevent subsidence and maintain pressure).[7]

Compressors are required in oil drilling and oilfield maintenance operations, and particularly in secondary recovery efforts. The continued expansion of natural gas pipelines (whose mileage increased 9 percent between 1973 and 1978) spelled the installation of additional large compressors for gas transmission; and increases in new wells—more than twofold between 1973 and 1978—required numerous smaller compressors for gas gathering, as did the prohibition of flaring of waste gas (which now must be stored in tanks). Also, steep increases in capital expenditures of the coal mining industry—162 percent between 1958 and 1972 (after adjustment for price changes), and 169 percent between 1973 and 1977—indicate expansion in this industry's demand for compressors.

Expansion of petroleum pipeline capacity also raised the demand for pumps, particularly of the high-horsepower centrifugal kind, and for stationary compressors. While the network of petroleum pipelines operated by petroleum pipeline companies increased 16 percent between 1960 and 1970, and contracted somewhat thereafter, total oil transported rose 81 percent during the 1960's, and 48 percent in the 1970's.[8] At the same time, the average diameter of pipes was enlarged by one-third, roughly doubling capacity.[9] This required significant increases in the size and capacity of pumping equipment and compressors.

Expanding electrical generating capacity spurred the output growth especially of centrifugal pumps. These are used as boiler-feed pumps, as well as in many other operations requiring the circulation and condensation of steam and water. While the total number of electrical generating stations did not advance very much over the review period, the proportion of stations generating 500,000 kilowatts or more rose from under 3 percent in 1960 to 12 percent in 1979. Nuclear and gas-turbine driven, power-generating plants likewise increased. The rise in the number of larger electric generating plants spelled a shift to larger, more powerful pumps.[10]

Table 1. Productivity and related indexes for pump and compressor manufacturing, 1958–80

[1977 = 100]

Year	Output per employee hour	Output	Employee hours	Employees
1958	64.5	41.1	63.7	63.1
1959	68.8	43.4	63.1	62.6
1960	66.6	44.6	67.0	66.1
1961	69.2	43.9	63.4	62.6
1962	73.6	48.6	66.0	64.9
1963	78.1	51.7	66.2	64.6
1964	79.4	59.0	74.3	71.5
1965	80.9	65.2	80.6	77.9
1966	81.1	70.5	86.9	82.9
1967	82.5	70.1	85.0	82.4
1968	82.3	68.3	83.0	80.3
1969	86.3	74.0	85.7	83.3
1970	85.8	74.8	87.2	85.8
1971	87.1	69.4	79.7	79.4
1972	91.1	76.2	83.6	82.5
1973	97.8	87.7	89.7	88.6
1974	96.7	94.0	97.2	97.3
1975	91.3	87.0	95.3	96.0
1976	96.8	91.4	94.4	94.3
1977	100.0	100.0	100.0	100.0
1978	102.6	107.1	104.4	105.1
1979	102.5	114.5	111.7	112.7
1980	99.8	112.9	113.1	113.9
Average annual rates of change (in percent):				
1958–80	2.1	4.7	2.6	2.7
1975–80	1.9	6.0	4.1	4.2

Construction accounts for another 18 percent of pump and compressor output. Centrifugal and trash pumps (which accommodate up to 25 percent of small solids in the water being pumped) are used in the clearing and preparing of construction sites.[11] Portable compressors are indispensable in the many pneumatical operations at construction sites. Between 1960 and 1973, the volume of total construction put in place rose at an average annual rate of 2.9 percent; thereafter it declined at a rate of 1.5 percent. However, some construction sectors with high demand for pumps continued to expand—for example, sewage system construction (spurred by more stringent environmental regulations).

Employment and hours

Employment in the pump and compressor manufacturing industry currently numbers approximately 91,000 persons. It rose 81 percent between 1958 and 1980, or at an average annual rate of 2.7 percent (compared with 1.1 percent for all manufacturing).

The long-term trend in employee hours in the industry did not differ significantly from the long-term trend in employment. They rose at a rate of 2.6 percent a year over the period, compared with 1.1 percent for manufacturing as a whole.

Production worker employment rose somewhat faster over the 1958–80 period than production workers' hours (2.7 percent a year versus 2.4 percent). Year-to-year changes ranged from an increase of 12 percent in 1974 to a decline of 10 percent for production worker employment; the range was wider still for hours. Overtime exceeded the manufacturing durables average in 17 of the 22 years examined here.[12] Comparatively high overtime hours were probably related to hiring and separation policies which, judging by the pertinent labor turnover data, have been such as to ensure retention of a relatively skilled work force. Labor turnover in the industry ran less than three-fifths of the manufacturing average for the period.[13] High overtime and low turnover rates were probably also related to the skill composition of the industry's work force.

Data on the skill composition of employees in pump and compressor manufacturing are not directly available. Such data have been compiled by the BLS only for the general industrial machinery group (SIC 356), of which pumps and compressors represent 29 percent by employment. Craft and related workers accounted for 30 percent of the production workers employed by establishments in this group in 1980, compared with 26 percent for total manufacturing. Metalworking craftworkers represented 12 percent of all production workers in the group, compared with 5 percent for manufacturing; and machinists 3 percent, compared with 1 percent. Operatives accounted for slightly more than three-fifths of all production workers in the general industrial machinery group, the same as in manufacturing as a whole. But metalworking operatives in industrial machinery, constituting one-third of production workers, had three times the share of their counterparts in all manufacturing. Laborers, with 6 percent of production workers in the group, had little more than half their share for all manufacturing.

Wage differentials also suggest a somewhat higher skill composition for production workers in pump and compressor establishments than in all manufacturing. In 1980, hourly earnings of the former ran 10 percent above the manufacturing average, and 3 percent above the manufacturing durables average. These ratios remained substantially unchanged during 1958–80. (Hourly earnings were about the same for production workers in the industry and in the general industrial machinery group of which the industry is part.)

Employment of nonproduction workers by pump and compressor manufacturing establishments rose at a slightly faster rate than that of production workers—2.9 percent a year (versus 2.7 percent). Nonproduction workers account for a comparatively high proportion of the industry's employment—41 percent in 1980, as against 30 percent for all manufacturing. The proportion did not change significantly over the review period. One of the reasons for the high proportion of nonproduction workers resides in the larger share accounted for by mechanical engineers in the industry groups' occupational makeup (the data are, again, for the general industrial machinery group). Such engineers represented 6 percent of all white-collar workers in the group in 1980—three times the comparable manufacturing ratio. Engineering and science technicians, among them drafters, made up 11 percent of white-collar workers in the group, as against 8 percent for manufacturing. The group also employed a somewhat higher proportion of clerical and secretarial workers (42 versus 40 percent). The share of blue-collar nonproduction workers, such as truckdrivers and service employees, was generally lower than for manufacturing.

Technological changes

Small lot production is the rule in pump and compressor establishments. Pumps and compressors are often large machines, manufactured to customer specification. While many of these machines are composed of standard parts, the economies associated with mass production are generally not available in producing pumps and compressors. The production process must constantly be adapted so as to cope with the many design, casting, and machining requirements that arise. Such adaptation was facilitated by the advent of numerically controlled machine tools in the 1960's, and the introduction of computer-aided design into engineering practice.[14] Numerical controls and computer-aided design have been important sources of labor productivity advances in the industry. The impact of these technological changes will be outlined, following a brief survey of the kinds and age of the metalworking machinery used in manufacturing pumps and compressors.

According to the *12th American Machinist Inventory of Metalworking Equipment* for 1976–78 (latest available), about one-third of all metal cutting and metal forming machine tools in the pump and compressor manufacturing industry were less than 10 years old; 70 percent were less than 20 years old. Comparable data for earlier years are available only for the general industrial machinery group (SIC 356). For general industrial machinery, no distinct trend in the age composition of metalworking machinery is observable. Thus, in 1958, 34 percent of such machinery installed in the plants of this group was less than 10 years old, 74 percent was less than 20 years. In 1968, as well as in 1978, the comparable figures read 33 and 72 percent.[15]

Despite the absence of a trend toward a more mod-

ern stock of metalworking equipment in terms of age, output capability per machine tool unit improved considerably. According to the *American Machinist's 10th Inventory of Metalworking Equipment* (1968), "For the last 5 years, the number of machine tools has increased by 4.5 percent, while the value of production, as measured in constant dollars by the *American Machinist* production index, has gone up by 39 percent." In the text accompanying its 12th Inventory (1976–78), the *American Machinist* again confirmed this trend. It noted that while the total machine tool "population" had declined by about one-tenth between 1968 and 1978, the production index had risen 40 percent.[16]

Table 2. Productivity and related indexes for pumps and pumping equipment manufacturing, 1972–80

[1977 = 100]

Year	Output per employee hour	Output	Employee hours	Employees
1972	90.8	81.0	89.2	88.1
1973	94.1	91.7	97.4	94.8
1974	93.6	91.9	98.2	98.3
1975	89.9	90.4	100.6	101.4
1976	92.7	92.9	100.2	99.7
1977	100.0	100.0	100.0	100.0
1978	101.1	106.1	104.9	106.2
1979	100.7	111.6	110.8	113.0
1980	97.2	112.5	115.8	117.6
Average annual rates of change (in percent):				
1972–80	1.2	3.9	2.6	3.1

Machining time cut

The increase in the output capacity of machine tools has undoubtedly contributed to gains in the labor productivity of pump and compressor manufacturing. For example, machining time for pump casings, which often are of great weight and size, has in the leading plants been drastically reduced by specially designed milling machines. These milling machines also require less setup time, and a smaller number of setups than formerly. In one case, machining time for large centrifugal pump casings, weighing up to 18,000 pounds, was reduced from 48 to 17 employee hours; in other words, where three 16-hour shifts, involving two operators, were required earlier, only one operator working 17 hours is needed now.[17] However, electric energy requirements are considerably greater.[18]

Reductions in machining time are frequently achieved by combining in one large metalworking operation several previously separate ones. An example is the simultaneous milling, radial drilling, and facing (smoothing) of different parts of the same workpiece. Sequential operations on a given workpiece are speeded up by means of automatic tool changers, commanded by taped instructions, causing different kinds of tools (or different configurations of the same kind of tool) to be advanced, retracted, and changed, as programmed. (Such apparatus may be bypassed by manual controls, when necessary in the operator's judgment.)[19]

Reductions in setup time have also been made possible for many single-purpose machines, for example, grinders. Pump shafts must in some cases be tapered, and this has usually required several setups depending upon the length and desired fit of the shaft. In some of the industry's plants, separate setups for this purpose have been eliminated by grinders that adapt automatically and will grind several fits simultaneously.[20]

Advances in the foundry operations of pump and compressor manufacturers have also contributed to labor productivity gains. In the technically more advanced plants, molding and coremaking have been speeded up by rapid-cycle machinery, and by discarding the time-consuming sand baking process. The no-bake process uses a resin binder and a catalyst to produce the sand mold, saving energy as well as unit labor requirements.[21] Several of the same core patterns (from which pump casings and other pump and compressor parts are cast) can be cut simultaneously by means of synchronous fabricating machinery, operating on the principle of key-making apparatus.

Engineering plays a key role in pump and compressor manufacturing. As noted, much of the industry's output is manufactured to customer specifications, which of necessity involves engineering staff. Additionally, the advent of numerically controlled machine tools, and of computer numerical controls, has centered more production responsibilities in engineering departments, away from the shop floor. The growth of engineering staff has intensified concern with promoting its efficiency. Engineering efficiency has been raised in the more advanced establishments of the industry by applying certain computer technologies; designing production processes which economize on engineering time; and standardizing common parts. Efforts have also been made to bypass engineering where feasible.[22]

Computer graphics have simplified drafting by allowing corrections to be made to the draft without manually redrawing it. Detailed drawings can be made within minutes, where before it took hours. Computerized data banks permit access to all drawings on file. Computer graphics has permitted the elimination of 7 to 8 drafter jobs in one of the establishments visited by BLS staff. The computer-aided design can be programmed directly upon tape, and fed to the machine tool. This represents a considerable advance for numerical controls, inasmuch as programs previously had to be punched, or prepunched programs had to be purchased.

With design and production closely linked, owing to the computer and numerical controls, engineers conceive of computer-aided design and computer-assisted manufacturing as integral operations. Calculation of formulae, design of the product, and production are

viewed and operated as a single process. Uniformity of product dimension and quality are ensured. Changes in the detail of design are quickly and inexpensively incorporated. Engineering time saved by computer-aided design and computer-assisted manufacturing has been estimated at two-thirds of conventional engineering procedures.[23]

As noted, replacement of parts and attachments accounts for a sizable proportion of the output of pump and compressor manufacturing. Computer-aided design and computer-assisted manufacturing helps ensure that replacement parts are dimensionally accurate, while economizing on engineering time. Dimensional conformance is further ensured by certain process innovations. Thus, cores or molds for impellers and other pump and compressor components are now frequently ceramic instead of wood.

Capital expenditures

Plant and equipment outlays by pump and compressor manufacturers rose at an average annual rate of 8.1 percent between 1958 and 1980—compared with 4.9 percent per year for all manufacturing. (The expenditure data underlying these rates have been adjusted for price changes.[24]) The industry's capital spending rose at a particularly high rate during the 1960's, nearly tripling between 1958 and 1969. For a few years thereafter, such spending receded from the 1969 level, but it resumed its rise in 1972, and doubled between 1972 and 1980. Comparable figures for all manufacturing are considerably more modest, as the tabulation shows (average annual rates in percent):

	Pumps and compressors	*Manufacturing*
1958–80	8.1	4.9
1958–69	12.2	8.2
1969–80	6.9	4.6
1969–72	-10.2	-3.0
1972–80	7.6	5.4

Structure of the industry

In 1977, pumps and pumping equipment were manufactured in 613 establishments, air and gas compressors in 175. The former had increased 10 percent since 1972, the latter had more than doubled. In the preceding 9 years, no change in the number of establishments making pumps and compressors had occurred. The number of *companies* in the industry owning these establishments barely changed during the 1970's.[25]

Pumps and compressors are manufactured mostly in larger plants. Five percent of all establishments in the industry employed 45 percent of its workers in 1977, and accounted for about the same proportion of the total value of shipments. More generally, establishments with 100 workers or more represented less than one-quarter of the total number of establishments in the industry but well over four-fifths of total employment and value of shipments.

Table 3. Productivity and related indexes for air and gas compressor manufacturing, 1972–80

[1977 = 100]

Year	Output per employee hour	Output	Employee hours	Employees
1972	92.1	66.7	72.4	71.6
1973	106.8	79.8	74.7	76.6
1974	103.0	98.2	95.3	95.3
1975	96.7	80.5	85.0	85.3
1976	106.4	88.4	83.1	83.8
1977	100.0	100.0	100.0	100.0
1978	105.5	109.1	103.4	102.8
1979	106.0	120.3	113.5	112.2
1980	105.7	113.7	107.6	106.6
Average annual rates of change (in percent):				
1972–80	1.1	6.5	5.4	5.2

Concentration was high. The industry's four largest companies employed more than half of its workers in 1977, and accounted for half of its value of shipments. For manufacturing as a whole, the comparable ratios were 6 and 7 percent.

Even so, the establishments are mostly small, employing fewer than 100 persons. The smaller plants accounted for 79 percent (pumps) and 70 percent (compressors) of all industry establishments in 1977. At the same time, however, they recorded only 14 and 9 percent of total industry employment. These relationships had not changed much from earlier phases of the review period.

Outlook

Continued advances in the labor productivity of pump and compressor manufacturing are likely over the longer term. The diffusion of numerically controlled machine tools and computer-aided design within the industry's establishments, as well as among them, has still some way to go. The age distribution of metalworking machinery should continue to favor higher-capacity, modernized equipment. Organizational changes resulting from a widening scope of computer applications—for example, more centralized decisionmaking in reference to machining processes—will probably also improve productivity.[26]

So far, robots appear not to have been introduced widely. Even in the more advanced shops, they are used chiefly for paint spraying and other marginal operations. Industry observers, however, expect that robots, as their costs decline, will handle workpieces more and more during the noncutting portion of the work cycle.[27] Such a development is also bound to raise labor productivity.

The nearer-term outlook is somewhat clouded, however. The industry's output is likely to suffer from weakened demand from major users of pumps and compressors. When output slackens, a slowed rate of productivity advance, even declines in the rate, are more probable. A source of weakened demand is the stagnation in housing starts, which tends to diminish the need for pumps and compressors used in construction, as well as for such public works as water and sewage, which often require pumps and related equipment on a large scale. Another source of declining needs for (hence output of) pumps and compressors are reductions in projected increases in oilfield exploration and development. (These reductions have been linked to smaller-than-expected energy demand increases, and lessened price pressures.)[28]

At the same time, the widespread concern with cutting energy costs may bolster the demand (and output) of more energy-efficient pumps and compressors. For example, variable displacement pumps may to some extent replace fixed displacement pumps. The latter rejects excess flows by means of a relief valve, dumping them back into a reservoir. This wastes pump energy, which a variable displacement pump can avert.[29] Piston pumps, furthermore, are thought by industry observers to be also favored over fixed displacement pumps, as high-pressure hydraulics is more widely adopted in industry and transportation (especially in aircraft and mobile equipment). High-pressure hydraulics permits the use of lighter pipes, pumps, and actuators.[30]

Industry observers believe that pumps and equipment of larger size will continue to be installed in such uses as steampower generation, pipelines, and petroleum refining. The shift from gasoline to heavy fuel refining[31] requires heavier rotary rather than lighter centrifugal pumps. Slurry pipelines—which move water-suspended solids such as coal and wood chips—are believed to gain wider acceptance, because they offer important economies in transportation.

The BLS has projected a somewhat faster rise in the number of nonproduction workers than production workers for the general industrial machinery group.[32] In 1990, professional and technical workers will make up 12.4 percent of all of the group's employees, according to the projections, compared with 11.4 percent in 1980; and the share of clerical and related workers will rise slightly. The proportion of craftworkers will remain unchanged, and that of operatives will edge downward. It seems reasonable to assume that changes in occupational pattern projected for the general industrial machinery group will, by and large, be repeated by pump and compressor manufacturing. □

FOOTNOTES

[1] The pump and compressor manufacturing industry consists of two segments, pumps and pumping equipment, designated as SIC 3561 of the *Standard Industrial Classification Manual 1972* of the Office of Management and Budget; and air and gas compressors, SIC 3563. SIC 3561 consists of establishments primarily engaged in manufacturing pumps and pumping equipment for general industrial use. Measuring and dispensing pumps for gasoline stations are not included, nor are pumps installed in automobiles. SIC 3563 consists of establishments primarily engaged in manufacturing air and gas compressors for general industrial use. Refrigeration compressor units are not included. Prior to 1972, pumps and compressors were classified together in SIC 3561.

Average annual rates of change are based on the linear least squares of the logarithm of the index numbers. Extensions of the indexes will appear in the annual BLS Bulletin, *Productivity Measures for Selected Industries.*

[2] William C. Krutzsch, "Introduction and Classification of Pumps," in Igor J. Karassik and others, *Pump Handbook* (New York, McGraw-Hill, 1973), p. 1 ff.

[3] John P. Rollins, ed., *Compressed Air and Gas Handbook* (New York, Compressed Air and Gas Institute, 1973), p. 1. The range of compressed air uses are discussed on pp. 1–44.

[4] U. S. Department of Commerce, Bureau of Economic Analysis, *The Detailed Input-Output Structure of the U. S. Economy: 1972* (Washington, D.C., Government Printing Office, 1979).

[5] John R. Birk and James H. Peacock, "Chemical Industry," *Pump Handbook*, p. 10–74 ff. Also, conversation with industry observer.

[6] E. R. Pritchett, "Steel Mills," *Pump Handbook*, p. 10–159; and telephone conversation with author.

[7] Elvitsky, *Pump Handbook.*

[8] U. S. Department of Labor, Bureau of Labor Statistics, *Productivity Measures for Selected Industries, 1954–80* (Washington, D.C., Government Printing Office, 1982), table 179.

[9] Mary Vickery, "Petroleum Pipeline Transportation," U.S. Department of Labor, Bureau of Labor Statistics, *Technological Change and its Labor Impact in Five Energy Industries,* BLS Bulletin 2005 (Washington, D.C., Government Printing Office, 1979), pp. 39 and 42.

[10] Telephone conversation with Krutzsch, an author of *Pump Handbook.*

[11] Benjes, H.H., "Sewage," *Pump Handbook,* p. 10–2. Also, telephone conversation with author.

[12] Overtime in pump and compressor manufacturing compared with overtime for all of manufacturing durables (all manufacturing = 100) as follows:

Pumps and compressors			*Pumps*	*Compressors*
1958	63	1974	126	112
1959	111	1975	119	115
1960	104	1976	131	103
1961	83	1977	114	116
1962	96	1978	100	113
1963	90	1979	103	114
1964	103	1980	100	161
1965	113			
1966	123			
1967	114			
1968	103			
1969	103			
1970	110			
1971	93			
1972	103			
1973	105			

[13] Labor turnover in pump and compressor manufacturing compared with manufacturing (all manufacturing = 100) as follows (data from 1972 forward for pumps and pumping equipment only; data for air and gas compressors are not available):

	Accessions	*Separations*
1958	52	66
1959	69	56
1960	55	65
1961	54	58
1962	56	51
1963	56	56
1964	63	46
1965	60	58
1966	68	63
1967	57	59
1968	57	57
1969	68	65
1970	60	76
1971	54	56
1972	60	49
1973	67	55
1974	71	67
1975	51	68
1976	59	53
1977	63	55
1978	51	49
1979	53	54
1980	54	58

[14] See Comptroller General of the United States, *Manufacturing Technology—A Changing Challenge to Improved Productivity*, Report to the Congress, Washington, June 3, 1976, especially p. 37 ff.

[15] *The Eighth American Machinist Inventory of Metalworking Equipment—1958*, New York, McGraw-Hill. Reprinted from the *American Machinist*, Nov. 17, 1958; *The Tenth American Machinist Inventory of Metalworking Equipment—1968*, New York, McGraw-Hill, 1968. The data cited for pump and compressor manufacturing from the 12th *Inventory* are based on unpublished printouts.

[16] *American Machinist*, December 1978, p. 135. The reduction in machining time is confirmed in Donald N. Smith and Larry Evans, *Management Standards for Computers and Numerical Controls* (University of Michigan, 1977). See also John Duke and Horst Brand, "Cyclical Behavior of Productivity in the Machine Tool Industry," *Monthly Labor Review*, November 1981, pp. 27–34.

[17] William H. Parker, "Cutting time out of pump machining," *American Machinist*, January 1979, pp. 112–13.

[18] "The Machine Tools that are Building America," *Iron Age*, Aug. 30, 1976, p. 163. According to the report, electric horsepower requirements for lathes rose from 150 in the 1950's to 400 to 600 in the 1970's. Many other examples are also cited in the article.

[19] Observation of industry operations. See also *Iron Age*, cited above.

[20] Observation of industry operations.

[21] Observation of industry operations. See also Richard W. Lyon, "Foundries," in U.S. Department of Labor, Bureau of Labor Statistics, *Technology and Labor in Four Industries*, Bulletin 2104 (Washington, D.C., Government Printing Office, January 1982), p. 12.

[22] Industry sources, and observation of industry operations. See also A. Harvey Belitsky, "Major technology changes in metalworking machinery," *Technology and Labor in Four Industries*, pp. 20–33.

[23] Industry source.

[24] Adjustment for price changes was made by using the implicit deflator for nonresidential investment in structures and producers' durable equipment. See *Economic Report of the President*, February 1982, p. 236.

[25] U.S. Department of Commerce, Bureau of the Census, *General Report on Industrial Organization, 1977 Enterprise Statistics* (Washington, D.C., Government Printing Office, 1981).

[26] A. Harvey Belitsky, "Major technology changes," especially pp. 24–25.

[27] See *American Machinist*, June 1980, p. 147 ff.

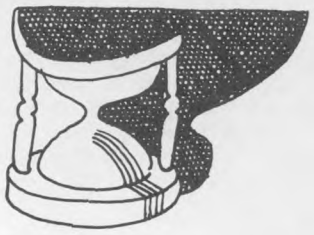
[28] "Biggest U.S. Oil Concerns Likely to React to Glut by Cutting 1982 Capital Budgets," *The Wall Street Journal*, Apr. 7, 1982, p. 7.

[29] "Curbing the Energy Appetite of Hydraulic Systems," *Machine Design*, June 26, 1980, p. 95.

[30] "Modern Hydraulic Systems: the Pressure Mounts," *Machine Design*, Jan. 24, 1980, p. 81 ff.

[31] Rose Zeisel and Michael D. Dymmel, "Petroleum refining," *Technological Change and Its Impact in Five Energy Industries*, p. 26.

[32] See the articles on the Bureau's projections in *Monthly Labor Review*, August 1981, pp. 9–42.



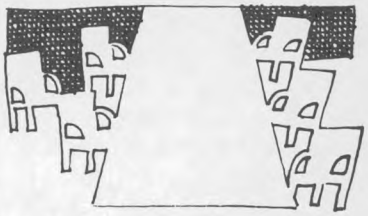
Major Agreements Expiring Next Month

This list of collective bargaining agreements expiring in January is based on contracts on file in the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more.

Employer and location	Industry	Labor organization[1]	Number of workers
Associated Produce Dealers and Brokers of Los Angeles, Inc. (California)	Wholesale trade	Teamsters (Ind.)	2,200
Bunker Ramo Corp. (Illinois)	Electrical products	Electrical Workers (IBEW)	1,250
Campbell Soup Co. (Napoleon, Ohio)	Food products	Food and Commercial Workers	1,850
Caterpillar Tractor Co. (Joliet, Ill.)	Machinery	Machinists	5,700
Champion Spark Plug Co. (Interstate)	Electrical products	Auto Workers	4,300
Dana Corp., Spicer Axle Division (Fort Wayne, Ind.)	Transportation equipment	Allied Industrial Workers	2,300
Erwin Mills (North Carolina)	Textiles	Textile Workers	1,700
General Mills Fun Group, Inc., Kenner Products Division (Cincinnati, Ohio)	Miscellaneous manufacturing	Allied Industrial Workers	2,200
Greater Seattle Retail Drug Association, Inc. (Seattle, Wash.)	Retail trade	Food and Commercial Workers	2,500
Industrial Relations Council of Furniture Manufacturers in Southern California	Furniture	Carpenters	1,200
Johns-Manville Sales Corp. (Manville and Finderne, N.J.)	Stone, clay, and glass products	Paperworkers	1,550
Kelsey-Hayes Co. (Detroit and Romulus, Mich.)	Transportation equipment	Auto Workers	1,500
Kroehler Manufacturing Co. (Interstate)	Furniture	Upholsterers	1,100
Levingston Shipbuilding Co. (Orange, Texas)	Transportation equipment	Orange Metal Trades Council	1,700
Magic Chef, Inc. (Cleveland, Tenn.)	Fabricated metal products	Molders	1,250
Masonite Corp., Hardboard Division (Laurel, Miss.)	Lumber	Woodworkers	1,000
National Electrical Contractors Association, Inc., Western Pennsylvania Chapter	Construction	Electrical Workers (IBEW)	1,250
Philip Morris U.S.A. (Richmond, Va.)	Tobacco	Bakery, Confectionery and Tobacco Workers	7,200
Philip Morris U.S.A. (Louisville, Ky.)	Tobacco	Bakery, Confectionery and Tobacco Workers	2,450
R. H. Macy and Co., Inc., Bamberger Division (Newark, N.J.)	Retail trade	Food and Commercial Workers	1,800
Union Carbide Corp., Agricultural Products Co. (Institute, W. Va.)	Chemicals	Machinists	1,100
United Technologies Corp., Pratt and Whitney Aircraft Group, Government Products Division (West Palm Beach, Fla.)	Transportation equipment	Machinists	1,550

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

Developments in Industrial Relations



General Tire contract deviates from pattern

General Tire and Rubber Co. and the United Rubber Workers negotiated a 3-year contract for 1,200 workers in Waco, Tex., that deviated from the "pattern" settlement the union had negotiated with other major tire companies. (See *Monthly Labor Review*, July 1982, p. 53.) M.G. O'Neil, president and chairman of General Tire, said the new contract has "important implications for the whole of industry, not just the tire industry."

One of the changes from the pattern calls for skilled workers to receive larger quarterly cost-of-living pay adjustments than unskilled workers. O'Neil said this was necessary to counter a "compression" of pay rates between skilled and unskilled employees that had reduced the workers' incentive to stay in or move up to top-rated jobs, such as tire builder. The cost-of-living formula is the same as the pattern contract (quarterly adjustments of 1 cent an hour for each 0.26-point movement in the Consumer Price Index for Urban Wage Earners and Clerical Workers, CPI–W), except that only 60 percent of the payable amount will be distributed equally to all workers; the balance will be distributed as special adjustments to skilled workers. Another change from the pattern contract called for establishment of a profit-sharing plan that could increase the amount of money available for distribution under the cost-of-living pay adjustment formula.

In another move to relieve the pay compression, the parties reduced the pay rates for unskilled workers hired after the effective date of the contract. For example, the maximum rate for new janitors will be $8.63, compared with the $10.50 rate that still applies for janitors already on the payroll. The pay spread was further increased by providing immediate pay raises to skilled workers.

In the benefits area, the health insurance plan now requires employees to pay 10 percent of hospital room and board costs, up to a maximum of $400 for any one confinement. O'Neil said this would induce employees "to avoid going to the hospital or to shorten the stay."

The accord also revised the portion of the pension formula based on past service to $15 a month for each of the first 15 years of service, $16.50 for each of the next 15 years, and $17 a month for each year in excess of 30. All service accrued after the effective date of the agreement will be calculated at the $17 rate. The pattern settlement raised the benefit rate to $16.50 a month for each year of past or future service, from the $15 rate that prevailed at all of the tire companies, including General Tire.

Similar terms were accepted by 1,200 employees represented by the Rubber Workers at the company's Mayfield, Ky., plant.

Earlier in 1982, General Tire had closed a plant in Akron, Ohio (see *Monthly Labor Review*, June 1982, p. 65). During the current negotiations, the company indicated that the Waco plant also might be closed if the workers did not accept a moderate settlement.

Garment accord defers initial wage increase

About 70,000 workers in various locations were covered by a settlement between cotton garment manufacturers and the Clothing and Textile Workers. The accord deferred the initial wage increase of 25 cents an hour to January 1, 1983. The workers, who make shirts, pajamas, pants, and other garments, will also receive 30-cent increases on January 1 of 1984 and 1985. In addition, there is a provision for automatic cost-of-living pay adjustments in January of 1984 and 1985 equal to the percentage rise in the Consumer Price Index for Urban Wage Earners and Clerical Workers in excess of 5 percent during the preceding year. Each adjustment is limited to 10 cents an hour.

There also were improvements in benefits, including a 3-step increase in sickness and accident benefits to $105 a week, from $76.

Southern textile workers get wage increases

Several major textile mills in the South announced wage increases for their employees. The size of the increases was not divulged, except at Guilford Mills, which granted a 6-percent hike to 1,500 employees. The

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

increases were generally limited to hourly employees and were effective in October or November, a change from the June or July effective dates in recent years. Company officials attributed this delay to poor economic conditions in the industry.

At Cannon Mills Corp., the wage increases for 20,000 employees were accompanied by improvements in insurance benefits and the addition of a paid holiday. Other companies granting increases were Burlington Industries, Inc. (38,000 employees affected), West Point Pepperell (15,000), Cone Mills, Inc., and Collins and Aikman.

Meanwhile, the Clothing and Textile Workers Union was bargaining on wages and benefits with Fieldcrest Mills, Inc., for approximately 7,000 workers. The union also was bargaining for smaller numbers of workers it represents at some operations of Cone Mills, Burlington, West Point Pepperell, and M. Lowenstein.

Martin Ward, president of Plumbers union, dies

Martin J. Ward, Jr., general president of the Plumbers and Pipefitters since 1971, died October 9 after a heart attack. Ward, 64, also was a vice president of the AFL–CIO, serving in a variety of assignments, but drawing particular praise for his efforts to further international cooperation among labor organizations.

Selected to succeed Ward was Marvin J. Boede, who had been assistant general president of the union since 1977. For the 2 preceding years, he had served as an international representative, assigned to the State of Michigan. Boede began his career as an official of the union in the 1960's after completing a plumbing apprenticeship.

Beef processor's workers call off strike

A bitter 4-month strike against Iowa Beef Processor's Dakota City, Neb., beef operations was ended when members of Local 222 of the United Food and Commercial Workers voted to return to work. An official of the local said that the return of the 1,600 workers was motivated by the economic hardships suffered by the strikers and by a belief that the union could strengthen its bargaining position by ending the walkout. The official said the union would continue to press the unfair bargaining practices charges it had filed against Iowa Beef, as well as its national boycott campaign against the company. There was no immediate indication of when talks would resume.

The walkout began in early June, after the parties had reached a bargaining stalemate. Reportedly, the union had been willing to accept a 2-year wage freeze, including a suspension of cost-of-living pay adjustments, similar to its earlier settlements with other meatpackers. (See *Monthly Labor Review*, February 1982, p. 48.) But, Iowa Beef was pressing for a 4-year pay freeze and for a $2-an-hour cut in pay for new workers, contending that its pay rates were higher than some the union had negotiated with competitive firms. According to the company, its minimum rates were $9.27 for workers in slaughtering, and $8.97 for those in processing.

Some picket line violence erupted when the company began hiring replacements for the strikers, and State police and the national guard were ordered to the scene by Iowa Governor Charles Thone. As the return to work was beginning, a union official commented, "I don't know what will happen to them [the replacements]. Obviously, there isn't room there for all of them."

GM, union set up occupational health panel

General Motors Corp. and the Auto Workers announced formation of a panel of six occupational health scientists to aid in improving workers' safety and health at the company. The new Occupational Health Advisory Board, headed by David W. Wegman of the Harvard School of Public Health, will evaluate and develop research projects, health programs, and related activities.

General Motors Vice President Alfred S. Warren, Jr. and Auto Workers Vice President Owen Bieber said the board is the first of its type established by a major industrial company and a union. The panel was established under terms of the 1982 collective bargaining settlement between the parties. (See *Monthly Labor Review*, May 1982, pp. 59–60.)

Second round of concessions at Hayes-Albion

About 470 workers at Hayes-Albion's Malleable Iron Division approved a second round of wage concessions in an effort to avert a shutdown of the 93-year-old plant, located in Albion, Mich. In addition to a $1.16 cut in their $10.38 an hour average pay, they agreed to a freeze on cost-of-living pay adjustments and a reduction in paid holidays, insurance, and other benefits. The employees are represented by the United Auto Workers.

Despite the 3-year concession agreement, the company did not guarantee that the foundry would remain open, noting that it was operating at only 30 percent of capacity and had suffered losses in each of the last 3 years. The company had been forced to close two other plants in Tiffin and Bryan, Ohio.

In a related development, the Albion city council moved to aid the company by granting it 3 months of free water and sewer service valued at about $31,000. The city government also was proceeding with efforts to have local businesses help ease the impact of the cuts at the plant by holding down or reducing their prices.

Concession agreement at Rockwell International

Workers at Rockwell International Corp. agreed to a concession agreement that supersedes a contract scheduled to expire in February 1983. About 5,200 workers at 10 heavy-vehicle parts plants were covered by the new contract, which runs to July 19, 1985. Reportedly, terms included no specified wage increases, an 18-month deferral of each of the next three usual quarterly cost-of-living pay adjustments, and a 25-percent reduction in the size of all subsequent adjustments. In return, the company agreed to advance money to the weakened Supplemental Unemployment Benefits fund and to increase its basic financing rate. The company also increased certain other benefits for workers affected by layoffs and plant closings.

About half of the members of the Auto Workers union affected by the settlement are on layoff. The plants are located in Michigan, Illinois, Indiana, Ohio, and Kentucky.

Union initiates concessions to save jobs

In Tecumseh, Mich., workers at Tecumseh Products Co. voted to freeze their cost-of-living pay allowance for 1 year. This precluded payment of a 20-cent-an-hour increase in the allowance that had been scheduled for the beginning of October.

According to Raymond R. Jackson, president of the independent United Products Workers Union, the move was initiated by the union. He said the plant was currently shut down for 3½ weeks because of a lack of orders for the automotive air conditioning compressors it produces. Current employment at the plant is 560 workers, compared with 1,400 in recent years and 3,400 in 1968.

Bargaining completed for city employees

Bargaining between the City of New York and its employees was essentially completed in mid-October when 35,000 uniformed employees agreed on 2-year contracts. In September, the city had settled with a coalition of 40 unions representing 180,000 nonuniformed employees.

In the wake of these settlements, the only employees still bargaining with the city were 7,300 sanitation workers, and small groups of uniformed supervisory police officers.

Mayor Edward Koch acknowledged that the settlement for the uniformed police patrol officers, firefighters, and correction officers was more liberal than that for the nonuniformed employees. But, he explained, this was proper because the uniformed employees "perform the most dangerous work of all our city employees." The uniformed employees contracts called for an 8-percent pay increase retroactive to the July 1 termination date of the prior contracts, and for another 8 percent increase on July 1, 1983. In addition, current employees who were on the payroll during the city's 1975–76 fiscal crisis will receive a $988 payment to repay wages that were lost when all of the city's unions agreed to a 1-year suspension of part or all of a 6-percent wage increase that was effective July 1, 1975. Payment was to be spread over a period of years. Other contracts terms included improvements in health insurance benefits and a $200 increase in longevity pay. Prior to the settlement, the top base pay for employees in all three groups had been $23,519 after 3 years of service.

The unions involved in bargaining for uniformed employees were the Patrolmen's Benevolent Association, the Uniformed Firefighters Association, the Correction Officers Benevolent Association, the Uniformed Fire Officers Association, and the Housing Patrolmen's Benevolent Association.

The accord for 180,000 nonuniformed workers called for a 2-year term generally beginning July 1, 1982. However, the initial wage increase of 8 percent was delayed 2 months for most of the employees. The agreement also provided for increased city financing of health insurance and other benefits.

Earlier in the year, 35,000 New York City bus and subway workers were affected by a 3-year arbitration award that ended a bargaining impasse between the Transport Workers and Amalgamated Transit Workers unions and the Metropolitan Transit Authority. The award provided for a 7-percent pay increase retroactive to the April 1, 1982, termination date of the prior contracts, and for increases of 6 percent on April 1, 1983, 4 percent on April 1, 1984, and 3 percent on July 1, 1984. The award also terminated the automatic cost-of-living pay adjustment provision; added an 11th paid holiday; and increased the transit authority's financing of health and welfare benefits. The transit authority is a State agency.

Teacher settlements

The start of the new school year was accompanied by a number of settlements for public school teachers and related employees.

- In Detroit, 11,000 teachers represented by the American Federation of Teachers were covered by a 1-year contract that did not provide for a salary increase. The settlement was preceded by a 3-week strike.
- In Philadelphia, 20,000 teachers represented by the American Federation of Teachers were covered by a 3-year contract that called for 6 percent salary increases in September 1982 and March of 1984 and

1985. The school board also agreed to finance 80 percent of health and welfare benefits (up from 60 percent), and to pay the teachers for time lost during their 1981 strike—10 days of pay immediately and 9 days at retirement.

- In Chicago, 30,000 members of the American Federation of Teachers agreed to a 1-year contract that did not provide for salary or benefit improvements. The school board did agree to continue paying the full cost of pensions; prior to the 1981 settlement, the teachers had contributed 7 percent of their salary. The teachers gave up 1 day of pay to help minimize the cost of the 1982 settlement.
- In Jefferson County, Ky., 5,200 members of the National Education Association were covered by a 2-year agreement that provided for a 5.3-percent salary increase effective July 1, 1982, and a 4.7-percent increase effective July 1, 1983. The accord also called for a .5-percent (of salary) increase in employer financing of benefits, and increment increases of $500 for teachers with 20 years of service and $1,000 for those with 25 years of service.
- In Seattle, 2,500 members of the National Education Association were covered by a 1-year accord that did not provide for salary or benefit improvements.
- In Newark, N.J., 5,500 teachers represented by the American Federation of Teachers were covered by a 3-year contract that provided for a 6-percent salary increase retroactive to July 1 and for 8-percent increases on July 1 of 1983 and 1984. Teachers with 20 years of service receive $684 a year in longevity pay, increasing to $739 on July 1, 1983, and $798 on July 1, 1984.
- In Florida, 6,400 members of the independent Hillsborough (County) Classroom Teachers Association were covered by a 1-year contract that provided for an 8.5-percent salary increase. Other terms included complete financing of health benefits by the school board, as long as premiums do not increase more than 30 percent (teachers previously paid part of the premium), full payment for unused sick leave at retirement (formerly 75 percent); and up to 7 years of credit for full-time teaching outside the county (formerly 5 years).

