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In this issue:
Projections of the U.S. labor force, GNP, industrial growth, and occupations to 1995

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THE U.S. ECONOMY IN 1995

OTHER ARTICLES

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Labor Month In Review

INJURIES AND ILLNESSES. Job-related injuries and illnesses continued to decline in 1982, according to the Bureau of Labor Statistics' annual survey of private industry workplaces. There were 4.75 million work-related injuries in 1982, a decline of nearly 530,000 cases from 1981. The incidence of injuries per 100 workers (injury incidence rate) fell to 7.7, compared with an 8.3 rate in 1981. (About 0.1 of this decline may be attributed to a disproportionate drop in hours worked in high-risk industries.) There were 105,600 occupational illnesses, down from 126,100 in 1981. Establishments with 11 workers or more recorded 4,090 deaths. Nearly 30 percent of these fatalities were from car and truck accidents.

Injuries. The injury incidence rate declined in agriculture, forestry, and fishing; mining; construction; manufacturing; transportation and public utilities; and wholesale trade. The rate increased in retail trade and in finance, insurance, and real estate; and remained the same in services. The construction industry had the highest incidence rate, and the finance, insurance, and real estate industry, the lowest.

Injury incidence rates fell in establishments of all sizes except those with fewer than 50 employees, which showed no change. As in previous years, rates were lowest in establishments with fewer than 50 workers or more than 1,000. Rates remained highest in establishments with 100 to 249 employees; in this category, manufacturing had the largest decline, while construction posted the only increase. As in 1981, the number of injuries per 100 workers dropped in each employment-size class in the manufacturing division.

Lost workdays. Less than half (45 percent) of all injuries in 1982 involved lost worktime. The number of injuries resulting in lost workdays declined from 2.41 million in 1981 to 2.14 million in 1982. Nonfatal injuries without loss of worktime also dropped.

Total days lost because of occupational injuries declined from 39.2 million in 1981 to 36.1 million in 1982—a drop equivalent to a full year of work for about 144,500 employees. The average number of days lost per injury of this type was 17 (16 in 1981). The wholesale trade and services industries did not show an increase in the average number of lost workdays. Mining establishments continued to have the highest number of average lost workdays per injury—25 days (up 1 day from 1981), and the construction and transportation and public utilities industry divisions also had above-average numbers of lost workdays.

The severity of lost workdays because of occupational injuries can be measured by the number of workdays lost per 100 full-time workers (lost workday incidence rate). The all-industry incidence rate was 57.5 in 1982, down from 60.4 in 1981. Among industries, mining continued to have the highest rate, although it had the largest drop, from 145.7 days in 1981 to 136.7 in 1982. The largest increases occurred in the construction and agriculture, forestry, and fishing industries.

The number of injuries per 100 workers which involved lost workdays decreased in agriculture, forestry, and fishing; mining; construction; manufacturing; transportation and public utilities; and wholesale trade. It remained unchanged or increased only slightly in the other industries.

Illnesses. Skin disorders continued to account for the majority of reported occupational illnesses in 1982, about 40 percent. Physical disorders associated with repeated trauma showed the largest percentage increase in total illnesses, 21 percent, compared with 18 percent in 1981.

An occupational illness is any abnormal condition or disorder caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact. The incidence of occupational illnesses measured by the annual survey refers to the number of new cases occurring during the year and does not measure continuing conditions reported in previous surveys. Thus, illnesses are recorded only for the year in which they are recognized and diagnosed as work-related.

Occupational illness estimates generated from the annual survey provide a valid measure of recognized acute cases. However, they do not adequately reflect the portion of occupational illlnesses which are chronic and long-latent in nature.

The survey. The Annual Survey of Occupational Injuries and Illnesses is a cooperative program in which State agencies participate with the Bureau of Labor Statistics. The survey covers establishments in private industries, except for the self-employed; farmers with fewer than 11 employees; and private households.

The data are based on the records which employers maintain under the Occupational Safety and Health Act of 1970. Response to the 1982 survey was mandatory and involved a sample of approximately 280,000 establishments.

Detailed information on occupational injuries and illnesses in 1982 are contained in news release USDL 83-471, available from the Bureau of Labor Statistics, Inquiries and Correspondence, 441 G Street, N.W., Washington, D.C. 20212. □

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The 1995 labor force: a second look

About 131.4 million persons are expected to be in the 1995 labor force, 3.8 million more than projected earlier; alternative projections use various demographic and, for the first time, economic assumptions about the labor force

HOWARD N FULLERTON, JR. AND JOHN TSCHETTER

During the 1982–95 period, the number of persons of prime working age (25–54) in the labor force is expected to grow considerably faster than the total labor force. Young workers will decline in absolute numbers as the rate of growth of the total labor force slows markedly. These growth trends reflect the aging of the baby-boom generation and a subsequent sharp decline in birth rates.

The Bureau of Labor Statistics has revised its labor force projections for the 1982–95 period.[1] For the middle scenario, which assumes that labor force participation of women will accelerate then taper off, the civilian labor force is projected to reach 131.4 million persons by 1995, 3.8 million more than projected earlier.[2] The labor force is expected to grow 1.6 percent per year over the 1982–90 period, slowing to 1.0 percent per year during 1990–95, thus continuing the slow growth which began in the late 1970's. Nearly two-thirds of the growth will be among women; nearly one-fourth will be among the black and other group.[3]

This article presents new projections for the 1995 labor force with alternative demographic and, for the first time, economic assumptions. The demographic alternatives illustrate the sensitivity of the size of the projected labor force to various assumptions regarding the behavior of age, sex, and racial groups.[4] The economic alternatives explore the sensitivity of labor force changes to assumptions about real earnings and the employment rate.

Howard N Fullerton, Jr. and John Tschetter are economists in the Office of Economic Growth and Employment Projections, Bureau of Labor Statistics.

Methodology

Labor force projections require population projections. The latter have been prepared by the Bureau of the Census by age, sex, and race, based on trends in birth rates, death rates, and net migration.[5] Once the population projections are prepared, BLS can project labor force participation rates—the percent of each group in the population who will be working or seeking work—for 64 age, sex, and race groups.

To develop labor force participation rates for each group, rates of growth over the 1962–81 period (or subperiods) are analyzed using the most appropriate time period for each group. If past trends are deemed not likely to continue throughout the projection period, the rates are modified. The rate of change in labor force participation was modified for several groups: women ages 20–44 and 45 and over, and men ages 55 and over. The rates of change in participation for all groups are tapered so that the annual changes would be zero after the year 2004.

For women ages 20 to 44, it is assumed that the rate of change in participation will accelerate during the 1982–85 period to allow some partial recovery from the 1980–82 economic slowdown. These projections assume that some of the 1980–82 slowdown in female participation rates are permanent, particularly when compared with the trends of the early and mid-1970's.

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For the older labor force, the participation rates have been declining over the 1962–81 period. It is assumed that these declines will moderate. If the historical trends for some older groups continue, the resulting participation rates would approach zero. These modifications for women and older workers were made to each age group within these broad groups. The historical rates of change in participation for all remaining labor force groups are assumed to continue.

The levels of anticipated labor force are calculated by applying projected participation rates to the Bureau of the Census' population projections.

Middle growth scenario

The overall growth in the labor force over the next 8 to 12 years will be influenced by the baby-boom generation, which will attain those ages at which both men and women have their highest participation; and by the continued, but slower, rise in participation among women ages 20 to 44. (See tables 1 and 2.) In contrast, the increases in the labor force during the 1970's were influenced by the initial entrance of the baby-boom generation, and by the very rapid increases in the labor force activity of women, particularly married women ages 20 to 44. As a consequence of these changing influences, labor force growth is expected to slow in the late 1980's and the 1990's.

The following tabulation shows labor force growth from 1950 to 1982 and projected growth from 1983 to 1995, by age group:

	1950–60	1960–70	1970–82	1982–90	1990–95
Age 16 and over ..	1.3	1.7	2.4	1.6	1.0
16 to 24	.0	4.5	2.7	−1.3	−.8
25 to 54	1.3	1.0	2.3	2.9	1.6
55 and over	1.6	1.4	.3	−.7	−.2

The uncertainty of projections

Knowledge or insights concerning future employment trends is very valuable. . . . Such information is used to plan careers and training programs, and develop business expansion plans and public policy. However, information about future employment growth is clouded by uncertainty. . . . It is very important for users to understand the imprecise nature of projections so they can deal with the information properly.

Although virtually no data about changes in the economy over a 10-year period can be anticipated with absolute certainty, there are differing degrees of uncertainty. To illustrate, I would say with relative certitude that the younger labor force is going to decline in this decade. The population which will be 16 years or older in 1990 is born and unless there are truly revolutionary changes in labor force participation rates for young people along with dramatic infusions through immigration of young people, the young labor force will decline. Perhaps, at the other end of the scale the uncertainty would be a projection of employment in the oil and gas well drilling industry. If I knew what the price of oil would be in 1990 or 1995, perhaps I could come close to projecting the level of employment in that industry. But the factors that will determine the price of oil in 1990 are themselves subject to great variances and uncertainty.

For much of the information on projections, the uncertainty lies between these two extremes. For example, the occupation "computer service technician" is projected to grow very rapidly. From 1982 to 1995, its projected growth is 97 percent. I am confident that employment in this occupation will grow rapidly, certainly much faster than the average growth of the economy over this period. However, I am not certain that the growth rate will be 97 percent or even fall within the 94–98 percent range shown in our alternatives. The growth rate could be significantly greater. Some occupations of this size, 55,000 in 1982, have grown much faster in the past. Still, a growth rate of only 50 percent is not beyond the realm of impossibility.

Concerns received from the public have led us to think and probe further in terms of asking questions about our projections. For example, in the last 6 months, the Department of Defense and some of the defense industries have said there is a critical shortage of engineers that should be reflected in our publications. During the same period, we have had three groups representing the engineering professions say that BLS has been painting such a rosy picture for engineers that we are causing a flood in the market and that their member engineers cannot find jobs.

Which of these groups is correct? We examined this dilemma and concluded that there probably are two distinct markets for engineers. One is new college graduates who are currently in short supply—in at least some engineering disciplines—and these are principally among the engineering categories used by defense contractors. But 45 year-old engineers who are working on a product or product line that has been cancelled are in a tough job market because they are not always able to compete with the young engineer. The important point here is that if this situation is true for engineers, it may also be true for accountants and auditors, lawyers, and many other occupations.

Economists and others involved in forecasting economic activity understand the uncertain nature of projections. However, others, including those who are primary users of the information, may not. Thus, the development of numerical projections is only the first task in presenting information on economic trends or employment growth. It is just as important to present the data in a meaningful way. Unfortunately, this task is neither simple nor straight forward. Despite BLS' experience with and concern about the subject, we still are not sure our users understand the uncertainty attached to our projected data. The Bureau hopes that by indicating the factors underlying growth, preparing evaluation of previous projections, and discussing alternatives and assumptions, we will provide users with some idea of the uncertainties.

—Ronald E. Kutscher
Associate Commissioner
Bureau of Labor Statistics.
Remarks before a Labor Market Information Conference in Atlanta, Ga., June 1983

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Table 1. Civilian labor force, by sex, age, and race, 1970–82, and middle growth projection to 1995

Labor group	Labor force (in thousands)					Participation rate				
	1970	1980	1982	1990	1995	1970	1980	1982	1990	1995
Total, age 16 and over	82,771	106,940	110,204	124,951	131,387	60.4	63.8	64.0	66.9	67.8
Men	51,228	61,453	62,450	67,701	69,970	79.7	77.4	76.6	76.5	76.1
16 to 24	9,725	13,606	13,074	11,274	10,573	69.4	74.4	72.6	74.7	74.5
16 to 19	4,008	4,999	4,470	4,123	4,043	56.1	60.5	56.7	62.3	62.9
20 to 24	5,717	8,607	8,604	7,151	6,530	83.3	85.9	84.9	84.4	84.1
25 to 54	32,213	38,712	40,357	48,180	51,358	95.8	94.2	94.0	93.8	93.4
25 to 34	11,327	16,971	17,793	19,569	18,105	96.4	95.2	94.7	93.7	93.1
35 to 44	10,469	11,836	12,781	17,469	19,446	96.9	95.5	95.3	95.6	95.3
45 to 54	10,417	9,905	9,784	11,142	13,807	94.3	91.2	91.2	91.3	91.1
55 and over	9,291	9,135	9,019	8,247	8,039	55.7	45.6	43.8	37.4	35.3
55 to 64	7,126	7,242	7,174	6,419	6,311	83.0	72.1	70.2	65.5	64.5
65 and over	2,165	1,893	1,845	1,828	1,728	26.8	19.0	17.8	14.9	13.3
Women	31,543	45,487	47,755	57,250	61,417	43.3	51.5	52.6	58.3	60.3
16 to 24	8,121	11,696	11,533	10,813	10,557	51.3	61.9	62.0	69.1	71.6
16 to 19	3,241	4,381	4,056	3,778	3,761	44.0	52.9	51.4	56.8	58.2
20 to 24	4,880	7,315	7,477	7,035	6,796	57.7	68.9	69.8	78.1	82.0
25 to 54	18,208	27,888	30,149	40,496	44,852	50.1	64.0	66.3	75.6	78.7
25 to 34	5,708	12,257	13,393	16,804	16,300	45.0	65.5	68.0	78.1	81.7
35 to 44	5,968	8,627	9,651	14,974	17,427	51.1	65.5	68.0	78.6	82.8
45 to 54	6,532	7,004	7,105	8,718	11,125	54.4	59.9	61.6	67.1	69.5
55 and over	5,213	5,904	6,073	5,941	6,008	25.3	22.8	22.7	20.5	19.9
55 to 64	4,157	4,742	4,888	4,612	4,671	43.0	41.3	41.8	41.5	42.5
65 and over	1,056	1,161	1,185	1,329	1,337	9.7	8.1	7.9	7.4	7.0
White	73,556	93,600	96,143	107,734	112,393	60.2	64.1	64.3	67.3	68.1
Men	46,035	54,473	55,133	59,201	60,757	80.0	78.2	77.4	77.4	77.0
16 to 24	8,540	11,902	11,371	9,854	9,271	70.2	76.7	74.9	78.5	79.1
25 to 54	29,000	34,224	35,565	41,864	44,232	96.3	95.0	94.9	94.8	94.5
55 and over	8,494	8,345	8,197	7,483	7,254	55.8	46.1	44.2	37.8	35.6
Women	27,521	39,127	41,010	48,533	51,636	42.6	51.2	52.4	58.1	60.0
16 to 24	7,141	10,179	10,013	9,285	9,025	52.1	64.4	64.7	72.5	75.4
25 to 54	15,690	23,723	25,619	34,081	37,433	48.9	63.4	66.1	75.6	78.7
55 and over	4,690	5,226	5,378	5,167	5,178	24.9	22.4	22.4	20.1	19.5
Black and other	9,218	13,340	14,062	17,217	18,994	61.8	61.7	61.6	64.8	65.7
Men	5,194	6,980	7,317	8,500	9,213	76.5	71.5	71.0	71.0	70.6
16 to 24	1,185	1,702	1,702	1,420	1,302	64.5	61.6	60.0	55.9	52.7
25 to 54	3,212	4,488	4,792	6,316	7,126	91.9	88.6	88.0	87.6	87.2
55 and over	796	790	822	764	785	54.7	40.8	40.5	34.3	32.6
Women	4,024	6,359	6,745	8,717	9,781	49.5	53.6	53.9	59.7	61.7
16 to 24	982	1,516	1,520	1,528	1,532	46.3	49.3	48.8	53.7	55.3
25 to 54	2,517	4,164	4,529	6,415	7,419	59.2	67.0	67.9	75.8	78.7
55 and over	524	678	695	774	830	30.0	26.4	25.5	23.5	22.8

The slowdown actually began in 1979. The peak labor force growth, 3.0 percent per year, occurred between 1976 and 1979. Over the 1979–82 period, growth was only 1.6 percent per year, reflecting the slowing of long-term growth, as well as the repercussions of 3 years of flat economic growth.

Over the 1982–95 period, there will be a pronounced shift in the age structure of the labor force. The 25- to 54-year-old labor force is expected to grow considerably faster than the total labor force, 1.3 percentage points per year faster during the 1982–90 period. At the same time, the number of 16- to 24-year-old participants is projected to decline in absolute numbers. During the 1960's and 1970's, the labor force growth of younger workers was by far the fastest of any age group, reflecting the baby-boom generation initially entering and then maturing in the labor force. As this young generation ages in the 1990's, the number of persons ages 25 to 34 will decline. A shift from a young

Table 2. Black civilian labor force, by sex and age, 1972–82, and middle growth projection to 1995

Labor group	Labor force (in thousands)					Participation rate				
	1972	1980	1982	1990	1995	1972	1980	1982	1990	1995
Blacks, age 16 and over	8,707	10,865	11,331	13,600	14,833	59.9	61.0	61.0	64.5	65.4
Men	4,816	5,612	5,804	6,687	7,297	73.7	70.6	70.1	70.4	70.5
16 to 24	1,214	1,414	1,401	1,156	1,055	63.9	62.0	60.3	55.9	54.0
25 to 54	2,917	3,551	3,745	4,939	5,549	90.0	88.4	87.7	87.4	87.0
55 and over	687	647	660	592	583	49.1	39.3	39.0	33.2	31.3
Women	3,890	5,253	5,527	6,913	7,646	48.7	53.2	53.7	59.0	61.2
16 to 24	967	1,279	1,272	1,210	1,180	45.0	48.9	48.4	51.8	53.2
25 to 54	2,421	3,387	3,660	5,073	5,805	60.0	67.6	68.8	75.7	78.6
55 and over	503	588	595	630	661	27.8	26.1	25.3	23.6	22.9

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to a prime working-age population in itself induces an increase in the overall participation rate, as prime-age persons are more likely to be in the labor force.

The population ages 55 and older will continue to increase. However, the participation rates for this group are projected to continue declining. For men, the increased population and declining participation have resulted in absolute declines in their number in the labor force. For women, this combination is expected to result in a relatively constant number in the labor force over the next decade. It is assumed that the new social security laws will not affect the trend of labor force participation for the population 55 and older between now and 1995.

These variations in growth rates by age groups mean that persons ages 25 to 54 will account for a much greater share of the 1995 labor force than the 1982 labor force. Prime working-age persons (25 to 54) are expected to account for about 73 percent of the 1995 labor force, up from 61 percent in 1970, and 64 percent in 1982. The growing proportion of prime-age participants could favorably affect productivity because of the greater continuity of participation by women and because of the higher educational attainment of all participants. This continuity and educational attainment imply that the future labor force will be more experienced and better trained, compared with the 1970's when younger workers (ages 16 to 24) accounted for a large share of labor force growth. The maturing of the labor force in the 1980's and 1990's means that employers may have difficulties finding young workers. The decline in the number of youths will be particularly important to the Armed Forces, the single largest employer of young men.

Median age. The median age of the labor force will rise slightly over the next 10 to 15 years. The median age was fairly constant between 1950 and 1970, but dropped sharply between 1970 and 1980 when the baby-boom generation entered the labor force. The following tabulation shows the median age of the labor force for 1950 to 1980 and the projected median age for 1990 and 1995, by sex and race:

	1950	1960	1970	1982	1990	1995
All participants ..	38.6	40.5	39.0	34.8	35.9	37.3
Men	39.3	40.5	39.4	35.3	36.4	37.8
Women	36.7	40.4	38.3	34.2	35.3	36.8
White	—	40.7	39.3	35.0	36.1	37.5
Black and other...	—	38.2	36.6	32.8	34.8	36.3

The differences in median age between men and women and between whites and black and other minorities reflect the age mix of the respective labor forces. For example, in 1982, men ages 55 and over accounted for 14.4 percent of the male labor force; women ages 55 and over accounted for only 12.7 percent of the female labor force. These median age differences between the two groups are projected to continue.

Women and minorities. During the 1982–95 period, the number of women and minorities in the labor force are projected to grow faster than the overall labor force. The following tabulation shows total labor force growth and growth for women, blacks, and black and other minorities for the 1950–82 period, and projected growth, 1982–95:

	1950–60	1960–70	1970–82	1982–90	1990–95
Total	1.3	1.7	2.4	1.6	1.0
Women	2.4	3.1	3.5	2.3	1.4
Black and other ..	—	1.8	3.6	2.6	2.0
Blacks	—	—	—	2.3	1.8

Women, both white and black, will account for about two-thirds of the labor force growth during the 1980's and 1990's, about the same proportion as in the 1950's. During the 1960's and 1970's, when men of the baby-boom generation entered the labor force, the proportion of growth attributed to women dropped despite rapid increases in their participation rates. With the young men of the baby-boom generation now in the labor force, the share of labor force growth attributed to women will be greater over the next decade.

The black and other group, should account for slightly more than 21 percent of the additions to the labor force during the 1982–90 period, increasing to nearly 28 percent in the 1990–95 period. Since 1960, this group's proportion of overall growth has been growing despite the continuing drop in participation by black men. The black labor force is projected to grow at almost twice the white rate, reflecting the younger age structure of the black population.

The two groups just discussed overlap. White women and black and other men and women together will account for 72.4 percent of the 1982–90 labor force growth, and 75.8 percent of the 1990–95 growth. These two groups accounted for only 66.8 percent of the 1970–82 labor force growth.

Economic dependency. Around 1986, more of the population should be in the labor force than not in the labor force. The economic dependency ratio, the number of persons not in the labor force divided by those in the labor force, was high in the 1960's, but declined sharply through the 1970's as the baby-boom generation and women entered the labor force in large numbers. During the 1980's and 1990's, the ratio should continue to decline, but at a considerably more moderate pace, reflecting only the continued increases in participation rates for women.

The numerator of the economic dependency ratio can be disaggregated into all persons who are (1) under age 16, (2) between ages 16 and 64, and (3) age 65 and over. The denominator of the ratio in each instance is the total labor force. The following tabulation shows the economic dependency ratio for 1960 to 1982 and projected for 1990 and 1995 for these age groups.

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	1960	1970	1982	1990	1995
Total population ..	150.4	138.5	106.5	96.4	94.1
Under age 16	81.45	72.1	48.9	45.2	45.2
Age 16 to 64	50.2	46.8	36.0	28.4	26.0
Age 65 and over ..	18.7	19.6	21.6	22.5	22.9

The drop (from 50 to 36 persons per hundred workers) in the ratio attributed to the 16- to 64-year-olds reflects the steady entry of women into the work force. The economic dependency ratio for persons under age 16 has declined over the 1960 to 1980 period, as the baby-boom generation and women entered the labor market. During the next decade, the ratio should be unchanged despite the "echo" of the baby boom, that is, the increase in the population attributed to the children of the baby-boom generation. The ratio for older workers is expected to rise slightly over the next decade, and should continue to rise into the middle of the next century; currently, their ratio is the lowest of the three groups.

These projected economic dependency ratios have several implications. There will be fewer children per labor force participant in the future, hence providing for primary and secondary education should be less of a burden. On the other hand, there will be more older persons not in the labor force per labor force participant, therefore, providing for retirement and the care of older workers should be slightly more of a burden.

Alternative assumptions

The middle scenario just discussed reflects underlying assumptions and could be significantly affected by changes in these assumptions. BLS developed alternative projections to examine the range of outcomes attached to any projection. Two sets of alternative projections were developed for the current projection: demographic alternatives and economic alternatives. The following tabulations show the size of the civilian labor force during 1970, 1980, and 1982

	Civilian labor force (in millions)		
	1970	*1980*	*1982*
Total	82.8	106.9	110.2

and the projected size under each scenario for 1990 and 1995:

	Civilian labor force (in millions)	
	1990	*1995*
High demographic ..	131.3	141.0
High economic	125.3 to 125.4	131.9 to 132.8
Middle	125.0	131.4
Low economic	123.7 to 124.9	130.0 to 131.0
Low demographic ...	120.3	125.1

Demographic alternatives. One assumption in the middle scenario is that the growth in participation rates of women ages 20 to 44 will accelerate in the near term (that is, recover from the effects of the 1980 and 1981–82 recessions) before tapering off. If the rate of female labor force participation continues to accelerate through the late 1980's (rather than only through the mid-1980's) the 1995 participation rate and labor force for these women would be considerably higher than in the middle scenario, about 9.6 million *more* persons, or 7.3 percent. (See table 3.)

On the other hand, it is possible that the participation rates for women ages 20 to 44 will not accelerate and instead will continue the modest upward trend shown during the 1979–82 period. If this occurs, there would be 6.3 million *fewer* persons (4.8 percent) in the 1995 labor force.

The two differences between the low, middle, and high assumptions concerning female participation rates, are substantial. The high scenario reflects female participation rates nearly converging to the higher male participation rates. The low scenario reflects a sharp deceleration from the trends of the 1970's. Over the 1979–82 period, the growth of female rates slowed, possibly in response to the 1980 and 1981–82 recessions. However, it might also reflect a change in the long-run trend. The low scenario, in essence, assumes that the recent trends reflect new secular trends for women.

The low-growth path assumes a more modest growth which is *not* a reversal of the upward growth in female participation rates or shifts in marital status. For example, regardless of which scenario is used, women should account for 65 to 66 percent of increases in the labor force. This stability occurs because increases in female participation will be the greatest source of labor force growth over the next decade.

A second demographic assumption in the middle scenario concerns the relative trends in black-white participation. Over the past two decades, the rates for black and white men have been diverging. (The rates for black and white women, on the other hand, appear to have converged, if not crossed.) The low and middle scenarios assume these respective trends will continue. The high scenario assumes that the rates for black and white men will converge to the higher white male rates. In the low scenario, black and other minorities account for 25.8 percent of the increase in the labor force over the 1982–95 period; in the high scenario, 23.9 percent; and in the middle scenario, 23.3 percent.

Economic alternatives. Labor force projections are only one segment of the BLS projections program. The program includes gross national product projections, in total and by major demand and income components; industry output and employment projections; and occupational requirements projections. To emphasize the uncertainty of these varied projections, BLS traditionally develops several scenarios which cover a number of alternative assumptions yielding a reasonably broad span of employment and gross national product level. The alternative projections of the economy as a whole use different assumptions for fiscal policy, productivity growth, the unemployment rate, and the price level.

At issue in these alternatives is the relationship between earnings and unemployment rates and labor force trends. Would alternative economic trends imply substantially or

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modestly different labor force trends? According to the models, modest changes in the unemployment rate for all workers and in real earnings of workers lead to relatively small changes in the total labor force. (See table 4.)

Alternative projections of labor force trends have been made with two econometric models. One, labeled the marital status model, focuses on the behavior of detailed labor force trends.[6] The second model, labeled the macro labor force model, focuses solely on total labor force trends in the context of a broader economic model.[7] The methodology for these economic scenarios is substantially different from that used in other BLS labor force projections. The assumptions here are based on econometric models, while the other alternatives were based on a demographic methodology.

The *marital status model* relates participation rates for 16 age, sex, and marital status groups to real earnings of full-time workers by sex, and the overall unemployment rate. The model was estimated with Standard Metropolitan Statistical Area data for 34 cities during the 1973–80 period. The data are constructed from the micro files of the Bureau of the Census' Current Population Survey. The following tabulation shows the unemployment rate and annual earnings data used in the model.