Howard Johnson's to pay overtime wages

Two years of legal proceedings against the Howard Johnson's motel and restaurant chain ended when the firm agreed to pay $5 million in overtime wages to 5,000 current and former employees. The U.S. Department of Labor had charged that the company violated the Fair Labor Standards Act by not paying time-and-a-half rates for work in excess of 40 hours a week by salaried manager trainees and assistant managers earning under $250 a week, and hourly paid managers and manager trainees.

During the proceedings, Howard Johnson's contended the employees were exempt from the overtime pay requirements because they were part of "management." The Department maintained this was incorrect because the workers earned less than $250 a week, and because its investigation showed that they spent more than 40 percent of their time in "routine, non-management" type work.

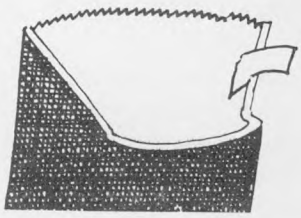
The $5 million will be distributed to current and former employees who performed in the jobs from August 1977 to March 1982. The settlement involved workers at 900 locations. Money that the company is unable to distribute because it cannot locate former employees will be paid into the U.S. Treasury.

Union leadership changes

In a November election, 33-year-old challenger Rich Trumka defeated Sam Church for the presidency of the United Mine Workers. The vote margin was about 2 to 1. However, Church did not concede the results, continuing to press his claim that Trumka had not served the required 5 years in the mines. Trumka, who had been a UMW staff attorney after working in the mines, said his priorities were to speed up organizing efforts to reverse the decline in the percentage of coal mined by the union's members, increase local political activity to help win legal objectives, and improve internal finances. The UMW has about 220,000 members—120,000 actively employed, 40,000 on layoff, and 60,000 retirees.

At the Auto Workers, the union's executive board backed Owen Bieber to succeed Douglas Fraser when he retires in May 1983. Fraser, who is leaving because he is at the union's mandatory retirement age of 65, has guided the union for 6 difficult years during which its members were hard hit by layoffs and contract concessions resulting from the domestic automobile industry's difficulties. Bieber, age 52, began his career in the industry in 1948 in Michigan, then moved through a succession of local, regional, and national jobs in the union. Since 1980, he has been a vice president of the UAW and has headed its General Motors Department. Bieber's accession to the presidency of the UAW was expected to be ratified at its May 1983 convention. □

Book Reviews



Help wanted—for women resuming careers

Women Returning to Work: Policies and Progress in Five Countries. Edited by Alice M. Yohalem. Montclair, N.J., Allanheld, Osmun & Co. Publishers, Inc., 1980. 292 pp. $25.

In recent decades, industrialized nations have experienced substantial growth in labor force participation by women. The value of this comparative international study lies in its cumulative effect, in its delineation of the almost universal cultural and political framework underlying the employment aspirations and opportunities of these women. The study grew out of the interest of the German Marshall Fund in sponsoring research on the changing role of women in advanced industrial nations. Financed by a Federal grant, the study was carried out with the cooperation of the Conservation of Human Resources Project, Columbia University.

Participants in the cross-national study (West Germany, France, the United Kingdom, Sweden, and the United States) met in 1978 to discuss the key areas to be investigated. With allowance for variances of statistical data, each national study sought to provide data on the number of women reentrants to the labor force; their specific problems on reentry; governmental policies regarding reentrants, especially in the context of labor market policy (but also, in some studies, with reference to incentives and disincentives created by taxation and family assistance policies); finally, each author's recommendations on facilitating reentry of women. Each national study presents relevant legislation and available statistical data, supplemented by quotations obtained in interviews with reentrants.

An underlying premise of the studies is that women in industrial economies will spend a good portion of their lives in the paid labor force. Several factors—including smaller families, inflationary pressures, the rise in the numbers of divorces and families headed by women—now lead to the conclusion that the average woman is likely to spend two decades or more in the labor force, and, therefore, opportunities and encouragement should be given to young women for greater education and training. For each country, the studies address two basic questions: (1) Do government labor market policies encourage participation by women returning to the labor force by providing equal access to needed counseling; training; child care; unemployment or subsistence benefits; sponsored public employment programs; options for part-time and full-time employment? (And, in some studies, do tax and family-benefit policies on balance encourage such women to reenter the labor force?) (2) What alternative government policies might better facilitate the reentry of such women?

In an excellent foreword, Eli Ginzberg, director of the Conservation of Human Resources Project, sums up the individual study findings relative to the first question:

> Despite significant differences in attitudes and behavior toward the return of mature women to work, France, Germany and the United Kingdom demonstrate several elements in common. Each of these countries gives priority in practice to programs for unemployed and unskilled youth and adult males and to persons seeking upgrading in skills in high demand. Such programs usually offer benefits that include compensation for earnings loss, social insurance coverage, travel expenses, and household maintenance. Facilitating the reentry of adult women is not deemed worthy of special assistance. Despite increases in the work activity of adult women in these nations, they are still regarded as a peripheral labor supply that can be adjusted to fluctuations in demand. Together with policies aimed at opening and closing the flow of guest workers, women remain the major balance wheel. . . . Although the United States has established a series of measures to promote equal employment opportunity, they are not the equivalent of the national commitment to equality in all social relationships that underlies the Swedish model.

These generalizations are supported by findings of the individual studies. Day care is insufficient for needs, especially for older children, and priority is given to those women already working, or receiving public funds, or heading families. In France, the National Employment Agency (ANPE) is "absolutely snowed under" by requests from "men, young people and people suddenly out of work" and thus placement personnel and counselors "are a bit negligent in helping reentrants who are reputedly difficult to place" even though, "since 1978, training programs are rightfully open to (them)." For West Germany, although the 1969 Labor Promotion Act explicitly covers women reentrants as a target group, the current policy is to measure the potential labor force as including the "silent reserve" during boom

times, but "excluding the silent reserve and registered part-time female job-seekers, primarily returnees, during recessions." "No statistics have been published on the role of participation by women returnees in the advanced and retraining measures, although the act specifically provides for them." Training benefits are conditional upon extensive prior and subsequent employment, often inconsistent with women's family obligations; subsistence benefits are lower for women because their labor force participation is generally classified as "desirable" rather than "necessary." With statistical data lacking, the author assumes that the "labor exchange is negatively selective in regard to women" (in publicly funded employment) because most women returnees are not benefit-recipients, and their unemployment represents no drain on public funds. In the United Kingdom, the Manpower Services Commission has "until recently tended to resist provision for special sections of the population," although the 1973 Employment and Training Act encouraged the Commission to include arrangements for increasing the opportunities for women and girls for employment and training. In the United States, measures to achieve "maximum employment" are endorsed by the Full Employment and Balanced Growth Act of 1978, but in the interest of controlling inflation, structural remedies (such as the Comprehensive Employment and Training Act, CETA) have in recent years been the dominant method of dealing with unemployment. In such programs, a study by Wharton School faculty members (O. R. Perry and others, *The Impact of Government Manpower Programs in General and on Minorities and Women*, University of Pennsylvania, Wharton School, 1975) found that minority and female trainees were heavily concentrated in programs having a limited emphasis on the acquisition and development of marketable occupational skills. "Only in the late 1970's have certain reentrants been specifically identified in legislation as targets for special types of assistance." And "some programs which have been especially designed for displaced homemakers" [often build] "on competencies gained in housekeeping and child rearing."

Only Sweden appears to have made serious effort to promote the full integration of returning women into the labor force. An Advisory Council on Equality between Men and Women was appointed in 1972, with prime emphasis on "unemployed and untrained women"—often synonymous with reentering women. Even so, cultural patterns, as well as the growing demand of the public sector fields (education, health, child and elderly care), have directed women reentrants and newcomers alike to employment in traditional "women's fields." In Sweden, as elsewhere, women continue to accept the main responsibility for home and child care, and occupy 91 percent of part-time jobs.

With respect to taxation policies and family income subsidies, those studies which dealt with this aspect emphasized the disincentives to full labor market participation by married women, or those with children. Some changes have been made to improve incentives. For example, in Sweden, a system of individual taxation was adopted in 1971 in place of the former high marginal tax on the wife's earnings; in the United States, the 1981 tax revisions also moderated the "marriage tax." The low pay for most "women's jobs" creates a policy dilemma: public funds can provide a higher standard of living for the family than can an unskilled female worker, whose net employment income may be negative after the loss of food, housing, and medical benefits associated with public assistance.

Recommendations by each author for improvement in the treatment of reentry women differ in emphasis, depending on each national situation. However, in general, the studies stress improved data collection and publication. (The United States compares favorably with other countries in this respect, but even more data are needed here also.) The recommendations also urge elimination of sex-stereotypes in education and vocational training, not only so that mature women may have access to better-paid "men's jobs," but also so that young women will not be led by social pressures to abandon schooling too soon, or to focus only on "women's fields." Other recommended governmental measures include an even-handed policy for both sexes by public employment agencies relative to counseling, training, unemployment and subsistence grants, and provision of public sector jobs; explicit governmental encouragement of equal parental responsibility for children and improved legislation regarding leave for parental duties; and public funding of high-quality child care for those families choosing to make use of such facilities. Such costly measures are unlikely to be adopted by governments facing periods of depressed economic growth. Therefore, it was also recommended that governments foster economic growth to the extent necessary to provide full employment, and thus improve job opportunities for all, including female reentrants.

This collection of studies will be highly useful to governmental policymakers as a means of measuring comparative progress in fostering the welfare of female citizens, as well as comparative success in fully utilizing labor resources. The authors bring to the present volume a record of significant studies of women in the labor market. A few minor criticisms may be noted: The quotations from interviews add immediacy, but there is no indication of interview format. In a few instances, sources of numerical data are not clearly spelled out. Nevertheless, all interested researchers will welcome these documented studies.

In the reviewer's opinion, this collection of studies,

by revealing the near-universality of the constraints faced by female reentrants, also strengthens the case for major reform of the educational system in order to modify societal biases. It is likely that the number of "reentrants" will diminish in the coming decades, as work force continuity of women becomes more like that of men. But the persistent problems of women in the labor force, of holding mostly low-pay, dead end jobs, will not be diminished until the educational system is made responsive to the new lifetime commitment of women to the paid labor force. In reference to the eligibility for skill training in the United Kingdom, the author writes: . . . "females tend to miss out twice—as girls 'because they will soon leave and have a baby,' and as reentrants because they are beyond the age for trainees and have not had the experience to justify further training." The distinctions in primary and secondary schools in academic curricula, physical education, and vocational training are extended and worsened in post-secondary training and college and university selection processes at undergraduate, graduate, and professional levels. The 30- to 50-year-old returnee who needs confidence-building, counseling, and job-readiness programs is the predictable product of a societal system which during the educational process considers her chiefly in relation to her child-rearing years, but then subsequently hands back to each woman the problems of belatedly acquiring the education or training needed for economic survival while juggling work schedules and children's needs.

—BLANCHE FITZPATRICK
Professor, Department of Economics
Boston University

Managerial perfection

The Transactional Manager: How to Solve People Problems with Transactional Analysis. By Abe Wagner. Englewood Cliffs, N.J., Prentice Hall, Inc., 1981. 196 pp., bibliography. $11.95.

Abe Wagner suspects that many supervisors and managers attain their positions based on the "Peter Principle," whereby their technical prowess is rewarded by putting them in charge of people, but lacking communication skills they become ineffective in their dealings with those they manage. The author's answer to the above problem is the gist of this book. He states that he has simplified and recast some of the transactional analysis theory developed by psychiatrist Eric Berne "to make it more readily useful to people who are unfamiliar with transactional analysis." The manager absorbs this material, applies it to his or her own behavior, avoiding any use of it for coercive or manipulative purposes, and develops those communication skills, or the author's preference, "people skills," to create more effective and productive managerial qualities.

Over the past decade, there have been at least 10 books published which are aimed at the manager, salesperson, personnel officer, and so on, all indicating that by learning, and then applying the techniques of transactional analysis, they can greatly improve the efficacy of their occupational work as they relate to and with others. It's very hard to disagree with the bare bones of such a proposition—people who are highly self-aware, in charge of their own behavior, and able to model rational behavior before others (the elements of transactional analysis) will generally have a more successful working and personal life than those lacking such attributes—but that's not the basic question in this book. The real question is: Can a person by *reading* a book actually internalize the contents to the point of *changing* his or her behavior? Knowledge *about* something, which comes from reading or attending lectures, gives a person an intellectual storehouse of ideas, but it is entirely different from knowledge of *experience*, which comes from actually having existed in the interpersonal situations, good or bad, which transactional analysis theory and guidelines attempt to articulate.

This book is lucid and to the point. Wagner explicates without overreliance on jargon and speaks to those who have some background in psychoanalytical theory out of which Berne evolved the transactional analysis formulations. To others, this book may be an incentive to look further into their personal behavior. But to believe that a book, even as good as this one, can help promote a move toward managerial reformation is an overoptimistic piety.

To be sure, at the end of the book, Wagner suggests that a consultant in transactional analysis may be needed to incorporate the idea of improved "people skills" within an organization, and some companies have apparently tried this with varying outcomes. However, managers in either the private or the public sector may, for the most part, be shocked by the author's opinion that they might benefit from personal therapy as a step in changing their own behavior, because again, the opinion is an intellectual construct, however valid it may be, and not a self-realization from an actual experience. This book deals a bit too lightly in the serious matters it so adequately describes and thus raises additional questions about its ultimate acceptance by the managers it seeks to attract.

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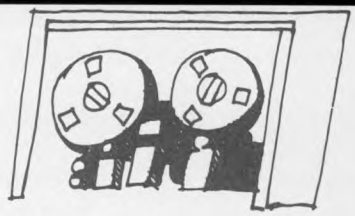
Current Labor Statistics



NOTES ON CURRENT LABOR STATISTICS

This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics. A brief introduction to each group of tables provides definitions, notes on the data, sources, and other material usually found in footnotes.

Readers who need additional information are invited to consult the BLS regional offices listed on the inside front cover of this issue of the *Review*. Some general notes applicable to several series are given below.

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might otherwise mask short-term movements of the statistical series. Tables containing these data are identified as "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 labor force data in tables 2–7 were revised in the March 1982 issue of the *Review* to reflect experience through 1981. The original estimates also were revised to 1970 to reflect 1980 census population controls.

Beginning in January 1980, the BLS introduced two major modifications in the seasonal adjustment methodology for labor force data. First, the data are being seasonally adjusted with a new procedure called X-11/ARIMA, which was developed at Statistics Canada as an extension of the standard X-11 method. 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 now being calculated for use during the first 6 months of the year, rather than for the entire year, and then are calculated at mid-year for the July-December period. Revisions of historical data continue to be made only at the end of each calendar year.

Annual revision of the seasonally adjusted payroll data shown in tables 10, 12, and 14 were made in August 1981 using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 28 and 29 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 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 1967 = 100, the hourly rate expressed in 1967 dollars is $2 ($3/150 × 100 = $2). The resulting values are described as "real," "constant," or "1967" dollars.

Availability of information. Data that supplement the tables in this section are published by the Bureau of Labor Statistics in a variety of sources. Press releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule given below. The *BLS Handbook of Labor Statistics*, Bulletin 2070, provides more detailed data and greater historical coverage for most of the statistical series presented in the *Monthly Labor Review*. More information from the household and establishment surveys is provided in *Employment and Earnings*, a monthly publication of the Bureau. Historically, comparable information from the establishment survey is published in two comprehensive data books—*Employment and Earnings, United States* and *Employment and Earnings, States and Areas*, and their annual supplements. More detailed information on wages and other aspects of collective bargaining appears in the monthly periodical, *Current Wage Developments*. More detailed price information is published each month in the periodicals, the *CPI Detailed Report* and *Producer Prices and Price Indexes*.

Symbols

p = preliminary. To improve 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.

Schedule of release dates for major BLS statistical series

Series	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	December 3	November	January 7	December	1–10
Producer Price Index	December 10	November	January 14	December	21–25
Consumer Price Index	December 21	November	January 21	December	17–20
Real earnings	December 21	November	January 21	December	11–15
Productivity and costs:					
Nonfinancial corporations					26–29
Nonfarm business and manufacturing			January 28	4th quarter	26–29
Major collective bargaining settlements			January 31	1982	33–34

EMPLOYMENT DATA FROM THE HOUSEHOLD SURVEY

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 60,000 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 are (1) those 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. 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 **unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **civilian labor force** consists of all employed or unemployed persons in the civilian noninstitutional population; the **total labor force** includes military personnel. Persons **not in the labor force** are those not classified as employed or unemployed; this group includes persons 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.

Full-time workers are those employed at least 35 hours a week; **part-time workers** are those who work fewer hours. Workers on part-time schedules for economic reasons (such as slack work, terminating or starting a job during the week, material shortages, or inability to find full-time work) are among those counted as being on full-time status, under the assumption that they would be working full time if conditions permitted. The survey classifies unemployed persons in full-time or part-time status by their reported preferences for full-time or part-time work.

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 presented in table 1. 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 2–7 are seasonally adjusted, based on the seasonal experience through December 1981.

1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950–81

[Numbers in thousands]

Year	Total noninstitutional population	Total labor force		Civilian labor force							Not in labor force
		Number	Percent of population	Total	Employed				Unemployed		
					Total	Percent of population	Agriculture	Nonagricultural industries	Number	Percent of labor force	
1950	106,645	63,858	59.9	62,208	58,918	55.2	7,160	51,758	3,288	5.3	42,787
1955	112,732	68,072	60.4	65,023	62,170	55.1	6,450	55,722	2,852	4.4	44,660
1960	119,759	72,142	60.2	69,628	65,778	54.9	5,458	60,318	3,852	5.5	47,617
1965	129,236	77,178	59.7	74,455	71,088	55.0	4,361	66,726	3,366	4.5	52,058
1966	131,180	78,893	60.1	75,770	72,895	55.6	3,979	68,915	2,875	3.8	52,288
1967	133,319	80,793	60.6	77,347	74,372	55.8	3,844	70,527	2,975	3.8	52,527
1968	135,562	82,272	60.7	78,737	75,920	56.0	3,817	72,103	2,817	3.6	53,291
1969	137,841	84,240	61.1	80,734	77,902	56.5	3,606	74,296	2,832	3.5	53,602
1970	140,272	85,959	61.3	82,771	78,678	56.1	3,463	75,215	4,093	4.9	54,315
1971	143,033	87,198	61.0	84,382	79,367	55.5	3,394	75,972	5,016	5.9	55,834
1972	146,574	89,484	61.1	87,034	82,153	56.0	3,484	78,669	4,882	5.6	57,091
1973	149,423	91,756	61.4	89,429	85,064	56.9	3,470	81,594	4,365	4.9	57,667
1974	152,349	94,179	61.8	91,949	86,794	57.0	3,515	83,279	5,156	5.6	58,171
1975	155,333	95,955	61.8	93,775	85,846	55.3	3,408	82,438	7,929	8.5	59,377
1976	158,294	98,302	62.1	96,158	88,752	56.1	3,331	85,421	7,406	7.7	59,991
1977	161,166	101,142	62.8	99,009	92,017	57.1	3,283	88,734	6,991	7.1	60,025
1978	164,027	104,368	63.6	102,251	96,048	58.6	3,387	92,661	6,202	6.1	59,659
1979	166,951	107,050	64.1	104,962	98,824	59.2	3,347	95,477	6,137	5.8	59,900
1980	169,848	109,042	64.2	106,940	99,303	58.5	3,364	95,938	7,637	7.1	60,806
1981	172,272	110,812	64.3	108,670	100,397	58.3	3,368	97,030	8,273	7.6	61,460

2. Employment status by sex, age, race, and Hispanic origin, seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
TOTAL															
Total noninstitutional population[1]	169,848	172,272	172,966	173,155	173,330	173,495	173,657	173,843	174,020	174,201	174,364	174,544	174,707	174,889	175,069
Armed Forces [1]	2,102	2,142	2,158	2,158	2,164	2,159	2,168	2,175	2,176	2,175	2,173	2,180	2,196	2,198	2,188
Civilian noninstitutional population [1]	167,745	170,130	170,809	170,996	171,166	171,335	171,489	171,667	171,844	172,026	172,190	172,364	172,511	172,690	172,881
Civilian labor force	106,940	108,670	109,012	109,272	109,184	108,879	109,165	109,346	109,648	110,666	110,191	110,522	110,644	110,980	110,644
Participation rate	63.8	63.9	63.8	63.9	63.8	63.5	63.7	63.7	63.8	64.3	64.0	64.1	64.1	64.3	64.0
Employed	99,303	100,397	100,343	100,172	99,613	99,581	99,590	99,492	99,340	100,117	99,764	99,732	99,839	99,720	99,093
Employment-population ratio [2]	58.5	58.3	58.0	57.9	57.5	57.4	57.3	57.2	57.1	57.5	57.2	57.1	57.1	57.0	56.6
Agriculture	3,364	3,368	3,378	3,372	3,209	3,411	3,373	3,349	3,309	3,488	3,357	3,460	3,435	3,368	3,426
Nonagricultural industries	95,938	97,030	96,965	96,800	96,404	96,170	96,217	96,144	96,032	96,629	96,406	96,272	96,404	96,352	95,667
Unemployed	7,637	8,273	8,669	9,100	9,571	9,298	9,575	9,854	10,307	10,549	10,427	10,790	10,805	11,260	11,551
Unemployment rate	7.1	7.6	8.0	8.3	8.8	8.5	8.8	9.0	9.4	9.5	9.5	9.8	9.8	10.1	10.4
Not in labor force	60,806	61,460	61,797	61,724	61,982	62,456	63,324	63,321	62,197	61,360	61,999	61,842	61,867	61,710	62,237
Men, 20 years and over															
Civilian noninstitutional population[1]	71,138	72,419	72,795	72,921	73,020	73,120	73,209	73,287	73,392	73,499	73,585	73,685	73,774	73,867	73,984
Civilian labor force	56,455	57,197	57,355	57,459	57,665	57,368	57,448	57,554	57,730	58,164	58,016	58,084	58,026	58,407	58,359
Participation rate	79.4	79.0	78.8	78.8	79.0	78.5	78.5	78.5	78.7	79.1	78.8	78.8	78.7	79.1	78.9
Employed	53,101	53,582	53,504	53,354	53,122	53,047	53,097	53,006	52,988	53,260	52,985	52,996	52,887	52,828	52,626
Agriculture	2,396	2,384	2,413	2,382	2,311	2,390	2,386	2,377	2,382	2,464	2,424	2,474	2,436	2,447	2,462
Nonagricultural industries	50,706	51,199	51,091	50,972	50,811	50,657	50,711	50,629	50,606	50,796	50,561	50,522	50,451	50,381	50,164
Unemployed	3,353	3,615	3,851	4,105	4,543	4,322	4,351	4,548	4,742	4,904	5,031	5,088	5,139	5,579	5,733
Unemployment rate	5.9	6.3	6.7	7.1	7.9	7.5	7.6	7.9	8.2	8.4	8.7	8.8	8.9	9.6	9.8
Women, 20 years and over															
Civilian noninstitutional population[1]	80,065	81,497	81,920	82,038	82,151	82,260	82,367	82,478	82,591	82,707	82,811	82,926	83,035	83,152	83,271
Civilian labor force	41,106	42,485	42,831	42,987	42,88	42,868	43,031	43,243	43,301	43,683	43,904	44,076	44,115	44,025	43,833
Participation rate	51.3	52.1	52.3	52.4	52.2	52.1	52.2	52.4	52.4	52.8	53.0	53.2	53.1	52.9	52.6
Employed	38,492	39,590	39,814	39,878	39,713	39,764	39,744	39,807	39,715	40,075	40,350	40,392	40,490	40,369	40,046
Agriculture	584	604	596	63.5	572	64.9	628	636	601	634	581	600	589	585	572
Nonagricultural industries	37,907	38,986	39,218	39,243	39,141	39,115	39,116	39,172	39,114	39,441	39,769	39,791	39,901	39,784	39,474
Unemployed	2,615	2,895	3,017	3,109	3,175	3,104	3,286	3,435	3,586	3,608	3,554	3,684	3,626	3,656	3,787
Unemployment rate	6.4	6.8	7.0	7.2	7.4	7.2	7.6	7.9	8.3	8.3	8.1	8.4	8.2	8.3	8.6
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	16,543	16,214	16,093	16,037	15,995	15,955	15,913	15,902	15,861	15,820	15,794	15,753	15,702	15,671	15,625
Civilian labor force	9,378	8,988	8,826	8,826	8,631	8,643	8,686	8,549	8,616	8,819	8,271	8,362	8,503	8,548	8,452
Participation rate	56.7	55.4	54.8	55.0	54.0	54.2	54.6	53.8	54.3	55.7	52.4	53.1	54.2	54.5	54.1
Employed	7,710	7,225	7,025	6,940	6,778	6,771	6,748	6,679	6,637	6,782	6,429	6,344	6,463	6,523	6,422
Agriculture	385	380	369	355	326	373	359	336	326	390	353	386	411	336	393
Nonagricultural industries	7,325	6,845	6,656	6,585	6,452	6,398	6,389	6,343	6,311	6,392	6,076	5,958	6,052	6,187	6,029
Unemployed	1,669	1,763	1,801	1,886	1,853	1,872	1,938	1,870	1,979	2,037	1,842	2,018	2,040	2,025	2,030
Unemployment rate	17.8	19.6	20.4	21.4	21.5	21.7	22.3	21.9	23.0	23.1	22.3	24.1	24.0	23.7	24.0
White															
Civilian noninstitutional population[1]	146,122	147,908	148,562	148,631	148,755	148,842	148,855	149,132	149,249	149,250	149,429	149,569	149,536	149,652	149,838
Civilian labor force	93,600	95,052	95,365	95,535	95,329	95,120	95,333	95,508	96,015	96,641	96,223	96,493	96,414	96,762	96,421
Participation	64.1	64.3	64.2	64.3	64.1	63.9	64.0	64.0	64.3	64.8	64.4	64.5	64.5	64.7	64.3
Employed	87,715	88,709	88,734	88,498	88,010	87,955	87,990	87,956	87,988	88,450	88,173	88,137	88,133	88,020	87,434
Unemployed	5,884	6,343	6,631	7,037	7,319	7,165	7,344	7,552	8,026	8,191	8,050	8,356	8,281	8,742	8,987
Unemployment rate	6.3	6.7	7.0	7.4	7.7	7.5	7.7	7.9	8.4	8.5	8.4	8.7	8.6	9.0	9.3
Black															
Civilian noninstitutional population[1]	17,824	18,219	18,333	18,362	18,392	18,423	18,450	18,480	18,511	18,542	18,570	18,600	18,626	18,659	18,692
Civilian labor force	10,865	11,086	11,188	11,207	11,226	11,188	11,205	11,217	11,170	11,335	11,253	11,322	11,412	11,482	11,395
Participation rate	61.0	60.8	61.0	61.0	61.0		60.7	60.7	60.3	61.1	60.6	60.9	61.3	61.5	61.0
Employed	9,313	9,355	9,313	9,321	9,279	9,314	9,265	9,197	9,111	9,216	9,174	9,223	9,262	9,166	9,096
Unemployed	1,553	1,731	1,875	1,886	1,947	1,874	1,939	2,020	2,058	2,120	2,079	2,098	2,150	2,316	2,299
Unemployment rate	14.3	15.6	16.8	16.8	17.3	16.8	17.3	18.0	18.4	18.7	18.5	18.5	18.8	20.2	20.2
Hispanic origin															
Civilian noninstitutional population[1]	8,901	9,310	9,559	9,556	9,519	9,400	9,341	9,297	9,235	9,297	9,428	9,521	9,689	9,464	9,474
Civilian labor force	5,700	5,972	6,074	6,151	6,095	6,054	6,065	6,024	5,933	6,001	5,931	5,966	6,087	5,967	5,994
Participation rate	64.0	64.1	63.5	64.4	64.0	64.4	64.9	64.8	64.2	64.5	62.9	62.7	62.8	63.1	63.3
Employed	5,126	5,348	5,422	5,446	5,426	5,330	5,298	5,260	5,191	5,166	5,131	5,135	5,197	5,097	5,086
Unemployed	575	624	652	705	669	724	767	764	743	834	800	832	890	870	908
Unemployement rate	10.1	10.4	10.7	11.5	11.0	12.0	12.6	12.7	12.5	13.9	13.5	13.9	14.6	14.6	15.2

[1] The population and Armed Forces figures are not seasonally adjusted.

[2] Civilian employment as a percent of the total noninstitutional population (including Armed Forces).

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" group are not presented and Hispanics are included in both the white and black population groups.

3. Selected employment indicators, seasonally adjusted

[Numbers in thousands]

Selected categories	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CHARACTERISTIC															
Total employed, 16 years and over	99,303	100,397	100,343	100,172	99,613	99,581	99,590	99,492	99,340	100,117	99,764	99,732	99,839	99,720	99,093
Men	57,186	57,397	57,266	57,051	56,725	56,629	56,658	56,472	56,401	56,820	56,223	56,192	56,210	56,148	55,915
Women	42,117	43,000	43,077	43,121	42,888	42,952	42,932	43,020	42,940	43,297	43,541	43,540	43,630	43,572	43,179
Married men, spouse present	39,004	38,882	38,746	38,553	38,342	38,234	38,255	38,181	38,142	38,312	38,354	38,213	38,184	38,041	37,890
Married women, spouse present	23,532	23,915	23,874	23,820	23,691	23,744	23,727	23,900	23,831	24,213	24,401	24,223	24,300	24,187	24,047
Women who maintain families	4,780	4,998	5,045	5,049	5,064	5,107	5,158	5,095	5,095	4,986	5,112	5,247	5,216	5,115	5,108
OCCUPATION															
White-collar workers	51,882	52,949	53,199	53,086	53,084	52,836	52,841	52,763	53,177	53,705	53,586	53,685	53,750	53,876	53,643
Professional and technical	15,968	16,420	16,681	16,657	16,774	16,803	16,612	16,659	16,844	16,818	17,053	17,292	17,023	16,901	17,049
Managers and administrators, except farm	11,138	11,540	11,616	11,461	11,424	11,091	11,253	11,311	11,501	11,541	11,504	11,355	11,613	11,649	11,605
Salesworkers	6,303	6,425	6,400	6,418	6,450	6,520	6,544	6,637	6,603	6,587	6,547	6,567	6,677	6,507	6,595
Clerical workers	18,473	18,564	18,502	18,550	18,436	18,423	18,432	18,155	18,229	18,759	18,482	18,471	18,437	18,819	18,395
Blue-collar workers	31,452	31,261	30,953	30,683	30,344	30,203	30,309	30,416	29,924	29,926	29,716	29,609	29,465	29,143	29,147
Craft and kindred workers	12,787	12,662	12,446	12,411	12,446	12,370	12,454	12,511	12,492	12,316	12,207	12,229	12,342	12,253	12,164
Operatives, except transport	10,565	10,540	10,410	10,220	10,169	9,966	9,955	9,860	9,688	9,585	9,655	9,453	9,257	8,938	8,945
Transport equipment operatives	3,531	3,476	3,580	3,438	3,368	3,415	3,503	3,397	3,400	3,419	3,414	3,439	3,268	3,369	3,342
Nonfarm laborers	4,567	4,583	4,517	4,614	4,361	4,451	4,397	4,648	4,343	4,607	4,441	4,488	4,598	4,583	4,696
Service workers	13,228	13,438	13,525	13,670	13,639	13,709	13,612	13,526	13,555	13,738	13,791	13,634	13,926	14,029	13,725
Farmworkers	2,741	2,749	2,770	2,802	2,660	2,817	2,787	2,710	2,623	2,731	2,660	2,750	2,711	2,714	2,710
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,425	1,464	1,502	1,436	1,352	1,377	1,426	1,416	1,423	1,541	1,431	1,530	1,568	1,538	1,608
Self-employed workers	1,642	1,638	1,631	1,641	1,602	1,674	1,596	1,644	1,664	1,698	1,676	1,674	1,613	1,562	1,616
Unpaid family workers	297	266	261	321	228	380	359	277	270	236	251	250	254	255	221
Nonagricultural industries:															
Wage and salary workers	88,525	89,543	89,460	89,238	88,991	88,759	88,586	88,526	88,322	89,051	88,606	88,541	88,737	88,650	87,995
Government	15,912	15,689	15,491	15,397	15,585	15,578	15,527	15,492	15,453	15,422	15,635	15,443	15,569	15,691	15,420
Private industries	72,612	73,853	73,969	73,841	73,406	73,181	73,059	73,034	72,869	73,629	72,970	73,098	73,168	72,959	72,575
Households	1,192	1,208	1,162	1,204	1,291	1,248	1,161	1,225	1,192	1,202	1,201	1,200	1,242	1,229	1,220
Other	71,420	72,645	72,807	72,637	72,115	71,932	71,898	71,809	71,677	72,427	71,770	71,898	71,927	71,730	71,355
Self-employed workers	7,000	7,097	7,152	7,141	7,057	6,971	7,055	7,126	7,264	7,269	7,319	7,268	7,352	7,478	7,333
Unpaid family workers	413	390	451	425	410	410	408	434	413	382	397	390	409	372	415
PERSONS AT WORK[1]															
Nonagricultural industries	90,209	91,377	91,384	91,323	90,922	90,125	90,892	90,548	90,596	91,282	91,020	90,501	90,508	91,054	90,220
Full-time schedules	73,590	74,339	73,886	73,915	73,360	72,803	73,028	72,649	72,335	73,036	72,662	72,430	72,112	71,700	71,215
Part time for economic reasons	4,064	4,499	5,009	5,026	5,288	5,071	5,563	5,717	5,834	5,763	5,444	5,492	5,648	6,600	6,574
Usually work full time	1,714	1,738	2,006	1,945	2,121	1,783	2,193	2,237	2,223	2,211	2,064	2,001	2,054	2,571	2,514
Usually work part time	2,350	2,761	3,003	3,081	3,167	3,287	3,370	3,480	3,611	3,552	3,380	3,491	3,594	4,029	4,060
Part time for noneconomic reasons	12,555	12,539	12,489	12,382	12,274	12,251	12,300	12,183	12,427	12,483	12,914	12,579	12,748	12,754	12,431

[1]Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

4. Selected unemployment indicators, seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CHARACTERISTIC															
Total, 16 years and over	7.1	7.6	8.0	8.3	8.8	8.5	8.8	9.0	9.4	9.5	9.5	9.8	9.8	10.1	10.4
Both sexes, 16 to 19 years	17.8	19.6	20.4	21.4	21.5	21.7	22.3	21.9	23.0	23.1	22.3	24.1	24.0	23.7	24.0
Men, 20 years and over	5.9	6.3	6.7	7.1	7.9	7.5	7.6	7.9	8.2	8.4	8.7	8.8	8.9	9.6	9.8
Women, 20 years and over	6.4	6.8	7.0	7.2	7.4	7.2	7.6	7.9	8.3	8.3	8.1	8.4	8.2	8.3	8.6
White, total	6.3	6.7	7.0	7.4	7.7	7.5	7.7	7.9	8.4	8.5	8.4	8.7	8.6	9.0	9.3
Both sexes, 16 to 19 years	15.5	17.3	17.7	19.0	19.0	19.6	20.0	19.0	20.8	20.3	19.4	21.0	20.6	20.4	21.7
Men, 16 to 19 years	16.2	17.9	17.9	19.6	20.2	20.8	20.4	20.2	22.3	21.2	21.1	22.6	22.5	22.0	23.1
Women, 16 to 19 years	14.8	16.6	17.5	18.3	17.7	18.2	19.4	17.6	19.2	19.2	17.5	19.2	18.6	18.7	20.1
Men, 20 years and over	5.3	5.6	5.9	6.4	6.9	6.6	6.7	7.0	7.3	7.5	7.7	7.9	7.9	8.6	8.8
Women, 20 years and over	5.6	5.9	6.1	6.3	6.4	6.3	6.6	6.9	7.2	7.3	7.1	7.3	7.1	7.4	7.6
Black, total	14.3	15.6	16.8	16.8	17.3	16.8	17.3	18.0	18.4	18.7	18.5	18.5	18.8	20.2	20.2
Both sexes, 16 to 19 years	38.5	41.4	45.6	44.1	42.2	41.2	42.3	46.0	48.1	49.8	52.6	49.7	51.6	48.5	46.7
Men, 16 to 19 years	37.5	40.7	41.6	41.9	39.6	36.3	40.7	48.5	48.3	50.6	58.1	48.3	50.1	51.2	48.0
Women, 16 to 19 years	39.8	42.2	49.5	46.6	45.1	46.7	44.2	43.1	47.8	48.9	46.2	51.2	53.1	45.4	45.2
Men, 20 years and over	12.4	13.5	14.7	15.5	16.5	16.3	16.0	16.0	16.9	17.0	17.1	16.8	17.2	19.8	19.8
Women, 20 years and over	11.9	13.4	13.9	13.6	14.1	13.3	14.5	15.4	15.6	15.3	15.0	15.5	15.1	15.7	16.3
Hispanic origin, total	10.1	10.4	10.7	11.5	11.0	12.0	12.6	12.7	12.5	13.9	13.5	13.9	14.6	14.6	15.2
Married men, spouse present	4.2	4.3	4.8	5.2	5.7	5.3	5.3	5.5	6.0	6.1	6.5	6.6	6.7	7.3	7.6
Married women, spouse present	5.8	6.0	6.1	6.5	6.6	6.2	7.0	7.1	7.8	7.4	7.0	7.4	7.1	7.5	7.9
Women who maintain families	9.2	10.4	10.6	10.8	10.5	10.4	10.2	10.6	11.5	11.8	12.4	12.0	11.6	12.4	11.2
Full-time workers	6.9	7.3	7.7	8.1	8.7	8.4	8.5	8.9	9.2	9.2	9.4	9.5	9.6	10.1	10.5
Part-time workers	8.8	9.4	9.5	10.2	9.2	9.6	10.8	10.0	10.9	10.5	9.8	11.4	10.3	10.5	10.1
Unemployed 15 weeks and over	1.7	2.1	2.1	2.2	2.2	2.2	2.5	2.7	2.7	3.0	3.3	3.2	3.3	3.5	3.8
Labor force time lost[1]	7.9	8.5	9.1	9.5	10.1	10.0	9.8	10.4	10.4	11.1	10.2	10.7	10.7	11.7	12.1
OCCUPATION															
White-collar workers	3.7	4.0	4.1	4.2	4.5	4.2	4.6	4.8	4.9	4.8	5.0	4.9	4.8	4.8	5.1
Professional and technical	2.5	2.8	2.6	2.7	3.4	2.9	3.1	3.2	3.2	3.3	3.3	3.3	3.1	3.2	3.5
Managers and administrators, except farm	2.4	2.7	2.8	3.0	3.1	2.7	3.1	3.0	3.3	3.5	3.8	3.7	3.8	3.6	3.6
Salesworkers	4.4	4.6	4.9	5.0	4.9	4.5	4.8	5.8	5.6	5.2	5.8	5.4	5.5	5.4	6.1
Clerical workers	5.3	5.7	6.0	6.0	6.2	6.3	6.7	6.9	7.2	6.8	6.9	6.9	6.7	6.7	7.1
Blue-collar workers	10.0	10.3	10.9	11.8	12.7	12.5	12.5	12.9	13.7	13.5	13.9	14.4	14.2	15.6	15.9
Craft and kindred workers	6.6	7.5	8.3	8.5	9.3	9.0	8.4	9.1	9.6	9.4	10.3	10.9	10.6	11.4	10.9
Operatives, except transport	12.2	12.2	12.8	14.1	15.5	15.4	15.4	15.9	16.9	16.5	16.7	17.4	17.5	20.2	21.1
Transport equipment operatives	8.8	8.7	8.0	10.4	10.5	10.2	10.3	10.4	10.7	11.8	13.0	11.6	12.5	11.6	12.7
Nonfarm laborers	14.6	14.7	15.6	16.0	16.9	16.9	17.9	17.9	19.2	18.3	17.9	18.6	17.4	19.2	19.8
Service workers	7.9	8.9	9.3	9.7	9.6	9.2	9.8	10.2	11.1	11.3	9.9	10.5	10.6	10.7	10.6
Farmworkers	4.6	5.3	6.2	6.2	6.4	6.9	4.9	5.4	5.8	8.3	7.2	6.1	6.9	5.1	6.6
INDUSTRY															
Nonagricultural private wage and salary workers[2]	7.4	7.7	8.1	8.4	9.1	8.8	9.0	9.5	9.9	9.9	10.0	10.2	10.1	10.7	11.1
Construction	14.1	15.6	17.6	17.8	18.1	18.7	18.1	17.9	19.4	18.8	19.2	20.3	20.3	22.6	23.0
Manufacturing	8.5	8.3	8.6	9.4	11.0	10.4	10.6	10.8	11.3	11.6	12.3	12.0	12.1	13.8	14.1
Durable goods	8.9	8.2	8.6	9.5	11.8	11.0	11.3	10.8	11.9	12.2	13.2	12.7	12.9	14.9	16.0
Nondurable goods	7.9	8.4	8.6	9.3	9.6	9.5	9.5	10.8	10.5	10.7	11.0	11.0	10.8	12.3	11.2
Transportation and public utilities	4.9	5.2	4.8	5.5	6.0	6.4	5.9	5.6	7.0	6.5	6.9	6.1	7.0	6.9	8.1
Wholesale and retail trade	7.4	8.1	8.4	8.6	8.9	8.7	9.0	10.3	10.1	10.6	9.7	10.5	9.8	9.8	10.3
Finance and service industries	5.3	5.9	6.2	6.1	6.4	5.9	6.5	6.9	7.0	6.9	6.8	7.0	7.0	6.8	7.1
Government workers	4.1	4.7	4.7	5.2	5.0	4.8	5.2	4.9	5.3	5.0	4.6	4.6	4.6	4.9	4.8
Agricultural wage and salary workers	11.0	12.1	13.4	14.1	14.8	16.2	12.8	14.0	14.6	18.2	16.3	13.8	14.3	12.5	12.6

[1] Aggregate hours lost by the unemployed and persons on part time for economic reasons as a percent of potentially available labor force hours.

[2] Includes mining, not shown separately.

5. Unemployment rates, by sex and age, seasonally adjusted

Sex and age	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Total, 16 years and over	7.1	7.6	8.0	8.3	8.8	8.5	8.8	9.0	9.4	9.5	9.5	9.8	9.8	10.1	10.4
16 to 19 years	17.8	19.6	20.4	21.4	21.5	21.7	22.3	21.9	23.0	23.1	22.3	24.1	24.0	23.7	24.0
16 to 17 years	20.0	21.4	21.5	22.6	21.9	21.9	22.7	22.7	24.6	25.3	23.7	26.1	25.8	26.9	25.8
18 to 19 years	16.2	18.4	20.0	20.5	21.2	21.3	22.0	21.3	21.9	21.3	21.9	22.8	22.6	21.6	23.0
20 to 24 years	11.5	12.3	12.7	13.0	13.5	13.5	14.1	14.2	14.7	14.3	14.4	14.5	15.2	15.3	15.9
25 years and over	5.1	5.4	5.7	6.0	6.5	6.3	6.4	6.8	7.0	7.1	7.4	7.5	7.3	7.9	8.1
25 to 54 years	5.5	5.8	6.2	6.5	6.9	6.7	6.8	7.3	7.4	7.7	7.7	7.9	7.8	8.6	8.7
55 years and over	3.3	3.6	3.8	3.8	4.1	4.2	4.3	4.6	5.0	4.8	5.4	5.2	5.1	5.1	5.5
Men, 16 years and over	6.9	7.4	7.7	8.3	9.0	8.6	8.7	9.0	9.4	9.6	9.7	9.9	10.0	10.7	10.9
16 to 19 years	18.3	20.1	20.1	21.8	22.3	22.1	22.5	23.5	24.4	24.0	24.2	25.1	25.1	25.3	25.6
16 to 17 years	20.4	22.0	21.1	22.7	22.6	23.0	23.0	24.3	24.7	26.3	25.8	28.1	27.3	29.6	29.0
18 to 19 years	16.7	18.8	19.3	21.0	22.2	21.4	22.1	22.9	24.3	21.9	24.0	23.4	23.4	22.6	23.2
20 to 24 years	12.5	13.2	13.8	14.4	14.8	14.9	15.4	15.7	16.0	15.5	15.8	15.9	16.6	17.4	17.5
25 years and over	4.8	5.1	5.5	5.8	6.5	6.3	6.3	6.6	6.9	6.9	7.5	7.5	7.5	8.2	8.5
25 to 54 years	5.1	5.5	5.9	6.3	6.9	6.7	6.7	7.1	7.2	7.5	8.0	8.1	8.0	9.1	9.1
55 years and over	3.3	3.5	3.7	3.7	4.4	4.3	4.2	4.8	5.1	4.7	5.0	4.8	5.4	5.4	6.1
Women, 16 years and over	7.4	7.9	8.2	8.4	8.5	8.4	8.9	9.0	9.4	9.5	9.1	9.6	9.5	9.5	9.8
16 to 19 years	17.2	19.0	20.7	20.9	20.5	21.2	22.1	20.1	21.3	22.1	20.2	23.1	22.8	21.9	22.3
16 to 17 years	19.6	20.7	21.9	22.5	21.1	20.6	22.5	20.8	24.5	24.1	21.4	24.1	24.2	23.9	22.3
18 to 19 years	15.6	17.9	20.6	19.9	20.0	21.1	21.9	19.6	19.4	20.6	19.7	22.2	21.7	20.6	22.9
20 to 24 years	10.4	11.2	11.5	11.3	12.0	11.9	12.7	12.6	13.3	12.9	12.9	12.9	13.7	12.9	14.0
25 years and over	5.5	5.9	6.1	6.4	6.4	6.3	6.5	7.0	7.2	7.4	7.2	7.4	7.0	7.4	7.5
25 to 54 years	6.0	6.3	6.5	6.8	6.9	6.7	7.0	7.6	7.7	8.0	7.4	7.7	7.5	8.0	8.1
55 years and over	3.2	3.8	4.0	3.8	3.7	4.1	4.3	4.3	4.8	5.0	6.0	6.0	4.6	4.7	4.7

6. Unemployed persons, by reason for unemployment, seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
NUMBER OF UNEMPLOYED															
Lost last job	3,947	4,267	4,573	4,905	5,343	5,205	5,153	5,622	5,906	5,901	6,302	6,177	6,347	7,073	7,477
On layoff	1,488	1,430	1,631	1,826	2,042	1,860	1,740	1,828	1,946	1,969	2,071	2,079	2,180	2,669	2,572
Other job losers	2,459	2,837	2,942	3,079	3,301	3,345	3,413	3,794	3,959	3,932	4,231	4,098	4,167	4,404	4,905
Left last job	891	923	976	916	923	835	964	885	937	874	813	813	806	767	796
Reentered labor force	1,927	2,102	2,178	2,339	2,244	2,079	2,277	2,249	2,365	2,438	2,372	2,528	2,440	2,415	2,217
Seeking first job	872	981	1,002	996	1,021	1,055	1,100	1,044	1,081	1,154	1,088	1,249	1,328	1,326	1,312
PERCENT DISTRIBUTION															
Total unemployed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Job losers	51.7	51.6	52.4	53.6	56.1	56.7	54.3	57.4	57.4	56.9	59.6	57.4	58.1	61.1	63.4
On layoff	19.5	17.3	18.7	19.9	21.4	20.3	18.3	18.7	18.9	19.0	19.6	19.3	20.0	23.0	21.8
Other job losers	32.1	34.3	33.7	33.6	34.6	36.5	35.9	38.7	38.5	37.9	40.0	38.1	38.2	38.0	41.6
Job leavers	11.7	11.2	11.2	10.0	9.7	9.1	10.2	9.0	9.1	8.4	7.7	7.5	7.4	6.6	6.7
Reentrants	25.2	25.4	25.0	25.5	23.5	22.7	24.0	22.9	23.0	23.5	22.4	23.5	22.3	20.8	18.8
New entrants	11.4	11.9	11.5	10.9	10.7	11.5	11.6	10.7	10.5	11.1	10.3	11.6	12.2	11.4	11.1
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.7	3.9	4.2	4.5	4.9	4.8	4.7	5.1	5.4	5.3	5.7	5.6	5.7	6.4	6.8
Job leavers	.8	.8	.9	.8	.8	.8	.9	.8	.9	.8	.7	.7	.7	.7	.7
Reentrants	1.8	1.9	2.0	2.1	2.1	1.9	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.2	2.0
New entrants	.8	.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2

7. Duration of unemployment, seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Less than 5 weeks	3,295	3,449	3,707	3,852	4,037	3,852	3,789	3,825	3,958	3,874	3,543	3,990	3,923	4,038	3,920
5 to 14 weeks	2,470	2,539	2,686	2,882	3,016	3,068	3,052	3,078	3,304	3,320	3,458	3,161	3,304	3,595	3,517
15 weeks and over	1,871	2,285	2,292	2,364	2,372	2,399	2,724	2,954	3,015	3,286	3,673	3,580	3,631	3,870	4,153
15 to 26 weeks	1,052	1,122	1,166	1,229	1,189	1,210	1,445	1,605	1,508	1,634	1,826	1,792	1,810	1,856	1,927
27 weeks and over	820	1,162	1,126	1,135	1,183	1,190	1,278	1,349	1,507	1,652	1,847	1,788	1,821	2,014	2,226
Mean duration, in weeks	11.9	13.7	13.6	13.1	12.8	13.5	14.1	13.9	14.2	14.6	16.5	15.6	16.2	16.6	17.2
Median duration, in weeks	6.5	6.9	6.8	6.9	6.7	7.2	7.3	7.6	8.5	9.0	9.8	8.3	8.2	9.5	9.6

EMPLOYMENT, HOURS, AND EARNINGS DATA FROM ESTABLISHMENT SURVEYS

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 177,000 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

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 blue-collar worker supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 11–15 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in transportation and public utilities; in wholesale and retail trade; in finance, insurance, and real estate; and in services industries. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

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

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

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 1982 data, published in the July 1982 issue of the *Review.* Consequently, data published in the *Review* prior to that issue are not necessarily comparable to current data. Complete comparable historical unadjusted and seasonally adjusted data are published in a Supplement to Employment and Earnings (unadjusted data from April 1977 through February 1982 and seasonally adjusted data from January 1974 through February 1982) and in *Employment and Earnings, United States, 1909–78,* BLS Bulletin 1312–11 (for prior periods).

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. See also *BLS Handbook of Methods for Surveys and Studies,* Bulletin 1910 (Bureau of Labor Statistics, 1976).

8. Employment by industry, selected years, 1950–81

[Nonagricultural payroll data, in thousands]

Year	Total	Private sector	Goods-producing				Service-producing									
			Total	Mining	Construction	Manufacturing	Total	Transportation and public utilities	Wholesale and retail trade			Finance, insurance, and real estate	Services	Government		
									Total	Wholesale trade	Retail trade			Total	Federal	State and local
1950	45,197	39,170	18,506	901	2,364	15,241	26,691	4,034	9,386	2,635	6,751	1,888	5,357	6,026	1,928	4,098
1955	50,641	43,727	20,513	792	2,839	16,882	30,128	4,141	10,535	2,926	7,610	2,298	6,240	6,914	2,187	4,727
1960[1]	54,189	45,836	20,434	712	2,926	16,796	33,755	4,004	11,391	3,143	8,248	2,629	7,378	8,353	2,270	6,083
1964	58,283	48,686	21,005	634	3,097	17,274	37,278	3,951	12,160	3,337	8,823	2,911	8,660	9,596	2,348	7,248
1965	60,765	50,689	21,926	632	3,232	18,062	38,839	4,036	12,716	3,466	9,250	2,977	9,036	10,074	2,378	7,696
1966	63,901	53,116	23,158	627	3,317	19,214	40,743	4,158	13,245	3,597	9,648	3,058	9,498	10,784	2,564	8,220
1967	65,803	54,413	23,308	613	3,248	19,447	42,495	4,268	13,606	3,689	9,917	3,185	10,045	11,391	2,719	8,672
1968	67,897	56,058	23,737	606	3,350	19,781	44,160	4,318	14,099	3,779	10,320	3,337	10,567	11,839	2,737	9,102
1969	70,384	58,189	24,361	619	3,575	20,167	46,023	4,442	14,705	3,907	10,798	3,512	11,169	12,195	2,758	9,437
1970	70,880	58,325	23,578	623	3,588	19,367	47,302	4,515	15,040	3,993	11,047	3,645	11,548	12,554	2,731	9,823
1971	71,214	58,331	22,935	609	3,704	18,623	48,278	4,476	15,352	4,001	11,351	3,772	11,797	12,881	2,696	10,185
1972	73,675	60,341	23,668	628	3,889	19,151	50,007	4,541	15,949	4,113	11,836	3,908	12,276	13,334	2,684	10,649
1973	76,790	63,058	24,893	642	4,097	20,154	51,897	4,656	16,607	4,277	12,329	4,046	12,857	13,732	2,663	11,068
1974	78,265	64,095	24,794	697	4,020	20,077	53,471	4,725	16,987	4,433	12,554	4,148	13,441	14,170	2,724	11,446
1975	76,945	62,259	22,600	752	3,525	18,323	54,345	4,542	17,060	4,415	12,645	4,165	13,892	14,686	2,748	11,937
1976	79,382	64,511	23,352	779	3,576	18,997	56,030	4,582	17,755	4,546	13,209	4,271	14,551	14,871	2,733	12,138
1977	82,471	67,344	24,346	813	3,851	19,682	58,125	4,713	18,516	4,708	13,808	4,467	15,303	15,127	2,727	12,399
1978	86,697	71,026	25,585	851	4,229	20,505	61,113	4,923	19,542	4,969	14,573	4,724	16,252	15,672	2,753	12,919
1979	89,823	73,876	26,461	958	4,463	21,040	63,363	5,136	20,192	5,204	14,989	4,975	17,112	15,947	2,773	13,147
1980	90,406	74,166	25,658	1,027	4,346	20,285	64,748	5,146	20,310	5,275	15,035	5,160	17,890	16,241	2,866	13,375
1981	91,105	75,081	25,481	1,132	4,176	20,173	65,625	5,157	20,551	5,359	15,192	5,301	18,592	16,024	2,772	13,253

[1]Data include Alaska and Hawaii beginning in 1959.

9. Employment by State

[Nonagricultural payroll data, in thousands]

State	September 1981	August 1982	September 1982[p]	State	September 1981	August 1982	September 1982[p]
Alabama	1,354.1	1,318.8	1,312.1	Montana	290.4	278.4	285.1
Alaska	186.5	202.2	199.1	Nebraska	631.9	605.1	608.5
Arizona	1,039.5	1,002.8	1,025.2	Nevada	423.1	416.7	418.3
Arkansas	748.0	719.0	731.2	New Hampshire	401.4	400.2	398.5
California	10,107.2	9,901.5	9,957.1	New Jersey	3,106.5	3,100.0	3,065.3
Colorado	1,290.2	1,279.9	1,280.1	New Mexico	479.7	473.5	476.1
Connecticut	1,441.3	1,395.8	1,415.7	New York	7,295.2	7,264.4	7,251.1
Delaware	261.2	258.2	259.4	North Carolina	2,403.3	2,298.3	2,344.4
District of Columbia	603.4	624.6	604.8	North Dakota	252.9	251.1	254.0
Florida	3,697.2	3,702.2	3,744.0	Ohio	4,359.0	4,179.0	4,217.5
Georgia	2,183.7	2,149.1	2,151.1	Oklahoma	1,208.8	1,203.7	1,204.3
Hawaii	396.3	403.3	393.8	Oregon	1,031.8	964.3	975.1
Idaho	335.3	307.6	315.9	Pennsylvania	4,720.4	4,483.3	4,496.1
Illinois	4,782.4	4,613.4	4,589.8	Rhode Island	407.7	392.6	394.7
Indiana	2,141.4	2,006.9	2,028.3	South Carolina	1,196.0	1,159.7	1,172.3
Iowa	1,096.1	1,027.5	1,048.0	South Dakota	239.7	230.7	233.1
Kansas	953.5	906.1	919.9	Tennessee	1,762.5	1,704.9	1,714.1
Kentucky	1,206.1	1,125.2	1,141.9	Texas	6,204.7	6,222.5	6,216.4
Louisiana	1,647.9	1,606.7	1,613.3	Utah	566.8	558.4	564.1
Maine	422.2	422.1	414.1	Vermont	203.7	201.8	203.7
Maryland	1,708.9	1,662.7	1,666.6	Virginia	2,178.9	2,166.4	2,179.3
Massachusetts	2,646.9	2,602.4	2,619.3	Washington	1,606.2	1,546.9	([1])
Michigan	3,411.1	3,187.7	3,223.5	West Virginia	636.4	603.3	598.3
Minnesota	1,786.6	1,706.4	1,713.9	Wisconsin	1,957.9	1,873.0	1,883.4
Mississippi	826.1	782.7	795.9	Wyoming	222.2	215.0	214.2
Missouri	1,989.7	1,957.2	1,970.8	Virgin Islands	36.4	36.0	34.8

[1] Not available.

p = preliminary.

10. Employment by industry division and major manufacturing group, seasonally adjusted

[Nonagricultural payroll data, in thousands]

Industry division and group	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. p	Oct. p
TOTAL	90,406	91,105	91,224	90,996	90,642	90,460	90,459	90,304	90,083	90,166	89,839	89,535	89,312	89,188	88,925
PRIVATE SECTOR	74,166	75,081	75,307	75,088	74,725	74,596	74,609	74,445	74,231	74,313	74,007	73,900	73,640	73,493	73,208
GOODS-PRODUCING	25,658	25,481	25,393	25,176	24,908	24,684	24,631	24,450	24,289	24,255	23,994	23,840	23,657	23,535	23,279
Mining	1,027	1,132	1,195	1,202	1,206	1,201	1,203	1,197	1,182	1,152	1,124	1,100	1,086	1,074	1,064
Construction	4,346	4,176	4,101	4,071	4,026	3,966	3,974	3,934	3,938	3,988	3,940	3,927	3,899	3,881	3,867
Manufacturing	20,285	20,173	20,097	19,903	19,676	19,517	19,454	19,319	19,169	19,115	18,930	18,813	18,672	18,580	18,348
Production workers	14,214	14,021	13,915	13,717	13,488	13,431	13,290	13,179	13,042	13,008	12,852	12,760	12,647	12,576	12,382
Durable goods	12,187	12,117	12,059	11,901	11,724	11,622	11,575	11,490	11,375	11,332	11,203	11,133	10,993	10,906	10,705
Production workers	8,442	8,301	8,218	8,061	7,885	7,793	7,759	7,685	7,576	7,553	7,443	7,388	7,272	7,201	7,031
Lumber and wood products	690.5	668.7	643	628	615	607	611	607	615	617	615	614	614	615	613
Furniture and fixtures	465.8	467.3	469	462	457	452	449	446	443	443	442	439	443	442	436
Stone, clay, and glass products	662.1	638.2	629	620	610	596	596	590	584	586	580	579	574	573	568
Primary metal industries	1,142.2	1,121.1	1,104	1,082	1,053	1,038	1,024	1,007	976	945	926	906	889	871	843
Fabricated metal products	1,613.1	1,592.4	1,577	1553	1,529	1,515	1,505	1,496	1,481	1,472	1,452	1,446	1,427	1,414	1,386
Machinery, except electrical	2,494.0	2,507.0	2,532	2,511	2,486	2,459	2,446	2,419	2,389	2,377	2,322	2,274	2,230	2,208	2,137
Electric and electronic equipment	2,090.6	2,092.2	2,101	2,077	2,049	2,055	2,048	2,038	2,034	2,034	2,026	2,018	2,011	1,994	1,973
Transportation equipment	1,899.7	1,892.6	1,861	1,830	1,791	1,777	1,778	1,774	1,748	1,755	1,745	1,759	1,719	1,707	1,675
Instruments and related products	711.3	726.8	731	727	725	720	718	716	713	713	708	708	702	700	695
Miscellaneous manufacturing	418.0	410.7	412	411	409	403	400	397	392	390	387	390	384	382	379
Nondurable goods	8,098	8,056	8,038	8,002	7,952	7,895	7,879	7,829	7,794	7,783	7,727	7,680	7,679	7,674	7,643
Production workers	5,772	5,721	5,697	5,656	5,603	5,548	5,531	5,494	5,466	5,455	5,409	5,372	5,375	5,375	5,351
Food and kindred products	1,708.0	1,674.3	1,662	1,664	1,661	1,657	1,663	1,658	1,643	1,652	1,637	1,643	1,628	1,631	1,635
Tobacco manufactures	68.9	69.8	69	69	68	69	68	68	67	67	67	65	65	63	63
Textile mill products	847.7	822.5	814	804	794	780	777	760	773	759	741	741	737	735	736
Apparel and other textile products	1,263.5	1,244.0	1,243	1,235	1,222	1,201	1,201	1,186	1,165	1,165	1,161	1,126	1,145	1,144	1,140
Paper and allied products	692.8	687.8	685	681	677	674	670	668	664	661	658	657	653	657	648
Printing and publishing	1,252.1	1,265.8	1,276	1,276	1,276	1,275	1,276	1,278	1,274	1,274	1,269	1,267	1,269	1,269	1,265
Chemicals and allied products	1,107.4	1,107.3	1,107	1,103	1,100	1,095	1,093	1,088	1,082	1,079	1,073	1,068	1,070	1,066	1,060
Petroleum and coal products	197.9	215.6	215	215	214	210	208	207	206	207	205	205	205	209	209
Rubber and miscellaneous plastics products	726.8	736.1	734	725	716	712	708	703	706	708	704	700	699	694	684
Leather and leather products	232.9	233.0	233	230	224	222	215	213	214	211	212	208	208	206	203
SERVICE-PRODUCING	64,748	65,625	65,831	65,820	65,734	65,776	65,828	65,854	65,794	65,911	65,845	65,695	65,655	65,653	65,646
Transportation and public utilities	5,146	5,157	5,162	5,150	5,128	5,125	5,115	5,100	5,094	5,101	5,078	5,044	5,025	5,032	5,022
Wholesale and retail trade	20,310	20,551	20,654	20,623	20,524	20,630	20,670	20,655	20,584	20,652	20,595	20,615	20,550	20,480	20,438
Wholesale trade	5,275	5,359	5,380	5,375	5,357	5,346	5,343	5,336	5,323	5,331	5,307	5,299	5,278	5,266	5,249
Retail trade	15,035	15,192	15,274	15,248	15,167	15,284	15,327	15,319	15,261	15,321	15,288	15,316	15,272	15,214	15,189
Finance, insurance, and real estate	5,160	5,301	5,325	5,324	5,331	5,326	5,326	5,336	5,335	5,342	5,352	5,359	5,360	5,370	5,362
Services	17,890	18,592	18,773	18,815	18,834	18,831	18,867	18,904	18,929	18,963	18,988	19,042	19,048	19,076	19,107
Government	16,241	16,024	15,917	15,908	15,917	15,864	15,850	15,859	15,852	15,853	15,832	15,635	15,672	15,695	15,717
Federal	2,866	2,772	2,757	2,749	2,756	2,741	2,737	2,736	2,730	2,728	2,739	2,737	2,739	2,734	2,723
State and local	13,375	13,253	13,160	13,159	13,161	13,123	13,113	13,123	13,122	13,125	13,093	12,898	12,933	12,961	12,994

p=preliminary.

11. Hours and earnings, by industry division, selected years, 1950–81

[Gross averages, production or nonsupervisory workers on nonagricultural payrolls]

Year	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings
	Private sector			Mining			Construction			Manufacturing		
1950	$53.13	39.8	$1.335	$67.16	37.9	$1.772	$69.68	37.4	$1.863	$58.32	40.5	$1.440
1955	67.72	39.6	1.71	89.54	40.7	2.20	90.90	37.1	2.45	75.30	40.7	1.85
1960[1]	80.67	38.6	2.09	105.04	40.4	2.60	112.67	36.7	3.07	89.72	39.7	2.26
1964	91.33	38.7	2.36	117.74	41.9	2.81	132.06	37.2	3.55	102.97	40.7	2.53
1965	95.45	38.8	2.46	123.52	42.3	2.92	138.38	37.4	3.70	107.53	41.2	2.61
1966	98.82	38.6	2.56	130.24	42.7	3.05	146.26	37.6	3.89	112.19	41.4	2.71
1967	101.84	38.0	2.68	135.89	42.6	3.19	154.95	37.7	4.11	114.49	40.6	2.82
1968	107.73	37.8	2.85	142.71	42.6	3.35	164.49	37.3	4.41	122.51	40.7	3.01
1969	114.61	37.7	3.04	154.80	43.0	3.60	181.54	37.9	4.79	129.51	40.6	3.19
1970	119.83	37.1	3.23	164.40	42.7	3.85	195.45	37.3	5.24	133.33	39.8	3.35
1971	127.31	36.9	3.45	172.14	42.4	4.06	211.67	37.2	5.69	142.44	39.9	3.57
1972	136.90	37.0	3.70	189.14	42.6	4.44	221.19	36.5	6.06	154.71	40.5	3.82
1973	145.39	36.9	3.94	201.40	42.4	4.75	235.89	36.8	6.41	166.46	40.7	4.09
1974	154.76	36.5	4.24	219.14	41.9	5.23	249.25	36.6	6.81	176.80	40.0	4.42
1975	163.53	36.1	4.53	249.31	41.9	5.95	266.08	36.4	7.31	190.79	39.5	4.83
1976	175.45	36.1	4.86	273.90	42.4	6.46	283.73	36.8	7.71	209.32	40.1	5.22
1977	189.00	36.0	5.25	301.20	43.4	6.94	295.65	36.5	8.10	228.90	40.3	5.68
1978	203.70	35.8	5.69	332.88	43.4	7.67	318.69	36.8	8.66	249.27	40.4	6.17
1979	219.91	35.7	6.16	365.07	43.0	8.49	342.99	37.0	9.27	269.34	40.2	6.70
1980	235.10	35.3	6.66	397.06	43.3	9.17	367.78	37.0	9.94	288.62	39.7	7.27
1981	255.20	35.2	7.25	439.19	43.7	10.05	398.52	36.9	10.80	318.00	39.8	7.99
	Transportation and public utilities			Wholesale and retail trade			Finance, insurance, and real estate			Services		
1950	.....	.....	.....	$44.55	40.5	$1.100	$50.52	37.7	$1.340	.....	.....	.....
1955	.....	.....	.....	55.16	39.4	1.40	63.92	37.6	1.70	.....	.....	.....
1960[1]	.....	.....	.....	66.01	38.6	1.71	75.14	37.2	2.02	.....	.....	.....
1964	$118.78	41.1	$2.89	74.66	37.9	1.97	85.79	37.3	2.30	$70.03	36.1	$1.94
1965	125.14	41.3	3.03	76.91	37.7	2.04	88.91	37.2	2.39	73.60	35.9	2.05
1966	128.13	41.2	3.11	79.39	37.1	2.14	92.13	37.3	2.47	77.04	35.5	2.17
1967	130.82	40.5	3.23	82.35	36.6	2.25	95.72	37.1	2.58	80.38	35.1	2.29
1968	138.85	40.6	3.42	87.00	36.1	2.41	101.75	37.0	2.75	83.97	34.7	2.42
1969	147.74	40.7	3.63	91.39	35.7	2.56	108.70	37.1	2.93	90.57	34.7	2.61
1970	155.93	40.5	3.85	96.02	35.3	2.72	112.67	36.7	3.07	96.66	34.4	2.81
1971	168.82	40.1	4.21	101.09	35.1	2.88	117.85	36.6	3.22	103.06	33.9	3.04
1972	187.86	40.4	4.65	106.45	34.9	3.05	122.98	36.6	3.36	110.85	33.9	3.27
1973	203.31	40.5	5.02	111.76	34.6	3.23	129.20	36.6	3.53	117.29	33.8	3.47
1974	217.48	40.2	5.41	119.02	34.2	3.48	137.61	36.5	3.77	126.00	33.6	3.75
1975	233.44	39.7	5.88	126.45	33.9	3.73	148.19	36.5	4.06	134.67	33.5	4.02
1976	256.71	39.8	6.45	133.79	33.7	3.97	155.43	36.4	4.27	143.52	33.3	4.31
1977	278.90	39.9	6.99	142.52	33.3	4.28	165.26	36.4	4.54	153.45	33.0	4.65
1978	302.80	40.0	7.57	153.64	32.9	4.67	178.00	36.4	4.89	163.67	32.8	4.99
1979	325.58	39.9	8.16	164.96	32.6	5.06	190.77	36.2	5.27	175.27	32.7	5.36
1980	351.25	39.6	8.87	176.46	32.2	5.48	209.60	36.2	5.79	190.71	32.6	5.85
1981	382.18	39.4	9.70	190.95	32.2	5.93	229.05	36.3	6.31	208.97	32.6	6.41

[1] Data include Alaska and Hawaii beginning in 1959.

12. Weekly hours, by industry division and major manufacturing group, seasonally adjusted

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. p	Oct. p
PRIVATE SECTOR	35.3	35.2	35.1	35.1	35.0	34.4	35.0	34.9	34.9	35.0	34.9	34.9	34.8	34.8	34.7
MANUFACTURING	39.7	39.8	39.5	39.3	39.1	37.6	39.4	39.0	39.0	39.1	39.2	39.2	39.0	38.7	38.7
Overtime hours	2.8	2.8	2.7	2.5	2.4	2.3	2.4	2.3	2.4	2.3	2.4	2.4	2.4	2.3	2.2
Durable goods	40.1	40.2	40.0	39.7	39.5	38.2	39.8	39.5	39.5	39.6	39.7	39.7	39.4	38.9	38.9
Overtime hours	2.8	2.8	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.0	1.9
Lumber and wood products	38.5	38.7	37.8	37.7	37.7	35.0	37.9	37.6	37.6	38.5	38.7	38.6	38.2	38.3	37.9
Furniture and fixtures	38.1	38.4	38.0	37.6	37.9	33.6	37.7	37.3	37.4	37.5	37.8	37.6	37.9	37.5	37.7
Stone, clay, and glass products	40.8	40.6	40.1	40.1	39.7	38.6	40.1	40.0	40.0	40.2	40.4	40.6	40.3	40.1	40.2
Primary metal industries	40.1	40.5	40.0	39.6	39.2	38.3	39.4	38.8	38.5	38.5	38.9	38.9	38.8	37.9	37.6
Fabricated metal products	40.4	40.3	40.0	39.7	39.5	38.1	39.7	39.5	39.4	39.5	39.4	39.5	39.2	38.8	38.8
Machinery, except electrical	41.0	40.9	40.8	40.7	40.4	39.3	40.7	40.2	40.1	39.8	39.6	39.8	39.5	38.9	39.1
Electric and electronic equipment	39.8	39.9	39.8	39.4	39.5	38.3	39.8	39.4	39.3	39.4	39.5	39.8	39.3	38.8	38.9
Transportation equipment	40.6	40.9	40.6	40.4	39.7	39.0	40.5	40.4	41.1	41.1	41.6	41.0	40.5	39.8	39.7
Instruments and related products	40.5	40.4	40.3	40.2	39.9	39.0	39.9	39.9	39.9	40.2	40.2	40.1	40.1	39.7	39.3
Miscellaneous manufacturing	38.7	38.8	38.9	39.0	38.5	37.3	38.6	38.6	38.5	38.7	38.6	38.7	38.6	38.1	38.3
Nondurable goods	39.0	39.1	38.9	38.7	38.6	36.8	38.9	38.5	38.4	38.5	38.6	38.6	38.5	38.5	38.4
Overtime hours	2.8	2.8	2.8	2.7	2.6	2.5	2.6	2.5	2.6	2.5	2.5	2.6	2.6	2.6	2.6
Food and kindred products	39.7	39.7	39.5	39.5	39.8	39.1	40.2	39.5	39.4	39.4	39.5	39.5	39.1	39.4	39.5
Textile mill products	40.1	39.6	39.0	38.7	37.8	32.3	38.3	37.6	37.7	37.9	37.8	37.7	38.2	38.1	38.0
Apparel and other textile products	35.4	35.7	35.5	35.5	35.1	31.4	35.5	35.0	34.7	34.8	35.1	35.2	35.0	35.2	34.9
Paper and allied products	42.2	42.5	42.4	42.0	41.8	41.3	42.3	41.8	42.1	41.8	42.0	41.9	41.7	41.5	41.4
Printing and publishing	37.1	37.3	37.1	37.1	37.1	36.9	37.4	37.1	37.1	36.8	37.1	37.0	36.8	36.9	36.9
Chemicals and allied products	41.5	41.6	41.5	41.2	41.3	41.0	41.2	40.7	40.7	41.0	41.0	40.9	40.9	41.2	40.8
Petroleum and coal products	41.8	43.2	42.2	42.5	42.7	44.3	43.5	43.5	44.0	44.1	44.1	43.3	43.9	43.4	43.5
Rubber and miscellaneous plastics products	40.0	40.3	39.9	39.6	39.4	37.9	40.0	39.6	39.8	39.9	40.1	40.2	39.7	39.6	39.1
Leather and leather products	36.7	36.8	36.7	36.5	36.1	34.1	35.6	35.8	35.6	35.6	35.7	36.1	36.0	35.7	34.8
WHOLESALE AND RETAIL TRADE	32.2	32.2	32.0	32.1	32.0	31.7	32.0	31.9	31.8	32.0	31.9	31.9	31.9	32.1	32.1
WHOLESALE TRADE	38.5	38.6	38.4	38.5	38.4	38.1	38.5	38.4	38.3	38.5	38.6	38.5	38.5	38.4	38.3
RETAIL TRADE	30.2	30.1	29.9	30.0	29.9	29.7	29.9	29.8	29.8	30.0	29.8	29.9	29.9	30.1	30.2
SERVICES	32.6	32.6	32.6	32.6	32.6	32.5	32.6	32.6	32.7	32.7	32.7	32.6	32.6	32.8	32.7

NOTE: The industry divisions of mining; construction; tobacco manufactures (a major manufacturing group, nondurable goods); transportation and public utilities; and finance, insurance, and real estate are no longer shown. This is because the seasonal component in these is small relative to the trend-cycle, or irregular components, or both, and consequently cannot be precisely separated.

p=preliminary.

13. Hourly earnings, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. p	Oct. p
PRIVATE SECTOR	$6.66	$7.25	$7.42	$7.47	$7.45	$7.55	$7.54	$7.55	$7.58	$7.63	$7.64	$7.67	$7.70	$7.76	$7.78
Seasonally adjusted	(1)	(1)	7.40	7.45	7.46	7.52	7.53	7.54	7.59	7.65	7.67	7.71	7.74	7.72	7.75
MINING	9.17	10.05	10.25	10.39	10.41	10.65	10.62	10.62	10.65	10.66	10.82	10.91	10.93	11.06	10.97
CONSTRUCTION	9.94	10.80	11.65	11.18	11.26	11.59	11.32	11.33	11.32	11.46	11.41	11.53	11.60	11.70	11.80
MANUFACTURING	7.27	7.99	8.16	8.20	8.27	8.42	8.34	8.37	8.42	8.45	8.50	8.55	8.51	8.59	8.56
Durable goods	7.75	8.53	8.73	8.77	8.83	8.92	8.89	8.91	8.94	9.01	9.06	9.11	9.09	9.16	9.13
Lumber and wood products	6.55	7.00	7.10	7.16	7.16	7.38	7.27	7.28	7.24	7.41	7.59	7.64	7.61	7.66	7.56
Furniture and fixtures	5.49	5.91	6.06	6.05	6.12	6.28	6.19	6.21	6.21	6.23	6.30	6.34	6.39	6.40	6.42
Stone, clay, and glass products	7.50	8.27	8.50	8.54	8.56	8.70	8.62	8.65	8.72	8.80	8.86	8.93	8.93	9.01	8.97
Primary metal industries	9.77	10.81	10.97	11.10	11.08	11.23	11.20	11.15	11.24	11.23	11.31	11.37	11.49	11.55	11.44
Fabricated metal products	7.45	8.20	8.39	8.42	8.53	8.55	8.57	8.64	8.69	8.79	8.83	8.85	8.85	8.90	8.88
Machinery, except electrical	8.00	8.81	9.04	9.08	9.18	9.19	9.20	9.18	9.24	9.26	9.27	9.30	9.33	9.39	9.34
Electric and electronic equipment	6.94	7.62	7.80	7.83	7.90	7.98	7.96	8.01	8.03	8.05	8.09	8.18	8.24	8.32	8.36
Transportation equipment	9.35	10.39	10.74	10.74	10.76	10.79	10.82	10.89	10.89	11.08	11.21	11.25	11.18	11.24	11.29
Instruments and related products	6.80	7.43	7.60	7.68	7.81	7.93	7.94	8.00	8.07	8.16	8.23	8.31	8.40	8.44	8.44
Miscellaneous manufacturing	5.46	5.96	6.05	6.11	6.19	6.27	6.29	6.32	6.35	6.38	6.41	6.40	6.39	6.48	6.51
Nondurable goods	6.55	7.18	7.33	7.38	7.44	7.67	7.54	7.57	7.65	7.66	7.70	7.77	7.74	7.84	7.82
Food and kindred products	6.85	7.43	7.51	7.61	7.67	7.82	7.74	7.79	7.90	7.92	7.90	7.88	7.85	7.90	7.87
Tobacco manufactures	7.74	8.88	8.67	9.04	8.96	9.21	9.56	9.72	10.05	9.93	10.35	10.42	9.53	9.57	9.64
Textile mill products	5.07	5.52	5.72	5.73	5.72	5.76	5.76	5.76	5.79	5.79	5.79	5.81	5.82	5.86	5.86
Apparel and other textile products	4.56	4.96	5.05	5.04	5.04	5.18	5.13	5.15	5.18	5.16	5.18	5.17	5.18	5.20	5.20
Paper and allied products	7.84	8.60	8.82	8.89	8.96	9.06	8.99	9.03	9.11	9.14	9.28	9.41	9.45	9.63	9.55
Printing and publishing	7.53	8.18	8.40	8.42	8.48	8.58	8.56	8.59	8.59	8.61	8.66	8.74	8.79	8.89	8.86
Chemicals and allied products	8.30	9.12	9.37	9.42	9.53	9.68	9.68	9.71	9.81	9.83	9.95	10.02	10.03	10.21	10.26
Petroleum and coal products	10.10	11.38	11.47	11.58	11.59	11.91	12.29	12.32	12.50	12.52	12.53	12.42	12.42	12.62	12.55
Rubber and miscellaneous plastics products	6.52	7.16	7.30	7.31	7.38	7.51	7.49	7.45	7.52	7.56	7.64	7.65	7.64	7.76	7.74
Leather and leather products	4.58	4.99	5.09	5.11	5.15	5.19	5.22	5.24	5.32	5.32	5.36	5.30	5.33	5.40	5.41
TRANSPORTATION AND PUBLIC UTILITIES	8.87	9.70	9.94	10.05	10.06	10.10	10.13	10.07	10.14	10.17	10.20	10.29	10.43	10.44	10.48
WHOLESALE AND RETAIL TRADE	5.48	5.93	6.01	6.04	6.02	6.17	6.16	6.16	6.18	6.20	6.20	6.21	6.22	6.26	6.27
WHOLESALE TRADE	6.96	7.57	7.73	7.79	7.81	7.94	7.94	7.93	7.97	8.03	8.01	8.07	8.11	8.15	8.16
RETAIL TRADE	4.88	5.25	5.29	5.32	5.31	5.43	5.42	5.43	5.44	5.47	5.47	5.48	5.48	5.52	5.52
FINANCE, INSURANCE, AND REAL ESTATE	5.79	6.31	6.43	6.52	6.47	6.56	6.62	6.59	6.64	6.77	6.71	6.78	6.87	6.90	6.93
SERVICES	5.85	6.41	6.58	6.67	6.66	6.79	6.79	6.77	6.81	6.85	6.84	6.87	6.90	6.99	7.03

[1] Not available.

p=preliminary.