	1982	*1990*	*1995*
Unemployment rate:			
All workers			
High	9.7	5.4	5.2
Middle	9.7	6.3	6.0
Low	9.7	6.5	6.8
Real annual earnings (1972 dollars):			
Men			
High	$7,497	$8,698	$9,074
Middle	7,497	8,905	9,804
Low	7,497	8,941	10,148
Women			
High	4,441	5,152	5,375
Middle	4,441	5,275	5,807
Low	4,441	5,296	6,011

Developing the alternative scenarios with the marital status model required two steps. First, a middle scenario of labor force growth was developed for the 16 groups. This middle scenario for the 16 marital status groups was constrained to replicate the middle scenario described earlier. It was developed as in previous projections—extrapolating historical trends. Second, the differences in the two explanatory variables among scenarios were multiplied by the

Table 3. Projections of the civilian labor force in 1995, by alternative demographic scenarios

Labor group	Labor force (in thousands)			Participation rate		
	High scenario	Middle scenario	Low scenario	High scenario	Middle scenario	Low scenario
Total, age 16 and over	140,973	131,387	125,058	72.7	67.8	64.5
Men	73,005	69,970	67,541	79.4	76.1	73.5
16 to 24	11,321	10,573	10,013	79.8	74.5	70.6
25 to 54	52,545	51,358	50,130	95.5	93.4	91.2
55 and over	9,139	8,039	7,398	40.1	35.3	32.5
Women	67,968	61,417	57,517	66.7	60.3	56.5
16 to 24	11,155	10,557	9,792	75.7	71.6	66.4
25 to 54	49,525	44,852	41,964	86.9	78.7	73.6
55 and over	7,288	6,008	5,761	24.2	19.9	19.1
White	119,560	112,393	107,170	72.5	68.1	65.0
Men	62,451	60,757	58,839	79.2	77.0	74.6
16 to 24	9,463	9,271	8,755	80.8	79.1	74.7
25 to 54	44,815	44,232	43,406	95.7	94.5	92.7
55 and over	8,173	7,254	6,678	40.2	35.6	32.8
Women	57,109	51,636	48,331	66.4	60.0	56.2
16 to 24	9,330	9,025	8,316	77.9	75.4	69.5
25 to 54	41,384	37,433	35,097	87.0	78.7	73.8
55 and over	6,395	5,178	4,918	24.1	19.5	18.6
Black and other	21,413	18,994	17,889	74.8	65.1	61.9
Men	10,554	9,213	8,709	80.0	70.2	66.7
16 to 24	1,858	1,302	1,253	75.9	52.7	50.9
25 to 54	7,730	7,126	6,725	94.6	87.1	82.3
55 and over	966	785	722	40.3	32.8	29.9
Women	10,859	9,781	9,182	68.7	61.2	58.0
16 to 24	1,825	1,532	1,471	65.7	55.4	53.2
25 to 54	8,141	7,419	6,863	86.8	78.7	72.9
55 and over	893	830	847	24.5	22.9	23.1
Black	16,517	14,833	13,984	72.5	65.6	61.7
Men	8,125	7,297	6,775	79.4	70.7	66.4
16 to 24	1,432	1,055	984	73.9	54.3	50.4
25 to 54	5,974	5,549	5,246	93.4	87.1	82.2
55 and over	719	583	549	38.2	31.0	29.1
Women	8,392	7,646	7,217	67.0	61.7	57.8
16 to 24	1,407	1,180	1,148	63.8	53.8	51.8
25 to 54	6,311	5,805	5,413	85.7	78.1	73.2
55 and over	674	661	650	23.6	22.3	22.7

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Table 4. Civilian labor force by alternative economic scenarios, 1982 and projected to 1995

Labor group	Labor force (in thousands)				Participation rate			
	1982	High scenario	Middle scenario	Low scenario	1982	High scenario	Middle scenario	Low scenario
Marital status model:								
Total	110,204	131,887	131,387	130,977	64.0	68.0	67.8	67.6
Men	62,450	70,101	69,970	69,867	76.6	76.2	76.1	75.9
16 to 19	4,470	4,032	4,043	4,047	56.7	62.8	62.9	63.0
20 to 34	21,385	24,647	24,635	24,619	90.8	90.5	62.9	90.4
Married	14,212	11,071	11,071	11,062	97.1	95.6	90.4	95.6
Other	12,185	13,576	13,564	13,557	85.3	86.7	95.6	86.6
35 to 44	12,781	19,497	19,446	19,401	95.3	95.5	86.6	95.1
Married	10,321	14,971	14,956	14,937	96.8	97.0	95.3	96.8
Other	2,460	4,527	4,490	4,463	89.4	90.9	96.9	89.6
45 to 54	9,784	13,847	13,807	13,784	91.2	91.4	90.2	90.9
Married	8,320	11,553	11,531	11,523	93.4	93.8	91.1	93.5
Other	1,464	2,295	2,276	2,261	80.8	81.0	93.6	79.8
55 and over	9,019	8,076	8,039	8,017	43.8	35.5	80.3	35.2
							35.3	
Women	47,755	61,786	61,417	61,110	52.6	60.7	60.3	60.0
16 to 19	4,056	3,777	3,761	3,749	51.4	58.5	58.3	58.1
20 to 34	17,128	23,224	23,096	22,975	68.8	82.3	81.8	81.4
Married	10,592	11,160	11,087	11,021	61.6	80.8	80.3	79.8
Other	10,279	12,064	12,009	11,954	77.7	83.6	83.2	82.9
35 to 44	9,651	17,526	17,427	17,350	68.0	83.2	82.8	82.4
Married	6,723	11,968	11,932	11,902	64.1	81.8	81.5	81.3
Other	2,928	5,557	5,495	5,448	79.0	86.5	85.6	84.8
45 to 54	7,105	11,282	11,125	11,015	61.6	70.5	69.5	68.8
Married	4,993	7,927	7,798	7,708	57.9	68.4	67.3	66.5
Other	2,111	3,356	3,327	3,307	72.3	76.0	75.3	74.9
55 and over	6,073	5,976	6,008	8,017	22.7	19.9	20.0	20.0
Macro labor force model:								
Total	110,204	132,800	131,387	130,000	64.0	66.9	67.8	67.1

respective coefficients; then the products were added to obtain the differences from the middle scenario.

For the marital status model, the range between the high and low scenarios is only 900,000 persons in the total labor force and .4 percentage points in participation rates. (See table 4.) The groups most affected by the changes between the scenarios are married women ages 45 to 54, nonmarried women ages 35 to 44, married women ages 20 to 34, and nonmarried men ages 45 to 54 and ages 35 to 44. The finding that these groups are more sensitive than others to the changes in economic trends is consistent with the slower trends in participation rates during the 1979–82 period. The projected labor force participation rates for these five groups are all projected to change by between 1.0 and 1.7 percentage points between the high and low economic scenario.

The *macro labor force model* relates the labor force participation rate of all workers to the unemployment rate and real wages. As noted, the macro labor force model is part of a large-scale quarterly macroeconometric model that allows for interaction of labor force trends with employment, labor productivity, and other trends.

For the macro labor force model, the range between the high and low scenarios is 2.8 million persons and 1.4 percentage points in the total participation rates. The difference between the high and low scenarios for the macro labor force model, when compared to the marital status model, reflects, in part, the interaction of labor force trends with economic trends in the context of a macroeconometric model and, in part, the structural differences between the two labor force models.[8]

A comparison of the low and high economic scenarios with the middle scenario indicates that changes in economic assumptions do not result in substantial changes in labor force projections.

The most important finding across the four economic scenarios is that projections with two strikingly different labor force models yield *small* differences between the scenarios. By contrast, the difference between the high and low demographic scenarios is 15.9 million in 1995. Thus, the key factors in the size of the future labor force are demographic in nature.

Revisions reflect 1980 census

Several factors necessitated updating the projections published in 1980: revisions in the historical labor force estimates, revisions in the projected population (which are used in determining the size of the future labor force), and availability of labor force participation rates for the 1979–82 period.[9] The historical labor force data were revised to incorporate the 1980 census. The revised population projections reflect incorporation of the 1980 population estimates and new, *higher* assumptions about life expectancy and net migration, and new, *lower* assumptions about fertility levels. These changes resulted in a larger projected population for 1995, with 8.8 million more persons over age 16. The new population projection alone would have raised the 1995

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labor force projections by 5.3 million persons (after accounting for population shifts by age, sex, and race).

Offsetting the population growth is a lower projected change in labor force participation rates. This reflects the 1979–82 changes in participation which were lower than those of 1962–79. The 1979–82 changes reflect both cyclical factors and trend factors, such as an increased fertility after years of steady decline. If the previously projected participation rates were applied to the new population projections, the 1995 labor force would have been 132.4 million persons, 1 million more than the current projection. The most notable change in projected participation rates occurred for women ages 25 to 34, a group for which BLS has consistently underprojected participation. The rate for this group was lowered 2 percentage points in the current projection to 81.7 percent, compared with 83.7 percent in the previous projection. Still, participation for this group is expected to grow 13.7 percentage points over the 1982–95 period, the largest projected increase for any labor group. Projected participation rates for several groups have been revised upward, notably for men ages 35 to 54, and women 35 and older.

The following tabulation compares the previous and the revised projections of the 1995 labor force:

	1980 projection	1983 projection	Difference
Civilian labor force (in thousands)	127,542	131,387	3,845
Men	67,611	69,970	2,359
Women	59,931	61,417	1,486
White	109,292	112,393	3,101
Black and other	18,250	18,994	744
Participation rate	68.6	67.8	−.8
Men	76.8	76.1	−.7
Women	61.2	60.3	−.9
White	68.8	68.1	−.7
Black and other	67.0	65.7	−1.3

BASED ON BLS' PROJECTIONS, several significant changes in labor force trends are expected during the next decade:

- The total labor force will grow more slowly during the next decade than during the past decade.
- Women will account for a greater proportion of labor force growth in the decade ahead (nearly two-thirds) than they did over the past decade;
- Blacks and other minority groups will account for a greater proportion of overall labor force growth, about one-quarter during the next decade;
- The younger members of the labor force, ages 16 to 24, will decline in absolute numbers.
- The number of prime-age members of the labor force, those ages 25 to 54, will grow faster than the total labor force, 1.0 percentage point per year faster.

These projections reflect the changing demographic structure of the U.S. population: the aging of the baby-boom generation and the growth of the black population. These general conclusions hold for several scenarios concerning future trends in labor force participation for detailed groups, although the specific projections differ. □

FOOTNOTES

[1] These projections replace those in Howard N Fullerton, Jr., "The 1995 labor force: a first look," *Monthly Labor Review*, December 1980, pp. 11–21. For an evaluation of earlier projections, see Howard N Fullerton, Jr., "How accurate were the 1980 labor force projections?" *Monthly Labor Review*, July 1982, pp. 15–21.

[2] The labor force (civilian labor force and resident Armed Forces) is projected to be 126,577,000 in 1990 and 133,018,000 in 1995. Of these, 57,415,000 will be women in 1990 and 61,582,000 will be women in 1995. Because there is no age or race detail in the resident Armed Forces measure of the labor force, this article is based on the civilian labor force.

[3] As with other current BLS presentations of data by race, this article presents data for blacks; however, for historical comparison, data are also presented for the black and other group, which also includes American Indians, Eskimos, and other minorities.

[4] For a short description of the BLS demographic labor force projection methodology, see *BLS Handbook of Methods*, Bulletin 2134–1 (Bureau of Labor Statistics, 1982), Chapter 18; for a complete description, see *BLS Economic Growth Model System Used for Projections to 1990*, Bulletin 2112 (Bureau of Labor Statistics, 1982), Chapter 2.

[5] Among the assumptions of the Census Bureau's projections of the population is that the total fertility rate will rise from 1.83 in 1980 to 1.96 in 2000, and then will decrease to 1.90 in 2050; and that life expectancy will rise from 78.3 in 1981 to 81.3 in 2005 for women, 70.7 to 73.3 for men. See *Projections of the Population of the United States: 1982 to 2050*, *Current Population Reports*, Series P-25, No. 922 (Bureau of the Census, 1982).

[6] For illustrations of other uses of the marital status model, see James E. Duggan, "Labor force participation of older workers" *Industrial and Labor Relations Review*, forthcoming; and James E. Duggan, "Relative price variability and the labor supply of married persons." Both papers are available from the Office of Economic Growth and Employment Projections, Bureau of Labor Statistics.

[7] The macro labor force model is the labor force equation in the Chase Econometric Model. For a description of the model, see Arthur J. Andreassen and others, "Economic outlook for the 1990's: three scenarios for economic growth," pp. 11–23, this issue.

[8] BLS' alternative scenarios of gross national product, industry output and employment trends and occupational requirements use the macro labor force model's projections of total labor force. This was done because of the small differences between the economic scenarios of labor force trends and because the macro labor force is part of the macroeconometric model of the economic projections.

[9] For a discussion of the revisions in labor force estimates due to the 1980 Census of the Population, see Kenneth D. Buckley, Jennifer Marks, and Ronald J. Statt, "Revisions in the Current Population Survey Beginning in January 1982," *Employment and Earnings*, February 1982, pp. 7–15.

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Economic outlook for the 1990's: three scenarios for economic growth

Alternative monetary and fiscal assumptions suggest quite different trends in GNP and employment through 1995; in all versions, growth tapers after 1988, reflecting slower rates of population and labor force increase

ARTHUR J. ANDREASSEN, NORMAN C. SAUNDERS, AND BETTY W. SU

The Bureau of Labor Statistics has prepared trend projections of growth in aggregate and industry demand for the 1982–95 period, updating prior projections to 1990 and extending the analysis to 1995.[1] The projections are part of a Bureau program of studies aimed at analyzing medium-term economic growth and the implications for the structure of employment by industry and occupation. The new estimates consist of a moderate-growth case, and high-growth and low-growth alternatives, which examine the effects of alternate policies on U.S. economic growth, distribution of demand, and employment.

It should be noted that none of the three projections should be favored as the most likely. The intent in preparing them was not to forecast future economic performance but, rather, to examine the implications of a reasonable range of demand growth over the projection period. The projections represent only three of many possible responses of the economy to differing fiscal and monetary stimulae. A different perspective on the inner workings of the U.S. aggregate economy could easily lead one to arrive at completely different results. For this reason, the high-growth and low-growth alternatives should not be viewed as the "good" forecast and the "bad" forecast, but rather as vehicles for generating a reasonable spread in gross national product (GNP) and employment growth to 1995.

By 1995, real GNP is projected to range between $2.1 and $2.3 trillion, with total employment between 123.6 and 134.1 million jobs. In all three versions, job and production growth tapers during the latter part of the period, primarily in response to slower projected rates of growth of the population and labor force.[2] Following are historical and projected rates of growth for real GNP, real disposable income, and employment:

	GNP	*Disposable income*	*Employment*
Historical:			
1955–68	3.7	3.9	1.5
1968–73	3.5	4.3	1.7
1973–77	2.2	2.2	1.6
1977–82	1.6	2.4	1.6
Low growth:			
1982–90	2.8	2.4	1.4
1990–95	2.7	2.7	1.6
Moderate growth:			
1982–90	3.2	2.8	1.8
1990–95	2.5	2.6	1.5
High growth:			
1982–90	3.8	3.2	2.3
1990–95	2.5	2.7	1.7

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In terms of the real rate of growth, the low-trend projections are comparable to the 1973–82 experience, and the high-trend projection corresponds more to that of the 1960's.

Following is a detailed discussion of the assumptions and results of the moderate-growth alternative, both in terms of aggregate economic activity and industry demand patterns. A summary of the low-trend and high-trend results is included. Other articles in this issue examine the BLS projections of labor force, industry output and employment, and occupational demand.

Moderate growth assumptions

To develop the moderate-growth projections, assumptions were made concerning demographics, fiscal and monetary policy, foreign economic conditions, energy, and miscellaneous items.[3] Those variables having the largest impact on the projections are discussed below. (Refer to the box on pages 12–13 for a discussion of the model used to develop the aggregate projections.)

Demographic. The middle-growth projections of U.S. population, developed by the Census Bureau, were chosen for the moderate-growth scenario. The population age 16 and over is projected to increase by 21.6 million between 1982 and 1995, an average annual rate of growth of 0.9 percent. As in prior projections, the population rate of growth slows over the projection horizon, dropping from 1.1 percent annually between 1982 and 1988 to 0.8 percent each year between 1988 and 1995.

The civilian labor force grows somewhat more rapidly during the projection period, reflecting generally increasing participation rates and the shift of persons into age categories with traditionally higher labor force participation. The ci-

BLS projections procedures

The Bureau of Labor Statistics prepares projections on a 2-year cycle, using the Economic Growth Model System. This system is composed of a group of separate but not unrelated processes. Projections are produced in the following areas: (1) labor force; (2) aggregate economic performance; (3) industry final demand and total industry production; (4) industry employment levels; and (5) occupational employment by industry. Each block of the projections depends upon inputs from an earlier stage and feeds logically into the next.

The *labor force projections* use Bureau of the Census population projections by age, sex, and race, based on trends in birth rates, death rates, and net migration. With the population projections in hand, BLS projects labor force participation rates—the percent of each group in the population who will be working or seeking work—for 64 age, sex, and race groups. The labor force participation rate projection for each group is developed by: (a) analyzing past rates of growth over the 1962–81 period or for selected subperiods; (b) selecting the rate for a period deemed most appropriate for each group; and (c) modifying that rate if past trends are judged not likely to continue throughout the entire projection period. The levels of anticipated labor force are then calculated by applying the projected participation rates to the Bureau of the Census population projections.

The *aggregate economic projections or gross national product*, in total and by major demand and income category, use the BLS labor force and Census population projections as inputs. Consistent economic scenarios are developed to provide aggregate controls for the various categories of demand and employment. These scenarios are selected to encompass a band around likely growth of the economy in the future. Later stages of the projection process develop industry-level projections consistent with these aggregate data.

The Bureau's aggregate economic projections have, in the past, been prepared with a modified version of the Thurow econometric model of the U.S. economy. Following the last round of projections, it was determined that the BLS macro model was inadequate for further projections studies without major respecification and expansion. After studying the problem, the decision was made to look to the private sector for a macro model that would satisfy the needs of Bureau economists and that would, at the same time, remove the burden of periodic data base maintenance and model reestimation from the Bureau staff. A model of the size and complexity deemed necessary for an effective evaluation of U.S. economic growth potential had required that a significant proportion of staff time be allocated to such routine maintenance. For this reason and because of staff and other resource limitations, a competitive procurement process was initiated in January 1982 and a contract was awarded to Chase Econometrics Associates, Inc., in October 1982. Under the terms of this agreement, the Bureau now uses the Chase macro model to develop its projections.

The Chase model is a quarterly model of the U.S. economy, and is composed of 312 behavioral equations and 275 identities, thus determining 587 endogenous variables. In addition, the model contains 110 exogenous variables. The model can be conveniently decomposed into 13 sectors: (1) consumption, (2) business fixed investment, (3) residential investment, (4) change in business inventories, (5) foreign trade, (6) Federal government, (7) State and local government, (8) employment and hours, (9) financial, (10) income, (11) wages and prices, (12) industrial production, and (13) energy.

Assumptions are specified for the 110 exogenous variables. The model is simulated and the results are analyzed for consistency and reasonableness. Modifications to the exogenous variables and to the behavioral relationships are incorporated into the model until a reasonable set of results has been obtained.

For the *industry output projections*, the U.S. economy is disaggregated to 156 producing sectors, an exhaustive grouping which combines both the public and private sectors. The framework for this procedure is an input-output model that is prepared for a base period by the Bureau of Economic Analysis of the U.S. Department of Commerce. The first step at the industry level is to disaggregate the GNP estimate from the aggregate projections to a set of demands by industry. This projected in-

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vilian labor force is projected to attain a level of 131.4 million by 1995, an increase of just under 20 million from 1982. This represents average annual growth of 1.6 percent, 1982–88, and 1.0 percent between 1988 and 1995. The moderate-growth alternative uses the medium-growth projection of the civilian labor force discussed on pages 3–10 of this issue. The labor force projections in the low-trend and high-trend versions were generated by the macro model described on page 9.

Federal receipts and expenditures. General fiscal restraint throughout the remainder of this decade is the basic characteristic of the moderate-growth government expenditure and tax policies. Federal defense purchases of goods and services are assumed to increase at a real rate of 4.1 percent each year between 1982 and 1986. Thereafter, growth is assumed to drop to the 0.5- to 1.0-percent range to 1995.

Nondefense purchases of goods and services in real terms are expected to decline in the 1983–87 period, reaching $35.8 billion in 1987, $1.8 billion below the 1982 level. This reflects some employment declines, as well as general cutbacks in operating funds for many programs. Nondefense purchases are then assumed to grow, in real terms, by about 0.5 to 1.0 percent each year to 1990, and to accelerate somewhat to the 2.5- to 3.0-percent range during the first half of the next decade.

Social security benefit payments are expected to grow in nominal terms at an annual rate of 7.2 percent in the 1982–88 period, and by 7.1 percent each year between 1988 and 1995. No real benefit increases are assumed through 1988. The growth in social security payments is generated by inflation and by expanding client population only. After 1988, some resumption of real benefit growth is assumed, on the order of 0.5 percent to 1 percent annually.

dustry demand, in conjunction with a projected input-output table, is used to calculate total industrial production. The projected changes in input-output coefficients in the input-output model capture—among other factors—expected changes in technology. Finally, the employments necessary to produce those levels of output are estimated through use of projected industry productivity.

Aggregate demand projections are available from the macro model for 15 categories of consumption, 8 types of investment, 15 end-use categories of foreign trade, and 3 categories of government spending. Where possible, a further disaggregation of the control values is undertaken: Purchases of producers' durable equipment is divided into 23 types of capital equipment. Government spending is grouped into 12 categories.

To allow for shifts in the composition of aggregate demand and in the industrial makeup of a given demand category, "bridge tables" are projected. The bridge table is a set of percent distributions for each given demand category, such as one of the consumption groups or investment, among each of the 156 industries in the BLS input-output model.

The projection of the input-output table accounts for the changes in the input pattern for each industry. In general, two types of changes are made: (a) those made to the inputs of a specific industry after an industry study (as for the changes in inputs in the aluminum industry); and, (b) those made to the inputs of all industries for a specific commodity (as for increased use of business services across a wide spectrum of industries). Output requirements by industry are the result of multiplying the projected input-output table by projected changes in level and distribution of final demand.

The projected changes in industry output are important factors determining the *projections of industry employment*. However, converting output projections into employment estimates requires productivity-by-industry projections and measures of changes in average hours by industry. This is accomplished using a regression model with an equation for each industry that estimates worker-hours as a function of the following variables: (1) the industry's output, (2) capacity utilization, (3) the relative price of labor, and (4) a technology variable as approximated by the output/capital ratio. Worker-hours are then converted into jobs by dividing by average annual hours, which are projected using time trends. The sum of employment by industry is controlled to total employment as estimated in the macro model. Several iterations are usually necessary for a reasonable balance to be achieved.

Projections of employment for the 156 sectors in the Economic Growth Model are disaggregated to 372 industries corresponding to the 3-digit Standard Industrial Classification (SIC). This is done to match the industry mix of the industry-occupation matrix described later. The disaggregation is accomplished via a time-series regression model. The disaggregated 3-digit SIC industry employment projections are reviewed in light of a broad range of economic information. When the industry projections are considered final, they are used as inputs to the process of projecting occupational employment.

One of the main resources in making *occupational employment projections* is the industry-occupation matrix. This matrix is produced from data collected by State employment agencies and brought together by the Bureau of Labor Statistics to produce national estimates. The data are collected from employers on a 3-year cycle—manufacturing one year, nonmanufacturing the next year, and the balance of nonmanufacturing (trade, transportation, communications, and utilities) the final year. The data from the 3-year cycle are put on the same employment basis to form annual average estimates for occupational employment in each of the 3-digit SIC industries. The matrix contains over 1,500 detailed occupations, although most industries do not have employment in many of these occupations.

The major occupational cells of the industry-occupation matrix for the base year are reviewed and adjustments are made to the cells in the projected matrix to account for changes expected to take place in the industries because of technological change, product mix shifts, and other factors. The changes introduced into the input-output model for expected technological change may also change the staffing patterns in industries using the new technology. (For example, one would expect greater general employment of computer specialists as computer technology spreads across industries.) The projected industry employment data are applied to the projected industry occupational employment patterns and the new cell employment is aggregated across all industries to yield total occupational employment for the projected year.

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Medicare payments, on the other hand, are expected to grow at a 10.1-percent nominal rate over the 1982–88 period, reflecting client population growth, higher-than-average medical care cost inflation, and some real benefit increases, on the order of about 1 percent annually. After 1988, the medicare rate of growth drops to 8 percent annually as inflation continues to moderate.

Unemployment insurance benefits decline sharply through 1990 as the economy recovers from the 1982 recession and the number of unemployed drops. Some slight growth is apparent after 1990 as the unemployment rate stabilizes. Other transfer payments, including Federal retirement programs and veterans' benefits, are expected to increase at a nominal rate of 8.5 percent annually between 1982 and 1988, and at 7.9 percent during the 1988–95 period. Finally, grants to State and local governments are assumed to grow only with inflation during the entire period.

On the revenue side of the Federal government books, projected personal tax rates reflect currently mandated tax cuts and the indexation of personal taxes for the remainder of the period. Corporate profits taxes are assumed to stabilize at about 26 percent of profits for the entire projection period. Indirect business taxes are expected to increase annually by about 5.8 percent, while social insurance contributions are governed by the currently mandated tax rates and income base determination methods.

The net effect of these policies is a Federal budget deficit (NIPA basis) that declines steadily from $180 billion in 1983 to about $70 billion by 1990, and then remains at roughly that level for the remainder of the projection period.

Monetary policy. In the financial sector, 10 interest rates are derived, with the Federal funds rate providing the key to the overall term structure of rates. The major assumption affecting the determination of the Federal funds rate is the rate of growth of the nonborrowed monetary base, excluding currency. It is assumed that this variable will grow at a rate close to 10 percent during 1983, dropping to about 7 percent during the 1984–87 period, and then to the 5.5- to 6-percent range for the remainder of the projection period. This reflects an assumed willingness on the part of the Federal Reserve Board to loosen up somewhat on monetary controls as the economy recovers from the 1982 recession.

Also affecting the financial sector is the assumption concerning the rate of growth of money-market related mutual funds. This variable affects the distribution of the money stock between the aggregate money supply measures M1 and M2. Money-market funds are expected to increase at a strong pace during the mid-1980's (about 12 to 15 percent annually), but this will taper in the late 1980's and early 1990's to about a 10-percent average rate of growth.

Foreign economic conditions. Exports of domestically produced goods and services are influenced primarily by international financial markets and by the economic condition of our major trading partners. The following table summarizes the assumed annual percentage rates of growth of the variables in the macro model that reflect these considerations:

	Industrial production, world	*Wholesale price index, rest-of-world*	*Average value of the U.S. dollar*[4]
Historical:			
1968–73	—	—	−3.0
1973–77	0.9	11.8	2.4
1977–82	0.7	10.0	3.3
Low growth:			
1982–90	3.0	8.8	1.6
1990–95	2.9	7.9	0.0
Moderate growth:			
1982–90	3.2	8.3	2.1
1990–95	3.1	6.9	1.3
High growth:			
1982–90	3.3	8.5	2.2
1990–95	3.4	7.3	1.5

The assumed growth rates for industrial production appear high from a historical perspective. The table is deceptive, however, because the selected historical years are representative of peak-to-peak periods in this country. The world economy tends to lag the U.S. business cycle and, as a result, the historical growth rates presented above are not truly representative of long-term trend growth patterns. Generally, world industrial production has tended to increase at a 2.5- to 3.5-percent rate during trend growth periods.

Energy. Domestic oil production, currently running at about 10 million barrels per day (MBPD), is assumed to decline to 9.5 MBPD by 1987 and to remain at that level thereafter. Petroleum imports, on the other hand, are expected to increase steadily from 5.1 MBPD in 1982 to 7.8 MBPD in 1990 and 8 MBPD in 1995. The price of imported oil is assumed to rise from the 1983 price of $28 per barrel to $41 in 1990 and to $52 by 1995. This rise is consistent with overall inflation but does not reflect any real increase in the barrel price of imported crude oil.

Affecting transportation-related demand for petroleum are assumptions concerning the average miles-per-gallon of new domestically produced autos, and the ratio of imports to domestic autos. Mileage figures are assumed to improve from the 1982 level of 26.7 mpg to 37.8 by 1990 and 41.7 by 1995. After declining to a more normal share of 24 percent in 1983, imported autos are expected to capture more of the U.S. auto market, accounting for 30 percent of domestic sales by 1990. The share is assumed to stabilize through 1995 at that level.

Implications of moderate growth

Real GNP is projected to increase at an average annual rate of 3.2 percent over the 1982–90 period, reflecting re-

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covery from the 1982 recession. After 1990, GNP growth moderates somewhat to an annual rate of 2.5 percent between 1990 and 1995 (table 1). This assumes a return to the long-term trend growth path following the recovery and the continuing slowdown in the rate of growth of the civilian labor force. Following is a summary of the projection results for each major sector of the economy.

Prices. Projections for price change are truly optimistic in the moderate-growth scenario—at least compared to the more recent experience:

	Annual change, in percent		
	GNP *deflator*	*Personal consumption expenditures deflator*	*Gross private domestic investment deflator*
Historical:			
1955–68	2.4	2.1	1.7
1968–73	5.1	4.6	5.1
1973–77	7.3	7.1	9.4
1977–82	8.1	8.1	7.1
Moderate growth:			
1982–90	5.4	5.2	5.8
1990–95	3.3	3.6	2.7

The moderation in inflation expectations is based on the relatively modest rate of recovery projected from the 1982 recession. Demand growth accelerates at a pace readily matched by production capacity, thus averting much of the demand pressure on prices apparent during recoveries from the 1969–70 and 1973–75 recessions. The 1981–82 recession also significantly dampened wage rate growth, a major impetus to renewed inflation during earlier recoveries.

Employment and productivity. Civilian household employment is projected to increase by just over 24 million jobs between 1982 and 1995, as the unemployment rate declines from 9.7 percent in 1982 to 6.3 percent in 1990 and to 6.0 percent in 1995. (See table 2.) This represents average annual growth in employment of 2 percent between 1982 and 1990 and of 1.1 percent between 1990 and 1995. There are 6.5 million new jobs in the goods-producing sector, and 17.3 million in the private service-producing industries.

For the private nonfarm sector, the long-term average annual rate of productivity growth was 2.6 percent between 1955 and 1968. Between 1968 and 1973, this rate dropped to 2.1 percent annually and even further, to 0.2 percent, during the 1973–82 period. The slowdown in productivity growth over the past decade has been attributed to many factors, including the influx of new workers into the labor force; slowing in capital accumulation per worker; emphasis on nonproductive types of investment, such as pollution control investment; and the remarkable increase in energy prices since 1973.

Over the coming decade, many of the factors that contributed to the productivity slowdown are expected to improve. As a result, the projections for productivity are quite optimistic when compared to more recent experience. Productivity in the private nonfarm sector is expected to increase at a rate of 1.7 percent annually between 1982 and 1990 and by 1.4 percent each year during the 1990–95 period. Increases in manufacturing labor productivity are expected to average 2.2 percent annually over the entire period.