14. Hourly Earnings Index, for production workers on private nonagricultural payrolls, by industry

[1977=100]

Industry	Not seasonally adjusted					Seasonally adjusted						
	Oct. 1981	Aug. 1982	Sept. 1982 p	Oct. 1982 p	Percent change from: Oct. 1981 to Oct. 1982	Oct. 1981	June 1982	July 1982	Aug. 1982	Sept. 1982 p	Oct. 1982 p	Percent change from: Sept. 1982 to Oct. 1982
PRIVATE SECTOR (in current dollars)	142.0	149.3	150.4	150.7	6.1	142.0	148.1	148.9	149.9	150.0	150.6	0.4
Mining	151.4	161.5	163.2	161.9	6.9	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Construction	136.3	141.6	142.7	143.7	5.4	134.7	139.7	140.6	140.7	140.6	142.0	1.0
Manufacturing	145.4	153.6	154.7	154.8	6.4	145.4	152.5	153.3	154.2	154.7	154.7	.0
Transportation and public utilities	143.0	150.3	151.1	151.8	6.2	142.3	149.1	148.9	150.3	149.6	151.1	1.0
Wholesale and retail trade	140.0	145.9	146.7	146.8	4.9	140.5	145.2	145.7	146.5	146.7	147.3	.4
Finance, insurance, and real estate	140.7	150.1	150.6	151.3	7.5	141.4	147.2	148.6	150.6	151.2	152.0	.6
Services	140.6	148.3	149.6	150.0	6.7	140.8	147.3	148.7	149.7	149.6	150.3	.4
PRIVATE SECTOR (in constant dollars)	92.2	92.7	93.2	(2)	(2)	92.1	93.1	93.0	93.2	93.2	(2)	(2)

[1] This series is not seasonally adjusted because the seasonal component is small relative to the trend-cycle, irregular components, or both, and consequently cannot be separated with sufficient precision.

[2] Not available.

p = preliminary.

15. Weekly earnings, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1981			1982									
	1980	1981	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. p	Oct. p
PRIVATE SECTOR															
Current dollars	$235.10	$255.20	$261.18	$262.20	$262.24	$255.95	$262.39	$261.99	$262.27	$265.52	$267.40	$269.98	$271.04	$270.05	$270.74
Seasonally adjusted	(1)	(1)	259.74	261.50	261.10	258.69	263.55	263.15	264.89	267.75	267.68	269.08	269.35	268.66	268.93
Constant (1977) dollars	172.74	170.13	169.49	169.71	169.30	164.70	168.31	168.37	167.80	168.16	167.33	167.90	168.24	167.42	(1)
MINING	397.06	439.19	456.13	461.32	466.37	456.89	463.03	465.16	454.76	454.12	463.10	463.68	463.43	461.20	$459.64
CONSTRUCTION	367.78	398.52	419.62	414.78	417.75	385.95	406.39	419.21	415.44	429.75	427.88	438.14	436.16	431.73	436.60
MANUFACTURING															
Current dollars	288.62	318.00	323.95	325.54	329.97	312.38	326.93	327.27	325.85	329.55	334.05	332.60	331.89	334.15	332.13
Constant (1977) dollars	212.06	212.00	210.22	210.71	213.02	201.02	209.70	210.33	208.48	208.71	209.04	206.84	206.40	207.16	(1)
Durable goods	310.78	342.91	350.07	351.68	356.73	336.28	352.93	352.84	350.45	355.90	360.59	357.11	356.33	357.24	356.98
Lumber and wood products	252.18	270.90	271.22	269.93	272.80	248.71	272.63	273.73	270.05	285.29	297.53	294.90	295.27	295.68	289.55
Furniture and fixtures	209.17	226.94	233.92	230.51	238.07	204.10	231.51	233.50	230.39	231.76	238.77	233.31	243.46	241.92	245.89
Stone, clay, and glass products	306.00	335.76	344.25	345.87	343.26	325.38	337.90	344.27	347.93	355.52	361.49	362.56	362.56	364.00	364.18
Primary metal industries	391.78	437.81	435.51	440.67	438.77	431.23	443.52	434.85	434.99	430.11	439.96	437.75	440.07	440.06	427.86
Fabricated metal products	300.98	330.46	337.28	337.64	345.47	323.19	337.66	342.14	338.91	346.33	349.67	344.27	346.04	346.21	346.32
Machinery except electrical	328.00	360.33	367.93	372.28	381.89	360.25	374.44	370.87	367.75	367.62	367.09	363.63	364.80	366.21	364.26
Electric and electronic equipment	276.21	304.04	311.22	311.63	319.16	304.04	316.81	316.40	313.17	315.56	319.56	319.84	322.18	322.82	326.04
Transportation equipment	379.61	424.95	440.34	438.19	445.46	414.34	437.13	439.96	441.05	455.39	466.34	456.75	447.20	443.98	452.73
Instruments and related products	275.40	300.17	307.04	313.34	317.87	306.10	317.60	320.80	318.77	327.22	330.85	328.25	335.16	335.07	332.54
Miscellaneous manufacturing	211.30	231.25	237.77	241.35	242.03	229.48	241.54	244.58	242.57	245.63	247.43	244.48	246.65	248.83	251.94
Nondurable goods	255.45	280.74	286.60	288.56	291.65	277.65	291.04	289.93	291.47	294.14	297.99	299.15	299.54	303.41	301.85
Food and kindred products	271.95	294.97	296.65	302.88	309.87	302.63	307.28	303.81	306.52	312.05	312.05	312.05	310.86	315.21	310.87
Tobacco manufactures	294.89	344.54	341.60	350.75	341.38	332.48	366.15	362.56	367.83	369.40	397.44	383.46	363.09	379.93	382.71
Textile mill products	203.31	218.59	225.37	224.62	220.79	179.71	219.46	217.15	215.39	219.44	220.60	216.13	222.91	223.85	225.61
Apparel and other textile products	161.42	177.07	180.79	180.43	178.92	155.40	180.58	180.77	178.19	180.08	183.89	183.02	183.37	182.52	183.04
Paper and allied products	330.85	365.50	373.97	376.05	382.59	374.18	377.58	376.55	380.80	379.31	389.76	391.46	393.12	401.57	395.37
Printing and publishing	279.36	305.11	312.48	314.07	321.39	312.31	317.58	318.69	316.11	315.99	319.55	322.51	326.11	329.82	327.82
Chemicals and allied products	344.45	379.39	388.86	391.87	398.35	394.94	397.85	395.20	399.27	401.06	406.96	407.81	408.22	420.65	418.61
Petroleum and coal products	422.18	491.62	494.36	499.10	493.73	514.51	518.64	522.37	550.00	549.63	553.83	546.48	546.48	565.38	557.22
Rubber and miscellaneous plastics products	260.80	288.55	293.46	291.67	295.94	283.88	298.85	295.77	297.04	300.13	306.36	302.94	303.31	307.30	304.96
Leather and leather products	168.09	183.63	186.80	187.03	187.46	172.83	184.27	186.54	187.26	191.52	196.71	191.33	192.95	191.70	188.81
TRANSPORTATION AND PUBLIC UTILITIES	351.25	382.18	388.65	393.96	395.36	388.85	397.10	392.73	393.43	394.60	399.84	403.37	409.90	406.12	406.62
WHOLESALE AND RETAIL TRADE	176.46	190.95	192.32	192.68	194.45	191.89	194.66	194.66	195.91	197.78	199.02	202.45	202.77	200.95	201.27
WHOLESALE TRADE	267.96	292.20	298.38	300.69	302.25	300.13	303.31	303.72	304.45	308.35	309.19	312.31	313.05	312.96	314.16
RETAIL TRADE	147.38	158.03	157.64	158.54	160.89	157.47	159.35	159.64	161.02	163.01	164.65	168.24	168.24	166.70	166.15
FINANCE, INSURANCE, AND REAL ESTATE	209.60	229.05	232.77	236.02	234.21	237.47	239.64	239.22	240.37	245.75	242.23	245.44	249.38	248.40	250.17
SERVICES	190.71	208.97	213.85	216.78	217.12	219.32	220.68	220.03	221.33	222.63	224.35	227.40	227.70	228.57	229.18

[1] Not available.

p = preliminary.

UNEMPLOYMENT INSURANCE DATA

NATIONAL UNEMPLOYMENT INSURANCE DATA are compiled monthly by the Employment and Training Administration of the U.S. Department of Labor from monthly reports of unemployment insurance activity prepared by State agencies. Railroad unemployment insurance data are prepared by the U.S. Railroad Retirement Board.

Definitions

Data for **all programs** represent an unduplicated count of insured unemployment under State programs, Unemployment Compensation for Ex-Servicemen, and Unemployment Compensation for Federal Employees, and the Railroad Insurance Act.

Under both State and Federal unemployment insurance programs for civilian employees, insured workers must report the completion of at least 1 week of unemployment before they are defined as unemployed. Persons not covered by unemployment insurance (about 10 percent of the labor force) and those who have exhausted or not yet earned benefit rights are excluded from the scope of the survey. **Initial claims** are notices filed by persons in unemployment insurance programs to indicate they are out of work and wish to begin receiving compensation. A claimant who continued to be unemployed a full week is then counted in the insured unemployment figure. The **rate of insured unemployment** expresses the number of insured unemployed as a percent of the average insured employment in a 12-month period.

An **application** for benefits is filed by a railroad worker at the beginning of his first period of unemployment in a benefit year; no application is required for subsequent periods in the same year. **Number of payments** are payments made in 14-day registration periods. The **average amount of benefit payment** is an average for all compensable periods, not adjusted for recovery of overpayments or settlement of underpayments. However, **total benefits** paid have been adjusted.

16. Unemployment insurance and employment service operations

[All items except average benefits amounts are in thousands]

Item	1981				1982								
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. p
All programs:													
Insured unemployment	2,680	2,753	3,228	3,935	4,681	4,723	4,892	4,760	4,388	4,328	4,495	4,398	4,283
State unemployment insurance program:[1]													
Initial claims[2]	1,681	1,996	2,286	3,272	3,328	2,272	2,418	2,347	1,989	2,399	2,655	2,358	2,350
Insured unemployment (average weekly volume)	2,488	2,592	3,061	3,778	4,470	4,376	4,282	4,067	3,729	3,707	3,910	3,831	3,713
Rate of insured unemployment	2.9	3.0	3.5	4.3	5.1	5.0	4.9	4.6	4.3	4.3	4.6	4.4	4.2
Weeks of unemployment compensated	9,565	9,424	10,052	14,592	15,962	15,631	18,144	16,158	13,679	14,648	14,655	15,015	14,595
Average weekly benefit amount for total unemployment	$107.39	$108.92	$110.52	$112.83	$114.83	$116.95	$117.10	$117.61	$118.08	$118.64	$117.28	$121.52	$120.62
Total benefits paid	$1,001,020	$997,757	$1,080,810	$1,592,546	$1,764,206	$1,781,830	$2,072,642	$1,849,881	$1,573,444	r$1,692,150	$1,679,378	$1,746,195	$1,714,634
State unemployment insurance program:[1] (Seasonally adjusted data)													
Initial claims[2]	2,099	2,187	2,233	2,106	2,304	2,354	2,521	2,442	2,379	2,528	2,317	2,814	2,912
Insured unemployment (average weekly volume)	2,985	3,171	3,403	3,593	3,604	3,644	3,777	3,939	3,925	3,995	3,959	4,137	4,447
Rate of insured unemployment	3.4	3.6	3.9	4.1	4.1	4.2	4.3	4.5	4.5	4.6	4.5	4.7	5.1
Unemployment compensation for ex-servicemen:[3]													
Initial claims[1]	15	11	9	11	8	8	10	9	8	10	10	11	10
Insured unemployment (average weekly volume)	34	26	22	19	16	13	11	10	9	8	7	7	8
Weeks of unemployment compensated	153	116	91	93	65	49	48	37	31	29	25	24	25
Total benefits paid	$17,144	$12,952	$10,043	$10,155	$7,098	$5,304	$5,141	$4,013	$3,395	$3,314	$2,821	$2,793	$2,927
Unemployment compensation for Federal civilian employees:[4]													
Initial claims	18	20	16	17	17	12	13	13	11	14	13	12	13
Insured unemployment (average weekly volume)	29	32	36	39	40	40	38	33	29	28	29	27	26
Weeks of unemployment compensated	100	112	127	174	162	154	172	146	120	123	120	118	110
Total benefits paid	$10,495	$11,719	$13,491	$18,891	$18,040	$17,517	$19,677	$16,806	$13,526	$13,922	$13,445	$13,140	$12,230
Railroad unemployment insurance:													
Applications	15	21	13	19	22	11	9	5	5	36	68	68	14
Insured unemployment (average weekly volume)	34	40	44	54	75	67	65	57	44	44	55	55	61
Number of payments	74	86	83	117	153	140	154	130	95	93	100	100	137
Average amount of benefit payment	$207.98	$197.26	$207.08	$212.33	$213.39	$214.07	$215.71	$209.48	$200.75	$199.15	$202.54	$202.54	$216.14
Total benefits paid	15,046	15,994	$16,377	$25,292	$30,544	$28,011	$33,853	$26,262	$19,110	$18,574	$17,998	$17,998	$31,123
Employment service:[5]													
New applications and renewals	16,502	....	....	4,081	....	....	7,439	....	....	10,965	....	....	....
Nonfarm placements	3,509	....	....	731	....	....	1,232	....	....	1,902	....	....	....

[1] Initial claims and State insured unemployment include data under the program for Puerto Rican sugarcane workers.

[2] Excludes transition claims under State programs.

[3] Excludes data on claims and payments made jointly with other programs.

[4] Excludes data on claims and payments made jointly with State programs.

[5] Cumulative total for fiscal year (October 1-September 30). Data computed quarterly.

NOTE: Data for Puerto Rico and the Virgin Islands included. Dashes indicate data not available.
r=revised.
p=preliminary.

PRICE DATA

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 (1967 = 100, unless otherwise noted).

Definitions

The **Consumer Price Index** is a monthly statistical measure of the average change in prices in a fixed market basket of goods and services. Effective with the January 1978 index, the Bureau of Labor Statistics began publishing CPI's for two groups of the population. One index, a new CPI for All Urban Consumers, covers 80 percent of the total noninstitutional population; and the other index, a revised CPI for Urban Wage Earners and Clerical Workers, covers about half the new index population. The All Urban Consumers index includes, in addition to wage earners and clerical workers, 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, doctor's and dentist's fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items is kept essentially unchanged between major revisions so that only price changes will be measured. Prices are collected from over 18,000 tenants, 24,000 retail establishments, and 18,000 housing units for property taxes in 85 urban areas across the country. All taxes directly associated with the purchase and use of items are included in the index. Because the CPI's are based on the expenditures of two population groups in 1972–73, they may not accurately reflect the experience of individual families and single persons with different buying habits.

Though the CPI is often called the "Cost-of-Living Index," it measures only price change, which is just one of several important factors affecting living costs. Area indexes do not measure differences in the level of prices among cities. They only measure the average change in prices for each area since the base period.

Producer Price Indexes measure average changes in prices received in primary markets of the United States by producers of commodities in all stages of processing. The sample used for calculating these indexes contains about 2,800 commodities and about 10,000 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 universe includes all commodities produced or imported for sale in commercial transactions in primary markets in the United States.

Producer Price Indexes can be organized by stage of processing or by commodity. The stage of processing structure organizes products by degree of fabrication (that is, finished goods, intermediate or semifinished goods, and crude materials). The commodity structure 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.

In calculating Producer Price Indexes, price changes for the various commodities are averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1972. 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 groupings.

Price indexes for the output of selected SIC industries measure average price changes in commodities produced by particular industries, as defined in the *Standard Industrial Classification Manual 1972* (Washington, U.S. Office of Management and Budget, 1972). These indexes are derived from several price series, combined to match the economic activity of the specified industry and weighted by the value of shipments in the industry. They use data from comprehensive industrial censuses conducted by the U.S. Bureau of the Census and the U.S. Department of Agriculture.

Notes on the data

Beginning with the May 1978 issue of the *Review,* regional CPI's cross classified by population size, were introduced. These indexes will enable users in local areas for which an index is not published to get a better approximation of the CPI for their area by using the appropriate population size class measure for their region. The cross-classified indexes will be published bimonthly. (See table 19.)

For further details about the new and the revised indexes and a comparison of various aspects of these indexes with the old unrevised CPI, see *Facts About the Revised Consumer Price Index,* a pamphlet in the Consumer Price Index Revision 1978 series. See also *The Consumer Price Index: Concepts and Content Over the Years,* Report 517, revised edition (Bureau of Labor Statistics, May 1978).

For interarea comparisons of living costs at three hypothetical standards of living, see the family budget data published in the *Handbook of Labor Statistics, 1977,* Bulletin 1966 (Bureau of Labor Statistics, 1977), tables 122–133. Additional data and analysis on price changes are provided in the *CPI Detailed Report* and *Producer Prices and Price Indexes,* both monthly publications of the Bureau.

As of January 1976, the Wholesale Price Index (as it was then called) incorporated a revised weighting structure reflecting 1972 values of shipments. From January 1967 through December 1975, 1963 values of shipments were used as weights.

For a discussion of the general method of computing consumer, producer, and industry price indexes, see *BLS Handbook of Methods for Surveys and Studies,* Bulletin 1910 (Bureau of Labor Statistics, 1976), chapters 13–15. See also John F. Early, "Improving the measurement of producer price change," *Monthly Labor Review,* April 1978, pp. 7–15. For industry prices, see also Bennett R. Moss, "Industry and Sector Price Indexes," *Monthly Labor Review,* August 1965, pp. 974–82.

17. Consumer Price Index for Urban Wage Earners and Clerical Workers, annual averages and changes, 1967–81

[1967=100]

Year	All items		Food and beverages		Housing		Apparel and upkeep		Transportation		Medical care		Entertainment		Other goods and services	
	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change
1967	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...
1968	104.2	4.2	103.6	3.6	104.0	4.0	105.4	5.4	103.2	3.2	106.1	6.1	105.7	5.7	105.2	5.2
1969	109.8	5.4	108.8	5.0	110.4	6.2	111.5	5.8	107.2	3.9	113.4	6.9	111.0	5.0	110.4	4.9
1970	116.3	5.9	114.7	5.4	118.2	7.1	116.1	4.1	112.7	5.1	120.6	6.3	116.7	5.1	116.8	5.8
1971	121.3	4.3	118.3	3.1	123.4	4.4	119.8	3.2	118.6	5.2	128.4	6.5	122.9	5.3	122.4	4.8
1972	125.3	3.3	123.2	4.1	128.1	3.8	122.3	2.1	119.9	1.1	132.5	3.2	126.5	2.9	127.5	4.2
1973	133.1	6.2	139.5	13.2	133.7	4.4	126.8	3.7	123.8	3.3	137.7	3.9	130.0	2.8	132.5	3.9
1974	147.7	11.0	158.7	13.8	148.8	11.3	136.2	7.4	137.7	11.2	150.5	9.3	139.8	7.5	142.0	7.2
1975	161.2	9.1	172.1	8.4	164.5	10.6	142.3	4.5	150.6	9.4	168.6	12.0	152.2	8.9	153.9	8.4
1976	170.5	5.8	177.4	3.1	174.6	6.1	147.6	3.7	165.5	9.9	184.7	9.5	159.8	5.0	162.7	5.7
1977	181.5	6.5	188.0	6.0	186.5	6.8	154.2	4.5	177.2	7.1	202.4	9.6	167.7	4.9	172.2	5.8
1978	195.3	7.6	206.2	9.7	202.6	8.6	159.5	3.4	185.8	4.9	219.4	8.4	176.2	5.1	183.2	6.4
1979	217.7	11.5	228.7	10.9	227.5	12.3	166.4	4.3	212.8	14.5	240.1	9.4	187.6	6.5	196.3	7.2
1980	247.0	13.5	248.7	8.7	263.2	15.7	177.4	6.6	250.5	17.7	267.2	11.3	203.7	8.5	213.6	8.8
1981	272.3	10.2	267.8	7.7	293.2	11.4	186.6	5.2	281.3	12.3	295.1	10.4	219.0	7.5	233.3	9.2

18. Consumer Price Index for All Urban Consumers and revised CPI for Urban Wage Earners and Clerical Workers, U.S. city average—general summary and groups, subgroups, and selected items

[1967=100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
All items	279.3	284.3	287.1	290.6	292.2	292.8	293.3	279.1	283.7	286.5	290.1	291.8	292.4	292.8
Food and beverages	270.7	276.5	278.1	280.2	280.8	279.9	280.1	271.0	276.8	278.4	280.5	281.2	280.2	280.4
Housing	303.7	309.4	313.8	317.5	319.2	320.1	319.7	303.6	309.2	313.7	317.5	319.3	320.5	320.0
Apparel and upkeep	190.7	191.9	191.5	190.8	189.7	191.8	194.9	190.5	191.2	190.6	189.6	188.7	190.7	194.1
Transportation	285.2	282.9	285.6	292.8	296.1	296.2	295.3	286.6	284.3	287.1	294.5	297.9	298.0	296.9
Medical care	301.7	321.7	323.8	326.4	330.0	333.3	336.0	300.9	320.2	322.3	324.8	328.1	331.3	333.9
Entertainment	224.0	233.9	234.4	235.6	236.6	237.4	238.3	221.5	230.5	231.1	232.3	233.5	233.9	234.8
Other goods and services	243.0	253.8	255.0	255.8	257.2	258.3	266.6	239.3	250.9	252.4	253.1	254.5	255.7	262.8
Commodities	257.7	258.9	261.5	265.1	266.5	266.4	266.6	258.2	259.2	261.7	265.4	266.9	266.8	267.0
Commodities less food and beverages	247.6	247.0	249.8	254.0	255.7	255.9	256.1	248.4	247.2	250.1	254.5	256.3	256.5	256.8
Nondurables less food and beverages	265.8	259.7	261.0	266.3	268.2	268.8	269.9	268.5	261.3	262.6	268.2	270.3	270.7	271.8
Durables	232.6	235.8	239.8	243.2	244.7	244.6	244.1	231.5	234.8	238.9	242.3	243.9	244.0	243.6
Services	317.3	328.4	331.8	334.9	337.0	338.9	339.7	317.7	329.1	332.4	335.7	337.9	340.0	340.5
Rent, residential	211.9	220.1	221.8	222.6	224.8	226.0	226.9	211.5	219.6	221.3	222.1	224.3	225.5	226.4
Household services less rent	387.4	397.3	403.0	407.7	409.4	411.7	410.4	392.2	402.3	408.2	413.3	415.3	418.1	416.5
Transportation services	277.7	290.3	291.3	294.7	297.2	297.8	298.7	276.3	289.2	290.0	293.2	295.7	296.5	296.9
Medical care services	326.1	348.0	350.2	353.0	357.3	361.0	364.0	324.7	345.8	348.0	350.7	354.7	358.3	361.1
Other services	245.8	255.3	255.9	257.0	258.0	259.7	266.3	243.6	253.8	254.4	255.5	256.6	258.4	264.0
Special indexes:														
All items less food	278.2	282.9	286.0	289.7	291.5	292.5	292.9	278.2	282.5	285.6	289.4	291.4	292.4	292.8
All items less mortgage interest costs	262.9	267.9	270.3	273.6	275.1	275.6	276.7	263.3	267.9	270.3	273.7	275.3	275.8	276.7
Commodities less food	245.5	245.0	247.8	251.9	253.5	253.8	253.9	246.3	245.3	248.1	252.4	254.1	254.4	254.7
Nondurables less food	260.3	255.0	256.2	261.2	263.0	263.6	264.6	262.9	256.6	257.8	263.0	265.0	265.4	266.5
Nondurables less food and apparel	299.1	291.4	293.4	301.0	304.3	304.2	304.2	301.3	292.3	294.4	302.4	305.8	305.5	305.6
Nondurables	269.5	269.3	270.7	274.4	275.7	275.5	276.2	270.7	270.1	271.5	275.4	276.8	276.5	277.2
Services less rent	337.5	349.1	352.8	356.5	358.5	360.5	361.3	338.3	350.2	353.8	357.7	359.9	362.2	362.5
Services less medical care	314.1	324.0	327.5	330.7	332.5	334.1	334.8	314.6	324.9	328.3	331.7	333.6	335.6	335.8
Domestically produced farm foods	260.8	264.5	267.1	270.3	270.7	268.4	268.0	259.9	263.5	266.0	269.2	269.7	267.4	267.0
Selected beef cuts	277.9	275.1	281.6	289.1	287.4	280.8	279.3	279.7	276.4	283.1	290.6	288.8	281.9	280.7
Energy	417.1	395.7	402.1	418.6	424.5	424.5	424.2	420.1	396.9	403.1	420.4	426.5	426.1	425.6
All items less energy	268.6	275.7	278.3	280.7	282.0	282.7	283.1	267.5	274.5	277.0	279.4	280.8	281.5	281.9
All items less food and energy	264.8	272.2	274.9	277.3	278.7	279.8	280.4	263.6	270.9	273.6	276.0	277.6	278.7	279.2
Commodities less food and energy	222.9	227.2	229.9	232.1	233.1	233.6	234.1	222.1	226.4	229.1	231.3	232.4	232.8	233.6
Energy commodities	449.3	406.6	410.2	430.8	438.2	436.6	433.3	450.0	406.9	410.5	431.6	439.0	437.3	433.8
Services less energy	313.6	324.5	327.2	329.9	331.8	333.6	334.2	314.0	325.2	327.9	330.6	332.6	334.7	334.8
Purchasing power of the consumer dollar, 1967 = $1	$0.358	$0.352	$0.348	$0.344	$0.342	$0.342	$0.341	$0.358	$0.352	$0.349	$0.345	$0.343	$0.342	$0.342

18. Continued—Consumer Price Index—U.S. city average

[1967=100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
FOOD AND BEVERAGES	270.7	276.5	278.1	280.2	280.8	279.9	280.1	271.0	276.8	278.4	280.5	281.2	280.2	280.4
Food	278.0	283.9	285.5	287.8	288.5	287.4	287.6	278.1	284.1	285.7	288.0	288.6	287.5	287.7
Food at home	273.2	277.9	279.8	282.6	282.8	280.8	280.6	272.3	277.0	278.8	281.6	281.9	279.8	279.7
Cereals and bakery products	274.3	281.7	283.3	283.6	284.3	284.8	284.6	273.2	280.4	282.0	282.3	283.0	283.4	283.4
Cereals and cereal products (12/77 = 100)	150.1	153.6	154.5	154.5	154.8	154.5	154.3	151.2	154.6	155.4	155.5	155.8	155.5	155.2
Flour and prepared flour mixes (12/77 = 100)	139.5	139.7	141.8	142.1	143.5	141.6	141.4	141.1	140.1	142.1	142.5	144.0	142.1	141.8
Cereal (12/77 = 100)	155.7	165.4	165.7	166.1	166.3	166.5	166.9	157.2	167.4	167.8	168.2	168.5	168.6	169.0
Rice, pasta, and cornmeal (12/77 = 100)	151.6	149.6	150.2	149.4	148.9	149.3	148.2	152.6	150.8	151.5	150.6	150.0	150.5	149.4
Bakery products (12/77 = 100)	143.5	147.5	148.3	148.6	149.0	149.4	149.4	142.4	146.3	147.2	147.4	147.8	148.1	148.2
White bread	238.2	242.8	243.8	242.4	246.1	246.6	246.1	235.9	238.8	240.0	238.3	241.9	242.5	241.9
Other breads (12/77 = 100)	141.5	145.2	146.3	145.6	145.1	146.2	147.1	143.4	147.1	148.2	147.5	147.0	148.2	149.0
Fresh biscuits, rolls, and muffins (12/77 = 100)	143.3	147.6	149.7	149.9	148.9	150.5	149.5	140.1	143.8	146.0	146.2	145.4	146.6	145.6
Fresh cakes and cupcakes (12/77 = 100)	144.4	148.4	149.0	149.2	148.9	149.5	150.3	142.3	146.8	147.4	147.5	147.2	147.6	148.7
Cookies (12/77 = 100)	143.9	150.2	150.5	150.7	150.0	149.6	150.9	144.6	151.2	151.4	151.5	150.9	150.6	152.1
Crackers, bread, and cracker products (12/77 = 100)	132.0	137.3	139.6	140.9	141.8	141.3	140.8	132.2	138.7	141.0	142.3	143.2	142.6	142.3
Fresh sweetrolls, coffeecake, and donuts (12/77 = 100)	144.3	146.8	147.3	148.9	148.5	148.9	149.2	144.8	149.3	149.9	151.5	151.1	151.5	151.8
Frozen and refrigerated bakery products and fresh pies, tarts, and turnovers (12/77 = 100)	148.0	153.4	153.6	156.3	156.2	156.6	154.7	142.1	146.5	146.7	149.4	149.2	149.5	148.1
Meats, poultry, fish, and eggs	257.7	258.3	261.0	266.0	268.5	265.4	267.8	257.5	257.8	260.7	265.8	268.3	265.1	267.7
Meats, poultry, and fish	263.4	264.2	268.2	274.3	276.2	273.7	275.3	263.2	263.6	267.7	273.9	275.8	273.3	275.1
Meats	263.4	263.6	269.7	277.2	278.8	276.5	278.4	263.3	262.8	269.0	276.5	278.2	275.8	277.9
Beef and veal	277.1	274.8	281.1	288.2	286.7	280.5	279.1	278.3	275.3	281.9	289.0	287.4	280.8	279.8
Ground beef other than canned	270.3	266.9	269.4	274.6	272.5	268.1	265.4	273.8	267.9	270.7	275.9	273.9	269.0	267.0
Chuck roast	289.4	285.4	287.2	295.4	296.2	289.7	286.9	299.9	294.1	296.2	304.9	305.3	298.9	295.9
Round roast	244.1	244.9	252.4	257.0	251.8	245.0	245.4	249.1	247.9	255.9	260.1	254.7	247.9	249.2
Round steak	255.9	262.8	269.2	278.8	271.2	263.4	262.0	252.5	260.8	267.8	277.2	269.4	261.1	260.6
Sirloin steak	281.9	271.1	282.3	294.1	295.6	285.5	285.2	281.9	272.4	283.8	295.5	298.0	286.8	286.7
Other beef and veal (12/77 = 100)	164.9	163.7	169.0	173.3	173.3	169.7	169.3	162.8	162.1	167.5	171.9	171.7	168.0	167.6
Pork	238.1	241.6	249.9	259.5	265.4	268.2	277.1	239.4	241.0	249.2	258.9	264.9	267.6	276.3
Bacon	237.1	255.9	267.7	280.7	283.9	295.6	315.5	241.1	259.7	271.9	285.3	288.7	300.4	320.7
Chops	225.1	223.4	230.0	241.2	248.9	248.0	252.5	224.7	221.7	228.2	239.6	247.3	246.3	250.6
Ham other than canned (12/77 = 100)	106.8	105.4	111.1	112.6	115.3	116.8	122.1	105.6	102.8	108.3	109.6	112.4	113.8	119.1
Sausage	300.7	305.7	313.3	326.3	331.9	332.2	341.2	302.3	306.3	314.2	327.2	332.9	333.5	342.5
Canned ham	239.5	245.6	249.9	253.2	255.3	257.6	259.7	242.9	248.9	253.2	256.4	258.7	261.1	263.5
Other pork (12/77 = 100)	135.4	135.2	138.9	145.4	150.3	150.8	153.8	136.7	134.5	138.2	144.7	149.5	150.0	153.0
Other meats	260.7	262.8	264.0	268.5	272.0	272.8	272.1	258.7	261.8	263.2	267.8	271.3	272.3	271.7
Frankfurters	256.4	259.5	262.7	268.8	274.2	275.6	275.3	259.1	258.4	261.8	268.3	273.4	274.9	274.7
Bologna, liverwurst, and salami (12/77 = 100)	147.5	150.2	150.7	154.6	156.5	157.5	156.6	144.8	150.3	150.7	154.6	156.6	157.6	156.6
Other lunchmeats (12/77 = 100)	131.8	133.2	134.3	135.5	137.3	138.3	138.9	129.5	131.2	132.3	133.4	135.1	136.1	136.7
Lamb and organ meats (12/77 = 100)	144.4	142.6	141.2	143.1	143.9	142.3	140.5	146.0	145.6	144.4	146.5	147.3	145.6	143.6
Poultry	199.7	193.3	196.0	197.5	199.6	196.2	196.2	198.1	191.5	194.1	195.8	197.8	194.4	194.2
Fresh whole chicken	197.3	194.1	196.8	199.1	201.2	193.8	194.8	194.0	192.0	194.7	197.0	198.8	191.8	192.5
Fresh and frozen chicken parts (12/77 = 100)	130.5	127.6	128.3	129.3	129.4	128.2	127.1	130.1	125.9	126.5	127.5	127.9	126.5	125.4
Other poultry (12/77 = 100)	129.9	121.3	124.3	124.6	127.3	127.7	127.9	129.6	120.8	123.9	124.3	126.9	127.4	127.4
Fish and seafood	362.6	382.0	366.3	365.2	370.2	367.6	369.4	358.6	381.4	365.0	364.2	368.7	365.8	368.4
Canned fish and seafood (12/77 = 100)	140.9	141.5	139.8	139.9	140.5	139.4	139.3	139.4	140.8	139.2	139.4	139.9	138.8	138.7
Fresh and frozen fish and seafood (12/77 = 100)	136.5	147.9	139.4	138.6	141.3	140.4	141.5	134.9	148.0	138.9	138.3	140.8	139.7	141.3
Eggs	188.8	186.9	172.3	162.5	173.6	161.2	175.2	189.5	187.9	173.4	163.4	174.7	162.3	176.1
Dairy products	244.3	247.5	247.0	246.3	247.5	247.5	247.0	244.1	246.8	246.3	245.7	246.8	246.8	246.3
Fresh milk and cream (12/77 = 100)	134.7	135.9	135.7	135.2	135.6	135.4	135.1	134.3	135.3	135.1	134.7	135.1	134.8	134.5
Fresh whole milk	220.0	222.2	222.0	221.3	221.6	221.2	220.8	219.4	221.3	221.1	220.4	220.7	220.3	219.9
Other fresh milk and cream (12/77 = 100)	135.4	136.2	135.7	135.4	136.2	136.0	135.6	135.3	135.7	135.2	134.9	135.7	135.5	135.0
Processed dairy products (12/77 = 100)	143.0	145.6	145.2	144.9	145.9	146.3	146.1	143.4	145.9	145.5	145.2	146.2	146.6	146.3
Butter	247.1	250.1	251.1	250.9	251.1	252.1	252.2	249.9	252.7	253.7	253.4	253.7	254.6	254.7
Cheese (12/77 = 100)	140.8	143.7	144.0	143.2	144.2	144.8	144.9	140.9	144.0	144.3	143.6	144.5	145.1	145.2
Ice cream and related products (12/77 = 100)	148.7	150.9	148.7	149.6	150.4	150.6	149.3	149.1	150.2	147.9	148.7	149.6	149.6	148.4
Other dairy products (12/77 = 100)	137.3	139.9	139.7	138.7	141.3	140.7	141.1	137.6	140.8	140.4	139.4	142.0	141.6	141.8
Fruits and vegetables	281.6	294.0	297.9	305.6	299.7	291.4	284.1	276.3	290.3	293.6	301.0	295.3	286.7	278.8
Fresh fruits and vegetables	286.9	304.1	311.7	325.9	313.8	296.9	283.5	278.2	298.9	305.1	318.6	307.1	289.7	275.2
Fresh fruits	306.4	306.7	318.8	340.8	332.4	336.1	329.0	293.7	295.5	306.9	327.0	320.5	323.2	313.6
Apples	262.9	287.5	299.8	321.4	331.8	314.5	285.5	261.8	287.8	300.1	321.9	333.3	316.7	286.6
Bananas	250.7	268.5	261.6	267.9	245.4	233.7	240.7	251.3	266.1	259.3	265.5	243.6	231.3	238.5
Oranges	346.2	330.8	362.1	406.8	438.2	473.0	516.3	314.6	300.2	328.3	367.5	399.9	433.5	466.8
Other fresh fruits (12/77 = 100)	168.4	163.4	168.2	177.1	161.6	163.9	152.1	161.5	157.6	162.4	170.3	156.1	158.1	146.4
Fresh vegetables	268.6	301.8	305.1	311.9	296.4	260.2	241.0	264.4	302.0	303.7	311.1	295.0	259.6	240.6
Potatoes	329.1	306.1	320.3	344.9	370.9	328.1	272.4	316.8	300.8	313.6	339.7	366.0	323.4	269.6
Lettuce	293.5	355.2	291.6	269.1	254.5	246.3	236.1	292.9	358.6	293.5	270.0	253.0	247.5	237.9
Tomatoes	193.9	220.5	226.5	275.6	270.2	194.3	184.9	291.3	224.9	230.6	279.9	274.9	198.2	187.9
Other fresh vegetables (12/77 = 100)	137.9	166.3	179.3	177.5	155.6	138.3	134.0	136.6	166.7	178.6	177.0	154.8	137.8	133.5
Processed fruits and vegetables	278.3	285.5	285.4	285.9	°286.8	288.0	287.4	276.7	283.3	283.3	283.9	284.8	285.9	285.3
Processed fruits (12/77 = 100)	143.7	148.2	148.3	148.0	148.5	148.7	149.0	143.7	147.7	147.9	147.6	148.1	148.2	148.6
Frozen fruit and fruit juices (12/77 = 100)	143.6	147.1	145.7	144.4	143.5	142.8	144.1	142.8	146.1	144.6	143.4	142.6	141.7	143.2
Fruit juices other than frozen (12/77 = 100)	147.5	151.5	152.2	151.7	152.2	153.0	152.0	147.8	150.4	151.0	150.7	151.0	151.9	151.0
Canned and dried fruits (12/77 = 100)	139.8	145.6	146.4	147.0	148.8	148.9	149.8	140.1	146.2	147.0	147.6	149.4	149.6	150.4
Processed vegetables (12/77 = 100)	135.9	138.6	138.5	139.3	139.7	140.7	139.8	134.8	137.5	137.4	138.2	138.6	139.6	138.6
Frozen vegetables (12/77 = 100)	134.9	144.0	143.9	145.6	146.7	147.7	148.1	136.6	145.3	145.2	146.9	148.0	149.0	149.5