Developments related to employment and labor productivity are discussed by Valerie Personick elsewhere in this issue.

Personal consumption. Consumer spending is the largest component of GNP. In 1968, personal consumption expenditures (PCE) accounted for 60.0 percent of real GNP. The share increased to 63.2 percent in 1981 and to 65.3 percent in 1982. It should be noted that personal consumption expenditures accounted for a large proportion of GNP in 1982 because of the rapid relative increase in the purchase of services during a recessionary period. After returning to a more normal share of GNP after 1983, consumer expenditures are still expected to show a long-term upward trend, reaching 65.2 percent of GNP in 1995. The increase is due primarily to relatively higher disposable income and a slightly lower savings rate, as well as to the smaller share of GNP accounted for by government expenditures. Table 3 details the projections of 15 major categories of consumer spending.

Because of price effects, new technology, the shifting population mix, and new household formation, consumers' behavior will exhibit some changes over the next decade. Purchases of consumer durables are projected to grow very strongly over the period—5.1-percent average annual growth from 1982 to 1990 and 2.9 percent each year, 1990–95. All categories of durables are expected to increase strongly in the early period of the projections, but the largest growth is attributable to motor vehicles and to household appliances. Generally speaking, durables purchases react quite sharply to increasing inflation and to swings in the business cycle because such purchases are easily put off until "better times." Two major reasons for the strong durables growth over the projection period are the greatly improved inflation situation and the lack of business-cycle swings built into the projection methods.

Purchases of motor vehicles and parts dropped dramatically during the 1982 recession. Sales of new motor vehicles were down 18 percent to 11.4 million units in 1980 and dipped to 10.4 million units in 1982, the worst slump in 20 years. The drop in new-car sales was largely accounted for by domestic autos, as imports continued to increase their share of the market during the 1982 recession.

With cut-rate financing luring buyers, sales rebounded sharply in the final months of 1982. Demand for motor

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Table 1. Gross national product, 1968, 1973, 1977, 1982, and projected to 1990 and 1995

[Billions of 1972 dollars]

Item	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
Gross national product	$1,058.1	$1,255.0	$1,369.7	$1,485.4	$2,004.2	$1,915.5	$1,857.9	$2,264.6	$2,166.9	$2,126.7
Personal consumption	634.4	768.5	864.3	970.2	1,296.0	1,240.2	1,196.8	1,491.4	1,412.4	1,349.1
Durables	88.3	121.3	138.0	139.8	236.0	208.8	190.1	277.4	240.4	223.8
Nondurables	270.5	308.0	333.4	364.2	447.2	436.2	423.7	481.2	468.0	438.4
Services	275.6	339.2	393.0	466.2	612.8	595.2	583.0	732.9	704.0	686.9
Gross private investment	161.6	217.5	214.2	194.5	342.1	305.7	250.1	405.0	337.2	285.7
Equipment	66.8	90.7	99.9	112.7	166.2	149.1	132.4	202.8	177.2	159.6
Structures	42.8	47.4	40.4	53.4	62.8	61.5	45.0	76.9	70.1	44.6
Residential	43.1	62.3	60.7	37.8	97.8	80.5	63.6	113.1	78.1	69.6
Inventory change	9.0	17.2	13.3	−9.4	15.3	14.6	9.0	12.2	11.9	11.9
Net exports	1.9	15.5	22.0	28.9	34.1	48.8	83.0	22.8	85.9	148.4
Exports	61.2	97.3	112.9	147.3	206.7	202.3	206.5	261.7	260.0	267.9
Imports	59.3	81.8	90.9	118.4	172.6	153.5	123.5	238.9	174.1	119.4
Government	260.2	253.5	269.2	291.8	332.0	320.9	327.9	345.4	331.4	343.5
Federal	128.2	95.9	100.5	116.6	136.8	132.4	144.3	144.6	139.2	157.0
State and local	132.0	157.6	168.8	175.2	195.2	188.5	183.6	200.7	192.2	186.5
Percent distribution										
Gross national product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal consumption	60.0	61.2	63.1	65.3	64.7	64.7	64.4	65.9	65.2	63.4
Durables	8.3	9.7	10.1	9.4	11.8	10.9	10.2	12.2	11.1	10.5
Nondurables	25.6	24.5	24.3	24.5	22.3	22.8	22.8	21.2	21.6	20.6
Services	26.0	27.0	28.7	31.4	30.6	31.1	31.4	32.4	32.5	32.3
Gross private investment	15.3	17.3	15.6	13.1	17.1	16.0	13.5	17.9	15.6	13.4
Equipment	6.3	7.2	7.3	7.6	8.3	7.8	7.1	9.0	8.2	7.5
Structures	4.0	3.8	2.9	3.6	3.1	3.2	2.4	3.3	3.2	2.1
Residential	4.1	5.0	4.4	2.5	4.9	4.2	3.4	5.0	3.6	3.3
Inventory change	0.9	1.4	1.0	−0.6	.8	.8	.5	.5	.5	.6
Net exports	.2	1.2	1.6	1.9	1.7	2.5	4.5	1.0	4.0	7.0
Exports	5.8	7.8	8.2	9.9	10.3	10.6	11.1	11.6	12.0	12.6
Imports	5.6	6.5	6.6	8.0	8.6	8.0	6.6	10.5	8.0	5.6
Government	24.6	20.2	19.7	19.6	16.6	16.8	17.6	15.3	15.3	16.2
Federal	12.1	7.6	7.3	7.8	6.8	6.9	7.8	6.4	6.4	7.4
State and local	12.5	12.6	12.3	11.8	9.7	9.8	9.9	8.9	8.9	8.8
Average annual rate of change (in percent)										
	1968–73	1973–77	1977–82	High		Moderate			Low	
				1982–90	1990–95	1982–90	1990–95	1982–95	1982–90	1990–95
Gross national product	3.5	2.2	1.6	3.8	2.5	3.2	2.5	3.0	2.8	2.7
Personal consumption	3.9	3.0	2.3	3.7	2.8	3.1	2.6	2.9	2.7	2.4
Durables	6.5	3.3	0.3	6.8	3.3	5.1	2.9	4.3	3.9	3.3
Nondurables	2.6	2.1	1.8	2.6	1.5	2.3	1.4	1.9	1.9	0.7
Services	4.2	3.7	3.5	3.5	3.6	3.1	3.4	3.2	2.8	3.3
Gross private investment	6.1	−0.4	−1.9	7.3	3.4	5.8	2.0	4.3	3.2	2.7
Equipment	6.3	2.4	2.4	5.0	4.1	3.6	3.5	3.5	2.0	3.8
Structures	2.1	−3.9	5.7	2.1	4.1	1.8	2.7	2.1	−2.1	−0.2
Residential	7.6	−0.6	−9.0	12.6	2.9	9.9	−0.6	5.7	7.4	1.8
Exports	9.7	3.8	5.5	4.3	4.8	4.1	5.2	4.5	4.3	5.3
Imports	6.6	2.7	5.4	4.8	6.7	3.3	2.6	3.0	0.5	−0.7
Government	−0.5	1.5	1.6	1.6	0.8	1.2	0.7	1.0	1.5	0.9
Federal	−5.6	1.2	3.0	2.0	1.1	1.6	1.0	1.4	2.7	1.7
State and local	3.6	1.7	0.8	1.4	0.6	0.9	0.4	0.7	0.6	0.3

SOURCE: Historical data, Bureau of Economic Analysis; projected data, Bureau of Labor Statistics.

vehicles and parts is expected to increase at a robust rate, averaging 5.8-percent growth between 1982 and 1990. This represents an increase in new domestic car sales to 8.6 million units by 1990. Although low by the standards of the 1960's and 1970's, this is still well above the average sales rate of 5.7 million domestic cars in 1982. The slowdown from the long-term trends is caused by continuing relative price increases, a projected decline in the entry of new drivers into the marketplace, and the assumption that imports will continue to improve their competitive position in this country. The following table summarizes purchase data for motor vehicles, historically and projected.

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	1968	1973	1977	1982	1990	1995
Vehicles and parts as a percent of PCE (1972 dollars)	6.3	7.4	7.3	5.9	7.3	7.0
New-vehicles sales (millions of units)	—	13.6	14.6	10.4	16.6	16.1
New-car sales	9.6	11.4	11.1	8.0	12.4	12.0
Domestic	8.6	9.6	9.0	5.7	8.6	8.4
Imported	1.0	1.8	2.1	2.3	3.7	3.6
New-light-truck sales	—	2.3	3.5	2.4	4.2	4.1
Percent import share, new cars	10.7	15.5	18.7	28.3	30.0	30.0

Like the case for motor vehicles, the projected surge in purchases of furniture and household appliances is attributable to recovery. With the expected upturn in construction of new homes, demand for housing-linked items is expected to increase rapidly, at a rate of 4.6 percent per year, between 1982 and 1990.

In addition to the housing-related demand growth, a new boom in household appliances and furnishings, largely paralleling the 1950's television experience, will feature consumer electronics and a new wave of replacement demand. Purchases of home computers and supplemental equipment, such as printers and software, have exploded in the U.S. marketplace; demand for such popular new products is foreseen to grow strongly in the next decade. Other new electronic products, such as compact audiodiscs, video cassette recorders, and sophisticated electronic telephone systems, are also expected to become increasingly important. Thus, considerable growth of 4.2 percent annually in the 1982–95 period is projected, much higher than the growth rate of 2.9 percent for total consumption during the same period.

Consumer purchases of nondurables are expected to account for progressively smaller shares of GNP throughout the projection period. Nondurables accounted for 25.6 percent of GNP in 1968. The share dropped to 24.5 percent in 1982 and is projected to decline further to 22.8 percent and 21.6 percent of GNP in 1990 and 1995, as nondurables grow more in line with population than they did during the 1970's.

Food consumption has been declining as a proportion of total PCE over time, and it is expected to continue to do so through 1995. As a family's real income increases, the percentage spent on food decreases. In 1982, purchases of food accounted for 19.0 percent of PCE, while by 1995, they are expected to decline to 15.8 percent. Particularly, demand for restaurant meals is projected to grow more slowly in the period than in recent years. During the last decade, a rapid increase in the number of working wives helped to boost restaurant sales. Female labor force participation is projected to continue to rise over the projection period but at a slower pace than during the last 10 years. Consequently, purchased restaurant meals are projected to grow only at a rate of 1.1 percent per year in the 1982–95 period, compared with 2.8 percent between 1973 and 1979.

Average growth of 2.3 percent annually is projected for purchases of clothing and shoes between 1982 and 1995, compared with rates of 3.9 percent per year in the 1968–

Table 2. Selected macroeconomic variables, 1968, 1973, 1977, 1982 and projected to 1990 and 1995

Item	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
GNP deflator (1972 = 100)	82.5	105.7	140.0	206.9	341.1	315.9	303.5	483.7	372.1	341.8
Private nonfarm productivity	86.6	95.2	100.1	100.0	116.1	114.6	114.0	125.3	122.7	120.9
Unemployment rate	3.6	4.9	7.1	9.7	5.4	6.3	6.5	5.2	6.0	6.8
Total employment (in millions)	83,549	91,735	97,539	105,555	121,869	120,830	119,735	132,843	130,260	128,250
Government	14,092	15,506	16,783	17,471	17,891	17,658	17,993	18,482	18,203	18,532
Private	69,457	76,229	80,756	88,084	106,978	103,172	101,742	114,361	112,057	109,718
Farm	3,662	6,220	2,950	2,815	2,672	2,652	2,630	2,595	2,550	2,500
Manufacturing	20,065	20,438	20,017	19,223	22,635	22,236	21,686	24,132	23,491	22,963
Service-producing	37,363	43,567	48,796	56,721	67,828	67,533	66,559	75,596	74,157	72,673
Other	8,367	9,004	8,993	9,325	10,843	10,751	10,867	12,038	11,859	11,582
	Average annual rate of change (in percent)									
	1968–73	1973–77	1977–82	High		Moderate			Low	
				1982–90	1990–95	1982–90	1990–95	1982–95	1982–90	1990–95
GNP deflator (1972 = 100)	5.1	7.3	8.1	6.5	7.2	5.4	3.3	4.6	4.9	3.4
Private nonfarm productivity	1.9	1.3	0.0	1.9	1.5	1.7	1.4	1.6	1.7	1.2
Total employment	1.9	1.5	1.6	1.8	1.7	1.7	1.5	1.4	1.6	1.4
Government	1.9	2.0	0.8	0.3	0.7	0.1	0.6	0.3	0.4	0.6
Private	1.9	1.2	1.8	2.1	1.9	2.0	1.7	1.6	1.8	1.5
Farm	−2.5	−2.2	−0.9	−0.6	−0.6	−0.7	−0.8	−0.7	−0.8	−1.0
Manufacturing	0.4	−0.5	−0.8	2.1	1.3	1.8	1.1	1.3	1.5	1.2
Service-producing	3.1	2.9	3.1	2.3	2.2	2.2	1.9	1.8	2.0	1.8
Other	1.5	−0.0	0.7	1.9	2.1	1.8	2.0	1.6	1.9	1.3

SOURCE: Historical and projected employment data and projected price deflator, Bureau of Labor Statistics; historical price deflator, Bureau of Economic Analysis.

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Table 3. Personal consumption expenditures by major categories, 1968, 1973, 1977, 1982, and projected to 1990 and 1995

[Billions of 1972 dollars]

Category	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
Total	$634.4	$768.5	$864.3	$970.2	$1,296.0	$1,240.2	$1,196.8	$1,491.4	$1,412.4	$1,349.1
Motor vehicles and parts	40.3	56.5	63.5	57.4	107.0	90.3	80.7	118.1	98.2	87.1
Household appliances	14.2	21.2	26.3	33.0	52.5	48.3	43.8	64.6	57.4	55.1
Household furnishings	20.5	25.1	26.6	26.7	41.5	37.5	34.6	51.2	45.1	43.8
Other durable goods	13.4	18.5	21.5	22.7	35.0	32.7	31.0	43.5	39.7	37.8
Total durables	88.3	121.3	138.0	139.8	236.0	208.8	190.1	277.4	240.4	223.8
Food and beverages	142.4	153.6	170.6	184.0	216.6	213.2	207.1	228.7	223.8	208.9
Clothing and shoes	49.0	59.3	67.5	84.4	106.9	103.9	100.8	117.0	113.7	105.3
Gasoline and oil	19.9	26.2	27.7	25.6	29.7	28.8	27.9	30.5	28.9	26.8
Fuel oil and coal	5.3	5.4	4.4	3.5	3.7	3.7	3.6	4.4	4.4	4.1
Other nondurable goods	53.9	63.5	63.2	66.6	90.3	86.6	84.3	100.6	97.2	93.3
Total nondurables	270.5	308.0	333.4	364.2	447.2	436.2	423.7	481.2	468.0	438.4
Housing services	93.5	118.2	141.3	171.3	215.2	212.7	209.8	249.3	247.7	245.1
Household electricity	9.6	13.0	16.0	18.3	25.5	24.6	24.1	30.0	28.4	27.2
Household natural gas	5.9	6.4	6.5	6.6	5.3	5.1	5.0	5.2	4.7	4.5
Other household operations	23.4	28.0	32.6	38.6	55.0	52.9	51.4	68.9	64.0	61.3
Transportation services	23.4	28.5	32.7	31.7	45.0	42.4	41.0	55.1	50.1	47.9
Other services	119.7	145.1	163.9	199.6	266.7	257.5	251.8	324.3	309.1	300.9
Total services	275.6	339.2	393.0	466.2	612.7	595.2	583.1	732.8	704.0	686.9
Percent distribution										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Motor vehicles and parts	6.4	7.4	7.3	5.9	8.3	7.3	6.7	7.9	7.0	6.5
Household appliances	2.2	2.8	3.0	3.4	4.1	3.9	3.7	4.3	4.1	4.1
Household furnishings	3.2	3.3	3.1	2.8	3.2	3.0	2.9	3.4	3.2	3.2
Other durable goods	2.1	2.4	2.5	2.3	2.7	2.6	2.6	2.9	2.8	2.8
Total durables	13.9	15.8	16.0	14.4	18.2	16.8	15.9	18.6	17.0	16.6
Food and beverages	22.4	20.0	19.7	19.0	16.7	17.2	17.3	15.3	15.8	15.5
Clothing and shoes	7.7	7.7	7.8	8.7	8.2	8.4	8.4	7.8	8.1	7.8
Gasoline and oil	3.1	3.4	3.2	2.6	2.3	2.3	2.3	2.0	2.0	2.0
Fuel oil and coal	0.8	0.7	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Other nondurable goods	8.5	8.3	7.3	6.9	7.0	7.0	7.0	6.7	6.9	6.9
Total nondurables	42.6	40.1	38.6	37.5	34.5	35.2	35.4	32.3	33.1	32.5
Housing services	14.7	15.4	16.3	17.7	16.6	17.2	17.5	16.7	17.5	18.2
Household electricity	1.5	1.7	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
Household natural gas	0.9	0.8	0.8	0.7	0.4	0.4	0.4	0.3	0.3	0.3
Other household operations	3.7	3.6	3.8	4.0	4.2	4.3	4.3	4.6	4.5	4.5
Transportation services	3.7	3.7	3.8	3.3	3.5	3.4	3.4	3.7	3.5	3.6
Other services	18.9	18.9	19.0	20.6	20.6	20.8	21.0	21.7	21.9	22.3
Total services	43.4	44.1	45.5	48.0	47.3	48.0	48.7	49.1	49.8	50.9

Average annual rate of change (in percent)

	1968–73	1973–77	1977–82	High		Moderate			Low	
				1982–90	1990–95	1982–90	1990–95	1982–95	1982–90	1990–95
Total	3.9	3.0	2.3	3.7	2.8	3.1	2.6	2.9	2.7	2.4
Motor vehicles and parts	7.0	3.0	−2.0	8.1	2.0	5.8	1.7	4.2	4.3	1.5
Household appliances	8.4	5.5	4.6	6.0	4.2	4.9	3.5	4.4	3.6	4.7
Household furnishings	4.1	1.5	0.1	5.6	4.3	4.3	3.8	4.1	3.3	4.8
Other durable goods	6.7	3.8	1.1	5.6	4.4	4.7	4.0	4.4	4.0	4.0
Total durables	6.6	3.3	0.3	6.8	3.3	5.1	2.9	4.3	3.9	3.3
Food and beverages	1.5	2.7	1.5	2.1	1.1	1.9	1.0	1.5	1.5	0.2
Clothing and shoes	3.9	3.3	4.6	3.0	1.8	2.6	1.8	2.3	2.3	0.9
Gasoline and oil	5.7	1.4	−1.5	1.9	0.5	1.5	0.1	0.9	1.1	−0.8
Fuel oil and coal	0.4	−5.0	−4.5	0.6	3.5	0.6	3.5	1.7	0.2	2.6
Other nondurable goods	3.3	−0.1	1.1	3.9	2.2	3.3	2.3	2.9	3.0	2.0
Total nondurables	2.6	2.0	1.8	2.6	1.5	2.3	1.4	1.9	1.9	0.7
Housing services	4.8	4.6	3.9	2.9	3.0	2.7	3.1	2.9	2.6	3.2
Household electricity	6.3	5.3	2.8	4.2	3.3	3.7	2.9	3.4	3.5	2.5
Household natural gas	1.6	0.4	0.1	−2.7	−0.4	−3.1	−1.6	−2.5	−3.4	−2.1
Other household operations	3.7	3.9	3.5	4.5	4.6	4.0	3.9	4.0	3.6	3.6
Transportation services	4.0	3.5	−0.6	4.5	4.1	3.7	3.4	3.6	3.3	3.2
Other services	3.9	3.1	4.0	3.7	4.0	3.2	3.7	3.4	2.9	3.6
Total services	4.2	3.8	3.5	3.5	3.6	3.1	3.4	3.2	2.8	3.3

SOURCE: Historical data are from table 2.5 of the National Income and Product Accounts Tables, Bureau of Economic Analysis.

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73 period and 4.0 percent in the 1973–82 span. This represents real spending of $438 per person for clothing and shoes in 1995, compared with $280 in 1973 and $363 in 1982. The baby boom of the fifties powered much of the demand for clothing purchases of the sixties and seventies. The baby bust of the sixties will mean, for the nineties, a smaller proportion of the population in the 16- to 44-year-old group, accounting for 43 percent in 1995 versus 46 percent in 1982; individuals in this age group are major purchasers of clothing and shoes.

Due to continuing conservation, the downsizing of cars, and expected increases in relative energy prices, energy consumption stays at low levels through 1995. In 1982, the average miles-per-gallon for new domestic cars was 26.7, while by 1995, this figure is expected to jump to 41.7. Thus, only slight growth of 0.9 percent per year is projected for gasoline and oil purchases in the 1982–95 period. Since the energy crisis of the 1970's, consumption of fuel oil and coal for household heating and cooling has dropped substantially in response to relative price increases. Although the downward trend is expected to reverse in 1984, consumption will probably not return to its previous levels, at least not in the projection period. Average annual growth of 1.7 percent is projected for fuel oil and coal during the 1982–95 period.

Drugs and medical sundries is the only category of nondurables expected to show rapid growth during the projection period. Because of continued demand growth and the introduction of new kinds of products, a strong increase of 6.0 percent per year is projected between 1977 and 1995.

Consumer purchases of services have been becoming a more important budget item historically, and this trend is expected to continue to 1995. The growth of services purchases is broadly based; with the exception of natural gas purchases, all categories of services are expected to increase by at least 2.9 percent per year between 1982 and 1995.

Consumer expenditures for housing, which include rent paid by tenants and an imputed rental value of owner-occupied housing, have been an increasing share of total PCE over time, rising from 14.7 percent in 1968 to 16.3 percent in 1977, and to 17.7 percent in 1982. By 1995, housing expenditures are expected to exceed food expenditures and become the largest consumption category. The increase in housing demand is in response to changes in household formation rates—a trend toward single-person households, and a decrease in family size from 3.0 persons in 1973 to 2.6 in 1982, and to 2.4 in 1995. Stable growth of 2.9 percent per year in housing expenditures is projected for the 1982–95 period.

Since the early 1970's, demand for electric power has increased, consistently outpacing growth in GNP. In contrast, demand for natural gas has continued to decrease. This shift reflects diminished natural gas supplies and price hikes that have caused electricity to become the principal alternative energy source. During the past 2 years, retail natural gas prices rose by 40 percent (in nominal terms) in some parts of the Nation, and industry experts predict a sharp rise of 16 percent for the 1984 winter heating season. These trends of increased availability of electricity and decreased use of natural gas are expected to continue through 1995. Demand for electricity will grow 3.4 percent per year in the 1982–95 period, while demand for natural gas will fall at a rate of −2.5 percent.

Purchases of telephone and telegraph services by consumers are expected to grow substantially over the projection span. This reflects the increased use of modern communication systems, such as call-waiting and call-forwarding services, long-distance calling and related telecommunication systems, and the computerized telephone. In addition, cable television services have been expanding rapidly during recent years; spending on cable television services in 1982 was more than triple that in 1977. This trend is expected to continue in the next decade. Also contributing to increasing relative expenditures for communications services is the divestiture proceeding currently underway for the major supplier of these services. Communications services are projected to grow at an annual rate of 5.2 percent between 1982 and 1995.

The large increases projected in medical care services are affected by continued growth in the percentage of the population over age 65, who need more health care than the general population, and by the increasing availability of new, sophisticated, and expensive medical treatment equipment. In addition, demand for medical services seems to be relatively immune to the effects of price increases. Medical spending is projected to grow to 8.3 percent of PCE in 1995, compared to 7.0 percent in 1977.

Investment. Gross investment is expected to continue to exhibit its traditional volatility during the projection period. Accounting for 17.3 percent of GNP in 1973, gross private domestic investment (GPDI) accounted for only 13.1 percent by 1982, primarily because of the disastrous effects of high inflation and the recessions of the 1970's and early 1980's on housing construction. By 1990, investment accounts for 16.0 percent of GNP, reflecting growing expenditures for equipment and the projected housing recovery. The share declines slightly to 15.6 percent of GNP by 1995 as housing construction hits a plateau.

Equipment purchases are expected to grow at a 3.5-percent rate between 1982 and 1995, well above the 2.4-percent rate of the 1973–82 period. Although still well below the

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rate of growth of producers' durable equipment (PDE) purchases during the 1960's, this has important implications for productivity.

In terms of industries, computers and peripheral equipment are projected to rise from 8 percent of producers' durable equipment expenditures in 1977 to 20 percent in 1995. Despite the rapid growth by the computer industry during the 1970's, more is still expected, brought on by advances in microchip technology. These developments should continue to bring down the price of computers, making them available to even the smallest businesses. Large computers with speeds many times faster than the fastest now available will find expanded uses, and will also be purchased by large companies to replace existing equipment.

Investment spending on motor vehicles and aircraft is projected to grow less rapidly than total outlays for producer's durables as companies do little more than replace equipment that wears out. Moderate growth in the agricultural sector translates into moderate investment in farm machinery. Developments such as laser systems, data communications, and electronic mail will result in rapid growth in investment in radio and telephone equipment.

The nonresidential construction market suffered its setback in the mid-1970's and has, to some extent, already anticipated the recovery foreseen for the residential market. Growth in nonresidential construction is expected to average 2.1 percent each year between 1982 and 1995. Growth of expenditures for industrial structures is expected to exceed 5.0 percent annually over the entire period, more than offsetting the very slow growth expected for commercial office buildings.

Housing. The residential construction market is projected to recover strongly from its depressed condition of the last several years. Private housing starts are expected to rise from the 1982 level of 1.06 million units to a peak of 2.16 million in 1988. Thereafter, growth moderates and housing starts stabilize at about 1.9 million units annually to 1995.

Hardest hit during the last several years have been single-family housing starts. In 1982 and 1983, government subsidy programs encouraged multifamily construction projects and, as a result, multifamily starts constituted almost 37 percent of total starts in 1982. Projected stronger growth in the single-family construction area means that one-unit houses will account for 66.5 percent of starts, with multifamily units dropping to 33.8 percent, by 1988. By 1995, single-family starts are 65.8 percent of total starts. Mobile homes are projected to grow at a rate of 5.9 percent annually, 1982–90, and at a 2.5-percent rate between 1990 and 1995.

Exports and imports. The assumption that our major trading partners will recover strongly from the current worldwide recession underlies the strong growth projected for U.S. exports of goods and services—4.1 percent annually between 1982 and 1990, accelerating to 5.2 percent each year, 1990–95. By end-use categories, the expected growth is broadly based, as depicted in table 4.