18. Continued—Consumer Price Index—U.S. city average

[1967=100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
FOOD AND BEVERAGES—Continued														
Food—Continued														
Food at home—Continued														
Fruits and vegetables—Continued														
Cut corn and canned beans except lima (12/77=100)	136.8	140.5	140.7	141.1	141.0	143.6	141.3	135.1	137.9	138.5	138.8	138.6	141.2	138.8
Other canned and dried vegetables (12/77=100)	135.6	135.0	134.6	135.2	135.4	135.6	134.8	133.8	133.5	133.2	133.8	134.1	134.2	133.3
Other foods at home	325.7	331.6	332.6	332.6	332.2	333.3	333.6	326.2	332.6	333.5	333.5	333.1	334.0	334.5
Sugar and sweets	361.4	365.3	365.7	366.8	369.5	370.1	371.2	363.1	365.2	365.6	366.9	369.7	370.3	371.3
Candy and chewing gum (12/77=100)	146.8	150.9	150.0	150.4	150.5	150.0	149.7	147.6	150.8	149.9	150.5	150.6	150.1	149.8
Sugar and artificial sweeteners (12/77=100)	163.0	159.9	160.5	161.4	164.6	166.7	167.5	164.9	161.1	161.8	162.8	166.1	168.2	169.0
Other sweets (12/77=100)	145.3	147.2	148.9	148.9	149.8	149.6	151.1	143.8	145.3	147.0	146.9	147.9	147.5	148.9
Fats and oils (12/77=100)	268.5	260.4	260.6	260.7	259.3	258.3	258.4	267.4	260.4	260.6	260.7	259.3	258.2	258.3
Margarine	256.7	259.6	259.7	261.2	258.4	257.9	259.3	254.5	259.1	259.3	260.8	258.0	257.3	258.5
Nondairy substitutes and peanut butter (12/77=100)	178.5	157.3	156.0	156.5	154.9	154.2	151.2	177.2	155.6	154.2	154.9	153.1	152.4	149.5
Other fats, oils, and salad dressings (12/77=100)	129.6	129.0	129.6	129.1	129.2	128.5	129.4	129.2	129.5	130.2	129.7	129.7	129.0	130.0
Nonalcoholic beverages	413.7	424.1	425.6	424.8	422.8	423.8	424.2	414.7	426.0	427.3	426.6	424.4	425.3	425.9
Cola drinks, excluding diet cola	298.9	304.9	306.1	305.9	302.9	304.3	305.0	295.6	302.4	303.6	303.3	300.4	301.7	302.8
Carbonated drinks, including diet cola (12/77=100)	142.4	143.4	144.3	143.1	143.3	144.8	144.6	140.3	141.5	142.3	141.2	141.1	142.6	142.3
Roasted coffee	345.1	369.6	369.3	365.1	364.3	365.5	362.9	340.5	365.0	364.3	360.1	359.3	360.4	357.9
Freeze dried and instant coffee	330.8	343.4	344.3	344.3	344.9	344.9	343.1	331.4	343.0	343.9	343.8	344.4	344.4	342.5
Other noncarbonated drinks (12/77=100)	134.9	138.7	138.9	140.0	139.2	137.7	138.8	134.6	138.9	139.1	140.2	139.5	137.8	139.0
Other prepared foods	259.0	266.6	267.5	267.8	268.0	269.9	269.9	260.5	268.3	269.3	269.5	269.8	271.5	271.7
Canned and packaged soup (12/77=100)	134.9	135.7	135.7	136.3	136.9	137.9	137.4	136.4	137.8	137.7	138.3	138.9	140.0	139.5
Frozen prepared foods (12/77=100)	144.8	147.2	147.8	147.3	146.7	149.1	148.9	142.7	146.7	147.3	146.8	146.0	148.5	148.4
Snacks (12/77=100)	149.6	152.9	153.5	153.2	152.7	153.1	153.0	152.6	155.0	155.6	155.2	154.8	155.1	155.0
Seasonings, olives, pickles, and relish (12/77=100)	144.4	153.6	152.8	153.3	152.7	154.1	155.3	142.7	152.7	151.9	152.4	152.1	153.2	154.4
Other condiments (12/77=100)	143.3	148.7	150.2	150.6	151.4	151.9	152.2	145.3	150.4	151.9	152.4	153.2	153.6	154.0
Miscellaneous prepared foods (12/77=100)	142.3	147.6	148.5	148.3	149.3	150.2	149.7	142.8	147.7	148.7	148.5	149.5	150.3	149.9
Other canned and packaged prepared foods (12/77=100)	139.9	143.3	143.5	144.5	144.6	145.4	145.9	141.1	144.6	144.9	145.8	145.9	146.8	147.3
Food away from home	294.8	303.6	304.8	305.9	307.6	308.7	309.8	297.6	306.7	307.8	309.0	310.7	311.8	312.9
Lunch (12/77=100)	143.6	147.5	148.2	148.9	149.6	150.3	150.7	144.6	149.1	149.8	150.5	151.2	152.0	152.3
Dinner (12/77=100)	142.4	146.3	147.1	147.4	148.1	148.6	149.2	144.3	147.9	148.8	149.1	149.8	150.3	150.9
Other meals and snacks (12/77=100)	143.1	148.6	148.5	149.2	150.5	150.7	151.5	143.9	149.3	149.2	149.9	151.1	151.3	152.1
Alcoholic beverages	202.5	207.4	208.0	208.4	209.2	210.1	210.1	204.6	209.5	210.1	210.4	211.3	212.1	212.2
Alcoholic beverages at home (12/77=100)	131.4	134.6	135.0	135.0	135.5	136.1	135.9	132.8	136.0	136.2	136.3	136.9	137.4	137.2
Beer and ale	203.6	210.5	210.3	210.6	211.4	211.9	211.4	203.5	209.6	209.4	209.6	210.5	210.9	210.5
Whiskey	145.4	147.2	148.2	148.3	148.9	149.6	149.8	146.2	148.0	149.0	149.1	149.8	150.4	150.5
Wine	229.7	236.4	236.9	235.3	236.5	238.9	237.5	237.6	244.4	244.9	242.7	245.0	247.1	246.2
Other alcoholic beverages (12/77=100)	117.5	118.2	119.0	119.7	119.6	120.3	120.3	117.1	118.0	118.9	119.6	119.6	120.5	120.4
Alcoholic beverages away from home (12/77=100)	135.4	138.4	139.1	140.3	140.8	141.2	142.5	136.2	139.9	140.6	141.6	142.1	142.4	143.9
HOUSING	303.7	309.4	313.8	317.5	319.2	320.1	319.7	303.6	309.2	313.7	317.5	319.3	320.5	320.0
Shelter	326.9	331.4	336.7	340.9	342.8	344.2	342.6	328.6	332.8	338.3	342.6	344.6	346.5	344.7
Rent, residential	211.9	220.1	221.8	222.6	224.8	226.0	226.9	211.5	219.6	221.3	222.1	224.3	225.5	226.4
Other rental costs	308.1	323.7	323.6	327.3	330.0	333.9	343.0	308.0	322.8	322.6	326.3	329.4	333.3	341.1
Lodging while out of town	326.3	346.6	346.6	352.2	356.5	362.0	363.1	325.3	343.9	344.0	349.4	354.2	359.5	360.7
Tenants' insurance (12/77=100)	135.9	144.9	144.4	145.5	145.6	147.5	147.3	136.4	144.7	143.8	144.8	144.8	146.6	146.3
Homeownership	367.8	370.6	377.4	382.8	384.5	385.9	383.0	371.0	373.6	380.5	386.0	388.0	390.1	387.0
Home purchase	274.5	272.3	279.3	285.6	287.7	287.9	286.8	273.8	270.5	278.1	284.4	286.8	287.3	286.4
Financing, taxes, and insurance	501.8	508.4	516.2	521.8	524.3	527.3	519.9	509.0	516.0	523.8	529.7	532.4	536.8	528.9
Property insurance	389.7	393.6	396.7	400.6	401.5	402.5	404.8	391.9	396.0	399.2	402.7	403.7	404.6	407.4
Property taxes	206.2	217.2	218.3	218.8	219.3	221.8	223.7	208.0	219.1	220.2	220.7	221.1	223.7	225.6
Contracted mortgage interest cost	662.0	667.1	678.5	686.7	690.4	694.0	681.2	664.4	670.2	681.4	690.0	694.0	699.6	686.3
Mortgage interest rates	238.2	242.1	240.2	238.3	237.3	238.8	235.3	239.2	244.4	242.1	240.2	239.2	241.2	237.5
Maintenance and repairs	321.6	331.6	334.5	336.1	334.7	335.9	338.4	318.1	328.3	330.9	332.4	331.5	332.5	334.6
Maintenance and repair services	352.5	363.6	367.0	369.1	366.9	368.5	372.5	352.5	365.0	368.0	370.0	368.1	369.6	373.4
Maintenance and repair commodities	248.7	256.2	257.8	258.3	258.7	258.8	257.7	244.1	249.7	251.3	252.1	252.9	253.0	251.8
Paint and wallpaper, supplies, tools, and equipment (12/77=100)	146.2	153.1	154.2	153.3	153.4	154.2	153.0	139.1	145.8	147.0	146.0	146.5	147.3	145.9
Lumber, awnings, glass, and masonry (12/77=100)	125.0	124.5	124.5	124.7	125.0	124.1	123.6	123.2	121.9	121.9	122.1	1225	121.7	121.3
Plumbing, electrical, heating, and cooling supplies (12/77=100)	131.2	133.4	135.1	136.2	137.1	136.3	136.1	131.7	133.1	134.9	136.0	136.6	135.6	135.3
Miscellaneous supplies and equipment (12/77=100)	131.2	135.6	136.3	138.4	138.3	138.8	139.0	134.3	137.4	138.2	140.6	140.5	140.9	141.2
Fuel and other utilities	331.1	339.2	345.4	352.2	354.7	356.3	359.5	332.3	340.3	346.5	353.6	356.2	357.7	361.0
Fuels	422.4	428.2	438.0	448.4	452.0	454.0	458.5	422.2	427.8	437.4	448.3	451.9	453.8	458.4
Fuel oil, coal, and bottled gas	673.4	641.3	644.6	656.6	659.9	659.9	662.8	677.0	644.0	647.7	659.7	662.9	662.7	665.4
Fuel oil	705.7	666.2	670.6	684.8	688.6	686.8	685.9	709.0	668.4	673.3	687.5	691.1	689.1	688.1
Other fuels (6/78 = 100)	163.8	166.4	165.7	165.6	166.0	169.2	176.8	165.3	167.9	167.1	166.9	167.4	170.5	178.0
Gas (piped) and electricity	364.5	377.8	389.0	398.9	402.1	404.4	409.2	363.6	376.8	387.8	398.2	401.5	403.7	408.6
Electricity	309.8	312.8	314.9	327.5	330.5	333.7	332.5	309.9	311.8	314.4	327.7	330.8	333.7	332.5
Utility (piped) gas	431.7	465.3	494.6	497.2	500.2	500.6	517.6	428.5	463.6	490.8	493.8	496.9	497.5	514.5

18. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
HOUSING—Continued														
Fuel and other utilities—Continued														
Other utilities and public services	187.4	197.7	198.9	200.4	201.4	202.4	203.6	187.8	198.2	199.5	201.1	202.1	203.1	204.3
Telephone services	152.5	160.8	161.6	163.2	163.8	164.2	165.5	152.7	161.0	161.9	163.5	164.2	164.6	165.9
Local charges (12/77 = 100)	120.5	127.9	128.9	131.2	131.9	132.5	134.3	120.7	128.1	129.2	131.6	132.3	132.9	134.8
Interstate toll calls (12/77 = 100)	114.9	119.9	120.0	119.6	119.7	119.7	119.7	115.1	120.2	120.4	120.1	120.1	120.1	120.1
Intrastate toll calls (12/77 = 100)	103.9	108.9	109.3	109.8	110.0	110.0	110.1	103.7	108.7	109.0	109.4	109.6	109.6	109.7
Water and sewerage maintenance	304.1	320.7	323.5	324.9	327.7	331.9	332.4	306.0	323.6	326.7	328.0	330.8	334.8	335.4
Household furnishings and operations	224.5	232.6	233.4	233.7	234.1	233.4	234.2	221.2	229.1	230.0	230.4	230.9	230.0	231.0
Housefurnishings	187.9	193.8	194.7	194.7	194.7	193.3	194.3	185.7	191.7	192.5	192.6	192.7	191.3	192.4
Textile housefurnishings	207.7	218.7	220.9	220.2	218.6	220.4	222.1	213.0	221.4	223.9	223.3	221.1	222.9	225.0
Household linens (12/77 = 100)	127.7	135.8	135.4	134.6	131.9	132.9	135.4	129.7	137.0	136.8	135.9	133.3	134.1	136.4
Curtains, drapes, slipcovers, and sewing materials (12/77 = 100)	131.4	136.9	140.1	140.1	140.8	142.2	141.6	136.3	139.1	142.8	143.0	143.2	144.7	144.8
Furniture and bedding	207.7	214.7	215.1	214.4	214.2	210.3	213.3	202.7	211.0	211.3	210.9	210.5	206.9	210.3
Bedroom furniture (12/77 = 100)	137.6	142.3	144.5	143.0	144.8	141.4	145.5	132.9	138.9	140.7	139.7	141.2	137.3	142.1
Sofas (12/77 = 100)	118.6	119.3	119.1	117.5	117.7	117.0	117.2	117.4	119.6	119.4	118.2	118.1	117.5	117.7
Living room chairs and tables (12/77 = 100)	116.8	123.2	122.8	123.2	121.9	121.1	123.1	117.2	123.3	122.9	123.3	122.0	121.4	123.4
Other furniture (12/77 = 100)	137.3	142.3	141.6	142.3	140.9	137.1	137.8	132.3	137.9	137.0	137.7	136.3	133.3	134.1
Appliances including TV and sound equipment	147.7	150.6	151.4	151.4	151.6	151.3	151.5	146.7	150.3	151.1	151.2	151.5	151.2	151.4
Television and sound equipment (12/77 = 100)	108.7	108.7	108.8	108.6	108.7	108.3	108.2	107.8	107.7	107.9	107.7	107.8	107.5	107.4
Television	104.6	104.2	104.3	104.4	104.0	103.9	103.7	103.6	103.0	103.0	103.1	102.7	102.7	102.6
Sound equipment (12/77 = 100)	113.4	113.7	113.9	113.5	114.0	113.3	113.2	112.4	112.8	113.0	112.7	113.2	112.6	112.5
Household appliances	175.7	182.1	183.6	183.8	184.2	184.1	184.7	174.4	182.3	183.8	184.2	184.8	184.6	185.1
Refrigerators and home freezers	177.5	184.8	186.2	187.7	187.4	187.4	190.2	180.6	190.6	191.8	193.2	192.9	192.9	196.1
Laundry equipment (12/77 = 100)	129.7	136.4	136.6	136.7	137.3	137.3	137.6	128.8	136.6	136.8	136.9	137.5	137.5	137.9
Other household appliances (12/77 = 100)	119.7	122.9	124.3	123.9	124.4	124.3	124.0	117.1	120.7	122.3	122.3	123.0	122.7	122.0
Stoves, dishwashers, vacuums, and sewing machines (12/77 = 100)	118.8	122.3	123.7	123.1	123.3	122.7	123.4	116.0	119.7	121.4	121.6	122.2	121.4	121.5
Office machines, small electric appliances, and air conditioners (12/77 = 100)	120.8	123.5	124.9	124.8	125.6	126.0	124.6	118.3	121.8	123.3	123.0	123.9	124.2	122.5
Other household equipment (12/77 = 100)	133.1	137.8	138.3	139.0	139.6	138.2	137.8	131.6	135.6	136.0	136.9	137.5	136.0	135.6
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment (12/77 = 100)	134.8	140.3	141.4	142.3	142.7	142.9	143.3	129.6	132.9	133.9	134.9	135.4	135.4	135.9
Clocks, lamps, and decor items (12/77 = 100)	128.2	130.2	131.4	132.2	132.3	129.8	129.7	123.8	126.5	127.4	128.2	128.3	125.1	124.9
Tableware, serving pieces, and nonelectric kitchenware (12/77 = 100)	140.4	145.0	144.4	145.6	145.9	143.8	141.6	137.8	140.6	139.8	141.4	141.9	140.0	137.6
Lawn equipment, power tools, and other hardware (12/77 = 100)	124.5	130.8	132.1	131.9	133.2	132.3	133.4	129.2	136.0	137.4	137.1	138.5	137.2	138.8
Housekeeping supplies	273.3	284.9	285.5	286.5	288.4	288.7	289.2	270.4	281.2	281.8	283.1	285.0	284.9	285.7
Soaps and detergents	268.9	280.0	278.8	280.8	281.4	279.4	282.8	265.6	276.3	275.2	277.0	277.6	275.4	278.9
Other laundry and cleaning products (12/77 = 100)	135.7	142.7	143.3	143.8	145.3	144.6	145.6	135.8	141.6	142.3	142.7	144.2	143.6	144.5
Cleansing and toilet tissue, paper towels and napkins (12/77 = 100)	139.9	146.4	146.0	146.5	147.7	148.5	148.0	140.4	146.2	145.6	146.1	147.4	148.3	147.9
Stationery, stationery supplies, and gift wrap (12/77 = 100)	127.2	131.4	132.0	132.5	134.3	135.4	136.8	128.7	134.6	135.3	136.0	137.8	138.6	140.0
Miscellaneous household products (12/77 = 100)	142.8	147.5	149.3	150.2	150.3	150.7	150.2	138.1	142.4	144.1	144.9	145.1	145.5	145.0
Lawn and garden supplies (12/77 = 100)	137.8	144.7	144.8	144.0	145.3	145.7	143.8	131.1	136.8	136.6	136.7	138.1	138.1	136.4
Housekeeping services	298.3	310.4	311.3	311.7	312.5	312.9	313.4	296.9	309.2	310.2	310.9	311.6	312.2	312.7
Postage	308.0	337.5	337.5	337.5	337.5	337.5	337.5	308.1	337.5	337.5	337.5	337.5	337.5	337.5
Moving, storage, freight, household laundry, and drycleaning services (12/77 = 100)	144.7	152.1	153.1	154.2	155.3	156.1	156.6	144.9	152.2	153.3	154.5	155.4	156.4	156.8
Appliance and furniture repair (12/77 = 100)	129.0	135.6	136.6	137.0	137.5	137.7	138.3	128.3	134.1	135.1	135.5	136.0	136.1	136.7
APPAREL AND UPKEEP	190.7	191.9	191.5	190.8	189.7	191.8	194.9	190.5	191.2	190.6	189.6	188.7	190.7	194.1
Apparel commodities	181.4	181.4	180.9	180.0	178.6	180.8	184.1	181.6	181.3	180.5	179.4	178.2	180.3	183.8
Apparel commodities less footwear	178.0	177.4	176.7	175.6	174.0	176.9	180.4	178.1	177.1	176.0	174.7	173.4	176.2	179.9
Men's and boys'	181.1	183.1	183.8	183.1	182.4	183.7	186.5	181.4	182.9	183.7	183.2	182.6	183.5	186.6
Men's (12/77 = 100)	114.3	115.5	115.9	115.4	114.9	115.9	117.7	115.0	115.7	116.2	115.8	115.4	116.2	118.2
Suits, sport coats, and jackets (12/77 = 100)	108.8	107.6	108.1	107.3	105.5	108.0	110.6	102.1	101.1	101.4	100.6	99.2	101.2	103.5
Coats and jackets (12/77 = 100)	101.0	99.1	99.9	99.5	98.2	99.1	103.7	106.1	100.7	101.5	101.1	99.8	100.3	106.4
Furnishings and special clothing (12/77 = 100)	132.7	138.2	138.7	138.0	138.7	138.4	138.6	128.5	134.5	135.3	134.7	135.3	134.9	135.8
Shirts (12/77 = 100)	120.6	121.3	121.2	121.5	121.6	121.9	123.8	123.9	123.4	123.1	123.8	123.6	123.9	126.2
Dungarees, jeans, and trousers (12/77 = 100)	107.8	109.7	110.3	109.7	109.5	110.5	111.4	113.5	115.1	115.6	115.2	115.0	116.0	116.9
Boys' (12/77 = 100)	116.4	118.3	118.8	118.5	118.6	118.4	120.2	114.8	116.5	117.1	116.9	116.9	116.7	118.3
Coats, jackets, sweaters, and shirts (12/77 = 100)	111.3	111.2	111.5	110.7	109.0	110.5	113.7	112.3	111.5	112.0	111.5	109.7	111.3	114.6
Furnishings (12/77 = 100)	125.0	130.3	131.2	131.9	132.1	131.1	132.6	120.9	126.0	127.2	128.0	128.2	127.2	128.6
Suits, trousers, sport coats, and jackets (12/77 = 100)	117.0	119.0	119.6	119.4	120.7	119.5	120.3	114.4	116.8	117.3	117.1	118.3	117.1	117.3
Women's and girls'	162.9	160.9	159.1	157.3	154.6	159.2	163.6	164.9	163.4	160.8	158.4	156.2	160.9	165.7
Women's (12/77 = 100)	108.1	107.1	105.7	104.4	102.1	105.4	108.7	109.8	109.1	107.1	105.4	103.5	106.9	110.5
Coats and jackets	170.8	163.4	158.3	156.4	154.9	163.0	169.7	177.8	172.9	165.7	162.9	161.8	171.0	176.9
Dresses	170.8	166.6	162.0	160.1	152.8	158.5	165.1	155.5	151.1	147.1	145.4	138.4	145.9	151.2
Separates and sportswear (12/77 = 100)	101.1	100.1	101.2	100.2	96.7	98.3	101.4	103.3	101.0	101.9	101.0	97.6	99.1	102.6
Underwear, nightwear, and hosiery (12/77 = 100)	122.8	127.4	128.1	127.9	127.7	129.3	129.7	122.7	127.3	127.9	127.6	127.4	129.0	129.4
Suits (12/77 = 100)	95.4	89.4	83.4	78.6	77.6	85.6	92.7	115.0	111.0	100.6	92.7	93.1	99.8	111.9
Girls' (12/77 = 100)	109.7	106.7	106.3	105.8	106.3	108.2	109.6	108.8	106.9	106.2	105.2	105.4	107.4	108.9
Coats, jackets, dresses, and suits (12/77 = 100)	103.3	98.8	96.9	95.1	98.8	101.4	102.5	103.3	97.6	95.0	92.4	96.0	99.4	100.5
Separates and sportswear (12/77 = 100)	111.0	105.4	105.9	106.0	103.6	105.8	107.8	110.0	107.6	108.0	107.7	104.1	105.9	108.5
Underwear, nightwear, hosiery, and accessories (12/77 = 100)	117.9	122.0	122.4	122.9	123.8	124.0	124.4	115.5	121.0	121.5	121.9	122.7	123.0	123.5

18. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
APPAREL AND UPKEEP—Continued														
Apparel commodities—Continued														
Apparel commodities less footwear—Continued														
Infants' and toddlers'	266.4	267.0	269.0	268.7	268.8	272.4	276.8	279.8	278.2	279.3	278.2	277.8	283.0	288.1
Other apparel commodities	213.3	210.8	209.7	209.9	209.7	210.8	212.6	206.0	199.5	198.8	198.9	198.7	199.5	201.2
Sewing materials and notions (12/77 = 100)	118.3	118.5	119.3	119.2	120.0	121.5	121.9	116.4	116.9	117.7	117.6	118.5	119.6	120.0
Jewelry and luggage (12/77 = 100)	146.2	143.8	142.5	142.8	142.2	142.6	144.1	140.9	134.5	133.5	133.6	133.1	133.3	134.7
Footwear	202.4	205.6	206.5	206.6	206.4	204.4	206.2	202.3	206.1	206.9	206.7	206.7	204.1	205.9
Men's (12/77 = 100)	128.8	132.3	132.4	132.1	132.3	130.9	132.4	129.7	134.4	134.5	134.1	134.3	132.7	134.1
Boys' and girls' (12/77 = 100)	129.7	130.4	131.5	132.1	131.7	128.7	129.4	130.7	133.6	134.6	134.8	134.4	131.3	131.9
Women's (12/77 = 100)	123.5	125.1	125.8	125.8	125.6	125.4	126.5	121.2	121.1	121.6	121.6	121.5	121.1	122.4
Apparel services	262.0	273.4	274.7	275.3	276.6	277.4	279.2	260.0	271.0	272.3	273.0	274.3	275.2	277.2
Laundry and drycleaning other than coin operated (12/77 = 100)	155.7	163.5	164.4	164.8	165.4	165.6	166.7	155.0	162.0	162.8	163.3	163.8	164.1	165.2
Other apparel services (12/77 = 100)	138.2	142.5	142.9	143.1	144.1	145.0	145.9	137.4	142.7	143.1	143.4	144.6	145.5	146.6
TRANSPORTATION	285.2	282.9	285.6	292.8	296.1	296.2	295.3	286.6	284.3	287.1	294.5	297.9	298.0	296.9
Private	281.9	278.8	281.5	288.9	292.3	292.4	291.1	284.1	281.2	284.0	291.6	295.1	295.2	293.8
New cars	191.3	196.0	197.5	198.1	198.6	198.7	197.7	191.4	195.9	197.3	197.9	198.5	198.6	197.5
Used cars	272.8	285.1	291.4	298.2	302.4	304.4	304.6	272.8	285.2	291.4	298.2	302.4	304.4	304.6
Gasoline	411.2	366.7	370.4	392.3	400.3	398.4	394.2	412.4	367.9	371.7	393.8	401.6	399.7	395.5
Automobile maintenance and repair	298.7	311.9	313.6	316.0	318.0	319.2	320.6	299.3	312.8	314.4	316.8	318.7	320.0	321.3
Body work (12/77 = 100)	147.4	155.0	155.7	156.3	157.5	158.2	159.4	146.1	153.3	154.0	154.7	156.0	156.8	158.1
Automobile drive train, brake, and miscellaneous mechanical repair (12/77 = 100)	143.1	149.5	150.8	151.6	151.9	152.5	153.1	145.5	153.7	154.9	155.7	156.1	156.6	157.1
Maintenance and servicing (12/77 = 100)	138.9	144.5	145.0	146.8	147.9	148.5	148.9	139.2	144.0	144.4	146.2	147.3	147.8	148.2
Power plant repair (12/77 = 100)	142.6	149.1	150.1	150.8	151.7	152.4	153.3	141.9	148.6	149.6	150.3	151.2	151.9	152.8
Other private transportation	244.2	255.1	255.7	258.7	260.8	260.8	260.0	246.9	258.2	258.8	261.8	264.0	263.9	263.0
Other private transportation commodities	212.6	214.9	216.9	217.5	216.3	214.8	213.9	215.5	217.3	219.4	220.0	218.8	217.1	216.3
Motor oil, coolant, and other products (12/77 = 100)	147.7	150.7	149.9	150.7	151.5	153.2	152.5	145.3	149.2	148.4	149.0	150.3	151.8	151.2
Automobile parts and equipment (12/77 = 100)	136.0	137.2	138.8	139.2	138.2	136.8	136.3	138.4	139.2	140.9	141.2	140.1	138.6	138.1
Tires	189.7	190.1	192.3	192.8	191.8	189.5	188.5	194.1	193.7	196.0	196.4	195.5	193.0	192.1
Other parts and equipment (12/77 = 100)	132.8	136.2	138.0	138.3	136.6	135.8	135.8	133.2	136.6	138.4	138.6	136.8	136.0	135.8
Other private transportation services	255.0	268.2	268.4	272.2	275.1	275.5	274.7	257.7	271.6	271.8	275.5	278.5	278.9	277.9
Automobile insurance	262.0	270.4	271.6	274.0	275.4	275.8	276.9	261.8	270.2	271.3	273.5	274.9	275.2	276.3
Automobile finance charges (12/77 = 100)	178.0	187.2	186.3	192.0	193.6	193.5	189.6	176.5	186.7	185.9	191.2	192.6	192.9	188.9
Automobile rental, registration, and other fees (12/77 = 100)	120.1	133.3	133.3	133.3	137.4	138.0	138.9	119.8	133.7	133.7	133.8	138.4	138.8	140.0
State registration	147.9	174.2	174.2	174.3	183.6	183.8	183.7	148.0	173.8	173.8	173.9	183.2	183.4	183.3
Drivers' licenses (12/77 = 100)	109.6	123.0	127.7	127.7	132.8	132.8	132.8	109.5	123.0	127.9	127.9	133.1	133.1	133.1
Vehicle inspection (12/77 = 100)	128.4	129.0	126.7	126.7	128.5	128.5	128.5	129.1	130.4	128.3	128.3	129.9	129.9	129.9
Other vehicle-related fees (12/77 = 100)	140.9	149.5	149.2	149.3	151.0	151.9	154.5	145.9	156.4	156.2	156.3	158.7	159.4	163.0
Public	329.1	339.3	342.1	345.6	347.2	348.1	353.3	324.5	333.3	335.1	337.9	339.8	341.0	345.4
Airline fare	372.5	382.7	388.9	396.0	397.4	397.5	409.5	371.8	379.8	385.2	392.4	393.2	393.5	407.0
Intercity bus fare	351.4	367.0	366.0	363.7	368.3	370.5	368.9	351.7	368.7	367.5	365.4	370.6	372.3	371.0
Intracity mass transit	298.6	308.1	308.3	309.2	311.0	312.8	312.6	299.2	307.2	307.1	307.9	310.3	312.3	312.1
Taxi fare	288.6	297.6	297.6	298.0	299.3	299.7	299.8	297.1	307.3	307.2	307.6	308.7	309.3	309.3
Intercity train fare	305.0	332.1	337.9	338.2	338.4	338.6	338.4	305.2	332.1	337.9	338.2	338.4	338.6	338.4
MEDICAL CARE	301.7	321.7	323.8	326.4	330.0	333.3	336.0	300.9	320.2	322.3	324.8	328.1	331.3	333.9
Medical care commodities	190.8	202.4	204.1	205.6	206.5	208.2	209.9	191.9	203.0	204.8	206.3	207.1	208.8	210.5
Prescription drugs	176.5	188.8	190.4	191.8	193.4	195.6	197.2	178.0	189.7	191.4	192.7	194.4	196.6	198.2
Anti-infective drugs (12/77 = 100)	136.5	140.9	142.5	143.3	144.2	146.0	147.5	139.2	142.5	144.1	145.1	146.0	147.5	149.2
Tranquilizers and sedatives (12/77 = 100)	140.0	152.0	153.8	154.9	156.1	157.6	158.8	139.7	151.8	153.8	154.7	155.8	157.4	158.6
Circulatories and diuretics (12/77 = 100)	127.8	136.7	137.0	138.4	139.3	140.7	141.5	129.0	136.6	136.8	138.2	139.1	140.6	141.3
Hormones, diabetic drugs, biologicals, and prescription medical supplies (12/77 = 100)	160.6	173.3	175.4	177.2	179.6	181.6	182.3	161.4	174.6	176.9	178.6	181.1	183.1	183.8
Pain and symptom control drugs (12/77 = 100)	141.7	153.1	153.7	154.6	155.4	157.6	159.5	143.8	154.6	155.2	156.0	157.1	159.3	161.4
Supplements, cough and cold preparations, and respiratory agents (12/77 = 100)	134.1	144.7	145.9	146.3	147.9	149.6	150.8	134.6	144.8	146.0	146.4	148.1	149.8	150.9
Nonprescription drugs and medical supplies (12/77 = 100)	136.7	143.9	145.1	146.3	146.4	147.2	148.4	137.4	144.6	145.9	147.1	147.1	147.9	149.1
Eyeglasses (12/77 = 100)	126.9	130.1	130.9	131.6	131.6	131.6	131.9	126.0	128.7	129.7	130.4	130.4	130.3	130.5
Internal and respiratory over-the-counter drugs	217.8	231.1	233.4	235.2	234.9	236.6	239.3	218.9	232.5	235.0	236.8	236.2	237.9	240.6
Nonprescription medical equipment and supplies (12/77 = 100)	131.4	138.9	139.5	141.1	142.2	142.9	143.5	132.6	139.7	140.4	142.0	143.2	144.2	144.8
Medical care services	326.1	348.0	350.2	353.0	357.3	361.0	364.0	324.7	345.8	348.0	350.7	354.7	358.3	361.1
Professional services	284.3	297.8	299.2	301.2	302.8	304.4	305.9	284.5	297.9	299.3	301.3	302.9	304.6	306.1
Physicians' services	304.9	322.2	324.0	326.4	328.7	330.4	332.3	308.6	325.2	327.0	329.4	331.6	333.5	335.4
Dental services	270.8	281.1	282.1	283.9	284.8	286.4	287.7	268.4	279.2	280.3	282.1	282.9	284.4	285.7
Other professional services (12/77 = 100)	137.7	142.5	143.4	143.8	144.8	145.6	145.9	134.3	139.4	140.2	140.7	141.5	142.5	142.7
Other medical care services	376.5	408.7	411.9	415.7	423.2	429.4	434.1	374.1	405.4	408.5	412.1	419.4	425.4	429.9
Hospital and other medical services (12/77 = 100)	156.6	169.8	170.6	171.6	174.7	177.1	178.3	154.8	168.3	169.1	170.0	172.9	175.2	176.5
Hospital room	494.6	542.2	543.8	546.8	557.8	565.5	570.1	488.5	535.2	536.7	539.4	549.7	557.6	562.1
Other hospital and medical care services (12/77 = 100)	155.0	166.4	167.6	168.5	171.2	173.6	174.7	153.4	165.5	166.6	167.5	170.0	172.2	173.3

18. Continued—Consumer Price Index—U.S. city average

[1967=100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
ENTERTAINMENT	224.0	233.9	234.4	235.6	236.6	237.4	238.3	221.5	230.5	231.1	232.3	233.5	233.9	234.8
Entertainment commodities	227.9	238.0	238.8	239.6	241.1	240.5	240.8	224.0	232.0	232.8	233.8	235.5	234.4	235.0
Reading materials (12/77 = 100)	138.1	146.8	148.5	149.4	150.4	149.4	150.1	137.8	146.1	147.7	148.6	149.7	148.9	149.6
Newspapers	266.3	280.1	281.6	283.9	285.9	286.3	288.5	266.2	279.7	281.2	283.4	285.6	286.0	288.2
Magazines, periodicals, and books (12/77 = 100)	141.1	151.6	154.4	155.0	156.1	153.8	153.9	141.2	151.4	154.2	154.8	156.0	153.6	153.8
Sporting goods and equipment (12/77 = 100)	127.3	132.9	132.8	132.7	132.8	133.2	132.9	121.3	124.7	124.9	125.3	125.7	124.9	125.0
Sport vehicles (12/77 = 100)	128.4	136.1	135.4	135.7	135.4	135.7	135.3	118.7	122.8	122.6	123.9	124.1	122.4	122.8
Indoor and warm weather sport equipment (12/77 = 100)	119.1	120.4	121.0	119.6	120.3	119.7	120.5	117.2	118.6	119.2	117.1	118.0	117.5	118.1
Bicycles	193.2	198.9	199.4	197.6	198.3	199.4	199.0	193.9	200.2	200.7	198.8	199.4	200.4	200.0
Other sporting goods and equipment (12/77 = 100)	125.0	126.3	127.6	127.9	129.4	130.3	129.4	125.8	126.5	127.9	128.3	129.8	130.9	129.8
Toys, hobbies, and other entertainment (12/77 = 100)	131.0	135.4	135.5	136.1	137.3	136.9	137.1	130.6	134.3	134.4	134.9	136.1	135.7	136.0
Toys, hobbies, and music equipment (12/77 = 100)	129.4	134.1	134.8	135.9	137.2	136.4	136.4	127.1	130.7	131.4	132.4	133.7	132.8	132.9
Photographic supplies and equipment (12/77 = 100)	126.4	129.8	130.0	130.3	130.8	130.2	130.1	127.7	131.0	131.2	131.5	131.9	131.4	131.3
Pet supplies and expenses (12/77 = 100)	137.2	141.9	141.0	140.6	142.0	142.5	143.4	138.8	142.7	141.8	141.5	143.0	143.6	144.6
Entertainment services	218.9	228.5	228.7	230.5	230.8	233.5	235.2	218.3	229.2	229.2	230.9	231.3	234.2	235.8
Fees for participant sports (12/77 = 100)	134.3	142.0	141.6	142.5	141.8	143.4	146.0	134.0	143.7	142.9	143.8	143.0	144.8	147.4
Admissions (12/77 = 100)	128.0	132.2	133.0	133.5	135.5	137.4	136.4	127.3	131.2	132.1	132.6	134.6	136.5	135.5
Other entertainment services (12/77 = 100)	122.5	125.2	125.7	127.9	127.8	128.3	128.8	122.7	125.9	126.4	128.7	128.8	129.2	129.6
OTHER GOODS AND SERVICES	243.0	253.8	255.0	255.8	257.2	258.3	266.6	239.3	250.9	252.4	253.1	254.5	255.7	262.8
Tobacco products	221.7	235.1	237.4	237.8	239.2	240.1	246.8	220.9	234.0	236.6	237.0	238.3	239.3	246.1
Cigarettes	224.2	238.0	240.4	240.7	242.2	243.1	250.6	223.4	236.9	239.6	239.9	241.3	242.3	249.8
Other tobacco products and smoking accessories (12/77 = 100)	133.1	139.9	141.0	141.8	142.1	142.4	142.6	134.4	140.1	141.1	142.0	142.2	142.5	142.8
Personal care	236.3	245.9	246.5	247.8	249.4	250.6	251.1	233.6	244.1	244.7	246.0	247.5	248.8	249.3
Toilet goods and personal care appliances	231.2	243.8	244.5	246.3	247.7	249.5	249.1	231.1	244.7	245.4	247.0	248.6	250.5	250.0
Products for the hair, hairpieces, and wigs (12/77 = 100)	134.1	142.9	142.1	143.2	145.0	145.0	144.6	133.3	142.3	141.7	142.6	144.2	144.4	144.0
Dental and shaving products (12/77 = 100)	140.0	149.0	150.1	150.5	150.9	153.1	153.3	138.0	147.6	148.6	148.9	149.5	151.6	151.8
Cosmetics, bath and nail preparations, manicure and eye makeup implements (12/77 = 100)	130.7	136.5	137.6	139.6	139.9	141.3	140.7	130.4	137.5	138.5	140.1	140.5	142.0	141.4
Other toilet goods and small personal care appliances (12/77 = 100)	134.2	140.3	140.5	140.8	141.8	142.5	142.4	137.4	143.5	144.0	144.4	145.4	146.2	146.2
Personal care services	241.5	248.7	249.2	250.1	251.8	252.5	253.8	236.3	244.0	244.4	245.4	246.9	247.6	248.9
Beauty parlor services for women	243.0	250.7	251.3	252.3	254.4	255.0	256.3	236.1	244.3	245.0	245.9	247.9	248.7	249.8
Haircuts and other barber shop services for men (12/77 = 100)	135.3	138.8	138.9	139.4	139.8	140.2	141.1	133.9	137.6	137.7	138.2	138.5	139.0	139.9
Personal and educational expenses	281.5	291.9	292.8	293.3	294.5	295.8	316.1	281.8	293.5	294.6	295.2	296.4	297.9	317.4
Schoolbooks and supplies	252.1	263.8	264.2	264.6	264.8	265.3	280.5	255.9	268.0	268.4	268.8	269.0	269.6	284.3
Personal and educational services	288.5	298.7	299.8	300.3	301.7	303.1	324.4	288.5	300.0	301.4	302.0	303.4	305.1	325.6
Tuition and other school fees	147.4	151.4	151.4	151.5	152.0	152.6	165.6	147.7	152.0	152.0	152.1	152.5	153.2	166.2
College tuition (12/77 = 100)	146.3	151.0	151.0	151.2	151.8	151.9	164.9	146.1	151.3	151.3	151.4	152.0	152.0	165.0
Elementary and high school tuition (12/77 = 100)	151.5	152.2	152.2	152.2	152.2	154.6	168.7	152.1	152.9	152.9	152.9	152.9	155.6	169.6
Personal expenses (12/77 = 100)	150.0	160.9	163.6	164.5	166.0	167.4	169.4	148.5	160.5	163.6	164.6	166.1	167.6	169.6
Special indexes:														
Gasoline, motor oil, coolant, and other products	405.4	362.6	366.1	387.3	395.0	393.2	389.2	406.5	363.7	367.2	388.6	396.2	394.4	390.3
Insurance and finance	417.6	426.3	431.5	436.5	439.1	441.3	436.0	416.4	425.9	430.9	436.0	438.8	441.7	436.3
Utilities and public transportation	293.3	305.1	311.0	316.6	318.7	320.3	323.8	292.4	304.0	309.8	315.6	317.8	319.4	322.8
Housekeeping and home maintenance services	335.7	347.5	349.8	351.2	350.3	351.4	353.8	335.5	348.2	350.4	351.8	351.0	352.2	354.6

19. Consumer Price Index for All Urban Consumers: Cross classification of region and population size class by expenditure category and commodity and service group

[December 1977 = 100]