Merchandise exports are expected to grow at an annual rate of 5.3 percent over the projection period, led by consumer goods with average growth of 6.9 percent. In dollar values, capital goods are expected to show the largest increases—$24.2 billion, or nearly one-third of the total increase. Growth in exports of consumer goods and capital goods reflects the expectation that U.S. trade will move toward developing countries in the long run because those countries tend to require goods with higher technological inputs, such as electronic computers and parts, aircraft and parts, telephonic and other electrical apparatus, and medicinal and pharmaceutical preparations. By 1995, computers are expected to be the leading export industry, reaching 5.3 percent of total exports with a growth rate of 8.4 percent per year from 1977 to 1995. Exports of telephone and telegraph apparatus show the highest annual rate of increase—10.9 percent—over the 1977–95 period. The category of food, feeds, and beverages will continue to account for a sizable share of U.S. exports in coming years, but it will grow at a slower rate. The following table highlights those industries with the best expected export performance:

The five largest export industries, 1995:	*Percent of total exports*
Computers	5.3
Food and feed grains	4.2
Aircraft	3.6
Electronic components	3.4
Motor vehicles	3.3
The five fastest growing export industries, 1977–95:	***Annual percent growth rate***
Telephone and telegraph apparatus.	10.9
Communications	10.3
Floor covering mills	8.9
Furniture and fixtures	8.5
Computers	8.4

Imports are projected to grow at an average rate of 3.0 percent annually between 1982 and 1995. Merchandise imports will exhibit more rapid growth of 3.8 percent. Over the 1980–82 period, petroleum imports dropped by $1.8 billion, or 14 percent, as a result of both the U.S. recession and continuing efforts to conserve energy. Increasing imports of petroleum during the projection period result from falling domestic production and some increase in demand. Domestic oil production is expected to continue to decline somewhat, dropping from 9.9 million barrels per day in 1982, and stabilizing at 9.5 million by 1990. In real terms, the barrel price of oil is assumed to reach $52 by 1995, a price rise which is accounted for by general inflationary expectations. Thus, overall demand for petroleum tends to increase without the price constraints evident during the

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Table 4. Foreign trade by end-use categories, 1968, 1973, 1977, 1982, and projected to 1990 and 1995

[Billions of 1972 dollars]

Category	1968	1973	1977	1982	1990			1995		
					High	Moderate	Low	High	Moderate	Low
Net exports	$ 1.9	$15.5	$ 22.0	$ 28.9	$ 34.1	$ 48.8	$ 83.0	$ 22.8	$ 85.9	$148.4
Net merchandise	−1.9	1.5	0.9	1.7	−8.2	7.7	35.8	−21.5	28.9	72.9
Net services	3.8	14.0	21.1	27.2	42.3	41.1	47.2	44.3	57.0	75.6
Total exports	61.2	97.3	112.9	147.3	206.7	202.3	206.5	261.7	260.0	267.9
Merchandise	39.0	61.2	68.0	81.4	118.7	119.8	125.7	146.5	158.7	171.9
Foods, feeds, and beverages	5.5	9.7	10.5	14.5	21.1	20.1	20.1	30.1	28.3	28.4
Industrial supplies and materials	12.3	17.1	16.8	21.7	33.8	34.6	35.3	41.3	45.1	45.9
Capital goods, excluding autos	13.3	21.3	24.1	28.4	39.6	40.9	43.6	45.4	52.6	59.5
Automobiles	4.1	6.4	7.9	5.4	7.3	7.9	9.7	7.2	10.5	13.9
Consumer goods	2.7	4.4	6.1	7.4	12.9	12.5	13.1	17.5	17.6	19.6
Other goods	1.0	2.3	2.6	4.0	4.0	3.9	3.9	4.9	4.6	4.6
Services	22.3	36.1	44.9	65.9	88.0	82.5	80.9	115.2	101.3	96.0
Total imports	59.3	81.8	90.9	118.4	172.6	153.5	123.5	238.9	174.1	119.4
Merchandise	40.9	59.7	67.1	79.7	126.9	112.1	89.9	168.0	129.8	99.0
Foods, feeds, and beverages	6.5	7.4	6.9	7.2	12.5	11.5	10.3	14.7	13.2	10.7
Industrial supplies, excluding petroleum	14.0	16.5	17.8	16.3	25.8	22.8	20.4	29.0	23.3	20.7
Petroleum and petroleum products	2.8	6.6	9.0	5.1	9.5	8.9	8.4	13.3	12.7	12.5
Capital goods, excluding autos	3.9	7.2	9.0	18.9	28.3	24.9	16.9	44.1	29.6	19.2
Automobiles and parts	5.4	8.9	10.6	11.5	17.0	14.9	12.5	20.1	17.1	16.1
Consumer goods	6.8	11.4	12.5	17.9	30.1	25.4	17.8	42.6	29.7	15.6
Other goods	1.4	1.7	1.5	2.9	3.7	3.7	3.7	4.2	4.2	4.2
Services	18.5	22.1	23.8	38.7	45.7	41.4	33.6	70.9	44.3	20.4
	Percent distribution									
Total exports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Merchandise	63.7	62.9	60.2	55.3	57.4	59.2	60.9	56.0	61.0	64.2
Foods, feeds, and beverages	9.0	10.0	9.3	9.8	10.2	9.9	9.7	11.5	10.9	10.6
Industrial supplies and materials	20.1	17.6	14.9	14.7	16.4	17.1	17.1	15.8	17.3	17.1
Capital goods, excluding autos	21.7	21.9	21.3	19.3	19.2	20.2	21.1	17.3	20.2	22.2
Automobiles	6.7	6.6	7.0	3.7	3.5	3.9	4.7	2.8	4.0	5.2
Consumer goods	4.4	4.5	5.4	5.0	6.2	6.2	6.3	6.7	6.8	7.3
Other goods	1.6	2.4	2.3	2.7	1.9	1.9	1.9	1.9	1.8	1.7
Services	36.4	37.1	39.8	44.7	42.6	40.8	39.2	44.0	39.0	35.8
Total imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Merchandise	69.0	73.0	73.8	67.3	73.5	73.0	72.8	70.3	74.6	82.9
Foods, feeds, and beverages	11.0	9.0	7.6	6.1	7.2	7.5	8.3	6.2	7.6	9.0
Industrial supplies, excluding petroleum	23.6	20.2	19.6	13.8	14.9	14.9	16.5	12.1	13.4	17.3
Petroleum and petroleum products	4.7	8.1	9.9	4.3	5.5	5.8	6.8	5.6	7.3	10.5
Capital goods, excluding autos	6.6	8.8	9.9	16.0	16.4	16.2	13.7	18.4	17.0	16.1
Automobiles and parts	9.1	10.9	11.7	9.7	9.8	9.7	10.1	8.4	9.8	13.5
Consumer goods	11.5	13.9	13.8	15.1	17.4	16.5	14.4	17.8	17.1	13.1
Other goods	2.4	2.1	1.7	2.4	2.1	2.4	3.0	1.8	2.4	3.5
Services	31.2	27.0	26.2	32.7	26.5	27.0	27.2	29.7	25.4	17.1

SOURCE: Historical data are from tables 4.2 and 4.4 of the National Income and Product Accounts Tables, Bureau of Economic Analysis.

1970's. Petroleum imports are projected to grow at a rate of 7.3 percent per year between 1982 and 1995.

Imported cars held their own during the 1981–82 recession. Sales of imports were at 2.3 million units in 1982, accounting for 28 percent of all new-car sales. By 1995, annual automobile imports are projected to reach 3.6 million units, or 30 percent of all domestic sales. Average growth of 3.1 percent per year is expected over the 1982–95 period.

Two other categories of imports—capital goods, except autos, and consumer goods—are expected to grow at rates of 3.5 percent and 4.0 percent respectively from 1982 to 1995. In capital goods, electronic equipment and components and business equipment will contribute most of the increase; in consumer goods, nondurable goods imports such as apparel will strengthen total growth. Imported apparel is expected to reach 22 percent of total output (domestic output plus imports) in 1995 versus 11 percent in 1977. Industrial supplies, however, are expected to grow more slowly, achieving a yearly rate of 2.8 percent in the 1982–95 period.

The net result of these projections is a steady increase in real net exports over the period, from $29 billion in 1982 to $86 billion in 1995, boosting the GNP share of net exports from 1.9 percent to 4.0 percent between those years.

Government. More than half of government purchases are from the service industries, as indicated in the following distribution of 1977 government purchases less sales, by industry:

	Federal government		*State and local government*	
Source industry	*Defense*	*Nondefense*	*Education*	*Other*
Total	100.0	100.0	100.0	100.0
Agriculture, mining, and maintenance construction	1.5	−1.7	4.2	5.2
Manufacturing	34.1	27.2	11.2	13.5
Transportation, communications, and public utilities	4.0	3.6	3.5	5.6
Trade	0.9	2.3	−2.7	2.3
Other services	59.5	68.6	83.7	73.4

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Federal employment in both the defense and nondefense areas is assumed to show little growth through 1995. With a steady level of armed forces, compensation falls from one half of defense purchases in 1977 to little more than one-third in 1995. The remainder of defense purchases are mainly from manufacturing industries, and it is in this area that healthy growth is expected. Computers and peripheral equipment purchases will more than triple, while those for radio and communications equipment (which includes lasers) are projected to more than double. Other defense-related industries such as ordnance, missiles, aircraft, ships, and electronic components will account for much of the rest of the purchases.

Only moderate growth is expected in State and local government purchases between 1977 and 1995 as a result of the completion of the highway construction program; the slowdown in Federal grants-in-aid, outside of health; slower growth in the school-age population compared to the increase through the early 1970's; and diminished citizen expectations from government. Because most State and local purchases are for compensation, the expected moderate growth has only minor impacts on other industries. In general, State and local government purchases are expected to mirror the rest of the economy in the industries affected.

Alternatives to moderate growth

The high-growth and low-growth versions of the projections vary the assumptions regarding fiscal and monetary policy. By 1995, real GNP ranges between a low of $2,127 billion and a high of $2,265 billion, accompanied by unemployment rates of 6.8 percent and 5.2 percent for the low and high, respectively. Each of the alternatives is summarized below and estimates from these scenarios are presented with the moderate-growth projections in tables 1 and 2.

High growth. The major assumption in the high scenario is that the Federal Reserve Board pursues a less restrictive monetary policy than in the moderate growth projections. The assumption is that the Board of Governors allows more rapid monetary growth in order to bolster recovery from the 1981–82 recession and to sustain a higher trend growth over the long run.

This less-restrictive monetary policy, coupled with stronger demand growth, leads to somewhat different inflation expectations. The implicit GNP deflator increases at an annual rate of 6.5 percent between 1982 and 1990, 1.1 percent faster than in the moderate-growth version. However, instead of decelerating after 1990, implicit deflator growth begins to pick up, running at 7.2 percent annually to 1995. This is comparable with the rate of inflation during the 1973–77 period.

No real differences were assumed for fiscal policy in the high-growth projection. The higher inflation rates do, however, result in government expenditures growing more rapidly throughout the period. Federal expenditures rise at a rate of 7.8 percent each year between 1982 and 1995 as compared to the moderate-growth expenditures increase of 6.7 percent.

Real GNP grows at an average annual rate of 3.9 percent during 1982–85, a 0.6-percent higher rate than in the moderate version. Between 1990 and 1995, GNP rises at the same rate in both the moderate- and high-growth alternatives—2.5 percent annually. This is due primarily to the much higher rate of import growth in the high-trend version which tends to mask greater increases in the other categories of GNP. The GNP in 1995 is about $98 billion higher than in the moderate-growth case.

Major demand differences are in purchases of consumer durables ($37 billion higher), producers' durable equipment ($25 billion higher), and in residential investment ($35 billion higher). As noted above, greater income growth in this version leads to higher levels of imports, while exports are virtually unchanged. Net exports are therefore lower by $63 billion than in the moderate-growth projection. Finally, higher rates of income growth mean greater government revenues, which lead to a balanced Federal budget in 1990.

In the high-trend alternative, the distribution of demand as compared to the moderate version shows no change in the share going to government. Personal consumption expenditures at the total level show little difference, masking the fact that durables increase at the expense of nondurables and services. This follows from the assumption of easier money and lower interest rates, which are major inducements to purchase durables. Lower interest rates also lead to a larger share of GNP going to equipment investment and construction. Increased purchases from manufacturing as a result of higher government, durable goods, equipment, and construction purchases are more than cancelled by the large increase assumed for imports. The drop in the export share of GNP is partially reflected in a slight decline in the agricultural industries share.

Low growth. This alternative simulation assumes higher levels of government spending, especially in defense, but also in transfers and grants. Federal expenditures grow at a rate of 9.4 percent each year between 1982 and 1990 and at 7 percent during the 1990–95 period. This compares to 7.5-percent and 6.1-percent growth over the same periods in the moderate-growth scenario. Defense growth is about 1.5 percent higher each year between 1982 and 1988, reflecting somewhat higher staff levels and greater expenditures on goods. Transfer payments are higher in every category, with the major increase in social security and medicare. As a result of the more aggressive (or less controlled) fiscal policy, the Federal Government runs deficits of about $200 billion for the remainder of the decade, with only modest tapering after 1990 to about $160 billion by 1995.

In addition, the monetary authorities are assumed to be generally more restrictive in order to hold down inflation.

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Both M1 and M2 grow at about 0.6-percent-lower rates than in the moderate-growth projections. As a result, both short- and long-term interest rates are pushed higher, remaining in the double-digit range over the entire forecast period.

The high interest rates and severe competition for funds in the credit markets limits the growth of demand, especially for durable items. Real GNP is $40 billion lower in 1995 than in the moderate-growth case. Personal consumption expenditures are lower by $63 billion and gross private investment is off by $52 billion from the 1995 moderate-growth levels. In a situation analogous to that in the high-growth case, the slower growth in income lowers imports by $55 billion, thus masking, to some extent, the full impact on the domestic economy. Reduced income growth only exacerbates the Federal deficit situation, despite assumed personal tax hikes during the mid- and late-1980's. Dampened capital goods spending leads to lower productivity and job growth over the entire period.

Different assumptions in the low-growth case cause minor variations in the level of GNP, but large internal shifts, as compared to the base case. Tight monetary policy leads to higher interest rates with the expected retarding effect on consumers' and producers' durable goods and on construction—sectors that purchase heavily from manufacturing. However, because imports are assumed to grow at a much slower rate, and defense spending at a faster rate, than GNP, the adverse impact of low demand on manufacturing is alleviated. And lower consumer expenditures and investment do cause trade to represent a larger share of GNP. □

——*FOOTNOTES*——

[1] As part of a continuing program to assess the validity of BLS projections, a future article will evaluate the projections of the U.S. economy for 1980. For previous articles see Howard N Fullerton, Jr., "The 1995 labor force: a first look," *Monthly Labor Review*, December 1980, pp. 11–21; Norman C. Saunders, "The U.S. economy through 1990—an update," *Monthly Labor Review*, August 1981, pp. 18–27; Valerie A. Personick, "The outlook for industry output and employment through 1990," *Monthly Labor Review*, August 1981, pp. 28–41; Max L. Carey, "Occupational employment growth through 1990," *Monthly Labor Review*, August 1981, pp. 42–55; and Howard N Fullerton, Jr., "How accurate were the 1980 labor force projections?," *Monthly Labor Review*, July 1982, pp. 15–21.

[2] *Projections of the Population of the United States: 1982 to 2050, Current Population Reports*, Series P-25, No. 922 (U.S. Bureau of the Census, 1982).

[3] Tables detailing the major assumptions underlying the aggregate projections will be included with reprints of this article.

[4] Trade-weighted average value of the dollar *vis-à-vis* the currencies of major U.S. trading partners.

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The job outlook through 1995: industry output and employment projections

Recovery is expected in construction and durable goods, but services will continue to lead job growth; several heavy industries will not reach past peaks because changing markets and technologies will dampen expansion

VALERIE A. PERSONICK

The Bureau of Labor Statistics' latest projections of industry output and employment indicate that contrary to several popular reports the decade of the 1990's will not see the demise of America's smokestack industries. A sizable portion of the recent factory job loss can be attributed to the 1980–82 recessionary period, and as the economy recovers, heavy manufacturing industries should increase employment. Job gains in manufacturing will account for almost 1 of 6 new jobs between 1982 and 1995. (See table 1.) Manufacturing, which represented 25 percent of all jobs in 1959 but less than 19 percent in 1982, is projected to maintain this steady share throughout the 1982–95 period. (See table 2.)

Because manufacturing job gains primarily reflect a rebound from the low recession levels, much of the growth occurs in the early part of the projection span. About 3 million jobs are projected to be added to factory employment by 1990, but only about 1.3 million between 1990 and 1995. Furthermore, despite the recovery, employment in several key manufacturing industries (for example, autos and steel), are not expected to reach previous peaks, at least not by 1995. A turnaround in demand is projected to boost production in these sectors, but productivity improvements and technological change will limit job expansion.

Despite manufacturing's gains, most new job growth is projected to take place in service-producing industries, as it has in the past. Service-producing industries—broadly defined as transportation, communications, public utilities, trade, finance, insurance, real estate, other services, and government—are projected to account for almost 75 percent of all new jobs between 1982 and 1995.

Within the service-producing sector, the miscellaneous or other service component is projected to continue to grow the fastest. Industries such as medical care, business services, professional services, hotels, personal services, and nonprofit organizations are projected to account for more than 1 of 3 new jobs over the projection span, compared with 1 of 6 for manufacturing industries. In addition, the miscellaneous service sector is expected to have smoother job growth than manufacturing. Because miscellaneous service industries were less impacted by the cyclical downturn, they will not be as dramatically affected by the anticipated economic upswing, leading to smoother employment growth.

These findings are from the Bureau's most recent economic and employment projections for the years through 1995. This study of industry output and employment is one in a series of four; the others describe projections of the labor force, gross national product and the distribution of final demand, and employment by occupation.[1]

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Underlying assumptions and trends

Because of the unlimited range of actual outcomes in the future, three alternative projections to 1995 were prepared with an eye to suggesting a range of possibilities. These three scenarios, characterized as low growth, moderate growth, and high growth, assume various patterns of economic change. Because they are based on a few specific assumptions about macroeconomic variables, they do not represent the actual bounds to output and employment in 1995. Rather, they show what might happen under alternative responses of the economy to changes in fiscal and monetary policies.[2]

Unless otherwise noted, this article discusses the moderate growth projection. This case is marked by a period of recovery from the 1982 recession, followed by stable economic growth through the mid-1990's. The civilian unemployment rate, which was 9.7 percent in 1982, is projected to fall to 6.3 percent by 1990, and then dip slightly to 6.0 percent by 1995. Total employment is expected to rise from 102.3 million in 1982 to 127.6 million by 1995, a gain of more than 25 million new jobs. Growth is projected to be faster in the earlier years, as industries rebound from the recent economic downturn. Employment, which expanded by 3.6 percent a year between 1975 and 1979, showed very few gains during the business slump of 1980 or the brief recovery period thereafter. The more severe recession of 1981–82 brought an additional 1.3-percent decline in total jobs. Employment is projected to rebound, averaging growth of 1.8 percent a year from 1982 to 1990, then slow to 1.5 percent annually through 1995.

The slowdown in employment reflects not only the diminishing of the initial surge caused by recovery but, even more significantly, a continuing slowdown in the rate of growth of the labor force.[3] Following the rapid expansion of the 1970's, labor force growth has begun to taper as the last members of the baby-boom generation reach working age. The slowdown is projected to continue through the 1980's and 1990's, as the decrease in births between 1960 and 1975 will cause an absolute decline in the number of potential new workers ages 16 to 24. The labor force, which grew 2.3 percent a year between 1970 and 1982, is projected to grow 1.6 percent a year to 1990, and 1.0 percent a year thereafter.

Workweek. Somewhat offsetting the effects of slower labor force growth on job creation is the projection of the workweek. Average weekly hours are projected to continue their long-term downward trend. In the short run, average weekly hours, especially in manufacturing, are used to respond to the pressures of the business cycle. At the beginning of an economic downturn, employers cut back on overtime hours before laying off workers, and as the economy improves, overtime hours are added and the workweek extended before new employees are hired. This recovery will be no exception. The factory workweek is projected to expand from 38.9 hours in 1982 to 39.8 hours by 1984; thereafter, the long-term decline will resume, with manufacturing hours averaging 38.8 by 1995. Hours in nonmanufacturing will drop even more rapidly, reflecting both declines in the full-time workweek as well as increases in part-time employment. For the private nonfarm economy as a whole, average weekly hours are projected to fall from 35.1 in 1982 to 33.1 in 1995.

Table 1. Projected job growth, 1982–95

[In thousands]

Industry	1982–95		1982–90		1990–95	
	New jobs	Percent of total	New jobs	Percent of total	New jobs	Percent of total
Total new jobs	25,248	100.0	16,000	100.0	9,248	100.0
Goods-producing:	6,548	25.9	4,350	27.2	2,198	23.8
Farm	−265	−1.0	−163	−1.0	−102	−1.1
Mining	122	.5	39	.2	83	.9
Construction	2,434	9.6	1,472	9.2	962	10.4
Manufacturing	4,257	16.9	3,002	18.8	1,255	13.6
Durable	3,170	12.6	2,224	13.9	946	10.2
Nondurable	1,087	4.3	778	4.9	309	3.3
Service-producing:	18,700	74.1	11,650	72.8	7,050	76.2
Transportation, public utilities	1,094	4.3	659	4.1	435	4.7
Trade	6,009	23.8	3,819	23.9	2,190	23.7
Finance, insurance, and real estate	1,786	7.1	1,214	7.6	572	6.2
Services	8,673	34.4	5,246	32.8	3,427	37.1
Private households	−289	−1.1	−235	−1.5	−54	−.6
Government	1,427	5.7	947	5.9	480	5.2

Productivity. Output per worker hour, or productivity, is projected to return to rates of growth more characteristic of the late 1960's and early 1970's. Between 1968 and 1973, output per hour in the private nonfarm sector grew by 2.0 percent a year. Over the same span, employment and real gross national product also enjoyed rapid growth—2.1 percent for jobs and 3.5 percent for GNP. This period of expansion was followed by years of declining productivity. Between 1973 and 1979, productivity grew by only .9 each year, and between 1979 and 1982 the rate dropped further, to .4 percent. This decline is expected to be reversed, however, as new capital investment, strong demand growth, and more efficient utilization of the slowly growing labor force all contribute to a resurgence in productivity. Output per hour is expected to climb to a 1.6-percent annual growth rate during the 1982–90 period, and then grow at a 1.3-percent annual pace between 1990 and 1995.

For manufacturing alone, productivity gains are projected to be just as dramatic. A 2.2-percent annual rise is projected between 1982 and 1995, compared with 1.5 percent over the 1973–79 period and .7 percent during 1979–82.

It should be noted that rising productivity does not necessarily mean layoffs—as noted, 4.3 million new factory jobs will be added between 1982 and 1995. Productivity advances can be accompanied by employment growth, as the general level of production expands. GNP is projected

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Table 2. Actual and projected employment by major sectors, 1959–95

Sector	1959	1969	1979	1982	1990 Low	1990 Moderate	1990 High	1995 Low	1995 Moderate	1995 High
Employment (in thousands)										
Total	67,705	82,401	102,211	102,315	116,943	118,315	119,399	125,251	127,563	130,299
Farm	5,491	3,495	2,861	2,815	2,630	2,652	2,672	2,500	2,550	2,595
Nonfarm	62,214	78,906	99,350	99,500	114,313	115,663	116,727	122,751	125,013	127,704
Government	8,083	12,195	15,947	15,803	16,830	16,750	17,060	17,180	17,230	17,760
Federal	2,233	2,758	2,773	2,739	3,202	2,989	3,096	3,163	2,960	3,139
State and local	5,850	9,437	13,174	13,064	13,628	13,761	13,964	14,017	14,270	14,621
Private	54,131	66,711	83,403	83,697	97,483	98,913	99,667	105,571	107,783	109,944
Mining	612	501	704	742	775	781	760	842	864	844
Construction	3,825	4,386	5,903	5,491	7,020	6,963	7,052	7,798	7,925	8,004
Manufacturing	16,985	20,469	21,406	19,234	21,686	22,236	22,635	22,963	23,491	24,132
Durable	9,560	12,081	12,989	11,326	13,218	13,550	13,871	14,266	14,496	14,965
Nondurable	7,425	8,388	8,417	7,908	8,468	8,686	8,764	8,696	8,995	9,167
Transportation and public utilities	4,304	4,718	5,534	5,543	6,152	6,202	6,287	6,488	6,637	6,746
Trade	13,245	16,704	22,352	22,536	25,885	26,355	26,649	27,764	28,545	28,859
Finance, insurance, and real estate	2,923	3,864	5,523	5,899	7,021	7,113	6,667	7,607	7,685	7,788
Services	9,663	13,747	20,258	22,617	27,501	27,863	28,225	30,814	31,290	32,203
Private households	2,574	2,322	1,723	1,635	1,443	1,400	1,392	1,295	1,346	1,368
Percent distribution										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Farm	8.1	4.2	2.8	2.8	2.2	2.2	2.2	2.0	2.0	2.0
Nonfarm	91.9	95.8	97.2	97.2	97.8	97.8	97.8	98.0	98.0	98.0
Government	11.9	14.8	15.6	15.4	14.4	14.2	14.3	13.7	13.5	13.6
Federal	3.3	3.3	2.7	2.7	2.7	2.5	2.6	2.5	2.3	2.4
State and local	8.6	11.5	12.9	12.8	11.7	11.6	11.7	11.2	11.2	11.2
Private	80.0	81.0	81.6	81.8	83.4	83.6	83.5	84.3	84.5	84.4
Mining	.9	.6	.7	.7	.7	.7	.6	.7	.7	.6
Construction	5.6	5.3	5.8	5.4	6.0	5.9	5.9	6.2	6.2	6.1
Manufacturing	25.1	24.8	20.9	18.8	18.5	18.8	19.0	18.3	18.4	18.5
Durable	14.1	14.7	12.7	11.1	11.3	11.5	11.6	11.4	11.4	11.5
Nondurable	11.0	10.2	8.2	7.7	7.2	7.3	7.3	6.9	7.1	7.0
Transportation and public utilities	6.4	5.7	5.4	5.4	5.3	5.2	5.3	5.2	5.2	5.2
Trade	19.6	20.3	21.9	22.0	22.1	22.3	22.3	22.2	22.4	22.1
Finance, insurance, and real estate	4.3	4.7	5.4	5.8	6.0	6.0	5.6	6.1	6.0	6.0
Services	14.3	16.7	19.8	22.1	23.5	23.5	23.6	24.6	24.5	24.7
Private households	3.8	2.8	1.7	1.6	1.2	1.2	1.2	1.0	1.1	1.0

Sector	1959–69	1969–79	1979–82	1982–90 Low	1982–90 Moderate	1982–90 High	1990–95 Low	1990–95 Moderate	1990–95 High	1982–95 Low	1982–95 Moderate	1982–95 High
Average annual rate of change												
Total	2.0	2.2	.0	1.7	1.8	1.9	1.4	1.5	1.8	1.6	1.7	1.9
Farm	−4.4	−2.0	−.5	−.8	−.7	−.6	−1.0	−.8	−.6	−.9	−.8	−.6
Nonfarm	2.4	2.3	.1	1.7	1.9	2.0	1.4	1.6	1.8	1.6	1.8	1.9
Government	4.2	2.7	−.3	.8	.7	1.0	.4	.6	.8	.6	.7	.9
Federal	2.1	.1	−.4	2.0	1.1	1.5	−.2	−.2	.3	1.1	.6	1.1
State and local	4.9	3.4	−.3	.5	.7	.8	.6	.7	.9	.5	.7	.9
Private	2.1	2.3	.1	1.9	2.1	2.2	1.6	1.7	2.0	1.8	2.0	2.1
Mining	−2.0	3.5	1.8	.6	.7	.3	1.7	2.0	2.1	1.0	1.2	1.0
Construction	1.4	3.0	−2.4	3.1	3.0	3.2	2.1	2.6	2.6	2.7	2.9	2.9
Manufacturing	1.9	.4	−3.5	1.5	1.8	2.1	1.2	1.1	1.3	1.4	1.5	1.8
Durable	2.4	.7	−4.5	1.9	2.3	2.6	1.5	1.4	1.5	1.8	1.9	2.2
Nondurable	1.2	.0	−2.1	.9	1.2	1.3	.5	.7	.9	.7	1.0	1.1
Transportation and public utilities	.9	1.6	.1	1.3	1.4	1.6	1.1	1.4	1.4	1.2	1.4	1.5
Trade	2.3	3.0	.3	1.7	2.0	2.1	1.4	1.6	1.6	1.6	1.8	1.9
Finance, insurance, and real estate	2.8	3.6	2.2	2.2	2.4	1.5	1.6	1.6	3.2	2.0	2.1	2.2
Services	3.6	4.0	3.7	2.5	2.6	2.8	2.3	2.3	2.7	2.4	2.5	2.8
Private households	−1.0	−2.9	−1.7	−1.6	−1.9	−2.0	−2.1	−.8	−.3	−1.8	−1.5	−1.4

NOTE: Data include wage and salary workers, the self-employed, and unpaid family workers.

to grow 2.9 percent a year between 1982 and 1995, compared with 3.1 percent during the 1969–79 period, and .1 percent during the 1979–82 period. However, it is expected that new labor-saving technologies will cause shifts to occur among industries, with many of the old-line factory jobs giving way to new industries and occupations.

Technology and changing demand. Labor-saving technologies are not the only cause of employment shifts among industries. Another determinant obviously is the demand for an industry's products. It is useful to separate aggregate demand into two categories—final demand and intermediate demand. Final demand includes consumer expenditures,

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government purchases, investment in capital equipment and structures, exports, and imports. Intermediate demand refers to purchases necessary in the production process; for example, final demand by consumers for cars leads to intermediate demand by auto producers for steel, glass, plastic, and so forth.

Intermediate demand changes over time for several reasons. New technology is but one. Other reasons include substitutions necessitated by the changing relative prices of inputs, or scarcity of inputs, or changes in the relative distribution of goods which the industry produces.

Many times, a large increase or decline in demand for one product of an industry can have an impact on the supplying industries, even when the technology is not changing. When this demand change is coupled with a change in the production process, the impact can be even larger.

The energy crisis of the 1970's has led to some of these changes. As gasoline became more expensive, and the Congress mandated better fuel efficiency in domestic cars, the inputs to the production of autos changed. Cars became smaller, taking less steel (and lighter weight steel). Spare tires were replaced with smaller tires, and electronic ignition systems and "computers" were added to make cars more fuel efficient. Also, businesses were forced to be more energy efficient. Over time, they reduced their demand for electricity, gas, and oil by replacing older machines with more efficient models, renovating heating systems, and increasing building insulation.

Some changes occurred because of new technologies, and because these technologies were becoming more affordable. Advances in electronic components and computer chips made small business computers more prevalent and personal computers and video games quite common in private homes. Although this is reflected mainly as a final demand change, these same electronic components led to "smarter" machinery, which can do more. This trend will accelerate in the 1980's—most types of machinery are projected to include electronic components in the future.

Changing intermediate demand also affects the projection of miscellaneous business services. Many firms contract out for the services of this industry—computer software and services, mailing and reproduction services, building services, and personnel, management, and public relations services. As the demand for computers grows, obviously the demand for software will also grow. Businesses are finding that it is more efficient to get specialized services from professionals, instead of trying to do everything in-house.

Another growing component in business overhead is telephone communications. Firms have become increasingly dependent on telephone communication as business travel became more expensive and establishments more geographically spread out. As the capability of computers to "talk" to one another expands, this should become even more important. We have only begun to see the advances which are possible in this industry.

Most machinery is becoming smaller and being built with less steel. This change is reflected in the inputs to most industries, but causes a secondary impact on the demand for iron ore and coal.

Other changes in intermediate demand are not expected to be as large as those just described. The age structure of the population and health concerns are likely to cause some changes in the kinds of foods consumed and how they are packaged—less sugar and salt, more microwave and frozen foods. Food and beverages will be packaged more in plastic and paper products, less in metal cans. Plastics are likely to become even more commonplace and used in a multitude of new ways, as their cost comes down and durability improves. The radial tire and lower annual car mileage should slow down the domestic tire industry. As consumers keep their cars longer, maintenance and repair of vehicles will increase.

A continuation in the substitution of synthetic fibers for natural fibers (cotton and wool) in clothing and textile products is projected, although this trend is expected to slow.

Also projected is a change in how the advertising dollar is spent in the future. There will be a drop in the proportion spent on newspaper advertising, and an increase in that spent on radio and on commercial and cable television. This goes along with the closing of many afternoon newspapers, as the trend to watching news on television increases.

Output and employment: selected industries

Many industries are projected to show very rapid output and employment growth over the next several years but, for a lot of them, growth mainly represents a catchup following the severe 1980–82 recessionary period. (See table 3.) A list of the top 10 growth industries for the 1982–95 period illustrates how the recession and its subsequent recovery can impact the long-range growth outlook. (See table 4.) Several industries are on the list solely because their 1982 level of output or employment was so drastically reduced, and not because they are expected to be the high-growth industries of the 1980's. Examples are iron and ferroalloy ores mining (1982 output was half the 1981 level and employment less than two-thirds), and new construction. In addition, other industries not on the fastest-growing list may have faster growth rates projected for the years from 1982 to 1990 as they recover from recession, but their overall 1982–95 rate is projected to be lower than those industries on the list. Examples are chemical and fertilizer mining, fabricated metal stampings, engines and turbines, material handling equipment, household appliances, and miscellaneous transportation equipment.

New construction, along with the motor vehicle industry, actually led the recent downturn, as high inflation and interest rates constricted purchases of new homes and new cars. As the recession spread to supplier industries and to other areas of the economy, high unemployment and resulting concern over job security added to consumers' re-

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Table 3. Gross product by major sector, actual and projected, 1959–95

Sector	Billions of 1972 dollars									
	1959	1969	1979	1982	1990			1995		
					Low	Moderate	High	Low	Moderate	High
Total private	$629.5	$951.9	$1,326.4	$1,329.4	$1,690.0	$1,753.8	$1,838.4	$1,976.8	$2,001.3	$2,113.3
Farm	27.8	29.5	34.2	39.0	40.6	41.6	41.9	41.8	43.1	43.4
Nonfarm	601.7	922.4	1,292.2	1,290.4	1,649.4	1,712.2	1,796.5	1,935.0	1,958.2	2,069.9
Mining	13.3	18.2	20.8	21.6	24.3	25.1	25.3	26.4	27.0	27.3
Construction	45.5	55.8	58.2	47.7	56.3	64.3	73.2	63.1	73.8	86.5
Manufacturing	171.2	277.2	367.0	336.1	448.4	470.4	490.7	535.5	548.7	572.6
Durable	100.9	170.3	223.4	197.4	280.7	296.1	312.3	344.8	353.4	372.7
Nondurable	70.3	106.8	143.6	138.7	167.7	174.3	178.4	190.7	195.3	199.9
Transportation and public utilities	55.4	92.6	140.0	138.9	192.8	203.3	213.0	234.3	239.7	251.9
Transportation	29.9	43.4	56.3	46.8	60.7	63.6	66.0	71.4	73.0	76.1
Communications	11.5	23.8	49.0	57.2	91.2	97.5	103.5	117.5	120.3	127.8
Public utilities	14.0	25.3	34.7	34.9	40.9	42.2	43.5	45.4	46.4	48.0
Trade	115.4	173.6	250.7	248.0	297.8	314.9	332.4	336.2	353.1	376.3
Wholesale	42.0	70.6	106.5	106.3	126.5	132.6	140.0	142.4	147.8	157.6
Retail	73.4	103.0	144.2	141.7	171.3	182.3	192.4	193.8	205.3	218.7
Finance, insurance, and real estate	98.5	152.9	229.4	251.0	325.4	340.9	351.5	384.6	391.4	405.5
Services	76.9	121.4	184.1	205.6	260.4	270.7	283.5	303.3	307.8	323.9
Government enterprises	11.8	16.8	21.2	21.6	23.2	24.0	24.9	24.5	25.3	26.6
Private households	6.7	5.8	3.6	3.1	2.8	2.9	3.0	2.6	2.8	3.0
Rest of world and statistical discrepancy	7.0	8.1	17.2	16.8	18.0	−4.3	−1.0	24.5	−11.4	−3.7

Sector	Average annual rate of change											
	1959–69	1969–79	1979–82	1982–90			1990–95			1982–95		
				Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Total private	4.2	3.4	0.1	3.0	3.5	4.1	3.2	2.7	2.8	3.1	3.2	3.6
Farm	.6	1.5	4.5	.5	.8	.9	.6	.7	.7	.6	.7	.8
Nonfarm	4.4	3.4	−.0	3.1	3.6	4.2	3.2	2.7	2.9	3.2	3.3	3.7
Mining	3.2	1.3	1.3	1.5	1.9	2.0	1.7	1.5	1.5	1.6	1.8	1.9
Construction	2.1	.4	−6.4	2.1	3.8	5.5	2.3	2.8	3.4	2.2	3.4	4.7
Manufacturing	4.9	2.8	−2.9	3.7	4.3	4.8	3.6	3.1	3.1	3.6	3.8	4.2
Durable	5.4	2.8	−4.0	4.5	5.2	5.9	4.2	3.6	3.6	4.4	4.6	5.0
Nondurable	4.3	3.0	−1.2	2.4	2.9	3.2	2.6	2.3	2.3	2.5	2.7	2.8
Transportation and public utilities	5.3	4.2	−.3	4.2	4.9	5.5	4.0	3.3	3.4	4.1	4.3	4.7
Transportation	3.8	2.6	−6.0	3.3	3.9	4.4	3.3	2.8	2.9	3.3	3.5	3.8
Communications	7.5	7.5	5.3	6.0	6.9	7.7	5.2	4.3	4.3	5.7	5.9	6.4
Public utilities	6.1	3.2	.2	2.0	2.4	2.8	2.1	1.9	2.0	2.0	2.2	2.5
Trade	4.2	3.7	−.4	2.3	3.0	3.7	2.5	2.3	2.5	2.4	2.8	3.3
Wholesale	5.3	4.2	−.1	2.2	2.8	3.5	2.4	2.2	2.4	2.3	2.5	3.1
Retail	3.4	3.4	−.6	2.4	3.2	3.9	2.5	2.4	2.6	2.4	2.9	3.4
Finance, insurance, and real estate	4.5	4.1	3.0	3.3	3.9	4.3	3.4	2.8	2.9	3.3	3.5	3.7
Services	4.7	4.3	3.8	3.0	3.5	4.1	3.1	2.6	2.7	3.0	3.2	3.6
Government enterprises	3.6	2.4	.6	.9	1.3	1.8	1.1	1.1	1.3	1.0	1.2	1.6
Private households	−1.4	−4.7	−4.9	−1.1	−.9	−.3	−1.4	−.8	−.3	−1.2	−.9	−.3
Rest of world and statistical discrepancy	1.5	7.8	−.8	.9	(1)	(1)	6.4	−21.3	−29.9	2.9	(1)	(1)

[1]Not computable.

SOURCE: Historical data are from the U.S. Department of Commerce, Bureau of Economic Analysis.

luctance to make major spending commitments. Investment in residential construction and motor vehicle production each dropped by almost a third between 1979 and 1982.

Employment is projected to fare better in 1983 and succeeding years. As unemployment falls and the economy recovers, many durable goods industries will at first rebound strongly and then eventually resume long-term growth patterns. Some sectors, however, will not be able to recover to long-term growth paths, as changing markets and technologies crimp expansion. (See table 5 for employment by industry.)

Recovery in construction. Housing starts plunged from 2 million units in 1978 to fewer than 1.1 million in 1982, the result of high interest rates which drove many families out of the market for a new home. Pent-up demand will spur new home sales as interest rates fall, but by the late 1980's, a slowdown in the rate of new household formation will dampen these demand pressures. New housing starts are projected to climb steadily to 2.2 million by 1988, but then taper to 1.9 million by 1995.

While new housing construction was in a severe slump, maintenance and repair construction was buoyant. As one might expect, the inability to purchase a new house led many consumers to renovate their present dwellings. In addition, high oil prices and energy tax credits resulted in substantial investments in energy conservation measures. The output of maintenance and repair construction (almost two-thirds of which is for residences) rose 4.6 percent a year from 1979 to 1981, more than three times as fast as its long-term expansion rate of 1.5 percent. Employment dropped in 1982 as the industry succumbed to the general economic recession. A turnaround is projected, with the output of maintenance and repair construction projected to grow 2.2 percent a year through 1995.

Unlike new residential construction, nonresidential construction suffered a setback in the mid-1970's, and has already begun the recovery anticipated for homebuilding. A 2.1-percent growth rate is projected for nonresidential construction between 1982 and 1995. Growth of industrial

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structures such as plants and utilities will exceed 5 percent a year, while commercial buildings and other structures will grow much more slowly.

Total employment in new and repair construction peaked at 5.9 million in 1979, but fell to 5.5 million in 1982. The job picture will brighten as the industry recovers, with employment projected to reach 7.9 million by 1995. Growth will be faster between 1982 and 1990, rising 3.0 percent a year, then taper to a 2.6-percent annual rate between 1990 and 1995.

Construction-related industries. Output and employment trends in many construction-related industries mirror the patterns just described. Logging, sawmills, planing mills, and other wood product industries, which are heavily dependent on residential construction, suffered sizable output and employment losses between 1979 and 1982. These industries as a group took a 20-percent job cutback over that period. As residential construction improves, jobs in wood products industries should reappear. Employment is projected to grow 2.0 percent a year from 1982 to 1990 and .6 percent a year during the 1990–95 period. Almost all the growth is projected to be in millwork and plywood shops. Employment in logging, sawmills, and planing mills, which had been declining slightly even before the recession, will hold about level.

Most other construction-related industries will also show recovery from 1982's depressed levels. Included in this group are stone and clay products, fabricated structural metal, electric lighting and wiring, household appliances, furniture, and mobile homes. Most of the rebound occurs by 1988 or 1989, after which growth tapers off.

Motor vehicles. Like home construction, the motor vehicle industry was hit especially hard by high inflation and interest rates. The value of domestic production was cut by one-fourth in 1980, followed by an additional 10-percent drop in 1982. Workers in the industry suffered massive layoffs—284,000 jobs were lost over the 3-year span, with employment falling to a level of 707,000 by 1982 from 991,000 in 1979.

Consumers are projected to increase demand for motor vehicles as interest rates fall. New car sales are expected to climb to more than 12 million vehicles per year by 1988, compared with just 8 million in 1982.

After the catchup from 1982's depressed sales levels, however, new car sales are projected to plateau because of long-term demographic shifts which have already begun. The large numbers of new car buyers who flooded showrooms in the 1970's to purchase their first cars are now in older age groups. This surge of first-time buyers will not be seen again, at least not for several decades.

Imported autos held steady throughout the recession at 2.3 million units, as the drop in purchases occurred solely among domestic models. Imports are projected to stabilize at 3.6 million units, or 30 percent of all new car sales after 1989, as more foreign automakers open plants in the United States.

Flat demand after the recovery period, foreign competition, and new automated methods of production do not bode well for employment in the auto industry. Only 127,000 of the 284,000 jobs lost between 1979 and 1982 are projected to be recovered by 1990. After 1990, employment increases will be moderate through 1995. The projected 1995 level of 860,000 jobs for the motor vehicle industry falls short of the 1 million peak recorded in 1978.

High-tech industries. BLS has developed three definitions of high technology industries based on the utilization of workers in technology-oriented occupations and on expenditures for research and development.[4] In addition, some judgments were made to include or exclude industries based on the major product or activity of the industry. Whichever definition is used, employment in high technology industries is projected to increase faster than total employment between 1982 and 1995; however, the contribution of high-tech industries to total job growth will be relatively small. Under the broadest of the three definitions, high-tech industries account for 17 percent of all new jobs between 1982 and 1995; under the second definition, they account for 8 percent; while under the narrowest definition, they represent slightly more than 3 percent. These ratios are about in line with the industries' share of new jobs over the previous decade.

Projected employment growth rates vary widely among high-technology industries. Computer and data processing services and research and development laboratories, the only nonmanufacturing industries in the group, will show some

Table 4. Projected employment changes for selected industries, 1982–95

Industry	Average annual rate of change		
	1982–95	1982–90	1990–95
Fastest growing:			
Medical and dental instruments	4.3	3.2	6.1
Business services	3.9	4.1	3.6
Iron and ferroalloy ores mining	3.9	5.7	1.1
Computers and peripheral equipment	3.8	4.0	3.4
Radio and television broadcasting	3.8	4.2	3.0
Other medical services	3.8	3.6	4.0
Plastic products	3.5	4.1	2.4
Scientific and controlling instruments	3.4	3.2	3.7
Electronic components	3.2	3.6	2.7
New construction	3.1	3.3	2.8
Most rapidly declining:			
Leather tanning and industrial leather	−3.3	−2.3	−4.9
Dairy products (processed)	−2.3	−2.1	−2.6
Wooden containers	−2.3	−2.3	−2.2
Leather products, including footwear	−2.2	−2.4	−1.9
Tobacco manufacturers	−2.1	−1.2	−3.4
Bakery products	−2.0	−1.0	−3.7
Railroad transportation	−1.6	−1.8	−1.2
Cotton	−1.5	−1.5	−1.5
Private households	−1.5	−1.9	−.8
Dairy and poultry products (farm)	−1.3	−1.4	−1.3

NOTE: Data include wage and salary workers, the self-employed, and unpaid family workers.

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Table 5. Actual and projected employment by industry, 1959–95

[In thousands]

Industry	Actual				Projected					
					1990			1995		
	1959	1969	1979	1982	Low	Moderate	High	Low	Moderate	High
Agriculture:										
Dairy and poultry products	1,551	813	463	429	378	384	387	344	360	367
Meat animals and livestock	979	756	544	524	474	473	475	439	445	450
Cotton	565	172	60	61	55	54	55	50	50	51
Food and feed grains	960	635	602	603	585	589	593	571	577	585
Other agricultural products	1,436	1,119	1,192	1,198	1,138	1,151	1,162	1,096	1,118	1,141
Mining:										
Iron and ferroalloy ores mining	33	30	31	16	25	25	22	25	26	23
Copper ore mining	23	34	33	25	27	27	26	33	35	36
Nonferrous metal ores mining, except copper	31	25	38	34	34	34	33	35	34	34
Coal mining	201	138	261	242	299	286	275	310	317	322
Crude petroleum and natural gas (except drilling)	200	157	212	311	275	291	282	332	338	307
Stone and clay mining and quarrying	105	99	104	90	85	87	92	72	77	87
Chemical and fertilizer mineral mining	19	18	25	24	31	31	31	35	35	35
Construction:										
New construction (including oil well drilling)	3,163	3,594	4,679	4,067	5,242	5,263	5,366	5,936	6,043	6,091
Maintenance and repair construction	662	792	1,224	1,424	1,778	1,700	1,685	1,861	1,882	1,912
Manufacturing:										
Durable goods:										
Ordnance	50	175	73	79	90	87	88	88	85	90
Complete guided missiles and space vehicles	94	107	81	105	130	130	127	149	140	143
Logging	143	138	150	126	130	131	133	124	128	130
Sawmills and planing mills	305	230	237	179	192	196	210	206	209	215
Other millwork, plywood, and wood products	261	310	394	317	400	406	416	414	419	427
Wooden containers	43	36	19	15	12	12	13	10	11	12
Household furniture	259	316	329	270	334	346	368	346	357	392
Furniture and fixtures, except household	124	153	176	180	193	199	205	200	206	208
Glass	153	188	202	173	198	201	205	211	212	214
Cement and concrete products	209	228	255	209	222	240	250	215	240	257
Structural clay products	78	64	52	34	35	37	39	29	30	33
Pottery and related products	49	45	52	40	44	45	46	46	49	50
Other stone and clay products	125	140	165	132	156	164	173	175	182	191
Blast furnaces and basic steel products	588	644	571	394	420	435	430	433	447	444
Iron and steel foundries and forgings	269	312	324	221	247	255	258	264	270	275
Primary copper and copper products	137	160	161	135	157	160	164	166	170	178
Primary aluminum and aluminum products	111	153	170	140	167	174	175	168	178	183
Primary nonferrous metals and products	78	93	93	80	83	84	86	83	85	90
Metal containers	75	87	80	64	67	69	70	61	62	66
Heating apparatus and plumbing fixtures	71	76	76	61	72	73	80	77	78	88
Fabricated structural metal products	344	440	535	461	537	572	598	563	619	664
Screw machine products	88	114	117	92	112	115	117	118	121	122
Metal stampings	189	255	245	187	234	249	253	236	252	259
Cutlery, handtools, and general hardware	135	165	185	143	177	184	188	198	200	204
Other fabricated metal products	231	315	376	331	388	414	413	399	430	436
Engines, turbines, and generators	90	112	145	113	151	152	152	165	167	170
Farm machinery	128	141	184	139	164	170	173	167	172	178
Construction, mining, and oilfield machinery	162	202	276	254	315	321	325	343	357	368
Material handling equipment	65	95	106	87	110	113	120	123	125	136
Metalworking machinery	251	347	379	319	371	388	393	373	400	415
Special industry machinery	164	206	205	176	206	207	211	210	213	221
General industrial machinery	221	291	329	288	336	342	343	350	356	362
Other nonelectrical machinery	166	246	313	292	323	331	341	339	345	362
Computers and peripheral equipment	111	224	339	428	586	586	593	665	694	706
Typewriters and other office equipment	28	52	59	47	55	60	64	67	69	73
Service industry machines	97	147	188	159	190	199	211	208	214	232
Electric transmission equipment	157	207	221	215	235	245	246	246	256	263
Electrical industrial apparatus	176	223	251	206	255	261	275	284	288	313
Household appliances	157	187	178	142	175	183	193	185	188	202
Electric lighting and wiring	134	205	225	187	229	239	246	251	253	253
Radio and television receiving sets	114	156	116	93	95	106	110	106	113	116
Telephone and telegraph apparatus	105	146	165	148	177	185	199	208	209	230
Radio and communication equipment	252	409	357	424	452	433	440	532	460	463
Electronic components	213	394	525	561	725	745	793	862	850	855
Other electrical machinery and equipment	111	125	176	153	162	170	180	192	194	209
Motor vehicles	696	912	991	707	794	834	828	847	860	871
Aircraft	722	805	632	629	716	680	664	761	709	701
Ship and boat building and repair	151	193	230	223	260	254	248	277	270	263
Railroad equipment	41	51	74	37	45	47	47	47	50	52
Motorcycles, bicycles, and parts	9	14	20	14	17	18	19	19	20	21
Other transportation equipment	23	89	103	74	87	96	108	104	109	121
Scientific and controlling instruments	166	195	215	226	294	292	292	345	349	359
Medical and dental instruments	45	82	144	158	205	203	210	270	272	274
Optical and ophthalmic equipment	85	75	81	77	83	86	89	88	92	98
Photographic equipment and supplies	69	111	134	140	167	169	173	175	177	184
Watches, clocks, and clock-operated devices	30	35	28	18	22	22	23	23	21	22
Jewelry and silverware	67	78	92	76	75	82	88	96	98	109
Musical instruments and sporting goods	116	149	145	130	134	140	144	143	146	150

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Table 5.Continued— Actual and projected employment by industry, 1959–95

[In thousands]

Industry	Actual				Projected					
					1990			1995		
	1959	1969	1979	1982	Low	Moderate	High	Low	Moderate	High
Other manufactured products	229	233	245	218	210	214	224	216	218	238
Nondurable goods:										
Meat products	324	344	363	352	359	357	359	368	372	380
Dairy products	326	260	189	171	137	144	156	119	127	131
Canned and frozen foods	249	291	316	293	331	335	341	336	341	353
Grain mill products	139	137	147	135	143	145	145	140	144	147
Bakery products	313	286	238	227	203	210	209	164	174	177
Sugar	38	36	31	29	30	30	31	27	28	30
Confectionery products	79	87	80	73	77	78	80	69	71	76
Alcoholic beverages	107	97	86	87	83	86	85	76	80	83
Soft drinks and flavorings	111	142	153	145	164	168	169	159	167	171
Other food products	144	151	160	152	171	171	168	177	182	182
Tobacco manufacturing	95	83	70	68	61	62	64	50	52	58
Fabric, yarn, and thread mills	619	616	531	442	448	461	457	471	474	482
Floor covering mills	39	58	61	49	52	56	63	57	58	62
Other textile mill products	74	82	71	60	69	72	75	65	67	74
Hosiery and knit goods	221	251	227	205	207	218	218	224	236	240
Apparel	1,100	1,244	1,125	1,009	1,056	1,074	1,061	1,117	1,125	1,093
Other fabricated textile products	143	182	198	171	220	223	228	234	238	243
Paper products	415	483	494	475	513	516	524	526	533	551
Paperboard	175	231	214	189	190	201	209	179	192	208
Newspaper printing and publishing	328	376	432	445	492	494	491	517	535	543
Periodical and book printing and publishing	156	210	230	248	296	298	304	330	338	344
Other printing and publishing	446	550	640	668	733	758	751	745	789	803
Industrial inorganic and organic chemicals	260	296	328	329	362	358	353	371	379	381
Agricultural chemicals	54	65	70	65	81	84	84	82	88	93
Other chemical products	82	124	99	95	107	111	121	116	120	121
Plastic materials and synthetic rubber	81	108	100	89	110	114	119	113	116	124
Synthetic fibers	79	132	112	97	110	116	124	121	124	134
Drugs	106	143	193	199	253	254	252	276	281	284
Cleaning and toilet preparations	89	123	140	147	166	168	166	167	176	178
Paints and allied products	62	72	69	62	68	71	72	65	70	73
Petroleum refining and related products	217	182	210	202	185	183	182	179	182	183
Tires and inner tubes	105	119	127	105	100	102	104	101	104	108
Rubber products except tires and tubes	178	162	167	140	147	151	157	146	150	159
Plastic products	94	320	494	460	565	636	653	654	716	741
Leather tanning and industrial leather	36	29	20	19	15	16	16	11	12	14
Leather products including footwear	341	316	232	206	166	170	172	147	154	144
Transportation:										
Railroad transportation	930	651	559	433	353	373	429	327	351	377
Local transit and intercity buses	311	315	303	314	345	341	345	350	361	385
Truck transportation	1,001	1,214	1,555	1,454	1,720	1,701	1,702	1,750	1,774	1,793
Water transportation	239	234	222	206	197	210	214	204	214	216
Air transportation	184	357	443	450	522	532	528	561	568	573
Pipeline transportation	24	18	20	22	22	24	25	24	24	27
Transportation services	70	111	198	224	261	269	250	295	302	302
Communications:										
Radio and television broadcasting	90	131	191	221	301	308	292	355	357	359
Communications except radio and television	749	919	1,121	1,199	1,384	1,379	1,434	1,543	1,593	1,603
Public utilities:										
Electric utilities, public and private	430	460	608	684	686	712	714	730	740	746
Gas utilities, excluding public	215	220	220	230	220	218	219	205	207	211
Water and sanitary services, except public	61	88	94	106	140	133	135	144	147	154
Trade:										
Wholesale trade	3,349	4,163	5,507	5,585	6,162	6,298	6,387	6,622	6,734	6,745
Eating and drinking places	1,960	2,812	4,864	5,159	5,908	5,951	5,959	6,669	6,742	6,772
Retail trade, except eating and drinking places	7,936	9,729	11,981	11,792	13,815	14,106	14,303	14,473	15,070	15,342
Finance, insurance, and real estate:										
Banking	644	987	1,498	1,655	1,954	1,954	1,968	2,098	2,120	2,146
Credit agencies and financial brokers	389	652	901	1,038	1,313	1,350	1,364	1,507	1,518	1,549
Insurance	1,137	1,370	1,750	1,870	2,187	2,169	2,168	2,237	2,272	2,307
Real estate	753	855	1,374	1,336	1,567	1,640	1,168	1,764	1,774	1,787
Services:										
Hotels and lodging places	868	1,065	1,549	1,693	1,914	1,915	1,891	2,004	2,010	2,034
Personal and repair services	1,157	1,232	1,239	1,305	1,466	1,519	1,621	1,547	1,592	1,734
Barber and beauty shops	538	634	632	624	652	660	685	707	733	760
Miscellaneous business services	814	1,691	3,178	3,743	4,951	5,172	5,331	6,148	6,183	6,229
Advertising	121	134	165	186	213	218	221	228	234	238
Miscellaneous professional services	746	1,046	1,814	2,147	2,573	2,640	2,620	2,916	3,004	3,099
Automobile repair	422	569	839	910	965	1,029	1,101	1,113	1,141	1,186
Motion pictures	228	248	311	310	325	315	316	323	326	337
Amusements and recreation services	372	497	769	870	1,035	1,059	1,082	1,173	1,193	1,248
Doctors' and dentists' services	605	806	1,351	1,503	1,876	1,897	2,036	1,971	2,005	2,095
Hospitals	974	1,776	2,614	3,016	3,895	3,963	3,889	4,471	4,477	4,665
Medical services, except hospitals	303	672	1,431	1,664	2,089	2,208	2,279	2,649	2,688	2,744

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Table 5.Continued— Actual and projected employment by industry, 1959–95

[In thousands]

Industry	Actual				Projected					
					1990			1995		
	1959	1969	1979	1982	Low	Moderate	High	Low	Moderate	High
Educational services (private)	839	1,229	1,721	1,882	2,447	2,157	2,001	2,311	2,396	2,411
Nonprofit organizations	1,331	1,764	2,073	2,095	2,387	2,406	2,449	2,455	2,505	2,606
Private households	2,574	2,322	1,723	1,635	1,443	1,400	1,392	1,295	1,346	1,368
Forestry and fishery products	60	55	83	84	73	79	89	96	92	99
Agricultural, forestry, and fishery services	285	329	489	585	640	623	613	704	711	716
Government enterprises:										
Post office	574	732	661	662	629	597	595	537	581	594
Other federal enterprises	104	152	155	150	182	178	182	182	189	198
Local government passenger transit	71	87	130	173	207	209	215	228	233	251
Other state and local government enterprises	225	351	541	496	610	623	649	700	723	781

NOTE: Data include wage and salary workers, the self-employed, and unpaid family workers.

of the highest annual rates of increase, 5.2 percent and 3.9 percent respectively. Other rapid gainers are medical and dental instruments (4.2 percent), office and computing machines (3.7 percent), electronic components (3.2 percent), and engines and turbines (3.1 percent). On the other hand, the chemical industries as a group and petroleum refining are projected to have much lower growth rates because of oil price effects. In fact, employment in petroleum refining is projected to decline 1.6 percent a year.

Computers. Demand for computers and related equipment such as data storage devices, printers, calculators, and similar items is projected to continue to boom through the 1990's. Computer process control and computer-assisted design and manufacture will be widespread. Purchases of computer equipment will represent about one-fifth of all capital expenditures by businesses, by far their largest item of durable equipment spending. Investment, export, and government demand for computers will soon be supplemented by personal consumption expenditures. Foreign competition, although projected to rise, is not expected to significantly hamper the expansion of domestic output. Imports will continue to represent about 7 percent of total output. The value of domestic production of computers and peripheral equipment is projected to post a 6.9-percent yearly growth rate, ranking it among the top five output gainers.

Employment in computer manufacturing is projected to grow 3.8 percent a year. Productivity gains have typically been very rapid in this industry, and this will continue.

Electronic components. Electronic components are expected to become an even more integral part of consumer and capital goods than they are now. Domestic production will expand by 7.6 percent a year between 1982 and 1995. Imports are projected to grow at about the same rate, keeping the import share of total output of electronic components at about 14 percent. Employment is projected to rise from 561,000 in 1982 to 850,000 by 1995, a 3.2-percent yearly gain.

Communication equipment. Demand for communication equipment such as radios, televisions, telephone apparatus, radar, laser systems, satellites, and similar items will almost double between 1982 and 1995. New telecommunications services required by businesses and consumers will be augmented by increasing defense expenditures, at least in the earlier years. Imports are not expected to make additional inroads into the market but rather are projected to hold a smaller share of total output by 1995.

Employment, on the other hand, will not rise as rapidly as output. Productivity gains have typically been rapid in the manufacture of communications equipment, and this trend will hold. Employment in radio and television set production, which had suffered because of import competition and slack demand for all consumer durables during the recession, is projected to rebound and grow 1.5 percent a year between 1982 and 1995. The 1995 level, however, will still fall far short of the previous peak. Jobs in telephone apparatus manufacturing are projected to grow 2.7 percent a year, while in radio and other communications equipment, productivity advances will limit job gains to .6 percent a year.

Aerospace. Defense demand is also expected to boost production in the aircraft and guided missiles and space vehicles industries. Most of this growth will occur by the mid-1980's, after which real defense expenditures are projected to moderate sharply. Commercial aircraft manufacturers are expected to meet serious competition from foreign producers, both in their domestic and overseas markets. Output of the aircraft industry is projected to expand 1.8 percent a year during 1982–95, while employment grows at a .9 percent rate.