Category and group	Size class A (1.25 million or more)			Size class B (385,000–1.250 million)			Size class C (75,000–385,000)			Size class D (75,000 or less)		
	1982			1982			1982			1982		
	Apr.	June	Aug.	Apr.	June	Aug.	Apr.	June	Aug.	Apr.	June	Aug.
	Northeast											
EXPENDITURE CATEGORY												
All items	143.6	147.7	149.0	150.0	155.5	155.8	158.6	163.5	161.2	151.9	156.9	155.3
Food and beverages	143.7	145.9	144.9	142.2	144.1	143.4	147.4	148.8	148.9	140.4	142.9	142.9
Housing	144.5	151.6	153.3	155.3	165.2	164.5	173.3	182.1	174.5	160.5	169.3	163.7
Apparel and upkeep	119.1	118.6	119.6	122.5	122.8	122.4	127.4	128.3	128.4	125.1	123.4	124.8
Transportation	153.7	157.2	159.4	160.0	164.6	166.5	158.6	162.2	164.7	158.1	161.2	163.7
Medical care	146.4	147.5	150.0	148.9	150.2	156.1	150.4	152.7	157.2	151.5	155.4	156.1
Entertainment	135.5	136.5	139.7	136.2	137.5	137.4	135.8	136.4	136.8	139.0	141.1	143.8
Other goods and services	139.0	139.8	141.7	141.1	142.1	143.2	145.3	146.7	148.1	142.9	144.0	144.6
COMMODITY AND SERVICE GROUP												
Commodities	140.8	144.6	145.3	146.6	151.5	151.6	149.6	153.8	152.3	146.5	150.6	149.8
Commodities less food and beverages	139.0	143.8	145.5	148.7	155.1	155.6	150.6	156.2	153.9	149.4	154.3	153.1
Services	147.4	151.8	153.8	155.4	161.9	162.4	173.4	179.1	175.6	160.4	166.8	163.8
	North Central Region											
EXPENDITURE CATEGORY												
All items	155.2	159.6	162.2	155.1	155.3	157.0	151.2	155.2	158.9	153.3	156.4	160.2
Food and beverages	141.9	144.1	143.7	141.7	142.8	142.7	143.1	145.0	144.9	146.2	148.7	149.2
Housing	168.8	175.1	179.8	167.2	163.3	165.6	157.2	162.1	169.4	160.7	164.0	171.4
Apparel and upkeep	114.8	114.0	117.0	122.7	123.0	124.1	125.8	124.7	126.7	123.5	120.5	120.1
Transportation	158.7	165.1	166.1	156.9	163.2	165.0	158.4	165.7	166.7	157.2	163.1	164.1
Medical care	150.9	153.0	155.8	152.8	155.2	161.2	153.8	155.6	157.7	157.0	158.3	161.0
Entertainment	137.0	137.1	138.8	130.3	129.5	131.7	138.1	139.2	139.9	130.9	131.5	131.4
Other goods and services	140.3	141.4	142.3	146.5	152.5	153.3	139.0	141.2	142.8	146.4	148.3	150.2
COMMODITY AND SERVICE GROUP												
Commodities	145.4	149.4	150.9	146.4	148.5	148.8	144.3	148.8	150.8	143.7	147.9	149.1
Commodities less food and beverages	147.0	151.9	154.2	148.3	150.9	151.3	144.8	150.5	153.4	142.6	147.6	149.0
Services	169.8	174.8	179.0	169.3	166.2	170.3	162.4	165.6	172.0	168.7	169.8	177.8
	South											
EXPENDITURE CATEGORY												
All items	152.9	156.3	156.9	155.7	158.4	159.1	152.3	157.6	158.6	153.5	156.5	158.8
Food and beverages	145.0	146.7	147.2	144.9	146.9	146.5	144.0	146.0	146.0	145.9	147.7	147.5
Housing	161.1	165.2	165.0	165.2	167.2	167.9	159.1	167.0	167.8	161.5	164.6	168.4
Apparel and upkeep	125.6	124.9	124.0	124.3	123.6	122.6	120.2	118.6	121.0	111.1	109.4	107.9
Transportation	157.5	163.4	165.3	159.7	167.0	168.6	157.1	165.1	166.4	155.8	163.3	165.6
Medical care	149.5	152.8	156.2	152.3	154.5	157.3	160.1	162.5	166.2	165.1	166.6	169.3
Entertainment	130.1	132.0	131.7	141.2	143.1	145.0	141.1	142.7	142.1	145.7	145.2	148.1
Other goods and services	142.8	144.1	145.6	142.4	143.3	143.6	143.7	144.5	145.2	150.2	150.4	152.3
COMMODITY AND SERVICE GROUP												
Commodities	146.3	149.1	149.7	147.6	150.9	150.9	144.3	149.2	149.6	146.0	149.7	149.6
Commodities less food and beverages	146.9	150.1	150.8	148.8	152.6	152.8	144.5	150.6	151.2	146.0	150.5	150.5
Services	162.1	166.5	166.9	167.8	169.8	171.5	164.5	170.6	172.4	164.8	166.8	172.6
	West											
EXPENDITURE CATEGORY												
All items	158.5	160.8	160.3	157.0	158.6	159.9	151.1	149.7	153.3	157.9	159.9	158.5
Food and beverages	144.5	146.4	147.5	147.6	148.9	148.6	143.5	145.1	144.9	148.5	149.9	150.6
Housing	168.1	170.1	167.7	164.8	165.6	166.6	156.3	150.3	155.6	163.5	165.5	160.5
Apparel and upkeep	120.6	120.0	119.8	126.6	125.2	124.9	119.7	122.3	122.8	140.4	140.5	138.5
Transportation	162.9	167.7	169.9	161.7	165.9	169.7	158.3	163.5	167.0	160.5	162.8	166.2
Medical care	160.7	164.4	167.1	156.0	159.5	163.3	157.3	159.6	167.0	162.4	166.2	168.5
Entertainment	137.7	138.5	135.8	136.8	139.4	141.0	133.9	134.2	135.7	148.9	150.6	153.1
Other goods and services	147.5	147.0	149.3	148.9	149.1	149.8	139.5	139.9	141.7	149.8	153.3	154.4
COMMODITY AND SERVICE GROUP												
Commodities	145.5	147.8	148.8	148.1	149.5	151.0	146.4	147.5	149.9	148.9	151.3	149.2
Commodities less food and beverages	145.9	148.4	149.4	148.3	149.7	152.1	147.5	148.5	152.0	149.1	152.0	148.7
Services	175.9	178.1	175.5	169.3	171.1	172.1	157.9	152.8	158.1	171.2	172.5	172.1

20. Consumer Price Index—U.S. city average, and selected areas

[1967=100 unless otherwise specified]

Area[1]	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981	1982						1981	1982					
	Sept.	Apr.	May	June	July	Aug.	Sept.	Sept.	Apr.	May	June	July	Aug.	Sept.
U.S. city average[2]	279.3	284.3	287.1	290.6	292.2	292.8	293.3	279.1	283.7	286.5	290.1	291.8	292.4	292.8
Anchorage, Alaska (10/67=100)	250.5	...	263.8	...	263.6	...	263.4	245.9	...	258.0	...	259.1	...	258.9
Atlanta, Ga.	...	280.2	...	291.1	...	295.6	...	...	282.9	...	282.9	...	297.1	...
Baltimore, Md.	279.9	...	283.6	...	286.1	...	289.2	281.6	...	283.7	...	287.0	...	288.8
Boston, Mass.	272.8	...	272.5	...	279.2	...	282.9	273.6	...	272.0	...	278.7	...	282.7
Buffalo, N.Y.	...	258.3	...	265.8	...	267.7	...	...	256.4	...	264.1	...	265.5	...
Chicago, Ill.-Northwestern Ind.	276.9	280.2	287.7	291.8	293.1	293.2	294.0	275.8	280.0	287.0	291.5	292.7	292.5	292.9
Cincinnati, Ohio-Ky.-Ind.	275.2	...	288.7	...	293.3	...	300.2	277.1	...	291.2	...	295.9	...	302.8
Cleveland, Ohio	...	286.5	...	297.8	...	312.2	...	...	285.7	...	297.0	...	310.6	...
Dallas-Ft. Worth, Tex.	...	297.2	...	304.8	...	304.3	...	...	292.7	...	300.5	...	300.2	...
Denver-Boulder, Colo.	298.9	...	313.4	...	319.9	...	324.5	304.2	...	319.5	...	326.3	...	331.3
Detroit, Mich.	284.2	283.7	285.9	289.1	292.4	292.7	294.9	280.2	280.3	282.7	286.0	289.3	289.3	291.2
Honolulu, Hawaii	...	263.8	...	269.5	...	269.9	...	...	264.7	...	269.5	...	270.1	...
Houston, Tex.	...	304.9	...	313.9	...	318.6	...	...	302.1	...	310.9	...	315.3	...
Kansas City, Mo.-Kansas	...	274.0	...	281.6	...	285.0	...	...	272.1	...	280.1	...	283.6	...
Los Angeles-Long Beach, Anaheim, Calif.	279.3	286.8	287.1	290.1	289.3	289.1	288.2	282.9	290.5	290.6	293.9	293.0	292.8	291.7
Miami, Fla. (11/77=100)	150.2	...	155.7	...	155.1	...	156.1	151.0	...	157.0	...	156.9	...	157.5
Milwaukee, Wis.	286.9	...	292.9	...	296.5	...	302.4	292.1	...	296.0	...	299.6	...	306.3
Minneapolis-St. Paul, Minn.-Wis.	...	301.7	...	304.1	...	313.8	...	...	301.2	...	303.8	...	313.3	...
New York, N.Y.-Northeastern N.J.	268.8	268.2	270.9	276.7	277.3	278.5	280.7	267.8	266.5	269.4	275.3	276.1	277.1	278.9
Northeast, Pa. (Scranton)	271.5	...	270.2	...	275.1	...	276.0	275.0	...	272.1	...	277.3	...	277.1
Philadelphia, Pa.-N.J.	274.4	275.1	275.1	279.7	281.1	281.3	283.0	274.5	274.5	274.7	279.1	280.9	280.7	282.1
Pittsburgh, Pa.	...	275.3	...	285.1	...	291.4	...	...	276.7	...	285.9	...	291.8	...
Portland, Oreg.-Wash.	291.1	...	282.1	...	292.5	...	288.2	288.8	...	279.7	...	290.6	...	285.8
St. Louis, Mo.-Ill.	273.4	...	285.7	...	290.2	...	294.1	273.0	...	284.5	...	289.2	...	293.1
San Diego, Calif.	313.9	...	329.2	...	334.8	...	325.6	308.0	...	323.3	...	329.4	...	321.1
San Francisco-Oakland, Calif.	...	298.8	...	304.6	...	304.3	...	...	297.8	...	303.4	...	302.8	...
Seattle-Everett, Wash.	288.6	...	301.2	...	296.6	...	302.2	284.3	...	297.1	...	292.9	...	298.3
Washington, D.C.-Md.-Va.	271.8	...	278.4	...	281.3	...	286.5	275.7	...	283.3	...	286.3	...	291.9

[1]The areas listed include not only the central city but the entire portion of the Standard Metropolitan Statistical Area, as defined for the 1970 Census of Population, except that the Standard Consolidated Area is used for New York and Chicago.

[2]Average of 85 cities.

21. Producer Price Indexes, by stage of processing

[1967=100]

Commodity grouping	Annual average 1981	1981			1982									
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
FINISHED GOODS														
Finished goods	269.8	274.3	274.7	275.4	277.9	277.9	277.3	277.3	277.8	279.9	281.7	282.4	281.4	284.1
Finished consumer goods	271.3	275.1	275.2	275.8	278.3	278.6	277.7	277.3	277.7	r280.1	282.0	282.7	282.0	284.2
Finished consumer foods	253.6	254.0	252.7	252.9	256.4	258.2	257.1	260.0	262.3	263.4	260.7	259.8	259.9	257.8
Crude	263.8	253.8	260.0	273.9	280.6	282.5	263.3	266.6	259.9	r254.7	240.6	238.6	227.8	232.0
Processed	250.6	252.0	249.9	249.0	252.1	254.0	254.5	257.3	260.3	262.0	260.4	259.6	260.6	258.0
Nondurable goods less foods	319.6	324.3	325.4	326.3	329.3	330.3	328.8	325.7	324.3	r328.7	334.7	336.7	338.4	339.7
Durable goods	218.6	224.5	224.7	225.4	226.2	224.0	223.9	224.1	225.0	r225.9	227.0	227.7	223.2	231.1
Consumer nondurable goods less food and energy	208.8	212.6	213.6	213.9	217.4	219.6	220.5	222.3	223.1	r223.5	223.3	224.0	225.4	227.4
Capital equipment	264.3	271.5	273.0	274.1	276.2	275.0	275.8	277.2	278.1	r279.2	280.9	281.4	279.5	283.8
INTERMEDIATE MATERIALS														
Intermediate materials, supplies, and components	306.0	309.4	309.0	309.4	311.0	311.1	310.6	309.9	309.8	r309.9	311.4	311.0	310.7	310.0
Materials and components for manufacturing	286.1	290.2	289.5	289.3	290.4	290.9	290.4	290.6	291.4	r289.8	289.6	289.1	290.2	289.5
Materials for food manufacturing	260.4	250.9	246.8	245.6	250.7	252.8	252.0	254.4	260.0	r260.7	260.0	258.3	257.6	254.7
Materials for nondurable manufacturing	285.8	290.9	289.4	288.8	289.0	289.3	288.8	287.6	287.6	r285.4	283.6	282.9	282.4	280.3
Materials for durable manufacturing	312.1	316.7	314.9	314.0	313.6	313.1	310.9	311.0	311.0	r307.5	308.2	307.2	310.2	310.0
Components for manufacturing	259.3	265.1	266.9	267.8	269.8	270.9	271.8	272.6	273.6	r273.6	274.2	274.6	276.1	276.9
Materials and components for construction	287.6	290.1	290.2	291.1	292.0	293.0	293.3	294.0	293.7	r294.5	294.0	293.3	293.4	293.2
Processed fuels and lubricants	595.4	596.9	595.1	598.1	604.4	596.8	593.0	579.9	570.9	r581.1	601.6	603.8	593.2	590.2
Manufacturing industries	498.6	497.5	496.4	499.0	505.9	497.8	496.1	487.5	481.4	r491.7	508.4	511.0	497.4	496.9
Nonmanufacturing industries	680.8	684.7	682.2	685.6	691.3	684.2	678.3	661.1	649.5	r659.5	683.4	685.2	677.5	672.1
Containers	276.1	280.9	280.6	280.2	282.5	285.5	286.3	287.0	287.0	r286.5	286.4	285.6	285.5	285.1
Supplies	263.8	266.6	267.2	268.3	269.8	270.4	270.6	272.1	273.4	r273.4	273.5	272.9	272.5	272.3
Manufacturing industries	253.1	258.2	259.2	261.0	262.6	263.3	264.5	265.3	266.7	r266.7	267.3	267.1	267.3	267.4
Nonmanufacturing industries	269.6	271.2	271.6	272.4	273.8	274.4	274.1	276.0	277.2	r277.1	277.0	276.2	275.5	275.1
Feeds	230.4	215.9	212.0	214.6	214.8	212.0	208.1	213.1	214.2	213.1	211.1	203.7	198.4	193.3
Other supplies	276.4	282.3	283.7	284.1	285.7	287.3	287.9	288.9	290.1	290.4	290.7	291.3	291.5	292.1
CRUDE MATERIALS														
Crude materials for further processing	329.0	319.9	313.9	311.5	318.4	321.6	320.0	322.6	328.3	r325.6	323.4	320.5	316.3	312.2
Foodstuffs and feedstuffs	257.4	245.7	238.3	233.7	242.6	248.3	247.9	254.4	262.6	r259.9	255.5	250.7	242.9	236.3
Nonfood materials	482.3	479.2	476.3	478.6	481.5	479.3	475.2	469.9	470.2	r467.7	470.0	471.1	474.3	475.4
Nonfood materials except fuel	413.7	404.1	397.8	396.2	399.5	394.8	387.1	378.8	376.6	370.0	369.1	369.6	369.6	372.2
Manufacturing industries	429.4	418.6	411.7	409.8	413.2	407.5	398.4	389.0	386.3	378.9	378.4	378.9	379.1	382.4
Construction	261.8	264.7	264.8	265.2	267.6	270.5	273.2	273.3	274.5	r274.2	270.4	270.7	269.1	267.1
Crude fuel	751.2	779.0	792.5	813.0	812.9	824.5	839.7	851.2	864.8	r883.9	903.1	906.9	926.3	919.4
Manufacturing industries	864.9	898.4	915.8	942.5	940.3	954.4	974.7	989.1	1006.7	r1,032.0	1,056.0	1,060.9	1,086.1	1,077.5
Nonmanufacturing industries	674.0	697.8	708.2	724.0	725.6	735.4	746.6	755.8	766.4	r780.5	796.0	798.9	813.9	808.3
SPECIAL GROUPINGS														
Finished goods excluding foods	273.3	279.1	280.0	280.9	283.0	282.4	281.9	281.1	281.0	283.4	286.7	287.9	286.6	290.8
Finished consumer goods excluding foods	276.5	281.6	282.4	283.2	285.2	284.9	284.0	282.3	281.8	r284.8	288.7	290.1	289.1	293.3
Finished consumer goods less energy	233.6	237.2	237.2	237.6	240.5	241.3	241.3	243.0	244.3	r245.1	244.5	244.7	243.8	246.4
Intermediate materials less foods and feeds	310.1	314.6	314.5	314.9	316.4	316.4	316.0	315.1	314.6	r314.7	316.4	316.3	316.0	315.5
Intermediate materials less energy	285.2	288.8	288.5	288.7	289.9	290.7	290.5	291.0	291.6	r290.8	290.6	290.0	290.6	290.1
Intermediate foods and feeds	250.3	239.3	235.2	235.2	238.8	239.4	237.7	240.9	245.0	r245.1	244.1	240.6	238.4	234.8
Crude materials less agricultural products	545.6	543.4	540.7	543.5	546.1	543.9	538.4	531.6	531.5	r529.1	531.8	532.2	536.2	537.9
Crude materials less energy	254.0	243.2	235.8	231.6	239.1	243.4	242.8	247.3	252.8	r248.7	245.0	241.5	235.6	230.0

[1] Data for June 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r=revised.

22. Producer Price Indexes, by commodity groupings

[1967=100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1981	1981			1982									
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
	All commodities	293.4	296.1	295.5	295.8	298.3	298.6	298.0	298.0	298.6	r299.3	300.6	300.4	299.5	299.9
	All commodities (1957-59 = 100)	311.3	314.2	313.5	313.8	316.5	316.8	316.2	316.2	316.8	r317.6	318.9	318.7	317.8	318.2
	Farm products and processed foods and feeds	251.5	246.0	242.5	241.0	246.0	248.4	247.5	251.6	255.8	r255.3	252.5	250.1	247.5	243.9
	Industrial commodities	304.1	309.0	309.3	310.0	311.8	311.6	311.0	309.9	309.6	r310.6	313.0	313.4	312.9	314.4
	FARM PRODUCTS AND PROCESSED FOODS AND FEEDS														
01	Farm products	254.9	243.1	237.4	234.6	242.2	247.1	244.7	250.6	256.5	252.7	246.5	242.0	234.4	229.1
01-1	Fresh and dried fruits and vegetables	267.3	248.8	254.0	280.5	289.2	290.1	257.3	267.6	271.5	r264.5	238.4	237.7	220.3	222.3
01-2	Grains	248.4	227.6	226.5	213.6	225.2	223.2	220.9	226.0	228.2	225.7	212.8	197.2	187.3	183.2
01-3	Livestock	248.0	244.5	231.1	225.0	236.8	251.2	255.6	267.6	282.9	277.5	270.3	268.4	259.0	248.5
01-4	Live poultry	201.2	185.7	175.0	171.4	186.8	197.3	197.7	186.2	192.7	207.2	212.5	189.3	196.5	177.1
01-5	Plant and animal fibers	242.0	211.7	198.5	188.4	198.2	193.5	199.5	207.4	214.1	203.1	220.8	207.5	196.8	198.1
01-6	Fluid milk	287.4	294.3	288.2	286.7	287.6	285.8	282.5	280.3	278.8	278.9	279.0	278.8	281.9	285.0
01-7	Eggs	187.1	193.8	209.7	195.5	187.0	200.6	204.0	192.1	164.3	159.3	171.7	171.7	173.3	177.9
01-8	Hay, hayseeds, and oilseeds	274.1	230.4	221.1	218.8	218.4	217.6	213.7	222.8	227.3	219.3	220.0	218.1	201.8	194.3
01-9	Other farm products	273.8	263.3	273.1	280.2	280.1	273.7	273.0	274.2	273.9	271.8	265.5	274.4	276.8	274.0
02	Processed foods and feeds	248.7	246.6	244.3	243.6	247.1	248.1	248.1	251.1	254.4	255.8	254.8	253.6	253.6	251.0
02-1	Cereal and bakery products	255.5	256.9	256.5	255.1	256.6	253.3	253.3	253.5	252.8	r252.7	253.6	253.2	254.1	253.2
02-2	Meats, poultry, and fish	246.2	246.6	240.0	236.1	243.7	247.9	250.0	258.2	267.6	r271.2	266.1	262.3	265.7	256.9
02-3	Dairy products	245.6	246.8	246.9	247.2	247.7	248.0	248.0	248.4	248.5	248.7	248.8	249.0	249.3	250.0
02-4	Processed fruits and vegetables	261.2	271.7	270.5	271.8	273.2	276.3	275.9	275.2	273.8	r275.8	275.9	274.9	273.2	273.7
02-5	Sugar and confectionery	275.9	246.7	244.1	247.6	256.8	257.2	255.0	256.0	265.3	r269.1	276.1	286.0	279.1	276.7
02-6	Beverages and beverage materials	248.0	250.0	251.4	251.9	253.9	255.1	256.4	256.6	256.5	r256.7	256.7	257.3	256.8	258.4
02-7	Fats and oils	227.4	223.4	221.5	219.1	216.6	216.8	213.7	218.1	222.3	r221.8	221.4	216.0	211.6	214.9
02-8	Miscellaneous processed foods	250.1	249.9	250.1	250.1	251.0	250.9	249.5	249.6	248.0	248.6	248.0	245.9	246.9	247.7
02-9	Prepared animal feeds	230.2	218.1	214.7	217.2	217.4	214.9	211.4	216.3	217.4	216.4	214.6	207.9	204.5	200.1
	INDUSTRIAL COMMODITIES														
03	Textile products and apparel	199.7	204.0	203.6	203.4	205.0	205.6	205.0	205.4	205.4	r205.0	204.1	203.9	203.8	202.6
03-1	Synthetic fibers (12/75 = 100)	156.3	162.7	161.6	161.5	162.9	163.2	161.3	163.0	163.4	r162.8	162.4	163.1	163.4	162.0
03-2	Processed yarns and threads (12/75 = 100)	138.0	144.4	140.3	139.6	139.2	140.7	140.5	140.4	141.0	139.4	139.2	135.9	136.6	129.5
03-3	Gray fabrics (12/75 = 100)	146.8	148.0	147.4	147.2	148.2	147.3	146.6	146.3	145.9	r146.0	144.8	144.5	143.5	143.6
03-4	Finished fabrics (12/75 = 100)	125.2	126.7	126.5	125.6	126.8	127.1	125.6	125.4	125.2	124.0	123.8	124.4	123.8	123.4
03-81	Apparel	186.0	189.9	190.8	191.0	192.7	193.2	193.4	194.1	194.5	r195.0	193.1	193.5	193.5	193.5
03-82	Textile housefurnishings	226.7	233.0	233.4	233.6	237.6	240.8	241.4	241.8	239.5	r239.7	243.0	240.7	242.5	240.5
04	Hides, skins, leather, and related products	260.9	260.0	259.8	260.7	261.8	261.6	260.6	263.4	263.2	r261.8	261.3	263.2	264.8	264.7
04-2	Leather	319.8	313.7	311.3	312.3	319.0	317.7	313.3	310.6	309.8	r307.7	307.4	304.7	309.2	309.5
04-3	Footwear	240.9	239.6	239.8	240.1	238.9	238.6	239.8	244.8	244.5	r244.2	241.7	247.3	248.2	249.2
04-4	Other leather and related products	241.8	245.0	245.4	245.4	247.5	248.1	248.1	248.1	248.1	r245.6	252.0	249.9	252.9	252.4
05	Fuels and related products and power	694.5	698.1	698.1	702.5	705.1	697.8	689.7	670.6	662.2	r677.3	701.8	705.7	701.8	699.6
05-1	Coal	497.2	510.8	512.7	515.2	525.3	529.9	529.6	532.6	534.0	r533.6	538.6	539.1	541.4	539.7
05-2	Coke	456.4	469.7	469.7	469.7	469.7	469.7	467.5	467.5	467.5	r462.0	463.9	460.0	460.7	453.0
05-3	Gas fuels [2]	939.4	965.6	983.0	1,003.7	987.9	987.6	990.5	992.7	1,001.2	r1,027.5	1,055.4	1,073.7	1,116.6	1,133.6
05-4	Electric power	367.2	378.4	378.3	384.2	392.8	392.9	403.7	406.3	407.1	r405.7	416.9	415.3	415.4	409.1
05-61	Crude petroleum [3]	803.5	788.2	785.9	787.2	787.2	770.3	744.8	717.9	717.8	r718.2	718.7	718.7	718.8	735.8
05-7	Petroleum products, refined [4]	805.9	802.3	798.3	798.6	801.9	789.7	770.6	733.5	713.2	r739.4	777.1	781.8	763.1	754.9
06	Chemicals and allied products	287.6	292.4	292.0	291.8	292.9	293.6	294.6	294.3	295.0	r293.3	291.6	291.6	291.4	290.4
06-1	Industrial chemicals [5]	363.3	367.9	363.7	362.8	362.9	362.2	361.4	357.8	357.1	r351.2	349.7	349.7	349.3	347.6
06-21	Prepared paint	249.8	250.7	254.5	256.4	258.9	258.9	258.9	258.9	264.7	r264.7	265.1	265.1	265.1	265.1
06-22	Paint materials	300.1	308.1	308.3	305.8	306.6	306.4	306.8	306.7	306.9	r304.9	304.3	302.3	303.0	303.0
06-3	Drugs and pharmaceuticals	193.5	198.5	198.2	198.9	202.2	204.4	205.9	208.9	209.9	r209.7	209.9	211.1	212.6	214.7
06-4	Fats and oils, inedible	295.6	277.7	282.5	280.4	272.8	274.2	290.1	282.6	288.4	287.5	278.2	254.2	254.1	242.3
06-5	Agricultural chemicals and chemical products	285.0	293.1	295.7	294.9	296.8	298.0	297.1	295.8	294.8	r294.1	291.5	290.6	290.1	289.4
06-6	Plastic resins and materials	289.2	299.5	293.2	294.2	286.1	287.3	285.5	286.0	283.2	r282.1	280.6	282.4	281.5	281.6
06-7	Other chemicals and allied products	254.2	256.9	259.9	260.0	263.8	264.9	268.5	270.0	272.7	r273.8	270.7	271.8	270.7	268.1
07	Rubber and plastic products	232.6	237.3	238.0	238.3	237.3	239.3	240.8	241.1	242.1	r242.5	243.1	243.6	243.3	243.0
07-1	Rubber and rubber products	256.2	262.9	264.4	264.6	262.5	266.0	266.7	266.6	269.0	r269.3	271.6	272.5	271.7	271.1
07-11	Crude rubber	281.8	279.8	279.0	280.8	281.8	282.1	283.5	283.3	283.7	r282.5	280.2	278.6	276.5	272.4
07-12	Tires and tubes	250.6	257.1	255.9	255.4	253.6	256.7	253.7	253.4	254.9	255.3	255.6	257.9	255.7	255.8
07-13	Miscellaneous rubber products	251.4	261.1	266.7	267.2	263.8	268.8	274.3	274.7	278.8	r279.5	286.1	286.0	287.5	287.1
07-2	Plastic products (6/78 = 100)	128.5	130.3	130.3	130.6	130.5	131.0	132.3	132.6	132.5	r132.8	132.3	132.3	132.5	132.4
08	Lumber and wood products	292.8	284.3	282.1	285.4	285.5	285.2	285.3	286.5	284.6	r289.0	288.3	284.4	283.0	279.6
08-1	Lumber	325.1	311.7	306.6	309.9	310.0	308.1	308.2	312.4	310.5	r315.8	319.2	312.7	311.3	306.8
08-2	Millwork	273.4	271.3	271.8	273.7	277.1	278.6	276.5	276.6	276.3	r280.5	281.8	280.2	279.5	278.6
08-3	Plywood	245.7	234.3	233.5	239.7	237.4	235.1	236.5	234.0	230.5	r239.2	232.4	229.3	228.4	224.0
08-4	Other wood products	239.1	239.9	239.3	239.4	238.2	238.7	238.6	237.7	237.4	r236.0	236.0	235.8	235.6	235.8

See footnotes at end of table.

22. Continued—Producer Price Indexes, by commodity groupings

[1967=100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1981	1981			1982									
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
	INDUSTRIAL COMMODITIES—Continued														
09	Pulp, paper, and allied products	273.8	279.2	280.4	281.0	285.5	286.3	287.4	288.5	289.6	r289.5	288.9	289.1	289.2	289.2
09–1	Pulp, paper, and products, excluding building paper and board	270.8	275.7	275.8	275.6	276.1	276.8	276.6	275.3	274.8	r274.1	272.9	272.6	271.8	270.4
09–11	Woodpulp	397.1	402.3	413.7	413.7	410.3	410.3	411.6	389.9	393.3	r388.0	370.5	369.2	367.2	352.5
09–12	Wastepaper	175.7	165.1	144.5	143.4	135.2	128.8	129.2	128.1	121.5	115.2	115.6	116.0	116.0	116.0
09–13	Paper	279.8	287.8	287.4	287.2	289.2	289.8	289.6	289.4	288.2	r287.8	287.0	286.1	286.0	285.6
09–14	Paperboard	258.1	261.7	261.6	260.0	259.7	261.4	261.1	261.2	258.8	255.9	255.0	255.5	250.7	248.0
09–15	Converted paper and paperboard products	258.8	263.2	263.1	263.2	263.9	264.7	264.5	264.3	264.3	r264.5	264.6	264.4	264.2	263.9
09–2	Building paper and board	231.7	233.3	232.1	230.3	233.8	231.4	239.6	236.3	240.2	r240.0	239.2	243.8	242.8	241.5
10	Metals and metal products	300.4	305.3	304.2	303.3	304.7	304.2	302.9	303.1	302.8	r299.3	300.2	300.2	301.8	302.1
10–1	Iron and steel	333.8	341.3	340.0	339.9	343.1	342.9	342.5	342.8	341.3	338.3	337.4	337.4	336.6	337.6
10–17	Steel mill products	337.6	348.7	348.6	348.9	350.6	350.3	350.5	352.2	352.1	349.9	349.1	348.7	348.4	349.8
10–2	Nonferrous metals	285.8	285.4	281.1	277.1	274.4	273.6	267.2	266.1	263.6	r253.4	256.1	256.1	263.4	263.2
10–3	Metal containers	315.6	318.2	318.1	316.8	324.3	326.2	327.2	330.0	330.2	r329.9	329.9	328.8	328.7	328.7
10–4	Hardware	263.2	269.5	271.5	272.0	274.1	274.8	278.2	278.5	278.9	r280.3	278.9	280.3	280.4	280.8
10–5	Plumbing fixtures and brass fittings	267.5	272.9	273.1	274.0	274.6	276.4	279.1	280.3	281.0	r282.6	283.0	274.7	277.0	277.8
10–6	Heating equipment	224.2	229.0	228.8	229.9	233.4	233.1	235.4	236.0	237.2	r238.5	239.1	238.6	239.3	238.7
10–7	Fabricated structural metal products	295.5	302.6	303.2	303.0	303.4	304.0	304.5	305.2	304.9	r305.3	303.8	304.4	304.2	303.7
10–8	Miscellaneous metal products	270.5	276.1	278.0	278.3	281.2	278.7	279.0	279.7	284.5	r283.9	288.8	288.9	289.3	289.7
11	Machinery and equipment	263.3	269.3	270.4	272.0	274.1	275.4	276.2	277.6	278.2	r278.6	279.4	279.7	280.3	280.9
11–1	Agricultural machinery and equipment	288.3	295.5	300.8	302.8	303.1	304.6	306.4	306.8	308.2	r309.7	310.2	311.4	313.6	317.0
11–2	Construction machinery and equipment	320.8	328.3	329.6	332.0	337.0	337.9	339.2	341.5	343.5	r343.9	346.1	346.4	347.5	346.6
11–3	Metalworking machinery and equipment	301.3	306.6	307.9	312.9	315.9	317.2	317.8	319.6	320.7	r321.2	321.9	322.4	322.6	322.4
11–4	General purpose machinery and equipment	288.7	295.1	296.2	297.9	300.0	301.3	302.0	303.4	303.8	r303.5	304.4	304.5	304.5	305.5
11–6	Special industry machinery and equipment	307.9	314.6	315.0	316.4	320.4	320.7	321.3	322.9	323.9	r325.0	327.1	326.9	327.0	327.9
11–7	Electrical machinery and equipment	220.2	225.3	226.0	227.0	228.7	229.5	230.3	231.7	231.3	r231.5	232.0	232.0	232.5	233.0
11–9	Miscellaneous machinery	252.6	259.0	259.8	260.4	261.4	264.0	264.9	266.1	267.9	r268.5	268.9	270.3	271.1	270.9
12	Furniture and household durables	198.5	201.3	202.1	202.9	203.5	204.6	205.5	206.0	206.5	r207.0	206.8	207.4	207.7	208.4
12–1	Household furniture	219.7	222.8	225.1	226.6	227.5	227.4	227.6	229.7	230.0	r230.2	230.9	231.4	231.6	231.3
12–2	Commercial furniture	257.5	262.1	263.3	263.9	266.7	271.2	273.6	274.2	275.2	r276.0	277.8	278.0	278.6	278.8
12–3	Floor coverings	178.7	180.9	182.3	181.4	180.3	180.6	180.6	181.1	181.3	r181.9	180.1	179.4	180.3	180.3
12–4	Household appliances	187.3	190.8	190.9	191.3	193.4	195.3	197.3	197.8	198.9	r199.6	199.3	200.1	200.4	200.5
12–5	Home electronic equipment	89.2	88.1	88.0	89.6	89.3	89.6	89.1	87.9	88.0	r88.4	88.2	88.0	87.7	88.0
12–6	Other household durable goods	281.0	285.8	285.3	286.2	283.4	283.7	285.0	285.9	285.4	r286.1	283.6	287.4	288.1	293.8
13	Nonmetallic mineral products	309.5	313.3	313.7	313.5	315.6	319.0	319.9	320.2	321.2	r320.9	320.3	320.4	320.2	321.2
13–11	Flat glass	212.6	218.5	218.5	216.1	216.2	216.2	216.2	216.2	226.4	r226.4	226.1	226.1	221.1	221.1
13–2	Concrete ingredients	296.3	298.4	298.5	298.7	306.2	308.4	309.8	309.5	312.5	r312.7	310.6	311.7	311.2	311.9
13–3	Concrete products	291.2	293.3	293.4	293.6	295.5	295.9	296.3	297.7	298.2	r298.5	298.2	298.3	298.6	298.7
13–4	Structural clay products, excluding refractories	249.8	256.2	256.5	257.5	257.5	257.7	257.7	258.1	258.6	r258.9	258.8	258.8	259.5	259.5
13–5	Refractories	302.4	307.8	308.9	311.3	316.8	335.1	337.4	338.7	339.5	r340.4	340.9	341.2	341.3	341.3
13–6	Asphalt roofing	407.5	402.9	410.2	405.6	401.3	400.4	394.4	386.7	385.5	r396.4	392.3	392.5	400.2	405.1
13–7	Gypsum products	256.2	252.4	251.3	249.7	250.4	255.0	260.7	263.2	259.4	256.4	255.8	253.9	253.9	255.1
13–8	Glass containers	328.7	335.5	335.5	335.5	335.4	352.2	356.0	358.1	358.1	r358.1	357.4	357.3	357.9	358.4
13–9	Other nonmetallic minerals	463.8	473.3	473.5	474.7	474.7	478.7	479.6	479.1	471.3	465.2	466.4	466.2	466.2	470.4
14	Transportation equipment (12/68 = 100)	235.4	244.5	246.3	246.8	248.6	245.2	245.2	245.8	247.5	r249.1	250.4	251.2	245.0	256.4
14–1	Motor vehicles and equipment	237.6	247.8	248.9	249.5	250.8	246.8	246.8	247.2	249.2	r251.1	252.5	253.3	245.0	258.1
14–4	Railroad equipment	336.1	338.7	341.3	340.1	345.8	345.8	346.3	343.5	342.8	r342.8	349.3	354.7	354.7	357.5
15	Miscellaneous products	265.7	268.5	269.5	267.6	268.3	273.5	272.7	273.2	272.2	r271.5	273.8	272.4	280.3	285.9
15–1	Toys, sporting goods, small arms, ammunition	211.9	213.0	212.7	213.3	218.4	220.1	220.7	221.0	221.8	r221.9	222.9	224.4	224.7	223.7
15–2	Tobacco products	268.3	278.2	278.2	278.2	278.2	306.6	306.6	306.7	307.0	r307.0	311.3	311.3	328.8	366.0
15–3	Notions	259.8	269.7	269.7	269.7	270.3	270.4	271.5	271.5	280.1	r280.1	280.3	280.3	280.3	280.3
15–4	Photographic equipment and supplies	210.0	208.9	209.0	209.1	209.9	210.5	212.1	214.2	210.6	r210.4	210.6	210.6	211.6	210.2
15–5	Mobile homes (12/74 = 100)	156.8	159.1	159.3	159.3	159.5	159.6	161.9	162.2	162.5	r162.4	162.5	162.5	162.8	161.5
15–9	Other miscellaneous products	347.4	348.5	344.8	344.6	342.2	341.1	334.5	334.1	331.3	r328.6	333.1	326.5	344.7	344.7

[1] Data for June 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

[2] Prices for natural gas are lagged 1 month.

[3] Includes only domestic production.

[4] Most prices for refined petroleum products are lagged 1 month.

[5] Some prices for industrial chemicals are lagged 1 month.

r=revised.

23. Producer Price Indexes, for special commodity groupings

[1967 = 100 unless otherwise specified]

Commodity grouping	Annual average 1981	1981			1982									
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
All commodities—less farm products	295.7	299.5	299.4	300.0	302.0	301.9	301.4	300.9	301.2	r302.2	304.1	304.3	303.9	304.7
All foods	251.8	249.1	247.4	247.6	251.6	253.2	251.6	254.7	257.9	259.0	356.8	255.9	255.4	252.9
Processed foods	252.1	250.0	247.6	246.5	250.5	251.9	252.1	255.1	259.0	r260.8	259.8	258.9	259.3	256.5
Industrial commodities less fuels	263.7	268.7	269.0	269.4	271.1	271.5	271.7	272.3	272.8	r272.4	272.7	272.7	272.6	274.4
Selected textile mill products (Dec. 1975 = 100)	135.8	138.2	138.4	137.9	139.3	139.7	139.0	139.0	138.7	r138.2	137.5	137.6	137.7	137.3
Hosiery	134.3	136.5	136.5	136.7	136.9	136.9	137.5	138.0	138.5	138.5	138.5	138.5	138.7	138.7
Underwear and nightwear	203.4	204.7	205.7	206.3	213.9	215.6	215.9	215.9	215.9	r217.4	218.0	218.1	219.0	219.2
Chemicals and allied products, including synthetic rubber and fibers and yarns	278.4	283.8	283.2	283.1	284.3	285.1	285.6	285.6	286.1	r284.5	283.0	283.4	283.2	282.3
Pharmaceutical preparations	186.9	192.8	192.5	193.3	196.8	199.3	201.1	204.5	205.8	r205.4	205.7	207.2	209.3	211.5
Lumber and wood products, excluding millwork	303.0	290.1	286.4	290.7	289.9	287.9	288.5	290.5	288.1	r294.5	294.6	289.2	287.9	283.4
Steel mill products, including fabricated wire products	337.6	348.7	348.6	348.9	350.6	350.3	350.5	352.2	352.1	349.9	348.7	348.4	348.1	349.4
Finished steel mill products, excluding fabricated wire products	336.2	347.4	347.2	347.5	349.3	348.9	349.2	351.0	350.9	348.6	347.7	347.3	347.0	348.6
Finished steel mill products, including fabricated wire products	336.2	347.4	347.2	347.5	349.3	348.9	349.2	351.0	350.9	348.6	347.4	347.0	346.7	348.2
Special metals and metal products	279.4	286.7	286.8	286.6	287.9	286.0	285.3	285.6	286.3	r285.2	286.3	286.6	284.2	289.9
Fabricated metal products	280.0	286.0	287.0	287.1	289.4	289.0	289.9	290.8	292.6	r292.8	294.0	293.9	294.1	294.1
Copper and copper products	203.8	201.9	198.9	195.4	194.5	194.1	190.8	191.6	193.0	r179.7	179.5	180.1	181.4	179.2
Machinery and motive products	256.7	264.3	265.8	266.9	268.9	268.1	268.5	269.6	270.7	r271.7	272.8	273.3	270.8	276.3
Machinery and equipment, except electrical	288.5	295.0	296.4	298.4	300.7	302.3	303.1	304.6	305.7	r306.2	307.2	307.7	308.3	308.9
Agricultural machinery, including tractors	297.3	305.7	312.5	314.7	315.1	316.0	318.4	319.0	319.9	r321.3	320.5	321.5	324.6	329.8
Metalworking machinery	329.7	336.7	338.3	341.2	343.8	344.9	346.4	348.8	349.3	r350.1	352.7	353.2	353.6	354.2
Numerically controlled machine tools (Dec. 1971 = 100)	239.3	241.8	242.2	242.0	240.1	239.8	239.9	239.9	239.9	r240.0	239.6	239.6	239.8	239.8
Total tractors	324.7	338.3	342.2	342.3	346.9	346.9	349.1	352.4	353.6	r354.1	354.2	354.8	358.9	360.8
Agricultural machinery and equipment less parts	289.8	297.6	303.5	305.8	306.5	307.4	309.7	310.3	311.0	r312.2	311.8	312.5	315.1	319.5
Farm and garden tractors less parts	300.1	313.0	319.6	319.7	319.7	319.7	323.5	323.5	325.0	r325.8	324.2	324.8	331.8	334.9
Agricultural machinery, excluding tractors less parts	295.2	299.9	303.5	310.9	311.6	313.2	314.6	315.6	316.1	r317.9	317.7	319.0	319.1	325.9
Industrial valves	315.9	322.4	323.4	325.3	328.6	330.2	330.5	331.1	331.2	r330.6	329.2	329.2	329.4	329.3
Industrial fittings	302.1	304.1	304.1	304.1	304.1	304.1	304.1	309.1	309.1	309.1	310.2	310.2	309.2	307.3
Construction materials	283.0	284.6	284.1	285.2	286.6	286.9	287.5	288.2	288.2	r289.5	289.0	288.2	287.9	287.7

[1] Data for June 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

24. Producer Price Indexes, by durability of product

[1967 = 100]

Commodity grouping	Annual average 1981	1981			1982									
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
Total durable goods	269.8	275.0	275.4	276.0	277.6	277.4	277.4	278.1	278.5	r278.3	279.1	279.1	278.7	281.4
Total nondurable goods	312.4	312.8	311.4	311.4	314.7	315.4	314.2	313.6	314.5	316.0	317.7	317.3	315.9	314.3
Total manufactures	286.0	289.8	289.7	289.9	291.9	292.0	291.4	291.1	291.3	292.4	293.9	293.9	293.1	293.9
Durable	269.7	275.1	275.8	276.5	278.0	277.8	277.8	278.7	279.2	r279.3	280.1	280.1	279.7	282.4
Nondurable	303.6	305.5	304.5	304.3	306.8	307.2	305.9	304.1	304.0	r306.3	308.6	308.6	307.3	305.9
Total raw or slightly processed goods	330.7	326.4	323.3	323.6	328.9	330.6	329.7	331.9	335.1	r333.4	333.3	331.8	330.3	328.2
Durable	271.2	263.7	253.4	247.8	253.8	253.7	250.1	245.3	239.7	r225.4	225.0	225.7	227.0	225.1
Nondurable	334.0	330.0	327.4	328.2	333.4	335.2	334.5	337.2	341.1	r340.3	340.2	338.6	336.9	334.8

[1] Data for June 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

25. Producer Price Indexes for the output of selected SIC industries

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1981	1981			1982									
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
	MINING														
1011	Iron ores (12/75 = 100)	167.6	168.1	171.3	171.3	171.3	171.3	171.3	171.3	177.1	177.1	177.1	177.1	177.1	177.1
1092	Mercury ores (12/75 = 100)	346.0	354.1	354.1	343.7	347.9	313.7	325.0	327.0	308.3	307.5	306.2	287.5	289.4	312.5
1211	Bituminous coal and lignite	493.7	506.2	507.8	510.3	520.9	525.8	524.9	527.9	529.9	r530.0	533.5	534.7	536.3	536.0
1311	Crude petroleum and natural gas	898.6	900.8	907.5	921.7	919.7	913.9	905.4	893.3	901.2	r914.3	925.3	926.7	938.4	946.7
1442	Construction sand and gravel	277.4	279.7	279.8	280.7	287.4	289.9	293.1	292.6	295.0	r295.8	295.3	296.5	296.0	297.3
1455	Kaolin and ball clay (6/76 = 100)	138.7	143.4	143.4	143.4	149.6	149.6	149.6	151.7	151.7	151.7	151.7	151.7	151.7	151.7
	MANUFACTURING														
2011	Meatpacking plants	243.1	244.1	237.0	234.1	237.6	244.4	247.3	254.0	264.7	r265.8	258.4	253.0	253.1	242.6
2013	Sausages and other prepared meats	241.4	252.2	248.9	247.0	245.6	251.0	248.6	253.0	266.2	r274.0	272.2	275.4	282.3	277.5
2016	Poultry dressing plants	192.0	175.5	172.8	166.7	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
2021	Creamery butter	274.8	279.2	279.5	275.0	275.0	276.4	276.8	275.3	274.9	274.9	275.0	276.3	276.8	276.8

See footnotes at end of table.