Machinery. Other nonelectrical machinery (besides computers, typewriters, and other office equipment) is projected to experience a strong rebound in demand as businesses begin to invest in new capital equipment. The sector is projected to enjoy a 4.3-percent average rate of output growth

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between 1982 and 1995 (4.8 percent in the early years). Growth of domestic production occurs despite substantial import gains, because projected demand is so strong. Imports are expected to account for larger shares of most nonelectrical machinery industries than they do now, but for no industry will the share top 15 percent.

Leading the gains in domestic output will be engines and turbines and construction, mining, and oilfield machinery. Output of engines and turbines grows rapidly because of expected strong export demand, while the projected rebound in construction spurs demand for construction machinery. The metalworking machinery industry, which produces industrial robots, is projected to expand production by 3.5 percent a year through 1995, compared with declines or marginal growth since the mid-1960's.

Employment in nonelectrical machinery industries is projected to recover from 1982's cutbacks and resume long-term trends. Productivity gains are expected to be more rapid than for the durable goods sector as a whole, but because output also grows faster, there are opportunities for employment recovery. Most nonelectrical machinery industries will record new employment peaks by 1995.

Steel and other primary metals. Because of the strong growth projected for new construction, autos, nonelectrical machinery, and other industrial apparatus, the primary metals industries are expected to expand production over the next several years following the 1980–82 recession. However, recovery is not expected to be complete. Competition from foreign suppliers as well as continued substitution of alternative materials, such as plastics or ceramics, will limit the markets for domestic primary metals producers.

In the steel industry, which once employed 726,000 workers, output dropped by half over the late 1970's and early 1980's, and employment declined to 394,000 by 1982. Many steel mills were closed during the 1975–82 period. Recovery is expected, but neither production nor employment are projected to reach prerecession levels by 1995. Further, the gains in employment are projected to be less rapid than the gains in output, as it is assumed that production can only expand if new technologies such as continuous casting, the direct reduction of iron ore, and the electric arc furnace are used. Minimills which can specialize and use the latest technologies will become more important. Employment in the steel industry is projected to reach 447,000 by 1995.

Two primary metals, copper and aluminum manufacturing, have a better outlook than iron and steel. Demand for copper will be boosted by the rebound in residential construction, while aluminum will enjoy growth as a substitute for steel.

Nondurable goods. Nondurable manufactured goods are projected to experience modest growth over the next decade and a half. Food products industries can expect a 1.9-percent annual rate of increase in output, but little change in total employment from the 1982 level. Some food industries (dairy products, bakery products, sugar, confectionery products, and alcoholic beverages) will actually lose jobs, while others (canned and frozen foods, soft drinks, meat products, grain mill products, and other miscellaneous food items) are projected to post slight job gains.

Clothing purchases are projected to grow 2.6 percent a year between 1982 and 1995, but the share accounted for by imports will almost double, from 11 percent in 1977 to almost 22 percent by 1995. This shift in the site of production will limit employment gains in the industry. Jobs are projected to increase from 1.0 million in 1982 to only 1.1 million in 1995.

Some nondurable sectors are expected to enjoy considerable output growth, such as drugs, chemicals, synthetic fibers, and plastics. Output in each of these industries is projected to grow by more than 4 percent a year. Employment growth in these sectors shows a wider range because of differing projections of productivity—jobs grow by 3.5 percent a year in plastic products (the seventh fastest of all industries studied), but only by 1.4 percent in chemicals.

Miscellaneous services—most new jobs

The miscellaneous service sector will provide the most new job opportunities over the next decade and a half, with about twice as many new jobs as manufacturing. These jobs will be spread among various service industries, from medical care to business and professional services to amusements and recreation. In sum, miscellaneous or "other service" industries will account for more than 31 million jobs in 1995, almost one-fourth of total employment.

Service industries are least affected by cyclical movements, and the recent recession was no exception. While declines in employment were reported for almost every other sector, jobs in the other services sector expanded 3.7 percent a year throughout the 1979–82 recessionary period. Of course, job growth might have been even stronger without the economic downturn, but almost 2.4 million jobs were added in these service industries during the period in which other sectors experienced layoffs.

Business services. The largest industry in the "other service" category, miscellaneous business services, will have the most new jobs between 1982 and 1995. Employment is projected to grow from 3.7 million in 1982 to 6.2 million in 1995. A wide variety of services are included in this sector, such as personnel supply, business consultants (providing management services or public relations advice), janitorial and protective services, and computer and data processing services. All are expected to show rapid growth. Total output for the industry is projected to grow 5.3 percent a year and employment, 3.9 percent. These rates, although among the highest of all industries studied, are still lower than the historical growth rates for the industry. Since 1958, output growth in business services has averaged 9.4 percent

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a year and employment, 7.0 percent. The slowdown is projected to occur as the industry matures and the shift from in-house services to contracting-out by businesses reaches a saturation point.

Professional services. A related industry, miscellaneous professional services, is expected to follow the same trends. More than 850,000 jobs will be added to the sector between 1982 and 1995, but the rate of growth of both output and employment is projected to be smaller than the historical rates. This industry provides legal, engineering, architectural, accounting, and other professional services to businesses. Employment is projected to top 3 million in 1995.

Medical care. A very significant sector in terms of both number of jobs and rate of expansion has been the health field. Jobs in doctors' and dentists' offices more than doubled during the 1960's and 1970's, rising 4.2 percent a year to 1.5 million in 1982. Hospital employment tripled, growing 5.1 percent a year between 1958 and 1982 to 3 million jobs. The other medical services industry had the most rapid growth—jobs in nursing homes and personal care facilities, outpatient clinics run by health maintenance organizations or group health associations, and drug or alcohol rehabilitation centers, increased more than five times, with employment reaching 1.7 million in 1982.

Growth in health care employment was the result of many factors, chief among them the more widespread coverage of private medical insurance and the introduction of government health benefits programs such as medicare and medicaid. The projections assume no change in current law—that government funding will be maintained at its present level, except for changes stemming from inflation.

Inflation in medical care costs poses the greatest uncertainty in the projections of medical services output and employment. While the overall consumer price index has tripled since 1965, the index for medical care services has quadrupled. Despite these sharply increased costs, demand is projected to be even stronger in the projection period, as the population ages and as new, expensive technologies are used in life-saving treatments.

Because of higher costs and the assumption of no new government programs, it is expected that output and employment in medical care services will slow from historical rates. Doctors' and dentists' office jobs are projected to grow 2.2 percent a year over the 13 years through 1995, or an increase of 500,000. By comparison, over the previous 13-year period (1969–82), 700,000 jobs were added in medical offices. Hospital employment is projected to grow 3.1 percent a year, from 3 million in 1982 to 4.5 million in 1995. Jobs in other medical services will expand by 3.8 percent a year to almost 2.7 million in 1995. Overall, the 3 million new health care jobs projected to be added between 1982 and 1995 represent almost 12 percent of the total number of new jobs.

Growth slows in trade, government

Employment in wholesale and retail trade is projected to grow along with the rest of the economy, increasing from 22.5 million in 1982 to 28.5 million in 1995. Because total employment growth is slowing down, the rate of job growth in trade is also slower than it has been historically. Retail trade employment is projected to grow 2.0 percent a year, compared with 2.4 percent between 1958 and 1982; jobs in wholesale trade are projected to expand 1.4 percent annually, compared with 2.5 percent in the past.

The largest number of new job openings, about 1.6 million, will be in eating and drinking establishments. Other retail firms posting large gains will be department stores, grocery stores, new car dealers, miscellaneous shopping goods stores (such as jewelry, books, cameras, and sporting goods), and drug and proprietary stores. Retail shops projected to actually lose jobs include mobile home dealers, variety stores, general merchandise stores, candy stores, dairy products stores, women's accessory stores (such as millinery shops), children's wear stores, and fur shops.

In wholesale trade, the largest employment increases will be found in establishments selling machinery and equipment, motor vehicles, miscellaneous nondurable goods, and electrical goods.

Government. Employment in government is projected to grow more slowly than private sector jobs, as has been true since 1975, but the opposite of the expansionary 1950's and 1960's. The state and local sector represents most of the slowdown, as only 1.2 million new jobs will be added over the next 13 years, compared with 3.6 million during the preceding 13-year period.

Although job growth is slower than in the 1960's, it still represents a reversal from the actual declines of the late 1970's. In addition to tight budgets during the recession, declining school enrollments caused many state and local governments to reduce hiring. Beginning in 1984, however, enrollment in public elementary and secondary schools is projected to turn up again as the children of the baby-boom generation advance through school, leading to a slight upturn in employment.

Banking and transportation and utilities

The output of financial and banking services is projected to show very large gains over the next decade and a half with the introduction of new consumer services such as automatic funds transfers and the more widespread use of investment counseling. The output of the banking industry and of credit agencies and financial brokers is projected to grow by 4.1 percent a year.

Employment growth, on the other hand, will be very modest. Automatic teller machines and computerized banking and stock transactions will limit job gains to 1.9 percent a year. By comparison, employment in banking grew 4.4

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percent through the 1960's and 1970's, as the expanding use of checking accounts created the need for large numbers of new hires for check processing. That impetus will not be repeated, however, as checking account use is now commonplace, and as automatic transfers replace manual check processing.

The transportation, communications, and public utilities sector is not projected to contribute significantly to overall job growth, only adding slightly more than 1 million extra workers. However, output of this sector is projected to lead all other sectors in growth, reflecting the strong demand for new telecommunications services, as well as the divestiture of the telephone company. Output of the communications sector, which includes radio and television broadcasting in addition to telephone and telegraph communications, is projected to expand by 5.9 percent a year, compared with 2.9 percent for the economy as a whole.

Low and high alternative projections

Different industry employment levels in the low and high alternatives are primarily the result of two factors—(1) the unemployment rate and the size of the labor force are different in each case than in the moderate growth projection, leading to different levels of total employment, and (2) the distribution of final demand is markedly different, causing output and, therefore, employment at the industry level to vary significantly from the base case. (See table 6.)

In the low-growth alternative, a smaller labor force and more unemployment results in 2.3 million fewer jobs. Although total employment is only about 2 percent lower, at the industry level the difference between the base case and the low trend alternative ranges over a much broader band. For some industries, employment is almost 10 percent lower, while in others, it is actually higher than in the base case. This span results from the sharp differences in final demand and in projections of productivity.

A disproportionate share of the job difference occurs in durable manufacturing industries because interest rates are higher than in the base case. Only manufacturing industries dependent on defense demand do not show this drop; defense expenditures, as well as other federal government purchases, are actually higher in the low-growth scenario than in the base case because it is assumed that the federal government increases spending to try to stimulate the sluggish economy. Examples of defense demand boosting output and employment to higher levels than in the base projection are in ordnance, guided missiles, radio and communication equipment, electronic components, aircraft, and shipbuilding industries.

Table 6. Gross national product, moderate growth path and high and low alternatives

[In billions of 1972 dollars]

Component	1982	1995			Percent difference from moderate	
		Low	Moderate	High	Low	High
Gross national product	$1,485.4	$2,148.7	$2,166.9	$2,284.6	−0.8	5.4
Personal consumption	970.2	1,371.1	1,412.4	1,504.6	−2.9	6.5
Durables	139.8	223.8	240.4	279.8	−6.9	16.4
Nondurables	364.2	449.4	468.0	485.4	−4.0	3.7
Services	466.2	697.9	704.0	739.4	−.9	5.0
Gross private investment	194.5	285.7	337.2	408.6	−15.3	21.2
Equipment	112.7	159.6	177.2	204.6	−9.9	15.5
Structures	53.4	44.6	70.1	77.6	−36.4	10.7
Residential	37.8	69.6	78.1	114.1	−10.9	46.1
Inventory change	−9.4	11.9	11.8	12.3	.8	4.2
Net exports	28.9	148.4	85.9	23.0	72.8	−73.2
Exports	147.3	267.9	260.0	264.0	3.0	1.5
Imports	118.4	119.4	174.1	241.0	−31.4	38.4
Government	291.8	343.5	331.4	348.4	3.7	5.1
Federal	116.6	157.0	139.2	145.9	12.8	4.8
Defense	78.8	113.2	98.9	103.9	14.5	5.1
Nondefense	37.8	43.8	40.3	41.9	8.7	4.0
State and local	175.2	186.5	192.2	202.5	−3.0	5.4

SOURCE: 1982 data are from the U.S. Department of Commerce, Bureau of Economic Analysis.

In addition, lower income growth results in much lower imports, leading to instances where domestic production of import-sensitive industries is higher in the low-growth alternative than in the base case. This occurs in forestry and fishery products, nonferrous metal ores mining, chemical and fertilizer mining, and watches and clocks.

In the high-growth alternative, many of these assumptions are reversed. Total employment in 1995 is 2.7 million higher than in the moderate case, based on a larger labor force and less unemployment. Like the low-growth alternative, although total employment varies from the base case by about 2 percent, jobs at the industry level have a much broader range, in some instances topping the base case by as much as 13 percent.

Monetary policy is assumed to be less restrictive in the high-growth alternative, resulting in a higher rate of inflation. Inflation, however, contributes to making imports more attractive, and the rise in imports more than offsets increased domestic demand in several industries. Because of imports, domestic production in the high alternative is lower than in the base case for iron mining, crude petroleum, sugar, confectionery products, apparel, leather tanning, leather products, and steel. Employment is also correspondingly lower; however, for sugar and confectionery products, lower productivity keeps employment levels higher than in the base case. □

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———*FOOTNOTES*———

[1] See the following articles in this issue: Howard N Fullerton, Jr. and John H. Tschetter, "The 1995 labor force: a second look", pp. 3–10; Arthur J. Andreassen, Norman C. Saunders, and Betty U. Su, "The economic outlook for the 1990's: three scenarios for economic growth"; pp. 11–23; and George Silvestri, John M. Lukasiewicz, and Marcus E. Einstein, "Occupational employment projections through 1995", pp. 37–49.

[2] See Andreassen and others, "The economic outlook for the 1990's", for specific assumptions.

[3] See Fullerton and Tschetter, "The 1995 labor force".

[4] See Richard Riche, Daniel Hecker, and John Burgan, "High technology today and tomorrow; a small slice of the employment pie," pp. 50–58, this issue.

The decade of the 1980's

The maturing products of the baby boom continue to dominate the age-structure changes—the bulk of the bulge will have aged to between 35 and 44 years of age by 1990. Indeed, the 11-million person increase in this cohort will account for over 60 percent of the national growth increment between 1980 and 1990. This will undoubtedly place enormous stress on the Nation's economic system to satisfy the mid-level career aspirations of this fabled generation. Ever greater pressures for entrance into the executive suite will continue, a phenomenon only partially alleviated by a decline in the 55-to-64-years-of-age group.

In contrast to the expansion represented by maturing baby boomers will be the sharp contraction of the 15-to-24-years-of-age segment by approximately 7.7 million people; the baby bust, then, will finally be impacting American society in full force. Who will inherit—and support—the infrastructure built for the baby-boom generation? Between 1980 and 1990, it is entirely possible that the college-age population will decline by over 18 percent, fostering significant adjustments for higher-education institutions and services. At the same time, the numbers of new entrants to the labor force will shrink over the decade (ignoring labor-force-participation rates), alleviating the entry-level job pressures that characterized the 1970's. The entry-level housing built for a larger generation may provide a redundancy of certain forms of shelter as the decade evolves.

Concurrently, with the stabilization in size of the 5-to-14-years-of-age sector—which will remain at the 35-million-person level throughout the decade of the 1980's—the Nation's elementary and high schools will face diminished downward demographic pressure (although spatial population shifts will exert differential effects on a geographic base). In the aggregate, the three-decade-long stress of a boom-bust cycle should be greatly alleviated.

Once again, the elderly are a significant growth sector with a net increase of 4.3 million people expected—or roughly 450,000 persons a year reaching the nominal retirement age and surviving between 1980 and 1990. And the under-5-years-of-age population will begin to grow in size. Thus, a baby-boom "echo" will become etched into the Nation's age structure. But this will not preserve the United States population as a whole from a decided increase in median age to above 32 years.

—GEORGE STERNLIEB, JAMES W. HUGHES, and CONNIE O. HUGHES, *Demographic Trends and Economic Reality: Planning and Markets in the '80s* (New Brunswick, N.J., Rutgers, The State University of New Jersey, Center for Urban Policy Research, 1982), pp. 15 and 17.

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Occupational employment projections through 1995

During 1982–95, health care will continue to be an expanding field of work, typists are apt to decline due to word processors, and high technology should spur the growth of occupations such as engineers and computer personnel but dim the outlook for others, especially drafters

GEORGE T. SILVESTRI, JOHN M. LUKASIEWICZ, AND MARCUS E. EINSTEIN

The most recent occupational projections by the Bureau of Labor Statistics suggest that a wide range of job skills will be needed in 1995. Employment in jobs requiring a college education or specialized post-secondary technical training are expected to increase significantly between 1982 and 1995. However, many jobs that do not require post-secondary training are also expected to expand significantly. For example, the projected rapid increase in demand for medical services will require large numbers of nursing aides and orderlies in addition to highly trained medical practitioners.

On the other hand, employment growth in many occupations will be affected by technological change through the mid-1990's. For example, word processing equipment will slow the employment growth of typists, and industrial robots will reduce the growth in employment of welders, production painters, and material moving occupations. However, despite widespread technological advances, employment will continue to advance in most traditional fields from 1982 to 1995. More workers will be needed to drive trucks to deliver goods, to clean a growing number of buildings, to perform health and personal services and provide police and fire protection for our increasing population, and to maintain and repair a larger stock of automobiles, appliances, and factory equipment.

Rapid expansion of high technology will spur the growth of scientists, engineers, technicians, and computer specialists. They will be required to design, develop, and use high-technology products such as computers, scientific and medical instruments, communication equipment, and robots. Employment in these occupations has generally grown faster than the economy as a whole and most are expected to continue to do so. However, even in some of these fields, technological advances will have an impact on reducing employment needs. For example, advances in computer-aided design technology are expected to severely limit the employment growth of drafters.

The pattern of industrial employment growth also has an important impact on expected changes in occupational structure, because many occupations are concentrated by industry. Therefore, the information on occupational growth patterns presented in this article cannot be fully understood apart from the data and analyses dealing with economic and industry growth trends presented elsewhere in this issue of the *Review*. Indeed, the methodologies used to develop both the industry and occupational projections are very closely related.[1]

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Table 1. Civilian employment in occupations with 25,000 workers or more, actual 1979, 1982, and projected 1995

Occupation	Total employment (in thousands)					Percent change					
	1979	1982	1995			1979–95			1982–95		
			Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend
Total, all occupations	101,206	101,510	124,846	127,110	129,902	23	26	28	23	25	28
Professional, technical, and related workers	15,758	16,584	21,545	21,775	22,325	37	38	42	30	31	35
Engineers	1,177	1,204	1,787	1,788	1,831	52	52	56	48	49	52
Aero-astronautic engineers	44	44	65	62	62	47	39	41	49	41	42
Chemical engineers	58	56	79	80	82	37	40	43	41	43	47
Civil engineers	156	155	226	228	236	45	46	51	45	47	52
Electrical engineers	300	320	531	528	540	77	76	80	66	65	69
Industrial engineers	171	160	226	227	232	32	32	36	41	42	45
Mechanical engineers	216	209	314	318	327	45	47	51	50	52	56
Petroleum engineers	16	26	31	32	30	95	98	89	19	22	16
Life and physical scientists	247	271	343	342	348	39	38	41	27	26	29
Biological scientists	47	52	71	70	73	50	48	53	38	36	41
Chemists	87	89	107	108	111	22	24	27	21	22	25
Geologists	38	49	60	60	59	60	60	57	24	24	21
Mathematical specialists	48	48	63	62	63	31	29	32	31	29	32
Engineering and science technicians	1,227	1,243	1,649	1,661	1,705	34	35	39	33	34	37
Civil engineering technicians	32	35	56	58	60	77	82	88	59	64	69
Drafters	307	302	309	318	327	1	3	7	2	5	8
Electrical and electronic technicians	350	366	585	589	602	67	68	72	60	61	64
Industrial engineering technicians	33	27	36	35	37	9	7	11	31	29	33
Mechanical engineering technicians	47	48	72	72	74	54	55	58	51	52	55
Surveyors	55	44	61	62	64	11	13	17	40	43	47
Medical workers, except technicians	2,231	2,463	3,471	3,491	3,600	56	56	61	41	42	46
Chiropractors	22	25	33	32	32	46	45	45	28	27	27
Dentists	161	173	213	213	218	32	33	36	23	24	27
Dietitians	41	44	61	62	64	48	50	55	38	40	44
Nurses, registered	1,165	1,312	1,943	1,954	2,022	67	68	74	48	49	54
Optometrists	32	28	35	34	35	9	8	9	26	25	26
Pharmacists	143	151	188	192	196	31	34	37	24	27	30
Physicians	436	479	640	642	663	47	47	52	34	34	38
Therapists	186	202	291	294	302	56	58	62	44	45	50
Respiratory therapists	42	46	67	67	70	61	62	68	44	45	50
Occupational therapists	22	25	40	40	41	85	86	92	58	60	64
Physical therapists	37	43	68	69	70	84	85	89	57	58	62
Speech pathologists and audiologists	40	42	53	54	55	31	33	36	27	29	32
Veterinarians	34	36	48	48	48	42	41	43	31	30	32
Health technologists and technicians	574	627	891	898	932	55	57	62	42	43	49
Clinical laboratory technologists and technicians	195	209	291	292	303	49	50	55	39	40	45
Medical laboratory technicians	60	57	70	71	73	16	18	22	22	23	28
Medical laboratory technologists	92	103	150	150	156	63	64	70	46	46	52
Dental hygienists	58	69	97	99	104	69	72	81	40	43	50
Physical therapy assistants	27	33	55	55	56	103	104	109	67	68	72
Radiologic technologists	97	110	156	157	164	61	63	69	42	43	49
Radiologic technologists and nuclear medicine technicians	32	36	50	50	52	60	60	66	40	39	45
X-ray technicians	65	74	106	107	111	62	64	70	43	45	51
Surgical technicians	31	35	48	49	51	58	58	65	39	40	45
Technicians, excluding health, science, and engineering	338	364	451	453	465	33	34	38	24	24	28
Airplane pilots	78	80	102	103	104	31	32	34	28	29	31
Library technicians	28	29	32	32	33	15	16	19	9	10	13
Computer specialists	447	521	935	943	960	109	111	115	79	81	84
Programmers	231	266	465	471	480	101	104	107	75	77	80
Systems analysts	216	254	469	471	480	118	119	123	85	85	89
Social scientists	175	206	267	267	273	52	52	56	30	30	33
Economists	29	30	39	38	39	35	32	36	29	27	30
Psychologists	69	83	109	110	112	59	60	63	32	33	36
Teachers	3,967	3,980	4,612	4,706	4,806	16	19	21	16	18	21
Adult education teachers	107	125	164	165	170	53	54	58	31	32	36
College and university faculty	686	744	619	632	646	−10	−8	−6	−17	−15	−13
Dance instructors	23	27	35	35	36	51	52	57	31	32	36
Graduate assistants	138	140	122	124	127	−12	−10	−8	−13	−11	−9
Preschool, kindergarten, elementary schoolteachers	1,668	1,647	2,226	2,274	2,322	33	36	39	35	38	41
Preschool teachers	285	281	387	397	404	36	39	42	38	41	44
Kindergarten and elementary schoolteachers	1,383	1,366	1,839	1,877	1,918	33	36	39	35	37	40
Secondary schoolteachers	1,083	1,024	1,128	1,152	1,177	4	6	9	10	13	15
Vocational education teachers	99	98	139	143	146	41	45	48	42	46	49
Selected writers, artists, and entertainers	251	301	398	406	417	58	62	66	32	35	38
Actors	(1)	34	48	49	52	(1)	(1)	(1)	40	43	51
Commercial and graphic artists and designers	119	133	166	167	169	40	41	42	25	26	27
Designers	166	180	247	253	258	49	52	55	38	41	44
Musicians	134	124	153	155	160	15	16	19	23	25	28
Painters, artistic	21	25	29	29	29	43	42	42	17	16	16
Photographers	86	86	101	102	104	18	18	21	18	18	21
Public relations specialists	85	90	14	115	118	35	36	39	27	29	32
Radio and TV announcers and newscasters	48	55	70	70	70	46	47	48	27	28	29
Announcers	40	46	58	58	58	44	45	46	25	26	27
Reporters and correspondents	49	51	64	66	67	30	34	36	26	29	31
Sports instructors	(1)	53	63	64	66	(1)	(1)	(1)	20	21	25
Writers and editors	114	120	160	162	165	40	42	45	34	35	38

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Table 1. Continued—Civilian employment in occupations

Occupation	Total employment (in thousands)					Percent change					
			1995			1979–95			1982–95		
	1979	1982	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend
Other professional and technical workers	4,389	4,636	5,778	5,850	5,999	32	33	37	25	26	29
Accountants and auditors	830	856	1,181	1,200	1,229	42	44	48	38	40	44
Architects	75	84	116	118	121	55	57	61	38	40	43
Assessors	29	28	30	31	32	3	4	7	9	11	14
Buyers, retail and wholesale trade	251	256	321	331	336	28	32	34	26	30	31
Clergy	(1)	317	327	332	344	(1)	(1)	(1)	3	5	8
Cost estimators	94	92	131	134	137	39	42	46	41	45	48
Counselors	140	148	159	163	167	13	16	19	7	10	12
Directors, religious education and activities	36	43	44	45	46	22	24	28	3	5	9
Employment interviewers	59	57	85	86	87	44	45	47	51	52	55
Foresters and conservationists	29	31	35	34	36	20	15	21	14	9	15
Law clerks	35	40	55	56	59	60	63	70	37	39	45
Lawyers	393	465	618	624	638	57	59	62	33	34	37
Legal assistants	34	45	85	88	91	150	158	168	88	94	102
Librarians	147	151	167	170	174	13	15	18	11	13	15
Personnel and labor relations specialists	187	203	249	250	257	33	34	38	23	23	27
Purchasing agents and buyers	178	177	225	225	232	26	26	30	27	27	31
Group recreation workers	122	122	148	150	154	20	22	26	21	23	27
Social workers	328	345	409	416	428	25	27	30	19	21	24
Caseworkers	275	292	348	353	364	26	28	32	19	21	24
Community organization workers	53	52	61	63	65	15	18	22	17	20	24
Special agents, insurance	23	31	44	44	45	90	92	95	43	45	48
Tax examiners, collectors, and revenue agents	48	47	54	52	54	13	8	13	16	10	16
Tax preparers	28	32	45	46	49	60	65	75	38	43	52
Underwriters	73	76	90	92	93	24	26	28	19	21	23
Managers, officials, and proprietors	9,152	9,532	12,008	12,212	12,467	31	33	36	26	28	31
Auto parts department managers	48	44	61	63	64	27	31	34	37	42	45
Auto service department managers	60	54	76	78	80	27	31	34	39	44	47
Construction inspectors, public administration	41	39	46	46	47	12	12	15	17	17	21
Health and regulatory inspectors	103	101	111	108	113	8	5	10	9	7	11
Postmasters and mail superintendents	28	28	23	24	25	−20	−14	−12	−20	−14	−12
Railroad conductors	35	27	17	18	20	−50	−47	−43	−36	−32	−27
Restaurant, cafe, and bar managers	528	574	706	711	715	34	35	35	23	24	25
Sales managers, retail trade	271	271	352	362	365	30	34	35	30	33	35
Assistant principals	37	38	44	45	46	18	21	23	15	18	20
Principals	81	82	93	95	97	15	17	20	14	16	19
Store managers	938	971	1,218	1,262	1,285	30	35	37	26	30	32
Wholesalers	241	247	298	302	303	23	25	26	20	22	23
Salesworkers	6,780	6,967	8,535	8,771	8,911	26	29	31	23	26	28
Real estate agents and brokers	332	337	449	450	453	35	36	37	33	33	34
Real estate brokers	39	42	53	53	53	37	37	38	28	28	29
Sales agents, sales representatives, real estate	293	296	396	396	400	35	35	37	34	34	35
Real estate appraisers	31	32	47	47	48	53	54	56	48	49	51
Sales agents and brokers, insurance	316	361	447	452	458	42	43	45	24	25	27
Sales representatives, nontechnical	573	583	724	743	749	26	30	31	24	27	28
Sales representatives, technical	1,329	1,320	1,652	1,707	1,730	24	28	30	25	29	31
Salesclerks	2,867	2,916	3,472	3,601	3,670	21	26	28	19	23	26
Security salesworkers	60	78	106	107	109	77	78	81	36	36	39
Travel agents	50	62	86	88	88	74	78	78	40	43	43
Clerical workers	18,497	19,049	23,533	23,998	24,538	27	30	33	24	26	29
Adjustment clerks	38	36	48	49	50	26	30	33	34	38	40
Bank tellers	466	539	686	693	703	47	49	51	27	29	30
New accounts tellers	51	67	79	80	81	55	57	59	18	19	21
Tellers	415	471	607	613	622	46	48	50	29	30	32
Bookkeepers and accounting clerks	1,717	1,713	1,943	1,985	2,027	13	16	18	13	16	18
Accounting clerks	722	756	861	876	895	19	21	24	14	16	18
Bookkeepers, hand	996	957	1,081	1,109	1,132	9	11	14	13	16	18
Cashiers	1,518	1,570	2,235	2,314	2,362	47	52	56	42	47	50
Claims adjusters	67	66	99	98	101	47	47	51	49	49	53
Claims clerks	66	66	94	93	95	42	41	45	41	40	44
Claims examiners, insurance	39	47	61	62	63	56	59	62	29	31	34
Clerical supervisors	434	467	618	628	641	42	45	47	32	35	37
Collectors, bill and account	88	94	133	135	137	51	53	55	42	44	46
Court clerks	28	27	29	29	30	2	3	6	6	8	11
Credit clerks, banking and insurance	50	50	76	76	78	52	54	57	53	54	57
Customer service representatives	86	89	120	124	125	40	44	45	35	39	40
Desk clerks, except bowling floor	82	88	107	107	109	31	32	34	22	23	25
Dispatchers, police, fire, and ambulance	51	48	52	53	55	4	6	8	10	12	14
Dispatchers, vehicle service or work	87	90	111	113	116	27	30	33	23	26	29
Eligibility workers, welfare	34	32	32	32	33	−7	−5	−3	0	2	5
File clerks	293	295	316	321	329	8	10	12	7	9	12
General clerks, office	2,377	2,348	2,990	3,044	3,113	26	28	31	27	30	33
Insurance clerks, medical	78	86	137	139	145	77	79	86	60	62	69
Library assistants	80	81	94	96	98	17	19	22	16	18	21
Loan closers	(1)	45	63	64	65	(1)	(1)	(1)	40	41	44
Mail carriers and postal clerks	539	541	439	474	485	−19	−12	−10	−19	−12	−10
Postal mail carriers	234	234	206	223	228	−12	−5	−3	−12	−5	−3
Postal service clerks	306	307	233	252	257	−24	−18	−16	−24	−18	−16