25. Continued—Producer Price Indexes for the output of selected SIC industries

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1981	1981			1982									
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
	MANUFACTURING—Continued														
2022	Cheese, natural and processed (12/72 = 100)	215.7	215.4	215.9	218.4	218.6	217.9	216.7	216.5	217.1	r218.1	218.6	218.8	218.7	221.2
2024	Ice cream and frozen desserts (12/72 = 100)	211.9	212.5	212.5	212.7	212.8	212.8	210.9	214.2	214.2	214.2	213.6	213.6	216.5	216.5
2033	Canned fruits and vegetables	248.5	257.0	256.4	258.9	260.8	262.6	262.4	262.3	262.6	r265.1	265.5	263.2	260.1	261.1
2034	Dehydrated food products (12/73 = 100)	177.6	182.1	181.4	182.1	184.0	181.8	181.5	181.5	178.5	178.5	180.4	180.0	179.6	181.0
2041	Flour mills (12/71 = 100)	196.0	191.1	191.5	189.2	191.5	187.5	187.3	192.5	188.4	189.1	185.5	180.2	182.2	179.6
2044	Rice milling	277.2	247.3	235.4	215.1	205.9	192.2	183.5	177.9	183.0	180.3	177.6	183.0	183.0	183.0
2048	Prepared foods, n.e.c. (12/75 = 100)	124.5	117.3	116.4	116.0	116.0	115.9	114.6	115.4	116.7	r115.6	115.4	113.3	109.6	107.6
2061	Raw cane sugar	273.5	219.9	224.3	230.8	247.6	245.1	233.0	242.9	269.2	286.7	311.5	318.1	295.6	291.3
2063	Beet sugar	314.3	250.3	230.4	250.5	266.4	272.2	272.2	269.7	277.3	r277.3	290.5	297.4	300.8	298.1
2067	Chewing gum	309.8	303.2	303.2	303.2	303.3	303.3	303.3	303.4	303.4	303.4	303.3	304.7	304.7	304.8
2074	Cottonseed oil mills	199.0	172.0	167.2	182.4	184.9	170.5	158.1	164.7	167.9	170.2	174.6	173.1	164.5	157.6
2075	Soybean oil mills	245.8	229.7	221.2	221.9	223.1	220.4	216.6	225.8	232.0	226.4	224.1	205.5	200.6	198.3
2077	Animal and marine fats and oils	288.0	274.0	272.3	266.6	260.4	262.6	271.8	273.3	271.5	272.3	264.3	242.4	241.2	232.1
2083	Malt	282.5	275.4	275.4	275.4	267.1	267.1	267.1	259.1	259.8	259.8	259.8	259.8	251.2	251.2
2085	Distilled liquor, except brandy (12/75 = 100)	134.7	135.5	137.9	137.9	140.1	137.9	140.2	140.2	139.8	139.8	139.8	140.4	140.4	140.4
2091	Canned and cured seafoods (12/73 = 100)	187.8	188.2	188.3	188.5	187.2	187.0	187.7	188.2	188.0	188.4	187.8	184.3	186.2	186.3
2092	Fresh or frozen packaged fish	369.1	356.9	360.8	369.5	396.8	389.2	419.1	432.2	425.9	r441.3	418.9	426.2	446.7	453.9
2095	Roasted coffee (12/72 = 100)	238.1	238.2	239.2	240.4	245.1	247.7	248.8	250.6	248.0	r247.8	247.0	246.4	244.7	246.0
2098	Macaroni and spaghetti	252.0	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	255.5
2111	Cigarettes	277.7	288.4	288.4	288.4	288.4	319.7	319.7	319.8	319.9	r319.9	324.9	324.9	345.1	387.4
2121	Cigars	170.0	174.5	174.5	174.5	174.5	178.6	178.6	179.6	179.6	r179.6	176.6	176.6	176.8	176.8
2131	Chewing and smoking tobacco	320.7	326.1	326.1	326.1	326.1	349.4	349.4	349.4	353.6	353.6	358.3	358.3	358.5	375.1
2211	Weaving mills, cotton (12/72 = 100)	232.7	233.2	229.8	227.6	227.3	227.1	226.4	226.3	226.4	r224.4	222.0	221.7	218.6	215.4
2221	Weaving mills, synthetic (12/77 = 100)	136.7	139.4	139.8	139.5	139.8	139.7	140.0	139.2	138.5	r137.9	137.5	137.1	136.4	136.3
2251	Women's hosiery, except socks (12/75 = 100)	113.5	115.2	115.1	115.2	115.6	115.6	116.1	116.2	116.9	r116.9	117.0	117.0	117.0	116.8
2254	Knit underwear mills	210.2	210.9	212.8	213.0	225.2	225.2	225.9	226.0	226.1	r228.8	230.8	231.1	231.2	231.4
2257	Circular knit fabric mills (6/76 = 100)	110.9	112.0	112.4	111.8	112.4	113.2	110.7	110.2	109.9	r108.3	108.6	108.7	108.6	108.0
2261	Finishing plants, cotton (6/76 = 100)	144.9	144.9	143.5	141.4	140.5	140.3	140.8	141.6	141.5	r141.4	140.2	139.8	138.4	136.8
2262	Finishing plants, synthetics, silk (6/76 = 100)	126.5	129.1	129.1	128.6	129.4	129.9	128.5	128.5	128.4	r127.6	126.7	128.7	128.1	127.4
2272	Tufted carpets and rugs	154.2	155.7	157.0	156.7	155.5	155.7	155.7	156.1	156.4	r157.2	156.1	155.4	156.1	156.1
2281	Yarn mills, except wool (12/71= 100)	221.7	222.4	219.9	217.2	216.3	215.7	215.4	214.4	214.7	r213.8	213.7	213.2	213.1	211.8
2282	Throwing and winding mills (6/76 = 100)	139.3	154.5	145.6	146.0	145.7	150.3	150.0	151.0	152.7	r149.4	149.0	140.4	142.5	124.4
2284	Thread mills (6/76 = 100)	151.4	157.0	157.0	156.8	156.8	156.8	156.8	156.7	156.6	r156.6	156.5	158.0	158.0	157.9
2298	Cordage and twine (12/77 = 100)	134.8	139.3	139.3	140.7	141.0	141.0	141.0	141.0	141.0	141.0	141.0	141.0	142.6	142.6
2311	Men's and boys' suits and coats	224.0	227.4	228.4	230.5	233.7	233.6	233.8	234.4	234.6	r236.3	237.2	239.8	240.0	240.0
2321	Men's and boys' shirts and nightwear	209.5	212.4	212.6	213.4	173.4	215.9	216.9	217.3	217.5	r217.8	216.0	216.1	219.4	219.4
2322	Men's and boys' underwear	230.6	230.8	233.0	233.0	246.9	246.9	247.4	247.4	247.4	251.2	251.2	251.2	250.7	251.3
2323	Men's and boys' neckwear (12/75 = 100)	114.6	113.9	113.9	113.9	115.3	117.3	117.3	117.3	117.3	121.3	121.3	121.3	121.3	121.3
2327	Men's and boys' separate trousers	186.2	186.8	186.9	187.1	188.4	188.4	188.4	194.1	195.8	r195.9	195.6	195.6	195.6	195.5
2328	Men's and boys' work clothing	248.6	253.1	253.2	253.3	252.5	254.2	254.9	255.2	254.7	254.1	252.9	253.1	252.3	252.0
2331	Women's and misses' blouses and waists (6/78 = 100)	120.6	126.4	126.7	126.7	126.5	126.5	126.5	126.5	126.5	r126.6	123.6	123.8	123.8	123.8
2335	Women's and misses' dresses (12/77 = 100)	121.3	123.4	124.1	122.7	123.0	123.0	123.1	122.9	122.9	r123.7	123.7	123.6	122.7	122.8
2341	Women's and children's underwear (12/72 = 100)	169.7	170.6	171.6	171.6	174.7	174.8	175.0	175.0	176.6	r178.8	179.4	179.4	178.1	178.6
2342	Brassieres and allied garments (12/75 = 100)	136.7	138.8	138.9	140.1	145.1	148.8	148.8	148.8	148.1	r148.1	148.4	148.4	150.2	149.8
2361	Children's dresses and blouses (12/77 = 100)	120.9	122.0	122.5	123.2	123.2	123.2	123.2	122.2	122.2	r122.2	119.4	120.3	118.6	118.6
2381	Fabric dress and work gloves	289.3	289.2	289.2	289.2	293.8	297.4	295.5	295.5	295.5	294.5	294.5	288.2	288.2	287.4
2394	Canvas and related products (12/77 = 100)	132.0	137.6	137.6	139.7	144.9	144.9	147.2	145.7	145.9	r143.1	143.8	143.8	145.4	148.0
2396	Automotive and apparel trimmings (12/77 = 100)	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0
2421	Sawmills and planing mills (12/71 = 100)	228.2	219.5	216.5	218.6	218.0	216.9	216.9	218.8	217.4	r220.1	221.6	217.5	216.3	213.5
2436	Softwood veneer and plywood (12/75 = 100)	142.0	129.3	129.0	134.5	132.5	130.5	131.8	129.1	125.9	133.6	129.6	126.7	128.6	124.7
2439	Structural wood members, n.e.c. (12/75 = 100)	156.6	154.8	154.2	153.2	153.9	153.5	152.6	153.4	152.8	r154.2	154.5	155.1	154.4	154.1
2448	Wood pallets and skids (12/75 = 100)	152.5	152.0	150.4	149.9	149.8	149.0	148.2	145.9	144.7	144.2	144.1	143.8	143.8	144.3
2451	Mobile homes (12/74 = 100)	156.9	159.2	159.3	160.3	160.4	160.5	162.7	163.0	163.3	r163.2	163.4	163.4	163.7	162.6
2492	Particleboard (12/75 = 100)	173.6	168.0	166.9	170.3	172.6	170.7	177.7	178.2	178.0	r178.1	175.4	174.5	175.3	173.4
2511	Wood household furniture (12/71 = 100)	197.4	201.0	202.0	202.8	203.6	204.3	205.1	207.4	207.7	r208.0	208.1	208.0	208.0	208.8
2512	Upholstered household furniture (12/71 = 100)	174.0	175.6	179.5	182.1	184.4	179.3	179.3	181.8	182.3	r182.3	184.1	185.5	185.9	183.2
2515	Mattresses and bedsprings	192.3	195.2	197.5	198.0	204.4	205.6	205.6	205.7	205.9	r205.9	210.1	210.4	210.4	210.3
2521	Wood office furniture	254.2	257.1	257.0	257.6	261.9	270.7	270.8	270.8	270.8	r270.8	272.0	272.4	272.4	272.4
2611	Pulp mills (12/73 = 100)	252.4	255.0	262.5	262.5	258.6	258.6	260.7	253.6	249.7	r244.3	238.5	237.2	235.4	232.6
2621	Paper mills, except building (12/74 = 100)	156.2	159.8	159.7	159.6	162.0	162.0	162.0	161.3	160.3	r160.6	160.7	159.9	159.8	159.8
2631	Paperboard mills (12/74 = 100)	151.7	153.6	153.5	152.7	152.5	153.4	153.0	152.8	151.3	r149.8	149.1	149.4	146.5	144.8
2647	Sanitary paper products	343.4	344.0	344.1	344.6	344.6	344.6	344.5	344.5	343.6	r346.2	346.4	349.2	350.0	349.5
2654	Sanitary food containers	244.8	253.4	253.3	253.3	254.0	256.9	260.0	259.9	259.9	r259.9	261.4	261.4	262.2	263.2
2655	Fiber cans, drums, and similar products (12/75 = 100)	163.0	167.6	167.6	170.0	176.4	176.5	176.5	176.5	176.7	176.7	176.7	177.5	177.5	177.8
2812	Alkalies and chlorine (12/73 = 100)	305.9	317.7	317.0	324.8	329.4	335.2	335.6	322.0	341.1	r334.8	324.4	325.8	324.3	313.4
2821	Plastics materials and resins (6/76 = 100)	150.8	156.3	153.7	154.3	150.7	152.6	151.0	152.6	150.9	r150.3	150.2	150.8	151.1	150.7
2822	Synthetic rubber	293.3	301.0	301.4	302.7	303.9	306.1	306.7	306.6	307.1	303.8	301.8	299.9	298.8	296.6
2824	Organic fiber, noncellulosic	155.6	164.2	162.5	161.9	161.8	162.9	161.6	162.5	161.6	161.3	160.5	159.5	160.1	157.6
2873	Nitrogenous fertilizers (12/75 = 100)	142.8	142.9	144.2	142.9	142.4	142.6	142.2	141.7	140.5	139.5	136.1	136.0	135.6	134.6
2874	Phosphatic fertilizers	254.1	259.4	258.5	259.0	261.0	263.5	261.6	258.2	256.2	r257.3	256.6	248.7	245.9	247.1
2875	Fertilizers, mixing only	270.7	273.8	273.7	270.5	274.3	276.8	278.4	278.7	278.6	r279.0	278.6	277.9	275.4	274.7
2892	Explosives	311.9	318.7	316.5	315.6	314.9	317.6	320.5	327.2	326.1	r326.5	318.4	324.8	337.3	335.6
2911	Petroleum refining (6/76 = 100)	294.4	294.6	293.3	293.1	293.0	289.1	281.7	267.4	259.2	r267.9	281.4	283.7	280.3	278.5
2951	Paving mixtures and blocks (12/75 = 100)	194.3	196.3	196.4	196.0	197.0	198.0	198.1	197.1	196.3	r195.0	194.8	194.4	194.8	196.7
2952	Asphalt felts and coatings (12/75 = 100)	176.9	174.9	178.1	176.1	174.2	173.8	171.2	168.1	168.4	r173.1	171.3	171.1	174.5	176.5
3011	Tires and inner tubes (12/73 = 100)	215.8	221.0	220.1	221.2	222.0	222.4	220.3	216.7	221.3	221.5	221.7	226.2	221.7	221.9

25. Continued—Producer Price Indexes for the output of selected SIC industries

[1967=100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1981	1981			1982									
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June [1]	July	Aug.	Sept.	Oct.
3021	Rubber and plastic footwear (12/71 = 100)	184.4	185.0	185.0	185.2	186.1	188.4	189.1	189.0	186.6	187.0	187.0	186.8	185.9	185.9
3031	Reclaimed rubber (12/73 =100)	194.1	200.3	200.3	200.3	200.3	200.4	207.2	209.2	209.5	r210.7	207.7	207.4	207.6	207.5
3079	Miscellaneous plastic products (6/78 = 100)	128.9	130.8	130.8	131.0	131.1	131.6	132.8	133.2	133.0	r133.1	132.6	132.7	132.7	132.7
3111	Leather tanning and finishing (12/77 = 100)	150.7	148.2	146.8	147.5	150.8	149.3	147.9	146.8	147.4	r147.3	147.5	146.5	148.5	148.7
3143	Men's footwear, except athletic (12/75 = 100)	169.3	170.5	170.6	171.3	173.1	172.2	173.5	174.9	175.1	r171.6	171.6	175.5	175.7	175.8
3144	Women's footwear, except athletic	217.1	212.5	212.7	212.4	208.5	209.8	210.3	217.0	216.2	r220.1	216.3	220.6	222.2	223.3
3171	Women's handbags and purses (12/75 = 100)	155.5	158.4	158.4	158.4	158.4	158.4	158.4	158.4	158.4	158.4	158.5	157.8	159.0	159.0
3211	Flat glass (12/71 = 100)	175.3	180.1	180.1	177.4	177.5	177.5	177.5	177.5	187.9	r187.9	187.7	187.7	186.3	186.3
3221	Glass containers	328.6	335.4	335.4	335.4	335.3	352.1	355.8	358.0	358.0	r358.0	357.3	357.2	357.7	358.3
3241	Cement, hydraulic	329.6	330.3	330.3	330.3	339.6	341.5	341.5	341.1	341.9	r341.9	337.8	336.0	335.1	336.2
3251	Brick and structural clay tile	296.5	299.9	300.5	300.5	298.9	299.4	299.4	303.4	304.5	r305.0	307.2	307.2	307.5	307.5
3253	Ceramic wall and floor tile (12/75 = 100)	133.4	140.4	140.4	140.4	140.4	140.4	140.4	140.6	140.6	r140.6	138.0	138.0	138.0	138.0
3255	Clay refractories	310.2	313.9	315.2	319.9	329.6	354.4	355.6	355.2	355.5	r356.2	357.2	357.7	357.9	357.9
3259	Structural clay products, n.e.c.	222.6	231.7	231.7	236.6	225.6	226.0	225.9	215.9	215.8	r215.9	216.4	216.5	219.5	219.5
3261	Vitreous plumbing fixtures	254.9	259.0	259.3	260.1	261.1	260.6	260.8	261.8	265.4	265.5	264.2	263.9	267.1	269.1
3262	Vitreous china food utensils	335.0	336.8	344.7	344.7	347.7	347.7	347.3	346.5	355.5	r360.2	349.8	349.8	349.8	350.3
3263	Fine earthenware food utensils	309.1	313.8	315.0	315.0	315.1	315.1	315.0	314.9	316.2	r316.9	314.8	314.8	314.8	321.3
3269	Pottery products, n.e.c. (12/75 = 100)	160.1	161.8	163.7	163.7	164.3	164.3	164.2	164.0	166.3	r167.4	164.7	164.7	164.8	166.9
3271	Concrete block and brick	270.4	274.3	274.2	275.1	274.9	276.4	276.4	276.5	276.7	277.0	277.1	277.4	276.8	276.9
3273	Ready-mixed concrete	298.7	299.5	299.4	299.6	301.9	301.9	302.5	303.9	305.5	r305.5	305.4	304.8	305.4	306.1
3274	Lime (12/75 = 100)	172.5	173.7	173.5	173.8	178.8	183.7	185.7	186.3	188.0	r188.3	188.1	188.3	188.2	188.1
3275	Gypsum products	256.9	251.5	252.5	250.6	250.9	253.9	260.5	262.5	258.8	256.2	256.5	254.3	254.7	255.8
3291	Abrasive products (12/71 = 100)	232.9	237.6	241.0	241.0	241.3	248.3	249.8	250.2	251.7	252.1	252.0	252.3	252.3	252.3
3297	Nonclay refractories (12/74 = 100)	185.3	189.7	190.2	190.3	191.2	198.3	200.4	202.3	203.2	r203.8	203.8	203.8	203.8	203.8
3312	Blast furnaces and steel mills	342.8	353.1	353.0	353.3	354.7	354.4	354.4	356.1	355.9	r353.7	352.9	352.8	352.3	354.0
3313	Electrometallurgical products (12/75 = 100)	121.8	125.4	125.4	125.3	125.3	123.4	120.3	120.3	120.3	120.4	120.4	121.4	121.4	121.3
3316	Cold finishing of steel shapes	316.2	326.4	326.4	326.7	327.0	327.0	327.0	327.1	327.3	325.6	325.2	325.6	325.1	324.3
3317	Steel pipes and tubes	341.5	362.0	362.3	363.0	363.7	364.1	365.8	365.9	365.9	365.7	364.0	361.6	361.0	361.0
3321	Gray iron foundries (12/68 = 100)	299.7	303.3	305.2	306.1	307.9	310.0	311.5	311.9	311.1	r311.5	311.3	311.3	309.7	314.4
3333	Primary zinc	326.3	337.0	337.5	315.7	308.6	311.2	292.0	273.4	256.6	259.7	266.4	277.0	291.6	302.9
3334	Primary aluminum	333.1	333.5	332.5	332.8	324.1	320.2	320.8	312.4	308.8	r307.9	305.7	308.0	304.4	303.5
3351	Copper rolling and drawing	212.3	212.3	209.2	207.1	204.8	203.9	198.4	196.4	197.4	r190.0	189.2	190.1	190.9	191.3
3353	Aluminum sheet, plate, and foil (12/75 = 100)	175.8	179.9	180.2	180.8	181.8	181.7	181.2	179.9	178.6	178.0	178.2	177.1	177.2	176.3
3354	Aluminum extruded products (12/75 = 100)	180.1	181.3	181.4	181.1	180.8	180.8	180.5	180.2	180.2	180.1	179.5	178.9	178.0	177.7
3355	Aluminum rolling, drawing, n.e.c. (12/75 = 100)	159.1	163.0	166.2	166.1	166.1	166.5	166.3	162.9	163.0	165.4	164.7	164.5	165.9	160.0
3411	Metal cans	305.1	307.0	306.0	304.9	310.8	314.0	313.6	318.6	318.7	r318.7	318.6	318.0	318.1	318.0
3425	Hand saws and saw blades (12/72 = 100)	201.4	204.8	205.0	206.0	211.6	214.8	214.9	215.3	221.3	r221.4	221.0	221.2	221.2	221.2
3431	Metal sanitary ware	265.5	270.3	271.6	271.8	271.3	272.8	275.1	275.8	275.5	r276.1	276.1	276.9	276.4	278.1
3465	Automotive stampings (12/75 = 100)	146.0	147.4	149.7	149.1	150.1	144.7	144.2	144.3	144.5	r144.5	153.0	153.3	153.5	154.1
3482	Small arms ammunition (12/75 = 100)	159.0	159.9	159.9	163.9	167.5	167.5	167.5	166.3	166.3	r170.3	175.9	175.9	175.9	175.9
3493	Steel springs, except wire	245.9	253.9	254.1	256.1	255.8	257.4	256.4	254.3	254.5	r254.4	253.1	253.5	253.5	253.7
3494	Valves and pipe fittings (12/71 = 100)	248.9	252.9	253.5	255.7	257.7	258.9	259.1	260.3	260.9	r260.6	260.1	260.1	260.0	259.8
3498	Fabricated pipe and fittings	361.3	377.7	378.6	379.3	378.6	377.7	379.8	385.5	385.4	385.4	383.8	385.6	382.4	383.2
3519	Internal combustion engines, n.e.c.	311.9	323.2	326.4	325.4	329.4	332.0	332.6	334.2	338.4	r339.1	339.6	343.8	347.1	347.3
3531	Construction machinery (12/76 = 100)	156.8	161.0	161.6	159.7	162.5	162.4	163.3	164.3	165.2	r165.4	166.5	166.7	166.8	166.2
3532	Mining machinery (12/72 = 100)	282.5	288.5	290.8	292.9	295.5	297.8	300.9	302.4	304.0	r304.2	304.0	303.4	304.5	305.4
3533	Oilfield machinery and equipment	395.8	415.6	418.2	420.3	427.2	429.2	435.8	439.3	438.4	r438.7	438.4	439.6	439.1	436.9
3534	Elevators and moving stairways	253.9	257.0	260.7	265.6	264.3	269.8	271.6	271.8	275.5	r275.5	275.5	275.5	275.3	274.2
3542	Machine tools, metal forming types (12/71 = 100)	306.9	311.7	312.3	319.3	319.7	322.8	324.5	325.2	325.5	326.5	333.6	333.6	333.3	333.5
3546	Power driven hand tools (12/76 = 100)	147.3	149.5	149.5	150.0	153.3	153.2	153.9	154.7	156.3	r156.3	157.4	157.5	157.2	157.5
3552	Textile machinery (12/69 = 100)	243.5	248.0	247.9	249.9	252.3	253.5	255.0	256.2	257.3	r259.2	259.8	258.9	259.3	261.3
3553	Woodworking machinery (12/72 = 100)	225.0	228.9	229.1	229.1	233.7	232.9	233.4	234.7	234.7	r234.9	230.0	230.6	230.6	230.7
3576	Scales and balances, excluding laboratory	226.2	226.2	226.3	226.5	228.3	228.8	229.8	229.6	229.5	230.6	231.9	231.9	231.9	232.0
3592	Carburetors, pistons, rings, valves (6/76 = 100)	178.0	185.4	187.2	187.3	185.3	189.6	190.4	192.8	195.4	r195.9	196.6	197.2	197.6	198.2
3612	Transformers	209.9	217.3	222.0	222.0	220.5	222.2	222.4	223.3	224.7	r225.2	224.7	226.0	224.6	223.9
3623	Welding apparatus, electric (12/72 = 100)	227.5	232.5	233.2	235.8	236.8	236.9	232.3	237.6	237.6	r237.8	236.9	237.5	237.7	237.8
3631	Household cooking equipment (12/75 = 100)	141.2	141.6	141.9	142.6	146.0	146.8	147.2	146.2	147.1	146.9	148.2	150.4	151.0	151.1
3632	Household refrigerators, freezers (6/76 = 100)	132.8	137.8	137.9	137.9	140.1	141.1	142.3	142.5	143.2	144.3	145.5	145.9	145.9	145.4
3633	Household laundry equipment (12/73 = 100)	174.3	177.0	178.4	178.8	180.1	180.5	186.2	186.9	188.6	189.0	189.1	189.7	190.1	190.5
3635	Household vacuum cleaners	159.1	161.3	161.0	160.8	165.6	165.2	165.7	165.4	165.5	r165.6	158.4	159.4	159.5	159.2
3636	Sewing machines (12/75 = 100)	146.8	156.0	156.0	156.0	156.0	155.8	155.8	154.3	154.3	r154.3	153.7	153.0	153.0	153.6
3641	Electric lamps	277.3	285.9	284.8	281.3	282.1	286.1	283.6	296.6	294.5	293.9	291.9	291.9	296.3	302.9
3644	Noncurrent-carrying wiring devices (12/72 = 100)	249.6	258.7	262.1	262.1	257.9	259.0	258.1	260.0	262.7	r260.8	260.7	260.3	261.3	261.9
3646	Commercial lighting fixtures (12/75 = 100)	154.8	158.9	159.3	159.2	159.2	161.1	162.4	163.5	167.7	r166.5	166.5	165.9	165.4	165.7
3648	Lighting equipment, n.e.c. (12/75 = 100)	155.9	162.0	162.4	163.1	162.8	167.8	168.8	170.9	171.2	r171.1	171.1	171.2	171.2	171.2
3671	Electron tubes receiving type	309.7	327.5	327.8	342.2	374.1	374.2	374.4	374.5	374.4	r374.5	376.0	376.0	380.7	380.8
3674	Semiconductors and related devices	r90.9	91.6	92.0	91.7	90.9	90.2	90.0	89.5	89.3	r89.5	90.8	90.5	90.8	88.4
3675	Electronic capacitors (12/75 = 100)	170.3	171.5	168.1	166.6	167.4	169.7	168.4	167.6	166.6	166.8	166.7	166.2	165.5	164.4
3676	Electronic resistors (12/75 = 100)	141.4	142.7	143.0	142.8	143.7	144.0	143.4	144.4	145.2	144.9	144.4	144.6	144.8	145.2
3678	Electronic connectors (12/75 = 100)	154.9	156.8	155.8	155.8	155.9	156.2	156.7	156.4	158.3	r159.8	157.6	160.9	159.8	160.9
3692	Primary batteries, dry and wet	182.2	182.7	182.7	182.7	182.0	184.3	190.5	195.5	195.8	r196.2	196.3	196.3	196.8	198.1
3711	Motor vehicles and car bodies (12/75 = 100)	150.3	158.6	158.7	159.1	159.8	155.0	154.9	154.9	157.0	r159.0	159.7	160.3	151.4	162.8
3942	Dolls (12/75 = 100)	131.3	130.9	130.9	130.9	135.5	136.6	136.6	136.8	136.8	r136.8	136.5	136.5	136.5	136.5
3944	Games, toys, and children's vehicles	221.3	222.2	222.6	223.9	228.4	232.5	234.1	234.1	234.3	r234.3	231.8	231.8	232.1	232.6
3955	Carbon paper and inked ribbons (12/75 = 100)	138.5	140.2	140.2	140.3	140.3	140.3	140.3	140.3	140.5	140.6	140.5	140.5	139.3	139.3
3995	Burial caskets (6/76 = 100)	139.5	143.4	143.4	142.7	142.7	143.8	145.3	145.3	149.3	149.3	150.8	150.8	150.8	150.8
3996	Hard surface floor coverings (12/75 = 100)	151.8	153.7	153.7	153.7	155.1	155.2	156.1	156.1	156.3	154.3	155.0	155.7	156.9	156.9

[1] Data for June 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

[2] Not available.
r=revised.

PRODUCTIVITY DATA

PRODUCTIVITY DATA are compiled by the Bureau of Labor Statistics from establishment data and from estimates of compensation and output supplied by the U.S. Department of Commerce and the Federal Reserve Board.

Definitions

Output is the constant dollar gross domestic product produced in a given period. Indexes of **output per hour of labor input,** or labor productivity, measure the value of goods and services produced per hour of labor. **Compensation per hour** includes wages and salaries of employees plus employers' contributions for social insurance and private benefit plans. The data also include an estimate of wages, salaries, and supplementary payments for the self-employed, except for nonfinancial corporations, in which there are no self-employed. **Real compensation per hour** is compensation per hour adjusted by the Consumer Price Index for All Urban Consumers.

Unit labor cost measures the labor compensation cost required to produce one unit of output and is 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 the current dollar gross domestic product and dividing by output. In these tables, **unit nonlabor costs** contain all the components of unit nonlabor payments except unit profits. **Unit profits** include corporate profits and inventory valuation adjustments per unit of output.

The **implicit price deflator** is derived by dividing the current dollar estimate of gross product by the constant dollar estimate, making the deflator, in effect, a price index for gross product of the sector reported.

The use of the term "man hours" to identify the labor component of productivity and costs, in tables 26 through 29, has been discontinued. **Hours of all persons** is now used to describe the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all-employee hour** is now used to describe labor productivity in nonfinancial corporations where there are no self-employed.

Notes on the data

In the business sector and the nonfarm business sector, the basis for the output measure employed in the computation of output per hour is Gross Domestic Product rather than Gross National Product. Computation of hours includes estimates of nonfarm and farm proprietor hours.

Output data are supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

Beginning with the September 1982 issue of the *Review,* all of the productivity and cost measures contained in these tables are based on revised output and compensation measures released by the Bureau of Economic Analysis in July as part of the regular revision cycle of the National Income and Product Accounts. Measures of labor input have been revised to reflect results of the 1980 census, and seasonal factors have been recomputed for use in the preparation of quarterly measures. The word "private" is no longer being used as part of the series title of one of the two business sector measures prepared by BLS; no change has been made in the definition or content of the measures as a result of this change.

26. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years, 1950–81

[1977=100]

Item	1950	1955	1960	1965	1970	1974	1975	1976	1977	1978	1979	1980	1981
Business sector:													
Output per hour of all persons	50.4	58.3	65.2	78.3	86.2	92.5	94.5	97.6	100.0	100.6	99.6	98.9	100.7
Compensation per hour	20.0	26.4	33.9	41.7	58.2	78.0	85.5	92.9	100.0	108.6	119.1	131.4	144.1
Real compensation per hour	50.5	59.6	69.5	80.1	90.8	95.9	96.3	98.9	100.0	100.9	99.4	96.7	96.0
Unit labor cost	39.7	45.2	52.0	53.3	67.5	84.4	90.5	95.1	100.0	108.0	119.5	132.9	143.1
Unit nonlabor payments	43.4	47.6	50.6	57.6	63.2	78.5	90.4	94.0	100.0	106.7	112.8	119.3	135.2
Implicit price deflator	41.0	46.0	51.6	54.7	66.0	82.4	90.5	94.7	100.0	107.5	117.2	128.3	140.4
Nonfarm business sector:													
Output per hour of all persons	56.3	62.8	68.3	80.5	86.8	92.9	94.7	97.8	100.0	100.6	99.3	98.5	99.9
Compensation per hour	21.8	28.3	35.7	42.8	58.7	78.5	86.0	93.0	100.0	108.6	118.8	130.9	143.6
Real compensation per hour	55.0	64.0	73.0	82.2	91.5	96.4	96.8	99.0	100.0	100.9	99.2	96.3	95.7
Unit labor cost	38.8	45.0	52.2	53.2	67.6	84.5	90.8	95.1	100.0	108.0	119.6	133.0	143.8
Unit nonlabor payments	42.7	47.8	50.4	58.0	63.7	75.8	88.5	93.5	100.0	105.3	110.3	119.1	134.8
Implicit price deflator	40.1	46.0	51.6	54.8	66.3	81.6	90.0	94.6	100.0	107.1	116.5	128.3	140.8
Nonfinancial corporations:													
Output per hour of all employees	(1)	(1)	66.6	80.2	85.7	91.7	94.8	97.8	100.0	101.0	101.2	100.8	102.7
Compensation per hour	(1)	(1)	36.2	43.0	58.3	77.6	85.5	92.5	100.0	108.6	119.2	131.6	144.4
Real compensation per hour	(1)	(1)	74.2	82.5	90.9	95.4	96.2	98.5	100.0	100.8	99.5	96.8	96.2
Unit labor cost	(1)	(1)	54.4	53.5	68.0	84.7	90.2	94.6	100.0	107.5	117.8	130.5	140.6
Unit nonlabor payments	(1)	(1)	54.6	60.8	63.1	75.6	90.8	95.0	100.0	104.2	106.9	117.7	134.8
Implicit price deflator	(1)	(1)	54.5	56.1	66.3	81.6	90.4	94.7	100.0	106.4	114.1	126.1	138.6
Manufacturing:													
Output per hour of all persons	49.4	56.4	60.0	74.5	79.1	90.8	93.4	97.5	100.0	100.9	101.5	101.7	104.5
Compensation per hour	21.5	28.8	36.7	42.8	57.6	76.3	85.4	92.3	100.0	108.3	118.9	132.8	146.4
Real compensation per hour	54.0	65.1	75.1	82.3	89.8	93.8	96.2	98.3	100.0	100.6	99.2	97.7	97.5
Unit labor cost	43.4	51.0	61.1	57.5	72.7	84.1	91.5	94.6	100.0	107.4	117.1	130.6	140.0
Unit nonlabor payments	54.3	58.5	61.1	69.3	65.0	69.3	87.3	93.7	100.0	102.5	99.9	97.1	108.8
Implicit price deflator	46.6	53.2	61.1	61.0	70.5	79.8	90.3	94.4	100.0	106.0	112.0	120.8	130.8

[1] Not available.

27. Annual changes in productivity, hourly compensation, unit costs, and prices, 1971–81

Item	Year											Annual rate of change	
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1950-81	1960-81
Business sector:													
Output per hour of all persons	3.6	3.5	c2.6	−2.4	2.2	3.3	2.4	0.6	−0.9	−0.7	1.8	r2.5	2.1
Compensation per hour	6.6	6.5	8.0	9.4	9.6	8.6	7.7	8.6	9.7	10.4	9.6	6.2	r7.3
Real compensation per hour	2.2	3.1	1.6	−1.4	0.5	2.6	1.2	0.9	−1.4	−2.8	−0.7	r2.4	1.8
Unit labor cost	2.9	2.9	5.3	12.1	7.3	5.1	5.1	8.0	10.7	11.2	7.7	3.6	5.0
Unit nonlabor payments	7.6	4.5	5.9	4.4	15.1	4.0	6.4	6.7	5.7	5.8	13.3	r3.5	r4.7
Implicit price deflator	4.4	3.4	5.5	9.5	9.8	4.7	5.6	7.5	9.0	9.4	9.5	r3.6	4.9
Nonfarm business sector:													
Output per hour of all persons	3.3	3.7	2.4	−2.5	2.0	3.2	2.2	0.6	−1.3	−0.9	1.4	r2.2	r1.9
Compensation per hour	6.6	6.7	7.6	9.4	9.6	8.1	7.5	8.6	9.3	10.2	9.7	5.9	7.0
Real compensation per hour	2.2	3.3	1.3	−1.4	0.4	2.2	1.0	0.9	−1.7	−2.9	−0.7	r2.1	1.5
Unit labor cost	3.2	2.9	5.0	12.2	7.5	4.7	5.2	8.0	10.7	11.2	8.1	3.7	5.0
Unit nonlabor payments	7.4	3.2	1.3	5.9	16.7	5.7	6.9	5.3	4.7	8.0	13.1	r3.5	r4.6
Implicit price deflator	4.5	3.0	3.8	10.2	10.3	5.0	5.7	7.1	8.8	10.2	9.7	3.6	4.9
Nonfinancial corporations:													
Output per hour of all employees	4.8	3.0	2.6	−3.4	3.4	3.2	2.3	1.0	0.2	−0.3	1.8	(1)	2.0
Compensation per hour	6.5	5.8	7.7	9.7	10.1	8.2	8.1	8.6	9.8	10.4	9.7	(1)	6.9
Real compensation per hour	2.1	2.5	1.4	−1.1	0.9	2.3	1.6	0.8	−1.3	−2.8	−0.6	(1)	1.4
Unit labor cost	1.6	2.8	4.9	13.6	6.5	4.9	5.7	7.5	9.6	10.7	7.8	(1)	4.8
Unit nonlabor payments	7.4	2.7	1.5	7.1	20.1	4.6	5.3	4.2	2.6	10.1	14.6	(1)	4.1
Implicit price deflator	3.5	2.8	3.8	11.4	10.9	4.8	5.6	6.4	7.2	10.5	10.0	(1)	4.6
Manufacturing:													
Output per hour of all persons	6.1	5.0	5.4	−2.4	2.9	4.4	2.5	0.9	0.7	0.2	2.8	2.6	2.7
Compensation per hour	6.1	5.4	7.2	10.6	11.9	8.0	8.3	8.3	9.7	11.8	10.2	5.8	6.9
Real compensation per hour	1.8	2.0	0.9	−0.3	2.5	2.1	1.8	0.6	−1.4	−1.6	−0.2	2.0	1.4
Unit labor cost	0.0	0.3	1.7	13.3	8.8	3.4	5.7	7.4	9.0	11.6	7.2	3.1	4.1
Unit nonlabor payments	11.2	0.8	−3.3	−1.8	25.9	7.4	6.7	2.5	−2.6	−2.7	12.0	2.1	2.7
Implicit price deflator	3.1	0.5	0.3	9.0	13.1	4.6	6.0	6.0	5.7	7.8	8.4	2.8	3.7

[1] Not available. r = revised. c= corrected.