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Table 1. Continued—Civilian employment in occupations

Occupation	Total employment (in thousands)					Percent change					
			1995			1979–95			1982–95		
	1979	1982	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend
Mail clerks	88	100	132	131	135	51	50	54	33	31	35
Messengers, except bank	42	47	60	61	63	42	45	48	28	31	34
Meter readers, utilities	29	31	37	38	38	30	31	33	22	24	26
Office machine operators	893	936	1,179	1,196	1,220	32	34	37	26	28	30
Bookkeeping, billing machine operators	174	172	218	223	227	25	28	31	26	29	32
Proof machine operators	46	47	59	59	60	28	29	31	24	25	27
Computer operating personnel	548	580	727	737	752	33	34	37	25	27	30
Computer operators	190	211	366	371	378	93	95	99	74	76	79
Data entry operators	319	320	282	286	292	−12	−10	−8	−12	−11	−9
Peripheral EDP equipment operators	40	49	79	80	82	99	102	106	61	63	66
Duplicating machine operators	31	38	44	45	46	41	43	46	16	17	19
Order clerks	258	265	329	337	342	28	31	33	24	27	29
Payroll and timekeeping clerks	175	202	265	269	277	51	54	58	31	34	37
Personnel clerks	98	103	132	131	135	35	34	38	29	28	32
Policy change clerks	25	28	30	31	31	18	20	22	8	10	12
Procurement clerks	49	47	60	60	62	23	22	27	27	26	31
Production clerks	212	201	260	262	268	23	24	27	29	30	33
Raters	53	53	68	69	70	28	30	32	29	31	33
Receptionists	362	387	565	576	594	56	59	64	46	49	54
Reservation agents and transportation ticket clerks	112	108	108	110	112	−4	−2	−1	0	2	4
Reservation agents	55	53	54	55	56	−2	0	1	2	4	5
Ticket agents	52	49	48	49	50	−7	−5	−3	−3	−1	1
Secretaries and stenographers	2,624	2,711	3,355	3,410	3,498	28	30	33	24	26	29
Secretaries	2,342	2,441	3,108	3,161	3,243	33	35	38	27	29	33
Stenographers	283	270	247	250	256	−13	−12	−10	−8	−7	−5
Typists	980	990	1,136	1,145	1,175	16	17	20	15	16	19
Shipping and receiving clerks	380	365	420	431	439	11	13	16	15	18	20
Shipping packers	356	340	394	403	410	11	13	15	16	19	21
Statement clerks	32	34	44	44	45	39	40	42	30	32	34
Statistical clerks	83	98	112	114	116	36	37	41	15	16	18
Stock clerks, stockroom and warehouse	831	831	961	987	1,005	16	19	21	16	19	21
Survey workers	42	53	78	78	79	86	87	89	46	46	48
Switchboard operators/receptionists	217	107	279	285	292	29	32	35	35	38	41
Teachers' aides	442	463	579	593	606	31	34	37	25	28	31
Telephone operators	319	318	337	343	349	5	8	9	6	8	10
Switchboard operators	175	172	211	213	218	20	22	24	23	24	27
Central office operators	107	109	84	87	87	−21	−19	−18	−23	−20	−20
Directory assistance operators	37	38	42	43	43	13	17	17	11	15	16
Town clerks	28	26	29	29	30	3	5	7	10	12	14
Craft and related workers	12,359	11,591	14,476	14,769	15,099	17	20	22	25	27	30
Construction craftworkers	3,163	2,895	3,725	3,777	3,841	18	19	21	29	30	33
Insulation workers	43	47	66	67	68	53	56	59	41	44	46
Bricklayers	150	111	148	150	153	−1	0	2	34	36	38
Carpenters	1,008	863	1,095	1,110	1,128	9	10	12	27	29	31
Cement masons	107	87	122	125	127	14	17	19	41	44	46
Dry wall applicators	53	53	73	74	75	36	39	41	36	39	41
Electricians	556	542	704	715	730	27	29	31	30	32	35
Floor covering installers	80	79	100	101	103	25	27	29	26	29	30
Carpet cutters, carpet layers	54	53	66	67	68	23	25	26	25	28	29
Floor layers	26	26	33	34	35	30	32	35	28	30	33
Glaziers	37	41	53	55	56	44	48	51	31	35	37
Ironworkers	105	93	126	130	133	20	23	26	35	39	42
Reinforcing-iron workers	34	33	44	45	46	29	32	35	33	36	39
Structural steel workers	71	61	83	85	87	16	19	22	36	40	44
Painters, construction and maintenance	369	362	443	444	449	20	21	22	22	23	24
Plumbers and pipefitters	398	388	512	518	528	29	30	33	32	34	36
Roofers	111	102	128	129	131	15	16	18	25	27	28
Mechanics, repairers, and installers	4,039	3,936	5,004	5,107	5,223	24	26	29	27	30	33
Air conditioning, refrigeration, and heating mechanics	175	168	220	223	228	25	27	30	31	33	36
Aircraft mechanics	107	108	132	128	131	23	19	22	22	19	21
Gas and electric appliance repairers	61	62	71	72	74	17	20	23	14	17	20
Automotive body repairers	159	155	191	196	201	20	23	26	23	26	30
Automotive mechanics	871	844	1,134	1,168	1,195	30	34	37	34	38	42
Coin machine servicers and repairers	27	31	38	39	40	43	47	52	24	28	32
Central office repairers	49	50	47	49	49	−4	−1	0	−6	−2	−2
Computer service technicians	(1)	55	106	108	108	(1)	(1)	(1)	93	97	98
Diesel mechanics	175	173	216	222	226	24	27	30	25	28	31
Cable splicers	47	48	59	60	61	26	28	30	24	25	27
Line installers, repairers	113	127	154	157	159	37	39	41	21	23	25
Engineering equipment mechanics	77	83	93	94	96	21	22	24	12	13	15
Farm equipment mechanics	25	26	27	27	28	8	10	10	4	5	6
Instrument repairers	40	41	50	51	53	25	27	31	22	24	27
Industrial machinery repairers	366	330	416	425	438	14	16	20	26	29	33
Maintenance repairers, general utility	733	694	870	887	908	19	21	24	25	28	31
Marine mechanics and repairers	26	26	36	36	36	36	36	36	35	35	36
Millwrights	108	91	118	121	124	10	12	15	30	33	36
Office machine repairers	53	56	94	95	96	78	82	83	68	72	73

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Table 1. Continued—Civilian employment in occupations

Occupation	Total employment (in thousands)					Percent change					
			1995			1979–95			1982–95		
	1979	1982	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend
Radio and television service technicians	71	80	101	102	105	42	45	48	25	27	30
Installers, repairers, section maintainers	73	75	97	100	100	33	37	38	28	32	33
Station installers	58	59	69	72	72	20	24	25	18	21	22
Metalworking craftworkers, except mechanics	941	818	995	1,019	1,051	6	8	12	22	25	29
Boilermakers	45	40	42	43	44	−6	−5	−2	6	8	11
Machinists	239	220	271	278	287	13	16	20	23	26	30
Machine tool setters, metalworking	65	55	67	68	70	2	4	7	22	25	28
Molders, metal	34	25	29	29	30	−14	−12	−9	13	16	20
Sheet-metal workers and tinsmiths	213	188	248	252	260	16	18	22	32	34	38
Tool and die makers	176	152	179	184	190	2	5	8	18	21	25
Printing trades craftworkers	382	393	429	447	457	12	17	20	9	14	16
Bookbinders	29	30	34	36	37	16	22	24	14	20	23
Typesetters and compositors	103	104	99	97	99	−9	−6	−4	−10	−7	−5
Lithographers and photoengravers	66	67	83	87	89	26	33	35	23	29	32
Letter press operators	33	34	34	36	37	4	9	11	1	6	8
Offset lithographic press operators	86	88	107	113	115	24	30	33	22	28	31
Press operators and plate printers	37	42	44	45	47	19	23	27	5	8	12
Other craft and related workers	3,833	3,549	4,324	4,419	4,527	13	15	18	22	24	28
Bakers	64	65	73	76	78	15	19	22	12	17	19
Supervisors of blue-collar workers	1,295	1,200	1,482	1,519	1,553	15	17	20	24	27	30
Cabinetmakers	79	78	95	96	99	20	22	25	22	24	27
Crane, derrick, and hoist operators	127	105	128	132	134	1	4	6	22	25	27
Dental lab technicians	48	51	63	64	65	31	32	35	25	26	28
Opticians, dispensing and optical mechanics	35	31	38	39	40	9	12	15	22	25	29
Furniture upholsterers	30	37	40	40	42	33	34	39	7	8	12
Heavy equipment operators	443	384	480	490	500	8	11	13	25	28	30
Inspectors	468	410	520	529	543	11	13	16	27	29	32
Jewelers	26	30	33	34	35	26	29	32	11	13	17
Locomotive engineers	49	38	37	39	42	−26	−21	−15	−4	3	10
Merchandise displayers and window trimmers	27	27	37	38	39	38	43	45	39	43	46
Stationary engineers	61	58	60	61	62	−2	−1	2	3	4	7
Alteration tailors	55	54	72	75	77	31	36	40	32	37	41
Testers	119	116	151	152	157	27	28	31	30	31	35
Sewage plant operators	40	38	41	42	43	2	4	7	9	10	13
Water treatment plant operators	30	28	30	31	32	2	4	7	9	10	13
Operatives	14,039	12,995	15,044	15,419	15,809	7	10	13	16	19	22
Assembler occupations	1,459	1,313	1,625	1,646	1,702	11	13	17	24	25	30
Aircraft structure assemblers	33	33	28	26	26	−14	−19	−20	−15	−21	−21
Assemblers	361	307	363	379	398	1	5	10	18	23	30
Electrical machinery equipment assemblers	99	99	131	133	137	32	34	38	33	34	38
Electrical and electronic assemblers	281	286	365	362	371	30	29	32	28	27	30
Instrument assemblers	29	29	43	43	44	48	49	52	45	46	49
Machine assemblers	202	170	210	214	222	4	6	10	23	25	30
Wirers, electronic	38	37	50	50	52	33	31	35	36	34	39
Bindery workers, assembly	37	38	39	41	42	8	13	15	5	10	12
Laundry operators, small establishment	38	38	44	44	45	17	17	19	16	17	18
Pressers, hand	30	27	30	31	31	2	4	3	13	14	14
Pressers, machine	54	50	51	52	54	−6	−4	0	2	4	8
Pressers, machine laundry	70	64	68	69	74	−3	−1	5	5	7	14
Washers, machine and starchers	54	58	78	79	82	45	47	52	35	37	42
Meatcutters and butchers	59	57	62	63	64	5	6	8	9	10	12
Metalworking operatives	1,726	1,492	1,767	1,813	1,874	2	5	9	18	21	26
Electroplators	36	32	34	35	36	−4	−1	2	7	11	13
Machine tool operators	1,070	914	1,088	1,114	1,153	2	4	8	19	22	26
Drill press and boring machine operators	136	115	137	139	144	1	3	6	19	21	25
Grinding and abrading machine operators, metal	138	118	126	129	133	−9	−7	−4	7	10	13
Lathe machine operators, metal	159	137	155	159	164	−2	0	3	14	16	20
Milling and planing machine operators	68	61	68	69	71	−1	1	4	12	13	17
Machine tool operators, combination	193	169	217	220	229	13	14	19	29	31	36
Machine tool operators, numerical control	73	66	94	95	99	28	30	35	42	44	49
Machine tool operators, tool room	41	34	43	44	45	6	8	11	25	27	31
Punch press operators, metal	181	147	167	173	180	−8	−5	−1	14	18	22
Power brake and bending machine operators, metal	49	42	51	53	55	4	8	12	22	27	32
Shear and slitter operators, metal	32	27	32	33	34	−2	2	6	18	23	27
Welders and flamecutters	548	490	579	595	615	6	8	12	18	21	26
Roustabouts	67	94	78	80	80	17	20	19	−16	−14	−15
Baggers	224	242	219	229	234	−2	2	4	−9	−5	−4
Production packagers	560	548	616	637	654	10	14	17	12	16	19
Painters, automotive	41	36	51	53	55	24	28	32	41	46	51
Painters, production	118	101	115	118	122	−3	0	3	14	17	21
Sawyers	89	75	91	93	96	2	4	8	21	24	28
Sewers and stitchers	902	804	869	882	873	−4	−2	−3	8	10	9
Sewing machine operatives, regular equipment, garment	594	533	561	567	556	−5	−4	−6	5	7	4
Sewing machine operatives, special equipment, garment	88	78	84	85	83	−4	−3	−5	8	9	7
Sewing machine operatives, regular equipment, nongarment	145	128	152	155	158	4	7	8	19	22	24
Sewing machine operatives, special equipment, nongarment	47	42	48	50	51	4	7	9	16	19	21

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Table 1. Continued—Civilian employment in occupations

Occupation	Total employment (in thousands)					Percent change					
			1995			1979–95			1982–95		
	1979	1982	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend
Textile operatives	368	312	345	352	359	−6	−5	−3	11	13	15
Spinners, frame	31	26	25	25	25	−21	−20	−18	−5	−4	−2
Weavers	36	30	31	31	31	−14	−13	−12	3	4	6
Transport equipment operatives	3,694	3,551	4,181	4,287	4,387	13	16	19	18	21	24
Ambulance drivers and ambulance attendants	26	28	34	35	36	29	32	38	23	26	32
Busdrivers	443	473	537	551	572	21	24	29	13	17	21
Busdrivers, local and intercity	216	229	249	257	271	15	19	25	9	12	18
Busdrivers, school	226	244	288	295	301	27	30	33	18	21	23
Chauffeurs	42	48	61	63	65	44	48	53	27	30	34
Forklift and tow motor operatives	421	376	433	445	458	3	6	9	15	18	22
Parking attendants	36	37	37	38	40	3	6	10	1	4	8
Railroad brake operators	78	60	50	54	58	−35	−31	−26	−16	−10	−4
Sailors and deckhands	33	32	33	34	35	0	3	5	3	7	8
Taxi drivers	72	64	52	52	53	−28	−28	−26	−20	−19	−17
Truckdriving occupations	2,506	2,402	2,909	2,980	3,035	16	19	21	21	24	26
Delivery and route workers	813	797	924	951	967	14	17	19	16	19	21
Truckdrivers	1,693	1,604	1,985	2,029	2,068	17	20	22	24	26	29
All other operatives	4,145	3,805	4,413	4,544	4,666	6	10	13	16	19	23
Dressmakers, except factory	54	61	66	66	66	23	22	23	8	8	9
Filers, grinders, buffers, and chippers	130	107	134	137	142	3	6	9	26	29	33
Fuel pump attendants and lubricators	406	388	430	451	462	6	11	14	11	16	19
Stationary boiler firers	46	44	45	45	47	−2	−1	2	1	2	6
Miscellaneous machine operatives, meat and dairy products	45	42	39	40	41	−14	−11	−9	−9	−6	−3
Miscellaneous machine operatives, all other food products	73	71	75	78	80	3	7	9	6	10	13
Miscellaneous machine operatives, lumber and furniture	47	39	49	50	52	4	6	10	25	28	32
Miscellaneous machine operatives, paper and allied products	99	92	97	100	105	−2	1	6	5	9	14
Miscellaneous machine operatives, chemicals and allied products	153	146	172	178	183	13	16	20	18	22	25
Chemical operators-A	55	54	64	66	68	16	19	22	19	23	26
Chemical operators-B	27	26	31	31	32	14	17	21	18	22	25
Miscellaneous machine operatives, rubber and miscellaneous plastics	213	190	251	267	277	18	25	30	32	40	45
Extruder operators, rubber or plastics	28	26	35	37	39	25	34	39	36	46	51
Compression and injection mold machine operators, plastics	101	93	131	140	144	29	38	42	41	50	55
Miscellaneous machine operatives, stone, clay, and glass	50	41	49	51	53	−3	2	6	20	25	31
Miscellaneous machine operatives, primary metals	86	69	82	85	88	−5	−1	2	18	22	26
Miscellaneous machine operatives, manufacturing, nec.	90	83	99	102	104	11	13	16	20	23	26
Miscellaneous machine operatives, nonmanufacturing	40	39	42	44	45	6	10	12	7	11	13
Miscellaneous operatives, nec, durable goods	102	86	103	108	112	1	5	10	19	25	30
Miscellaneous operatives, nec, nondurable goods	229	218	231	238	242	1	4	6	6	9	11
Poultry dressers, eviscerators	50	48	50	50	51	0	1	3	4	6	8
Press assistants and feeders	25	26	30	31	32	16	23	25	14	20	22
Mixing operatives	43	41	43	45	46	2	6	8	5	9	12
Oilers	43	36	44	45	46	3	5	8	21	24	27
Photographic process workers	70	67	77	78	80	9	11	14	15	17	20
Rotary drill operators	22	28	27	28	28	24	26	27	−2	−1	0
Rotary drill operator helpers	31	33	29	29	30	−6	−4	−3	−14	−12	−11
Shoemaking machine operators	60	52	34	36	34	−43	−40	−43	−33	−30	−34
Surveyor helpers	50	40	61	63	65	22	26	30	54	59	64
Tire changers	60	60	83	86	88	39	45	48	39	45	48
Coil winders	28	27	32	32	33	13	13	18	19	19	24
Service workers	15,660	16,241	20,416	20,706	21,113	30	32	35	26	27	30
Building custodians	2,796	2,828	3,554	3,606	3,682	27	29	32	26	28	30
Food service workers	5,906	6,204	8,113	8,221	8,322	37	39	41	31	33	34
Bakers, bread and pastry	35	36	46	46	47	31	32	33	27	28	30
Bartenders	364	384	500	505	511	37	39	40	30	32	33
Butchers and meatcutters	184	191	173	179	182	−6	−3	−1	−9	−6	−5
Cooks and chefs	1,161	1,211	1,591	1,613	1,636	37	39	41	31	33	35
Cooks, institutional	406	423	527	536	549	30	32	35	25	27	30
Cooks, restaurant	330	351	494	500	505	50	51	53	41	42	44
Cooks, short order and specialty fast foods	424	437	570	578	582	34	36	37	31	32	33
Food preparation and service workers, fast food restaurants	757	809	1,092	1,106	1,113	44	46	47	35	37	38
Hosts/hostesses, restaurant, lounge, coffee shop	110	113	152	154	155	38	40	41	34	36	37
Kitchen helpers	822	850	1,139	1,155	1,174	39	41	43	34	36	38
Pantry, sandwich, and coffee makers	77	84	111	112	114	43	45	47	32	34	36
Waiters and waitresses	1,599	1,665	2,199	2,227	2,249	38	39	41	32	34	35
Waiters assistants	283	302	384	388	394	36	37	39	27	29	30
All other food service workers	515	559	726	734	748	41	43	45	30	31	34
Selected health service workers	1,980	2,240	3,038	3,066	3,166	53	55	60	36	37	41
Dental assistants	129	153		218	229	65	69	77	39	42	49
Licensed practical nurses	524	594	213	815	841	54	55	60	36	37	41

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Table 1. Continued—Civilian employment in occupations

Occupation	Total employment (in thousands)					Percent change					
			1995			1979–95			1982–95		
	1979	1982	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend	Low trend	Moderate trend	High trend
Medical assistants	88	100	809	148	154	65	67	74	45	47	53
Nursing aides, orderlies, and attendants	1,087	1,218	146	1,642	1,690	50	51	55	34	35	39
Pharmacy helpers	29	33	1,628	46	47	56	57	62	38	38	43
Psychiatric aides	115	132	45	185	192	60	60	66	40	41	46
			184								
Selected personal service workers	1,518	1,632		1,961	2,010	27	29	32	18	20	23
Barbers	110	115	1,930	127	129	14	15	17	9	10	12
Bellhops, bag porters, and doorkeepers	26	26	126	29	29	7	9	11	9	10	13
Child-care attendants	39	47	28	57	58	43	45	48	20	21	24
Child-care workers	396	414	56	499	504	25	26	27	19	20	22
Cosmetologists/women's hairstylists	483	491	495	589	604	19	22	25	17	20	23
			577								
Flight attendants	54	54		69	70	26	27	29	27	29	30
Game and ride operators and concession workers	(1)	53	68	63	66	(1)	(1)	(1)	17	19	24
Housekeepers, hotel and motel	(1)	101	62	130	133	(1)	(1)	(1)	29	29	32
Recreation facility attendants	64	72	130	88	92	35	37	42	21	23	27
Reducing instructors	24	35	87	46	51	88	96	114	29	34	46
Ushers, lobby attendants, and ticket takers	41	40	44	39	41	−6	−4	1	−4	−2	4
Welfare service aides	92	93	38	119	122	27	29	33	26	28	32
			116								
Protective service workers	1,752	1,707		2,146	2,194	21	22	25	24	26	29
Correction officials and jailers	112	111	2,121	147	150	30	31	35	31	33	36
Crossing or bridge tenders	28	27	145	29	30	3	5	8	6	8	11
Crossing guards, school	40	38	29	42	43	3	5	7	10	12	14
Firefighters	213	201	42	217	223	0	2	4	7	8	11
Fire officers	49	46	214	52	53	3	5	7	10	12	14
Guards and doorkeepers	645	635	51	935	950	44	45	47	46	47	50
Lifeguards	(1)	34	925	44	46	(1)	(1)	(1)	29	31	36
			43								
Police and detectives, public service	578	549		592	608	1	2	5	7	8	11
Police detectives	62	59	586	68	71	12	9	14	17	14	19
Police officers	102	97	69	107	110	4	5	8	10	10	14
Police patrolmen/women	383	363	106	390	400	0	2	4	6	7	10
Private household workers	1,088	1,023	383	850	864	−25	−22	−21	−20	−17	−16
Supervisors, nonworking, service	205	210	275	279	285	35	37	39	31	33	36
Laborers, except farm	6,257	5,861	6,884	7,052	7,215	10	13	15	17	20	23
Animal caretakers	91	105	119	120	123	31	33	35	14	15	17
Cannery workers	61	56	67	69	71	10	12	16	20	23	27
Cleaners, vehicle	119	100	133	138	143	11	16	20	32	38	43
Conveyor operators and tenders	51	46	53	54	56	3	6	8	14	18	21
Garbage collectors	115	110	127	129	133	11	12	16	15	17	20
Gardeners and groundskeepers, except farm	646	661	732	744	759	13	15	17	11	13	15
Helpers, trades	1,023	608	777	798	819	−24	−22	−20	28	31	35
Highway maintenance workers	173	165	172	175	179	0	1	4	4	6	9
Line service attendants	29	30	41	41	42	39	41	42	36	38	39
Pipelayers	47	42	56	57	58	18	21	23	32	35	37
Riggers	30	27	33	33	34	11	12	15	23	24	27
Stock handlers	938	962	1,111	1,150	1,171	18	23	25	15	20	22
Order fillers	356	355	420	430	435	18	21	22	18	21	23
Stock clerks, sales floor	581	608	691	721	736	19	24	27	14	19	21
Fallers and buckers	45	39	35	35	36	−23	−22	−20	−10	−9	−7
Farmers and farmworkers	2,704	2,691	2,404	2,407	2,424	−11	−11	−10	−11	−11	−10
Farmers and farm managers	1,447	1,448	1,370	1,357	1,359	−5	−6	−6	−5	−6	−6
Farm owners and tenants	1,405	1,407	1,319	1,304	1,305	−6	−7	−7	−6	−7	−7
Farm managers	42	40	51	52	53	21	24	26	27	30	32
Farm supervisors and laborers	1,257	1,243	1,034	1,050	1,065	−18	−16	−15	−17	−16	−14
Farm supervisors	33	33	31	31	32	−7	−5	−3	−6	−4	−2
Farm laborers	1,224	1,211	1,003	1,019	1,033	−18	−17	−16	−17	−16	−15

[1]Data not available.

The growth of occupations concentrated in the construction and manufacturing industries, which was severely affected by the 1980–82 recession, includes recovery from the trough of that period. As a result, the data on growth patterns of occupations must be interpreted very carefully. For this reason, the data on growth presented in table 1 include employment data for 1979 (prerecessionary) and 1979–95 growth rates.[2]

Alternative sets of projections

The Bureau has developed three alternative sets of occupational employment projections that are tied to the economic and industry alternatives presented elsewhere in this issue of the *Review*. Although the assumptions and analyses that differentiate these scenarios result in different rates of growth for most occupations, the basic changes in the occupational composition from 1982 to 1995 are similar in all versions. Thus, although this article focuses on the "moderate" scenario, the discussion would be very similar if any of the other scenarios were highlighted. However, the major differences in trends between the alternate scenarios are reported in the final section of this article. The alternative projections are also shown in table 1 for all detailed occupations.

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Differences in the occupational projections among the three alternatives should not be considered as the potential range within which the projections are likely to fall because the range for most occupations is much wider than that shown. The majority of occupations are sensitive to a wide variety of assumptions and economic factors and all of these could not be considered in the three scenarios.

One should keep in mind that the development of projections is not a precise statistical process. Despite the use of sophisticated economic models and the use of data in those models that are carefully developed by statistical techniques, the future cannot be precisely predicted. Too many factors can alter economic activity over the 1982–95 period to assure that the projections provide an exact picture of the future. This is very evident if one reviews previous employment projections developed by the Bureau or any other organization.[3]

The projections developed by the Bureau reflect very detailed analyses of the factors that are expected to affect occupational trends in addition to those factors built into the model. Thus, the occupational projections presented in this article reflect the analyses and judgments of Bureau staff who are involved in this development. Some of these judgments are fairly subjective, and therefore, open to question. For example, in developing projected occupational staffing patterns for automobile manufacturing, judgments had to be made about the actual use of robots and other production processes in the industry during 1982–95. Clearly, at this stage of the development and use of robots in automobile manufacturing, such judgments are highly subjective.

Despite these analytical problems in developing precise projections of the future, our experience has indicated that basic trends in occupational structure can be approximated through the types of analyses described. Growth trends have proved to be correct for most occupations in previous sets of projections. We are hopeful that our experience and improved techniques and data bases will result in projections that present the general trends in employment by occupation during 1982–95.

Broad structural changes

The impact of technological change, differences in industrial growth patterns, and other factors that have a significant impact on occupations will result in changes in the broad occupational structure between 1982 and 1995. However, the direction of these changes will be very similar to changes that have occurred over the past several decades. Professional and technical workers will continue to increase faster than total employment and account for a greater share of total employment in 1995 than in 1982. Service workers, excluding private household workers, also will continue to grow faster than average. Managers, salesworkers, and craftworkers will continue to increase at about average rates and maintain their relative share of total employment, a share which has not changed significantly over the past two decades. On the other hand, operatives and laborers should continue their long-term decline as a proportion of total employment, as their growth is impacted by the effects of technological change and the relatively faster growth of the service sector. Private household workers are expected to continue to decline numerically as well as in proportion to total employment.

Major changes in long-term trends in the broad occupational structure, however, are expected in clerical and in farming occupations. Although the number of clerical workers is expected to continue to increase, the effects of office automation should result in average growth rather than in the faster than average growth which has occurred over the past two decades. Farming occupations which have declined significantly throughout the century are expected to continue to decrease but somewhat more slowly than in the past. However, farming occupations should drop significantly as a proportion of total employment between 1982 and 1995.

Broad occupational trends tend to mask much of the dynamic changes in occupational structures that have occurred and are expected to occur over the projections period. Within each broad occupational group, detailed occupational trends will be affected by technological changes and by alterations in the basic structure of industrial growth. The latter changes are extremely important because occupational growth is very closely related to changes in employment of industries in which they are concentrated. The following sections of this article discuss the growth of individual occupations and highlight many of the basic changes in occupational employment that are anticipated over the period.