28. Quarterly indexes of productivity, hourly compensation, unit costs, and prices, seasonally adjusted

[1977=100]

Item	Annual average		Quarterly indexes										
			1980				1981				1982		
	1980	1981	I	II	III	IV	I	II	III	IV	I	II	III
Business sector:													
Output per hour of all persons	98.9	100.7	99.3	98.2	98.9	99.3	100.7	100.7	101.0	100.2	100.0	100.3	p101.3
Compensation per hour	131.4	144.1	126.7	130.0	133.1	136.1	140.0	142.5	145.6	148.2	150.9	153.4	p155.7
Real compensation per hour	96.7	96.0	97.0	96.4	96.9	96.2	96.2	96.4	95.7	95.6	96.5	97.1	p96.8
Unit labor cost	132.9	143.1	127.6	132.3	134.7	137.0	139.0	141.5	144.2	147.9	150.9	r152.9	p153.7
Unit nonlabor payments	119.3	135.2	116.0	116.2	120.6	124.6	131.8	133.4	137.4	138.3	136.4	r137.0	p140.8
Implicit price deflator	128.3	140.4	123.7	126.9	129.9	132.8	136.5	138.8	141.9	144.6	146.0	r147.5	p149.3
Nonfarm business sector:													
Output per hour of all persons	98.5	99.9	98.7	97.6	98.4	99.2	100.4	100.0	100.0	99.1	99.2	r99.4	p100.3
Compensation per hour	130.9	143.6	126.2	129.3	132.6	135.7	139.5	142.0	145.1	147.7	150.4	r152.7	p155.1
Real compensation per hour	96.3	95.7	96.6	96.0	96.5	95.9	96.0	96.0	95.4	95.3	96.3	96.6	p96.4
Unit labor cost	133.0	143.8	127.8	132.5	134.7	136.8	139.0	141.9	145.1	149.0	151.6	r153.5	p154.6
Unit nonlabor payments	119.1	134.8	115.2	116.7	120.3	124.4	131.5	132.8	136.7	138.4	136.7	r137.2	p140.9
Implicit price deflator	128.3	140.8	123.6	127.2	129.9	132.7	136.5	138.9	142.3	145.5	146.6	r148.1	p150.1
Nonfinancial corporations:													
Output per hour of all employees	100.8	102.7	100.8	99.8	101.1	101.7	102.8	102.7	102.8	102.2	102.3	r103.1	(1)
Compensation per hour	131.6	144.4	126.8	130.0	133.4	136.3	140.4	142.7	145.7	148.6	151.7	154.1	(1)
Real compensation per hour	96.8	96.2	97.0	96.4	97.1	96.3	96.5	96.5	95.8	95.9	97.1	97.5	(1)
Total unit costs	131.0	143.4	125.0	130.4	132.9	135.8	138.3	141.7	144.7	149.1	151.8	r153.8	(1)
Unit labor cost	130.5	140.6	125.8	130.2	131.9	134.1	136.5	138.9	141.7	145.4	148.3	r149.5	(1)
Unit nonlabor costs	132.5	151.4	122.7	131.0	135.7	140.7	143.4	149.6	153.1	159.6	161.8	r166.0	(1)
Unit profits	87.9	101.6	91.1	81.9	87.8	90.5	104.7	98.8	105.2	97.6	86.1	r82.3	(1)
Implicit price deflator	126.1	138.6	121.1	124.8	127.7	130.6	134.5	136.8	140.2	143.2	144.3	r145.6	(1)
Manufacturing:													
Output per hour of all persons	101.7	104.5	102.6	100.4	100.3	103.6	105.2	105.0	105.0	102.8	102.1	r102.3	p104.1
Compensation per hour	132.8	146.4	127.1	130.9	135.2	138.4	142.6	144.9	147.3	150.7	154.7	157.6	p160.1
Real compensation per hour	97.7	97.5	97.3	97.1	98.5	97.8	98.0	97.9	96.8	97.2	99.0	99.7	p99.5
Unit labor cost	130.6	140.0	123.9	130.3	134.9	133.6	135.5	138.0	140.3	146.6	151.5	r154.0	p153.8

[1] Not available. r= revised. p= preliminary.

29. Percent change from preceding quarter and year in productivity, hourly compensation, unit costs, and prices, seasonally adjusted at annual rate

[1977=100]

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	I 1981 to II 1981	II 1981 to III 1981	III 1981 to IV 1981	IV 1981 to I 1982	I 1982 to II 1982	II 1982 to III 1982	II 1980 to II 1981	III 1980 to III 1981	IV 1980 to IV 1981	I 1981 to I 1982	II 1981 to II 1982	III 1981 to III 1982
Business sector:												
Output per hour of all persons	0.0	1.1	−2.9	−1.0	r1.4	p4.0	2.5	2.2	0.9	−0.7	−0.4	p0.3
Compensation per hour	7.5	9.0	7.4	7.3	6.9	p6.2	9.7	9.4	8.9	7.8	7.6	p6.9
Real compensation per hour	0.5	−2.6	−0.4	3.9	2.2	p−1.3	−0.1	−1.3	−0.6	0.3	r0.8	p1.1
Unit labor costs	7.5	7.8	10.6	8.4	r5.5	p2.1	6.9	7.1	7.9	8.6	8.1	p6.6
Unit nonlabor payments	4.9	12.5	2.9	−5.4	r1.7	p11.5	14.8	13.9	11.0	3.5	r2.7	p2.5
Implicit price deflator	6.6	9.3	8.0	3.8	r4.3	p5.0	9.4	9.2	8.9	6.9	r6.3	p5.2
Nonfarm business sector:												
Output per hour of all persons	−1.3	−0.3	−3.5	0.6	r0.8	p3.6	2.5	1.6	−0.1	−1.1	r−0.6	p0.3
Compensation per hour	7.1	9.0	7.3	7.7	r6.1	p6.6	9.8	9.4	8.8	7.8	7.5	p6.9
Real compensation per hour	0.1	−2.6	−0.5	4.3	1.4	p−0.9	0.0	−1.2	−0.6	0.3	0.6	p1.1
Unit labor costs	8.6	9.3	11.2	7.1	r5.2	p2.9	7.1	7.7	8.9	9.0	r8.2	p6.6
Unit nonlabor payments	4.0	12.1	5.1	−4.6	r1.3	p11.3	13.8	13.6	11.2	4.0	r3.3	p3.1
Implicit price deflator	7.1	10.2	9.2	3.3	r4.0	p5.5	9.2	9.6	9.6	7.4	r6.6	p5.5
Nonfinancial corporations:												
Output per hour of all employees	−0.4	0.3	−2.3	0.5	r2.9	(1)	2.9	1.7	0.6	−0.5	r0.3	(1)
Compensation per hour	6.9	8.5	8.3	8.6	6.4	(1)	9.8	9.2	9.0	8.1	r8.0	(1)
Real compensation per hour	−0.1	−3.0	0.5	5.2	1.7	(1)	0.1	−1.4	−0.5	0.6	r1.0	(1)
Total unit costs	10.2	8.6	12.8	7.4	r5.4	(1)	8.7	8.9	9.8	9.7	r8.5	(1)
Unit labor costs	7.3	8.2	10.9	8.1	r3.4	(1)	6.7	7.5	8.4	8.6	r7.6	(1)
Unit nonlabor costs	18.5	9.8	17.8	5.7	r0.7	(1)	14.2	12.9	13.4	12.8	r10.9	(1)
Unit profits	−20.8	28.4	−25.9	−39.4	r−16.7	(1)	20.7	19.7	7.9	−17.8	r−16.7	(1)
Implicit price deflator	7.1	10.2	8.9	3.0	r3.8	(1)	9.6	9.7	9.6	7.3	r6.4	(1)
Manufacturing:												
Output per hour of all persons	−0.7	−0.1	−8.2	−2.4	r0.8	p7.1	4.5	4.7	−0.8	−2.9	r−2.5	p−0.8
Compensation per hour	6.6	6.8	9.6	11.1	7.8	p6.5	10.7	8.9	8.9	8.5	8.8	p8.7
Real compensation per hour	−0.4	−4.6	1.6	7.6	3.1	p−1.1	0.9	−1.7	−0.6	1.0	1.8	p2.8
Unit labor costs	7.3	6.8	19.4	13.9	r6.9	p−0.6	5.9	4.0	9.8	11.7	r11.6	p9.6

[1] Not available.

r= revised.

p= preliminary.

WAGE AND COMPENSATION DATA

DATA FOR THE EMPLOYMENT COST INDEX are reported to the Bureau of Labor Statistics by a sample of 2,000 private nonfarm establishments and 750 State and local government units selected to represent total employment in those sectors. On average, each reporting unit provides wage and compensation information on five well-specified occupations.

Data on negotiated wage and benefit changes are obtained from contracts on file at the Bureau, direct contact with the parties, and secondary sources.

Definitions

The **Employment Cost Index** (ECI) is a quarterly measure of the average change in the cost of employing labor. The rate of total compensation, which comprises wages, salaries, and employer costs for employee benefits, is collected for workers performing specified tasks. Employment in each occupation is held constant over time for all series produced in the ECI, except those by region, bargaining status, and area. As a consequence, only changes in compensation are measured. Industry and occupational employment data from the 1970 Census of Population are used in deriving constant weights for the ECI. While holding total industry and occupational employment fixed, in the estimation of indexes by region, bargaining status, and area, the employment in those measures is allowed to vary over time in accord with changes in the sample. The rate of change (in percent) is available for wages and salaries, as well as for total compensation. Data are collected for the pay period including the 12th day of the survey months of March, June, September, and December. The statistics are neither annualized nor adjusted for seasonal influence.

Wages and salaries consist of earnings before payroll deductions, excluding premium pay for overtime, work on weekends and holidays, and shift differentials. Production bonuses, incentive earnings, commissions, and cost-of-living adjustments are included; nonproduction bonuses are included with other supplemental pay items in the benefits category; and payments-in-kind, free room and board, and tips are excluded. *Benefits* include supplemental pay, insurance, retirement and savings plans, and hours-related and legally required benefits.

Data on negotiated wage changes apply to private nonfarm industry collective bargaining agreements covering 1,000 workers or more. Data on compensation changes apply only to those agreements covering 5,000 workers or more. *First-year* wage or compensation changes refer to average negotiated changes for workers covered by settlements reached in the period and implemented within the first 12 months after the effective date of the agreement. *Changes over the life of the agreement* refer to all adjustments specified in the contract, expressed as an average annual rate. These measures exclude wage changes that may occur under cost-of-living adjustment clauses, that are triggered by movements in the Consumer Price Index. *Wage-rate changes* are expressed as a percent of straight-time hourly earnings; *compensation changes* are expressed as a percent of total wages and benefits.

Effective wage adjustments reflect all negotiated changes implemented in the reference period, regardless of the settlement date. They include changes from settlements reached during the period, changes deferred from contracts negotiated in an earlier period, and cost-of-living adjustments. The data also reflect contracts providing for no wage adjustment in the period. Effective adjustments and each of their components are prorated over all workers in bargaining units with at least 1,000 workers.

Notes on the data

The Employment Cost Index data series began in the fourth quarter of 1975, with the quarterly percent change in wages and salaries in the private nonfarm sector. Data on employer costs for employee benefits were included in 1980, to produce a measure of the percent change in employers' cost for employees' total compensation. State and local government units were added to the ECI coverage in 1981, providing a measure of total compensation change in the civilian nonfarm economy.

Data for the broad white-collar, blue-collar, and service worker groups, and the manufacturing, nonmanufacturing, and service industry groups are presented in the ECI. Additional occupation and industry detail are provided for the wages and salaries component of total compensation in the private nonfarm sector. For State and local government units, additional industry detail is shown for both total compensation and its wages and salaries component.

Historical indexes (June 1981 = 100) of the quarterly rates of changes presented in the ECI are also available.

For a more detailed discussion of the ECI, see chapter 25, "The Employment Cost Index," of the BLS *Handbook of Methods* (Bulletin 1910), and the *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; and "The Employment Cost Index: recent trends and expansion," May 1982.

Additional data for the ECI and other measures of wage and compensation changes appear in *Current Wage Developments*, a monthly periodical of the Bureau.

30. Employment Cost Index, total compensation, by occupation and industry group

[June 1981 = 100]

Series	1980		1981				1982			Percent change	
										3 months ended	12 months ended
	Sept.	Dec.	March	June	Sept.	Dec.	March	June	Sept.	September 1982	
Civilian nonfarm workers[1]	—	—	—	100.0	102.6	104.5	106.3	107.5	110.1	2.4	7.3
Workers, by occupational group											
White-collar workers	—	—	—	100.0	102.7	104.9	106.5	107.7	110.7	2.8	7.8
Blue-collar workers	—	—	—	100.0	102.3	104.1	105.7	107.1	109.2	2.0	6.7
Service workers	—	—	—	100.0	102.8	104.2	107.2	108.3	110.8	2.3	7.8
Workers, by industry division											
Manufacturing	—	—	—	100.0	102.1	104.0	106.0	107.2	109.3	2.0	7.1
Nonmanufacturing	—	—	—	100.0	102.8	104.8	106.4	107.7	110.5	2.6	7.5
Services	—	—	—	100.0	104.4	107.1	108.2	109.2	113.5	3.9	8.7
Public administration[2]	—	—	—	100.0	104.3	106.0	108.1	109.1	112.8	3.4	8.1
Private nonfarm workers	92.8	94.7	98.1	100.0	102.0	104.0	105.8	107.2	109.3	2.0	7.2
Workers, by occupational group											
White-collar workers	92.6	94.5	98.3	100.0	101.8	104.0	105.8	107.2	109.5	2.1	7.6
Blue-collar workers	93.0	94.9	97.8	100.0	102.2	104.0	105.6	107.0	109.0	1.9	6.7
Service workers	92.7	94.3	99.3	100.0	101.9	103.1	106.7	107.9	109.6	1.6	7.6
Workers, by industry division											
Manufacturing	92.6	94.7	98.0	100.0	102.1	104.0	106.0	107.2	109.3	2.0	7.1
Nonmanufacturing	92.9	94.7	98.2	100.0	102.0	103.9	105.7	107.1	109.3	2.1	7.2
State and local government workers	—	—	—	100.0	105.3	107.4	108.8	109.3	114.3	4.6	8.5
Workers, by occupational group											
White-collar workers	—	—	—	100.0	105.7	107.8	109.1	109.5	114.9	4.9	8.7
Blue-collar workers	—	—	—	100.0	104.2	105.9	108.2	108.9	112.7	3.5	8.2
Workers, by industry division											
Services	—	—	—	100.0	105.8	107.9	109.0	109.4	114.9	5.0	8.6
Schools	—	—	—	100.0	106.0	107.9	108.9	109.1	114.8	5.2	8.3
Elementary and secondary	—	—	—	100.0	106.3	108.3	109.3	109.5	115.6	5.6	8.7
Hospitals and other services[3]	—	—	—	100.0	105.0	107.8	109.5	110.3	115.3	4.5	9.8
Public administration[2]	—	—	—	100.0	104.3	106.0	108.1	109.1	112.8	3.4	8.1

[1]Excludes household and Federal workers.
[2]Consists of legislative, judicial, administrative, and regulatory activities.
[3]Includes, for example, library, social, and health services.
NOTE: Dashes indicate data not available.

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

[June 1981 = 100]

Series	1980		1981				1982			Percent change	
										3 months ended	12 months ended
	Sept.	Dec.	March	June	Sept.	Dec.	March	June	Sept.	September 1982	
Civilian nonfarm workers[1]	—	—	—	100.0	102.5	104.4	106.3	107.3	109.7	2.2	7.0
Workers, by occupational group											
White-collar workers	—	—	—	100.0	102.6	104.7	106.7	107.6	110.4	2.6	7.6
Blue-collar workers	—	—	—	100.0	102.4	104.0	105.5	106.7	108.6	1.8	6.1
Service workers	—	—	—	100.0	102.5	103.6	106.8	107.9	110.1	2.0	7.4
Workers, by industry division											
Manufacturing	—	—	—	100.0	102.1	104.0	105.9	107.0	108.8	1.7	6.6
Nonmanufacturing	—	—	—	100.0	102.7	104.5	106.5	107.5	110.1	2.4	7.2
Services	—	—	—	100.0	104.4	106.6	108.6	109.5	113.2	3.4	8.4
Public administration[2]	—	—	—	100.0	103.8	105.5	107.5	108.4	111.9	3.2	7.8
Private nonfarm workers	93.5	95.4	98.0	100.0	102.0	103.8	105.9	107.1	109.0	1.8	6.9
Workers, by occupational group											
White-collar workers	93.3	95.2	98.1	100.0	101.8	103.9	106.2	107.3	109.4	2.0	7.5
Professional and technical workers	93.2	95.3	98.2	100.0	103.3	105.5	108.0	109.4	111.8	2.2	8.2
Managers and administrators	93.5	94.7	98.6	100.0	101.6	102.8	105.8	107.2	108.5	1.2	6.8
Salesworkers	92.2	94.8	96.2	100.0	98.0	101.9	102.2	101.8	104.5	2.7	6.6
Clerical workers	93.8	95.7	98.6	100.0	102.7	104.2	107.0	108.3	110.3	1.8	7.4
Blue-collar workers	93.8	95.7	97.7	100.0	102.3	103.9	105.4	106.6	108.5	1.8	6.1
Craft and kindred workers	94.0	96.1	97.8	100.0	102.9	104.3	106.2	107.6	109.6	1.9	6.5
Operatives, except transport	93.6	95.5	97.8	100.0	102.1	104.1	105.4	106.6	108.3	1.6	6.1
Transport equipment operatives	93.5	95.3	96.8	100.0	101.0	102.7	103.2	104.1	106.0	1.8	5.0
Nonfarm laborers	93.9	95.7	97.5	100.0	101.5	103.3	104.1	105.1	106.5	1.3	4.9
Service workers	93.4	94.8	99.2	100.0	101.8	102.7	106.7	107.9	109.3	1.3	7.4
Workers, by industry division											
Manufacturing	93.6	95.7	97.9	100.0	102.1	104.0	105.9	107.0	108.8	1.7	6.6
Durables	93.5	95.7	97.9	100.0	102.1	104.5	106.3	107.4	109.0	1.5	6.8
Nondurables	93.8	95.7	97.8	100.0	102.0	103.1	105.3	106.3	108.5	2.1	6.4
Nonmanufacturing	93.4	95.2	98.1	100.0	102.0	103.8	105.9	107.1	109.1	1.9	7.0
Construction	94.5	95.9	97.6	100.0	103.0	104.3	105.9	107.3	109.1	1.7	5.9
Transportation and public utilities	93.1	95.6	97.7	100.0	102.0	103.6	105.7	106.9	109.5	2.4	7.4
Wholesale and retail trade	93.6	95.1	98.2	100.0	101.3	102.3	103.9	105.8	106.5	.7	5.1
Wholesale trade	93.0	95.9	98.5	100.0	102.0	103.4	106.3	108.9	109.0	.1	6.9
Retail trade	93.8	94.8	98.1	100.0	101.0	101.9	103.0	104.5	105.5	1.0	4.5
Finance, insurance, and real estate	91.2	93.1	95.7	100.0	98.3	102.3	103.7	102.4	106.1	3.6	7.9
Services	94.2	95.7	99.6	100.0	103.6	105.8	108.8	110.0	112.5	2.3	8.6
State and local government workers	—	—	—	100.0	105.0	107.0	108.2	108.7	113.5	4.4	8.1
Workers, by occupational group											
White-collar workers	—	—	—	100.0	105.4	107.5	108.5	108.9	114.2	4.9	8.3
Blue-collar workers	—	—	—	100.0	103.9	105.5	107.5	107.9	111.5	3.3	7.3
Workers, by industry division	—	—									
Services			—	100.0	105.5	107.6	108.4	108.8	114.2	5.0	8.2
Schools	—	—	—	100.0	105.7	107.7	108.3	108.5	114.2	5.3	8.0
Elementary and secondary	—	—	—	100.0	106.0	107.9	108.7	108.8	114.9	5.6	8.4
Hospitals and other services[3]	—	—	—	100.0	104.6	107.3	108.8	109.5	114.3	4.4	9.3
Public administration[2]	—	—	—	100.0	103.8	105.5	107.5	108.4	111.9	3.2	7.8

[1] Excludes household and Federal workers.

[2] Consists of legislative, judicial, administrative, and regulatory activities.

[3] Includes, for example, library, social, and health services.

NOTE: Dashes indicate data not available.

32. Employment Cost Index, private nonfarm workers, by bargaining status, region, and area size

[June 1981 = 100]

Series	1980		1981				1982			Percent change	
										3 months ended	12 months ended
	Sept.	Dec.	March	June	Sept.	Dec.	March	June	Sept.	September 1982	
COMPENSATION											
Workers, by bargaining status[1]											
Union	92.4	94.7	97.6	100.0	102.5	104.8	106.5	108.4	110.6	2.0	7.9
Manufacturing	—	—	—	100.0	102.3	104.6	106.3	108.0	110.3	2.1	7.8
Nonmanufacturing	—	—	—	100.0	102.7	105.0	106.8	108.7	111.0	2.1	8.1
Nonunion	92.8	94.6	98.4	100.0	101.7	103.5	105.3	106.5	108.5	1.9	6.7
Manufacturing	—	—	—	100.0	101.8	103.5	105.7	106.6	108.4	1.7	6.5
Nonmanufacturing	—	—	—	100.0	101.7	103.5	105.2	106.4	108.6	2.1	6.8
Workers, by area size[1]											
Metropolitan areas	92.8	94.7	98.1	100.0	102.1	104.1	105.7	107.2	109.4	2.1	7.1
Other areas	91.9	94.2	98.1	100.0	101.8	103.2	106.2	107.0	108.6	1.5	6.7
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	93.5	95.8	97.4	100.0	102.7	105.0	106.5	108.1	110.3	2.0	7.4
Manufacturing	93.8	96.1	97.7	100.0	102.6	104.7	105.9	107.3	109.5	2.1	6.7
Nonmanufacturing	93.1	95.5	97.1	100.0	102.8	105.2	107.0	108.8	111.1	2.1	8.1
Nonunion	93.4	95.1	98.2	100.0	101.6	103.2	105.6	106.5	108.3	1.7	6.6
Manufacturing	93.4	95.4	97.9	100.0	101.7	103.3	105.9	106.7	108.2	1.4	6.4
Nonmanufacturing	93.4	95.0	98.3	100.0	101.6	103.2	105.5	106.4	108.3	1.8	6.6
Workers, by region[1]											
Northeast	94.2	96.0	98.3	100.0	101.7	104.4	106.1	106.7	109.7	2.8	7.9
South	93.2	94.9	98.0	100.0	101.9	102.8	105.7	107.4	108.8	1.3	6.8
North Central	93.3	95.3	98.1	100.0	101.6	103.3	104.7	106.1	107.6	1.4	5.9
West	93.5	95.3	97.9	100.0	103.2	105.1	107.9	108.6	110.7	1.9	7.3
Workers, by area size[1]											
Metropolitan areas	93.5	95.4	97.9	100.0	102.1	104.0	105.9	107.1	109.1	1.9	6.9
Other areas	92.9	95.1	98.3	100.0	101.8	103.1	106.0	106.8	108.3	1.4	6.4

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see BLS *Handbook of Methods*, Bulletin 1910.

33. Wage and compensation change, major collective bargaining settlements, 1977 to date

[In percent]

Measure	Annual average					Quarterly average								
						1980		1981				1982[p]		
	1977	1978	1979	1980	1981	III	IV	I	II	III	IV	I[r]	II[r]	III
Total compensation changes covering 5,000 workers or more, all industries:														
First year of contract	9.6	8.3	9.0	10.4	10.2	11.4	8.5	7.7	11.6	10.5	11.0	1.9	2.6	6.5
Annual rate over life of contract	6.2	6.3	6.6	7.1	8.3	7.2	6.1	7.2	10.8	8.1	5.8	1.2	2.1	4.9
Wage rate changes covering at least 1,000 workers, all industries:														
First year of contract	7.8	7.6	7.4	9.5	9.8	10.5	8.3	7.1	11.8	10.8	9.0	3.0	3.4	5.8
Annual rate over life of contract	5.8	6.4	6.0	7.1	7.9	7.4	6.5	6.2	9.7	8.7	5.7	2.8	3.2	4.8
Manufacturing:														
First year of contract	8.4	8.3	6.9	7.4	7.2	8.4	7.8	6.4	8.2	9.0	6.6	2.5	1.7	5.5
Annual rate over life of contract	5.5	6.6	5.4	5.4	6.1	5.6	5.8	5.5	6.7	7.5	5.4	2.7	1.6	4.2
Nonmanufacturing (excluding construction):														
First year of contract	8.0	8.0	7.6	9.5	9.8	9.5	8.2	8.0	11.8	8.6	9.6	2.7	6.2	5.6
Annual rate over life of contract	5.9	6.5	6.2	6.6	7.3	5.9	6.8	7.3	9.1	7.2	5.6	2.1	5.5	4.8
Construction:														
First year of contract	6.3	6.5	8.8	13.6	13.5	15.4	14.3	11.4	12.9	16.4	11.4	9.1	6.2	7.5
Annual rate over life of contract	6.3	6.2	8.3	11.5	11.3	13.0	12.0	10.3	11.1	12.4	11.7	8.9	6.4	7.1

p=preliminary. r= revised.

34. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1977 to date

Measure	Year					Year and quarter								
						1980		1981				1982[p]		
	1977	1978	1979	1980	1981	III	IV	I	II	III	IV	I[r]	II[r]	III
Average percent adjustment (including no change):														
All industries	8.0	8.2	9.1	9.9	9.5	3.5	1.3	1.7	3.2	3.3	1.5	1.0	2.0	2.3
Manufacturing	8.4	8.6	9.6	10.2	9.4	2.9	1.7	2.3	2.4	3.1	1.9	.9	.9	1.6
Nonmanufacturing	7.6	7.9	8.8	9.7	9.5	4.0	1.1	1.2	3.8	3.4	1.1	1.0	2.7	2.8
From settlements reached in period	3.0	2.0	3.0	3.6	2.5	1.7	.5	.4	1.1	.5	.4	.2	.4	.5
Deferred from settlements reached in earlier period	3.2	3.7	3.0	3.5	3.8	1.2	.3	.5	1.4	1.5	.4	.5	1.4	1.2
From cost-of-living clauses	1.7	2.4	3.1	2.8	3.2	.7	.6	.7	.7	1.2	.6	.3	.2	.6
Total number of workers receiving wage change (in thousands)[1]	—	—	—	—	8,648	—	—	3,855	4,701	4,364	3,225	2,877	3,425	3,654
From settlements reached in period	—	—	—	—	2,270	—	—	579	909	540	604	203	493	588
Deferred from settlements reached in earlier period	—	—	—	—	6,267	—	—	888	2,055	3,023	882	1,006	1,627	2,378
From cost-of-living clauses	—	—	—	—	4,593	—	—	2,639	2,669	2,934	2,179	1,913	1,550	2,126
Number of workers receiving no adjustments (in thousands)	—	—	—	—	145	—	—	4,937	4,092	4,428	5,568	5,628	5,080	4,851

[1] The total number of workers who received adjustments does not equal the sum of workers that received each type of adjustment, because some workers received more than one type of adjustment during the period.

p=preliminary.
r= revised.

WORK STOPPAGE DATA

WORK STOPPAGES include all known strikes or lockouts involving 1,000 workers or more and lasting a full shift or longer. Data are based largely on newspaper accounts and cover all workers idle one shift or more in establishments directly involved in a stoppage. They do not measure the indirect or secondary effect on other establishments whose employees are idle owing to material or service shortages.

Estimates of days idle as a percent of estimated working time measures only the impact of larger strikes (1,000 workers or more). Formerly, these estimates measured the impact of strikes involving 6 workers or more; that is, the impact of virtually *all* strikes. Due to budget stringencies, collection of data on strikes involving 6 workers or more was discontinued with the December 1981 data.

35. Work stoppages involving 1,000 workers or more, 1947 to date

Month and year	Number of stoppages		Workers involved		Days idle	
	Beginning in month or year	In effect during month or year	Beginning in month or year (in thousands)	In effect during month (in thousands)	Number (in thousands)	Percent of estimated working time
1947	270		1,629		25,720	
1948	245		1,435		26,127	.22
1949	262		2,537		43,420	.38
1950	424		1,698		30,390	.26
1951	415		1,462		15,070	.12
1952	470		2,746		48,820	.38
1953	437		1,623		18,130	.14
1954	265		1,075		16,630	.13
1955	363		2,055		21,180	.16
1956	287		1,370		26,840	.20
1957	279		887		10,340	.07
1958	332		1,587		17,900	.13
1959	245		1,381		60,850	.43
1960	222		896		13,260	.09
1961	195		1,031		10,140	.07
1962	211		793		11,760	.08
1963	181		512		10,020	.07
1964	246		1,183		16,220	.11
1965	268		999		15,140	.10
1966	321		1,300		16,000	.10
1967	381		2,192		31,320	.18
1968	392		1,855		35,567	.20
1969	412		1,576		29,397	.16
1970	381		2,468		52,761	.29
1971	298		2,516		35,538	.19
1972	250		975		16,764	.09
1973	317		1,400		16,260	.08
1974	424		1,796		31,809	.16
1975	235		965		17,563	.09
1976	231		1,519		23,962	.12
1977	298		1,212		21,258	.10
1978	219		1,006		23,774	.11
1979	235		1,021		20,409	.09
1980	187		795		20,844	.09
1981	145		729		16,908	.07
1981: January	6	12	12.0	29.6	257.9	.01
February	7	10	10.7	20.9	118.5	.01
March	16	20	201.6	207.8	861.8	.04
April	17	27	48.0	223.5	4,085.2	.20
May	18	27	85.1	259.0	4,454.0	.24
June	30	43	200.1	415.1	2,618.3	.13
July	23	38	80.1	125.4	1,575.5	.08
August	9	17	36.2	86.6	1,017.9	.05
September	5	10	26.3	65.2	898.8	.05
October	7	11	13.4	48.3	733.9	.04
1982[p]: January	2	4	6.1	11.4	199.9	.01
February	2	6	2.5	13.9	236.9	.01
March	3	8	8.3	21.3	352.2	.02
April	9	16	35.7	55.3	480.3	.02
May	14	21	43.7	60.3	636.1	.03
June	17	25	41.4	64.5	894.0	.04
July	11	22	36.3	62.2	830.9	.04
August	15	24	[r]42.0	[r]59.9	[r]786.0	.04
September	[r]14	[r]28	[r]390.0	[r]423.7	[r]2,126.5	.11
October	3	14	40.0	71.4	948.6	.05

p=preliminary. r=revised.

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SALES PUBLICATIONS

BLS Bulletins

National Survey of Professional, Administrative, Technical, and Clerical Pay, March 1982. Bulletin 2145, 80 pp., $4.75 (GPO Stock No. 029-001-02720-6). Summarizes results of the Bureau's annual survey of selected white-collar occupations in private industry. Results are used for a number of purposes, including general economic analysis and age and salary administration by private and public employers. One important use is to provide the basis for setting Federal white-collar salaries under the provisions of the Federal Pay Comparability Act of 1970.

Relative Importance of Components in the Consumer Price Indexes, 1981. Bulletin 2141, 35 pp., $4.50 (GPO Stock No. 029-001-02716-8). Presents data on the expenditure or value weights of components in the Consumer Price Indexes, expressed as a percentage of all items. The data can be used in conjunction with the *CPI Detailed Report*.

Area Wage Survey Bulletins

These bulletins cover office, professional, technical, maintenance, custodial, and material movement occupations in major metropolitan areas. The annual series of 70 is available by subscription for $90 per year. Individual area bulletins are also available separately.

Baltimore, Maryland, Metropolitan Area, August 1982. Bulletin 3015-39, 40 pp., $4.50 (GPO Stock No. 029-001-90160-7).

Chattanooga, Tennessee-Georgia, Metropolitan Area, September 1982. Bulletin 3015-43, 28 pp., $3.50 (GPO Stock No. 029-001-90164-0).

Greensboro-Winston-Salem-High Point, North Carolina, Metropolitan Area, August 1982. Bulletin 3015-42, 30 pp., $3.75 (GPO Stock No. 029-001-90163-1).

Fresno, California, Metropolitan Area, June 1982. Bulletin 3015-38, 25 pp., $3.50 (GPO Stock No. 029-001-90158-5).

Nassau-Suffolk, New York, Metropolitan Area, August 1982. Bulletin 3015-40, 35 pp., $4.50 (GPO Stock No. 029-001-90161-5).

Northeast Pennsylvania Metropolitan Area, August 1982. Bulletin 3015-41, 41 pp., $4.50 (GPO Stock No. 029-001-901162-3).

Industry Wage Survey Bulletins

These studies include results from the latest BLS survey of wages and supplemental benefits, with detailed occupational data for the Nation, regions, and selected areas (where available). Data are useful for wage and salary administration, union contract negotiation, arbitration, and Government policy considerations.

Savings and Loan Associations, February 1980. Bulletin 2106, 73 pp., $5 (GPO Stock No. 029-001-02718-4).

Structural Clay Products, September 1980. Bulletin 2139, 61 pp., $5 (GPO Stock No. 029-001-02719-4).

Union Wages and Benefits Bulletin

Printing Trades, September 1980. Bulletin 2125, 152 pp., $6.50 (GPO Stock No. 029-001-02717-6). The final publication in a series of BLS bulletins reporting on union wage rates, benefits, and weekly straight-time hours for specified crafts or jobs as provided in labor-management agreements in five industries. Other industries in the series are construction, grocery stores, local transit, and local trucking. These studies have now been discontinued because of budget constraints.

Periodicals

CPI Detailed Report. August issue provides a comprehensive report on price movements for the month, questions and answers on upcoming changes in the measurement of homeownership costs, statistical tables, charts, and technical notes. 109 pp., $5 ($28 per year).

Employment and Earnings. October issue covers employment and unemployment developments in September, plus regular statistical tables on national, State, and area employment, unemployment, hours, and earnings. 155 pp., $6 ($39 per year).

Producer Prices and Price Indexes. August issue includes a comprehensive report on price movements for the month and provides information on the availability of computer tape for Producer Price Index Revision data plus regular charts, text, tables, and technical notes. 116 pp., $5 ($34 per year).

Mailgram Service

Consumer price index data summary by mailgram within 24 hours of the CPI release. Provides unadjusted and seasonally adjusted U.S. City Average data for All Urban Consumers (CPI-U) and for Urban Wage Earners and Clerical Workers (CPI-W). (NTISUB/158). $125 in contiguous United States.

Microfiche

Local Area Unemployment Statistics, a subscription service which provides estimates of the labor force, employment, and unemployment for States, metropolitan areas, counties, and cities of 50,000 or more. The series includes revisions of monthly data and supplemental material issued on an irregular basis. Price: Domestic—$50 a year; Foreign—$62.50 a year.

Issued this month:

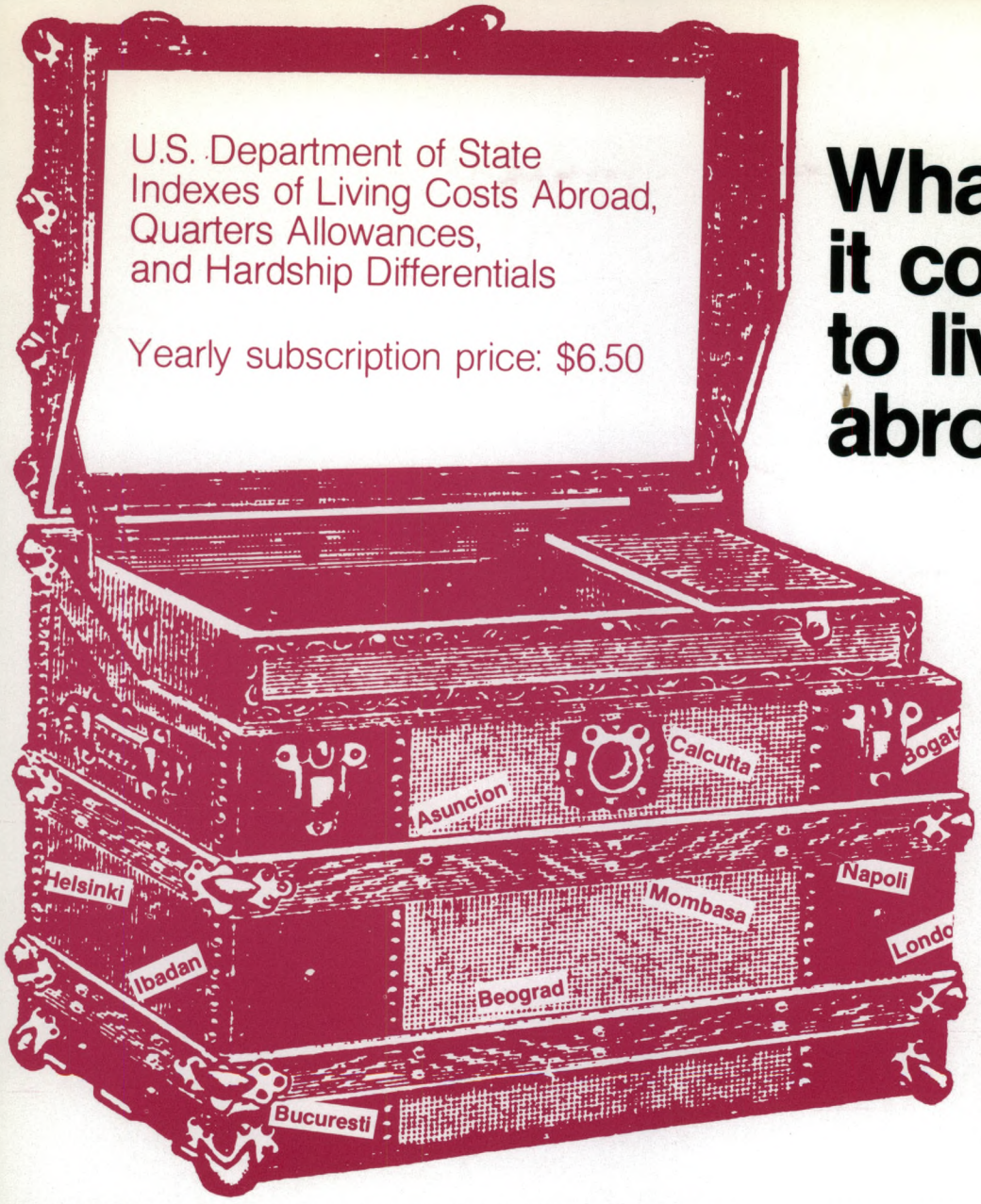
Supplement to Employment and Unemployment in Areas Potentially Eligible Under CETA as Areas of Substantial Unemployment, May 1981-April 1982. BLS/LAUS/AR-82/07 (Supplement No. 1). Provides labor force, employment, and unemployment estimates for Areas of Substantial Unemployment (ASU's) which may be eligible for funding under the Comprehensive Employment and Training Act of 1978, as amended.

Employment in States and Local Areas, January-July 1982. BLS/LAUS/MR 82/09. Benchmarked monthly estimates of the labor force, employment, and unemployment for States, labor market areas, counties, and county equivalents.

FREE PUBLICATIONS

Area Wage Survey Summaries

Albuquerque, N. Mex., September 1982. 6 pp.
Alpena-Standish-Tawas City, Mich., July 1982. 3 pp.
Champaign-Urbana-Rantoul, Ill., July 1982. 3 pp.
Phoenix, Ariz., June 1982. 3 pp.



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