Detailed occupations

The economy is expected to generate an additional 25.6 million jobs between 1982 and 1995. About one-half of this job growth is projected to occur in only 40 of the 1,700 occupations (see table 2) for which projections were developed. Several points should be kept in mind in reviewing these occupations which will account for the greatest number of additional jobs. In general, the occupations are numerically large and all had more than 250,000 workers in 1982. Occupations that require extensive training are not found to any greater extent in table 2 than are those requiring little formal training. Only one-fourth of the occupations generally require a college degree.

Several of the occupations on the list reflect recovery from very low 1982 employment levels caused by the recession. For example, helpers, trade; supervisors of blue-collar workers; and carpenters are on the list only because of the sharp drop in employment experienced from 1979 to 1982. Most of the employment growth reflects recovery to prerecessionary levels.

A list of the fastest growing occupations from 1982 to

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Table 2. Forty occupations with largest job growth, 1982–95

Occupation	Change in total employment (in thousands)	Percent of total job growth	Percent change
Building custodians	779	3.0	27.5
Cashiers	744	2.9	47.4
Secretaries	719	2.8	29.5
General clerks, office	696	2.7	29.6
Salesclerks	685	2.7	23.5
Nurses, registered	642	2.5	48.9
Waiters and waitresses	562	2.2	33.8
Teachers, kindergarten and elementary	511	2.0	37.4
Truckdrivers	425	1.7	26.5
Nursing aides and orderlies	423	1.7	34.8
Sales representatives, technical	386	1.5	29.3
Accountants and auditors	344	1.3	40.2
Automotive mechanics	324	1.3	38.3
Supervisors of blue-collar workers	319	1.2	26.6
Kitchen helpers	305	1.2	35.9
Guards and doorkeepers	300	1.2	47.3
Food preparation and service workers, fast food restaurants	297	1.2	36.7
Managers, store	292	1.1	30.1
Carpenters	247	1.0	28.6
Electrical and electronic technicians	222	.9	60.7
Licensed practical nurses	220	.9	37.1
Computer systems analysts	217	.8	85.3
Electrical engineers	209	.8	65.3
Computer programmers	205	.8	76.9
Maintenance repairers, general utility	193	.8	27.8
Helpers, trades	190	.7	31.2
Receptionists	189	.7	48.8
Electricians	173	.7	31.8
Physicians	163	.7	34.0
Clerical supervisors	162	.6	34.6
Computer operators	160	.6	75.8
Sales representatives, nontechnical	160	.6	27.4
Lawyers	159	.6	34.3
Stock clerks, stockroom and warehouse	156	.6	18.8
Typists	155	.6	15.7
Delivery and route workers	153	.6	19.2
Bookkeepers, hand	152	.6	15.9
Cooks, restaurants	149	.6	42.3
Bank tellers	142	.6	30.0
Cooks, short order, specialty and fast food	141	.6	32.2

Note: Includes only detailed occupations with 1982 employment of 25,000 or more. Data for 1995 are based on moderate-trend projections.

1995 is shown in table 3. Although the list is dominated by occupations that are tied to continued growth of expanding industries and which have been among the strongest in the economy for the past decade, many reflect recovery from the recession. It is also important to note that these fast growing occupations generally are not found on the list of occupations that will add the most jobs over the period. Almost half of the 20 occupations in the list are either in the computer or health fields, which are among the fields with the strongest growth.

Some occupations are expected to decline over the period. (See table 4.) In general, occupations on the list are concentrated in industries that are contracting, or severely affected by technological change. For example, railroad conductors are concentrated in a declining industry, while data entry operators are affected by technological change.

Health-related occupations. Health care will continue to be an expanding field of work during 1982–95. Reflecting growth in expenditures for health services, occupations in this field have been among the fastest growing for many years. Even during 1979–82, when total employment was virtually unchanged, employment in health occupations grew significantly. Continued population growth and expansion of health care insurance coverage are primary reasons underlying the expected continued growth. In addition, the aged, requiring the most health care, are expected to increase their share of the U.S. population. While the population is expected to go up by only 14 percent between 1980 and 1995, those over 65 years of age will increase by 26 percent.

The number of registered nurses is expected to grow by 49 percent between 1982 and 1995, an additional 642,000 jobs. Physicians are projected to increase by 34 percent, faster than the average for all occupations, and add 163,000 jobs. Nursing aides and orderlies should add 423,000 new jobs and licensed practical nurses, 220,000 jobs, both representing faster than average growth. Overall, these four occupations are projected to account for almost 6 percent of the total employment growth over the period.

Among the smaller and faster growing occupations, physical therapy technicians are projected to increase by 68 percent, occupational therapists by 60 percent, physical therapists by 54 percent, and medical assistants by 47 percent.

Computer-related occupations. Computers are expected to continue to have more widespread use throughout the economy through the mid-1990's. As a result, occupations that are directly related to computer development and use will be among the leaders in employment growth rates over the period. The number of systems analysts and computer programmers should expand at a very rapid rate through 1995. As more uses are found for computers in business and everyday life, software development will experience tremendous growth.

Most industry forecasts indicate that there will be more than 10 times as many computers in use during the next decade than exist today. This will translate into an increased demand for additional computer service technicians to maintain the equipment.

Recently, the focus has been on the micro- and minicomputers. Mainframe (large) computers have mostly been overlooked. In 1982, mainframe sales stood at $10 billion representing the largest segment of the computer machine market. Fifth-generation machines are expected to be introduced in the early 1990's, and sales are projected to grow significantly by 1995. Therefore, this means strong growth in the number of computer and peripheral equipment operators needed by 1995.

Education-related occupations. The growth of employment in many occupations in the education field is closely tied to the size of the school-age population. Although births declined steadily during 1961–75, the number of children born each year has grown steadily since 1976 and is expected to

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Table 3. Twenty fastest growing occupations, 1982–95

Occupation	Percent growth in employment
Computer service technicians	96.8
Legal assistants	94.3
Computer systems analysts	85.3
Computer programmers	76.9
Computer operators	75.8
Office machine repairers	71.7
Physical therapy assistants	67.8
Electrical engineers	65.3
Civil engineering technicians	63.9
Peripheral EDP equipment operators	63.5
Insurance clerks, medical	62.2
Electrical and electronic technicians	60.7
Occupational therapists	59.8
Surveyor helpers	58.6
Credit clerks, banking and insurance	54.1
Physical therapists	53.6
Employment interviewers	52.5
Mechanical engineers	52.1
Mechanical engineering technicians	51.6
Compression and injection mold machine operators, plastics	50.3

Note: Includes only detailed occupations with 1982 employment of 25,000 or more. Data for 1995 are based on moderate-trend projections.

continue until 1987. Because of this increase in births and the expected continued growth in the labor force participation of mothers of young children, employment of preschool teachers is expected to surge during 1982–95, increasing by more than 40 percent. Kindergarten and elementary schoolteachers as well as teachers' aides are anticipated to grow substantially as growth in the youth population works its way through the educational system.

The increase in the school-age population will not affect secondary schools until early in the 1990's. Therefore, secondary schoolteachers are expected to decline in numbers until 1990 and then turn around. Overall, between 1982 and 1995, this occupation should experience only minimal growth.

At the post-secondary level, vocational education teachers can be expected to grow at a strong pace. Growth of job training and retraining programs will be reflected in increased demand for this occupation. However, college and university teachers are projected to decline during 1982–95 because of a drop in the college-age population and because of higher tuition.

Scientific and technical occupations. Many scientific and technical occupations are expected to grow rapidly over the period, benefiting from the growth of high-technology industries. However, some will be negatively affected by the products of high technology and others will grow more sluggishly than average because they are concentrated in slowly growing industries.

Engineering occupations are expected to provide nearly 600,000 new jobs by 1995, as the occupation is expected to grow much faster than average. As manufacturing industries, primarily durable goods, rebound from the recession and place new technologies into their production systems, there will be heavy demands for electrical, industrial, and mechanical engineers. More civil engineers will be needed to meet the demands of a rejuvenated construction industry. Petroleum engineers on the other hand should experience average growth as oil supplies stabilize and new drilling moderates.

Chemists will be affected by a diminished growth of the chemical industry and geologists and geophysicists by a slowdown in oil and gas extraction. Therefore, both occupations are expected to grow only as fast as average. A fairly strong demand for biological scientists is expected due to the growth of the drug industry. Electrical and electronic technicians, mechanical engineering technicians, and civil engineering technicians should experience strong growth similar to their engineer counterparts. Drafters is one important occupation in this group to fall victim to new technology. As computer-assisted design equipment gains more widespread use, the growth of this occupation will be virtually nil.

Office clerical workers. Most office clerical occupations are expected to grow more slowly during 1982–95 than in the 1970's because of office automation. Nevertheless, significant growth is expected in some of these occupations. Receptionists should be among the fastest growing clerical occupations, with a projected increase of 49 percent. Because of the varied responsibilities and the need for human interaction, it is difficult to replace this occupation with a machine. Secretaries will increasingly use advanced office equipment in the future, thereby becoming more productive. This in turn will dampen demand for the occupation. Nevertheless, secretaries are projected to grow at a rate that is about average because of the growth of industries in which they are concentrated.

Table 4. Twenty most rapidly declining occupations, 1982–95

Occupation	Percent decline in employment
Railroad conductors	−32.0
Shoemaking machine operatives	−30.2
Aircraft structure assemblers	−21.0
Central telephone office operators	−20.0
Taxi drivers	−18.9
Postal clerks	−17.9
Private household workers	−16.9
Farm laborers	−15.9
College and university faculty	−15.0
Roustabouts	−14.4
Postmasters and mail superintendents	−13.8
Rotary drill operator helpers	−11.6
Graduate assistants	−11.2
Data entry operators	−10.6
Railroad brake operators	−9.8
Fallers and buckers	−8.7
Stenographers	−7.4
Farm owners and tenants	−7.3
Typesetters and compositors	−7.3
Butchers and meatcutters	−6.3

NOTE: Includes only detailed occupations with 1982 employment of 25,000 or more. Data for 1995 are based on moderate-trend projections.

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Most other office clerical occupations including typists will be growing more slowly than the average rate for all occupations. The expected increase in typing work will be in significant part taken care of by the increased use of word processing equipment. Stenographers is the one office occupation which has been declining and should continue to do so during the period.

Mechanics and repairers. The increasing complexity of equipment used by industry and by consumers is expected to provide continued steady growth for mechanics and repairers. Automotive mechanics are projected to grow faster than average—about 38 percent from 1982 to 1995—and because of the occupation's large size it will add nearly 324,000 jobs. Refrigeration and air-conditioning mechanics are expected to add 55,000 jobs. Office machine servicers and cash register servicers should rise by 72 percent as offices and stores are automated. This occupation will be among the fastest growing during the period.

Construction trades. Employment fluctuations caused by cyclical and seasonal factors characterize the construction industry. As a result, construction-related employment projections are difficult to develop accurately. Although employment among construction trades is projected to increase by more than 900,000 workers, much of this growth represents a recovery from the severe downturn of the early 1980's. If allowance is made for this recession, the growth of the construction trade occupations may be seen as approximating that of the rest of the economy.

Employment among the construction trades will also be affected by technological changes within the industry. Dry wall installers will benefit from the increased use of dry wall. Modular construction will slow the employment growth of carpenters. On the other hand, the increasing use of new types of electrical equipment will continue to aid the employment growth of electricians.

Food and beverage service occupations. The trend toward eating outside the home will result in continued employment growth among food and beverage preparation and service occupations. Sales in eating and drinking places nearly quadrupled between 1967 and 1981.[4] This trend is expected to add 1.8 million jobs in eating and drinking places, an increase of 38 percent during 1982–95. Much of this growth, however, should be in fast food restaurants and therefore food preparation and service workers in these establishments would increase faster than other food service occupations. They are expected to increase by 37 percent and add 297,000 jobs. Other food service occupations will also grow faster than average including waiters and waitresses, up 562,000; cooks, 402,000; and bartenders, 121,000. These four occupations will account for more than 5 percent of the total growth in jobs over the period.

Transportation occupations. As economic activity increases, so does the demand for transporting goods. Technological change has not radically affected the trucking industry, therefore, a rising demand for its services brings about roughly proportional increases in the employment of truckdrivers. Truckdrivers are projected to show average growth but, because of its large size, add almost 424,000 jobs. Double trailers and larger trucks will dampen employment growth among long-haul truckdrivers as will competition for long-haul business from railroad transportation.

Ambulance drivers are expected to have average employment growth. Busdrivers and industrial truck operators should experience below average growth rates. Technological change may have a greater impact on industrial truck operators, who move materials from one location to another within factories and warehouses. Industrial truck operators are projected to increase by 70,000, which largely reflects recovery from the decline in manufacturing employment during 1980–82.

Production occupations. The recovery of manufacturing from the recent recession and its projected employment increase by 1995 will provide many additional jobs for production workers performing precision tasks. Although growth rates will only approximate the economy as a whole, supervisors of blue-collar workers will gain 319,000 jobs; machinists, 58,000; press and plate printers, 35,000; tool and die makers, 32,000; and millwrights, 30,000. The majority of machinists, tool and die makers, and millwrights work in durable goods manufacturing which declined during 1980–82 and which is expected to recover and grow.

Some of the lesser skilled production occupations (such as operatives) are threatened by the introduction of robots and other automated equipment. Robots can perform welding, machine loading and unloading, spray painting, and certain types of assembly work, but their introduction is currently hampered by factors such as the lack of visual capabilities and by their purchase, installation, and maintenance costs. If the robots' capabilities can be improved and their associated costs can be reduced through mass production, we may see an occupational impact.

Among the fabricating, assembly, and handworking occupations, the group of assembly occupations is anticipated to grow by 332,000, primarily in electrical and electronic components, machinery, and electrical equipment assembly. Welders and flamecutters are expected to increase by 105,000; however, they are expected to decline in the automotive industry as more spot welding robots are used. The number of filers, grinders, buffers, and chippers should grow by about 30,000 jobs.

Some machine operators and tenders will experience the impact of robots which can load materials into machinery. However, increases are expected in some operator jobs, including 52,000 combination machine tool operators and

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39,000 power press operators. Sewers and stitchers should gain 78,000 jobs, although the growth rate is expected to be below average and employment is not even expected to reach the 1977 level by 1995. Production inspectors, testers, samplers, and weighers would be most affected by robotic vision systems, but the use of these systems seems to be in the distant future. Therefore, an increase of 119,000 inspecting jobs and 36,000 testing jobs is projected through 1995.

Sales occupations. Salesworker employment growth trends are generally tied to the growth of industries in which they are employed. Thus, security and bond sales agents and real estate agents should grow faster than average as do their related industries. Salesclerks should increase about average following the trend in retail trade where most are employed. However, because of the very large size of this occupation, it should be among the leaders in the *number* of jobs added during 1982–95.

Low and high alternative projections

The percentage distribution of occupational employment or staffing patterns within specific industries that was used to develop the low- and high-projection alternatives was identical to that used in the moderate-trend projections. Therefore, occupations that are concentrated in industries whose employment varies significantly are those which show the greatest variability among the three alternatives.

Total employment in the moderate-trend alternatives varied by only about 2 percent from both the low and high trends. Therefore, the distribution of employment by major occupational group varies little among the alternatives. (See table 5.)

In looking at specific occupations, significant differences may exist between the moderate and either the low and high alternatives. In virtually all cases, employment levels are small and the percent differences are relatively minor.

In a few instances, projected employment is greater in the low alternative than in the moderate, or lower in the high alternative than in the moderate. For example, employment for aircraft structure assemblers is projected to be 28,000 in the low alternative and 26,000 in the moderate and high alternatives. This is due to significantly higher projected employment for aircraft manufacturing in the low alternative which encompasses higher levels of defense expenditures.

Table 5. Percent distribution of employment by major occupational group, 1982 and projected 1995

Occupational group	1982	1995		
		Low trend	Moderate trend	High trend
Total, all occupations	100.0	100.0	100.0	100.0
Professional, technical, and related workers	16.3	17.3	17.1	17.2
Managers, officials, and proprietors	9.4	9.6	9.6	9.6
Salesworkers	6.9	6.8	6.9	6.9
Clerical workers	18.8	18.8	18.9	18.9
Craft and related workers	11.4	11.6	11.6	11.6
Operatives	12.8	12.1	12.1	12.2
Service workers	16.0	16.4	16.3	16.3
Laborers, except farm	5.8	5.5	5.5	5.6
Farmers and farmworkers	2.7	1.9	1.9	1.9

The following list identifies those occupations in which the difference between the alternative (high or low) projected employment is greater than 5 percent from the moderate trend:

Postmasters and mail superintendents
Railroad conductors
Postal mail carriers
Postal service clerks
Bookbinders
Locomotive engineers
Railroad brake operators
Extruder operators, rubber or plastics
Compression and injection mold machine operators, plastics
Press assistants and feeders
Shoemaking machine operators

Data uses

The current and projected occupational employment estimates presented in this article are developed by industry and are a part of a national industry-occupational employment matrix. Data from the matrix will underlie information in the 1984–85 edition of the *Occupational Outlook Handbook* which will be issued in the Spring of 1984. In addition to being used in the development of career guidance information, national occupational employment data and projections are used at all levels of government, and by others, to formulate education plans, including vocational education, and training requirements. State employment security agencies utilize the national matrix as part of their own programs of developing occupational projections. Other government agencies and private organizations also use the matrix for analytical purposes. □

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FOOTNOTES

[1] See *Handbook of Methods*, Bulletin 2134 (Bureau of Labor Statistics, 1982), chapters 18–21.

[2] Table 1 includes only 370 detailed occupations with employment of 25,000 or more in 1982. Projections developed in greater detail with employment of 5,000 or more in 1982 will be published in the Spring of 1984 in *Occupational Projections and Training Data*, 1984 edition. Current and projected occupational employment estimates are developed by the Bureau in the National Industry-Occupational Employment Matrix program. The national matrix is developed by applying data on occupational staffing patterns of industries collected in the Occupational Employment Statistics Survey program to estimates of annual average industry employment collected in the Current Employment Statistics program. These surveys count jobs rather than people; therefore, the employment estimates contained in this report are different from those derived from a count of individuals in the Current Population Survey.

[3] See Max L. Carey and Kevin Kasunic, "Evaluating the 1980 projections of occupational employment," *Monthly Labor Review*, July 1982, pp. 22–30.

[4] U.S. Bureau of the Census, *Current Business Report*, Series BR, Monthly Retail Trade.

A note on communications

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High technology today and tomorrow: a small slice of the employment pie

High tech industries are expected to provide only a small proportion of the jobs created between 1982 and 1995, under three concepts which embrace from six to 48 industries

RICHARD W. RICHE, DANIEL E. HECKER, AND JOHN U. BURGAN

High technology enjoys high visibility. Industry developments are tracked closely in the United States and abroad, and the implications for productivity, international competition, national defense, and the general standard of living are of increasing interest. Many States and some major cities have established task forces to assess the potential of high technology to provide employment opportunities and to develop incentives to attract high tech industries.

Although industries that manufacture computers and office equipment, electronic components and new drugs and medicines generally are among those classified as high tech industries, experts differ as to the makeup of the high tech group. There is no widely accepted definition of high technology industries, and they have been defined in many ways. In this article, we set forth various concepts of high technology and consider its effect on employment during the 1970's and through the mid-1990's.

The criteria generally used to classify high tech industries are research and development (R&D) expenditures, the use of scientific and technical personnel relative to total employment, and product sophistication. Employing these criteria, we developed three definitions of high tech to analyze employment trends in these industries. Our analysis indicates that:

- Employment in high tech industries increased faster than average industry growth during the 1972–82 period.
- High tech industries accounted for a relatively small proportion of all new jobs nationwide, but provided a significant proportion of new jobs in some States and communities.
- About 6 out of 10 high tech jobs are located in the 10 most populous States.
- States with relatively high proportions of employment in high tech industries are generally small; most are in the Northeast.
- Through 1995, employment in high tech industries is projected to grow somewhat faster than in the economy as a whole.
- High tech industries, even broadly defined, will account for only a small proportion of new jobs through 1995.
- Scientific and technical workers, while critical to the growth of industry and the economy, will account for only 6 percent of all new jobs through 1995.

A look at the concepts

Our examination of published reports on high technology prepared by private organizations and Federal and State agencies indicates a variety of approaches to identifying high

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technology industries. One approach used by a State agency, for example, involved a review of the U.S. Government's Standard Industrial Classification (SIC) manual in which 20 industry groups were designated as high tech based on the perceived degree of technical sophistication of the products.[1] One limitation of this method, and others which focus on the nature of the product, is that it is highly subjective. Moreover, as Robert Vinson and Paul Harrington point out in an article on high technology industries in Massachusetts, the degree of technical sophistication of the product is of less significance than the complexity of the production process for those interested in the implications of high tech for capital and labor force requirements.[2]

A concept of high technology included in a document prepared by the Congressional Office of Technology Assessment illustrates a much broader and complex approach in which a series of factors are considered in developing a concept of high tech firms and industries.[3] The office describes high technology firms as ". . . companies that are engaged in the design, development, and introduction of new products and/or innovative manufacturing processes through the systematic application of scientific and technical knowledge . . .". It points out that these companies typically use state-of-the-art techniques, have a high proportion of R&D costs; employ a high proportion of scientific, technical and engineering personnel; and serve small, specialized markets. The report goes on to say, "A high technology industry is a group of firms, producing similar or related products, that includes a high proportion of high technology firms."

As suggested earlier, definitions of high technology vary considerably. Federal agencies, including the Department of Defense, the Securities and Exchange Commission, and the Department of Commerce have formulated definitions of high technology to suit their own particular research needs.

An example: the set of definitions included in a report by the International Trade Administration, Department of Commerce, which examines U.S. competitiveness in high technology industries.[4] Four techniques for defining technology intensive trade are presented; one identifies industries and three focus on products.

The industry-based definition of technology intensive trade, developed by Michael Boretsky, uses the two measures frequently employed in examining high technology: R&D expenditures as a percentage of industry value added, and industry employment of scientists, engineers, and technicians as a proportion of the industry work force.[5] He identified two groups of industries based on the magnitude of R&D expenditures and employment of scientists, engineers, and technicians: technology intensive industries and high technology industries. Technology intensive products and others are not separately identified. The three product-based definitions also help in evaluating competitiveness in high technology industries. In the mid-1970's, Regina Kelly used R&D expenditures by product field and value of product shipments to develop intensity ratios.[6] She ranked products by R&D "intensity" and classified them by technology. Kelly designated the first quartile of R&D intensities as high technology goods. Subsequently, she refined her analysis and considered product groups with above average R&D intensities as technology intensive. In 1980, C. Michael Aho and Howard Rosen basically used the Kelly methodology to identify technology-intensive product groups.[7] These researchers used more recent data and the Standard International Trade Classification. More recently, Lester Davis used input-output analysis and R&D expenditure and shipment data by product group to develop an index of technological intensity.[8] Using an input-output matrix, Davis determined the value of R&D embodied in the various inputs used to make the products and the percentage of R&D embodied in the final product. He then arrived at total R&D by combining the indirect R&D (R&D contributed by inputs) with the value of direct R&D (R&D expenditures on product development). Davis ranked product groups according to total R&D to shipments intensity, with only those goods showing a significant R&D intensity (rather than simply above average) designated as high tech products.

A definition by Ann Lawson in an article in the Department of Commerce's *Industrial Economic Review* includes industries "possessing above average levels of scientific and engineering skills and capabilities, compared to other industries; and currently experiencing the accelerating technological growth associated with the germination and evolution stages along their respective S-curves."[9]

Selecting three groups of industries

Because there is no widely accepted definition of high technology industries, we believe it is useful to illustrate employment trends under a range of concepts. As indicated, the concepts underlying most definitions of high technology use one or a combination of three factors (1) the utilization of scientific and technical workers, (2) expenditures for research and development, and (3) the nature of the product of the industry. We have selected three groups of high technology industries based on these concepts.

We have defined industries according to the Standard Industrial Classification (SIC) at the 3-digit detail. We would have preferred to use 4-digit detail, but data were not available. We made an exception for R&D laboratories (SIC 7391), because, for this industry, data were available, and the other industries in SIC 739 have high levels of employment but little or no involvement with high technology. We defined scientific and technical workers as engineers, life and physical scientists, mathematical specialists, engineering and science technicians and computer specialists. We refer to these workers as *technology-oriented workers*. We excluded government, colleges, and universities, although some of

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their activities are no doubt high tech-oriented, such as some research conducted in higher educational institutions and in some government agencies. There was no realistic way to estimate the small proportion of employment associated with these activities.

Data on research and development expenditures are compiled annually through surveys conducted by the National Science Foundation. The most recent data available are for 1980. Statistics on employment of scientific and technical workers by industry are presented in the Bureau's national industry-occupation matrix. The most current matrix available presents data for 1982.

Group I. The criterion for inclusion in this group is solely the utilization of technology-oriented workers. We included an industry if technology-oriented workers accounted for a proportion of total employment that was *at least one and a half times the average for all industries.* (See table 1.)

To provide a reasonable definition but very broad coverage, we set the cutoff at 5.1 percent of total employment.

Table 1. Employment in high technology industries, 1972, 1980, and 1982

[In thousands]

SIC	Industry	High-tech group[1]			Employment			Percent change	
		I	II	III	1972	1980	1982	1972–80	1972–82
131	Crude petroleum and natural gas	X			139.3	219.6	281.7	57.7	102.2
162	Heavy construction, except highway and street	X			495.1	658.5	633.9	33.0	28.1
281	Industrial inorganic chemicals	X		X	141.2	161.1	153.5	14.1	8.7
282	Plastic materials and synthetics	X		X	228.7	204.8	182.7	−10.0	−20.1
283	Drugs	X	X	X	159.2	196.1	199.8	23.2	25.5
284	Soaps, cleaners, and toilet preparations	X		X	122.4	140.9	145.3	15.1	18.7
285	Paints and allied products	X		X	68.6	65.1	59.7	−5.1	−13.0
286	Industrial organic chemicals	X		X	142.8	174.1	174.3	21.9	22.1
287	Agricultural chemicals	X		X	56.4	72.0	67.1	27.7	19.0
289	Miscellaneous chemical products	X		X	90.0	93.3	91.5	3.7	1.7
291	Petroleum refining	X		X	151.4	154.8	169.0	2.3	11.6
301	Tires and inner tubes	X			122.1	114.8	101.9	6.0	−16.5
324	Cement, hydraulic	X			31.9	30.9	28.5	−3.1	−10.6
348	Ordnance and accessories	X		X	81.9	63.4	71.4	−25.6	−12.8
351	Engines and turbines	X		X	114.6	135.2	114.8	18.0	0.2
352	Farm and garden machinery	X			135.0	169.1	130.8	25.3	−3.1
353	Construction, mining, and material handling machinery	X			293.7	389.3	340.9	32.6	16.1
354	Metalworking machinery	X			286.0	373.1	320.3	30.5	12.0
355	Special industry machinery, except metalworking	X		X	176.9	207.3	179.4	17.2	1.4
356	General industrial machinery	X			267.5	323.7	283.2	21.0	5.9
357	Office, computing, and accounting machines	X	X	X	259.6	432.2	489.7	66.5	88.6
358	Refrigeration and service industry machinery	X			164.4	174.2	161.3	6.0	−1.9
361	Electric transmission and distribution equipment	X		X	128.4	122.5	110.1	−4.6	−14.2
362	Electrical industrial apparatus	X		X	209.3	239.9	211.8	14.6	1.2
363	Household appliances	X			186.9	163.2	142.0	−12.7	−25.0
364	Electric lighting and wiring equipment	X			204.4	209.2	186.9	2.4	−8.6
365	Radio and TV receiving equipment	X		X	139.5	108.8	94.6	−22.0	−32.2
366	Communication equipment	X	X	X	458.4	541.4	555.7	18.1	21.2
367	Electronic components and accessories	X	X	X	354.8	553.6	568.7	56.0	60.3
369	Miscellaneous electrical machinery	X		X	131.7	152.1	141.3	15.5	7.3
371	Motor vehicles and equipment	X			874.8	788.8	690.0	−9.8	−21.1
372	Aircraft and parts	X	X	X	494.9	652.3	611.8	31.8	23.6
376	Guided missiles and space vehicles	X	X	X	92.5	111.3	127.3	20.3	37.5
381	Engineering, laboratory, scientific, and research instruments	X		X	64.5	76.8	75.7	19.1	17.4
382	Measuring and controlling instruments	X		X	159.6	245.3	244.3	53.7	53.1
383	Optical instruments and lenses	X		X	17.6	33.0	32.5	87.5	84.7
384	Surgical, medical, and dental instruments	X		X	90.5	155.5	160.4	71.8	77.2
386	Photographic equipment and supplies	X		X	117.1	134.6	138.3	15.0	18.1
483	Radio and TV broadcasting	X			142.7	199.6	216.4	39.9	51.6
489	Communication services, n.e.c.[2]	X			29.7	66.1	91.0	122.6	206.4
491	Electric services	X			312.0	391.0	415.1	25.3	33.0
493	Combination electric, gas and other utility services	X			183.4	196.7	198.4	7.3	8.2
506	Wholesale trade, electrical goods	X			331.2	421.4	434.9	27.2	31.3
508	Wholesale trade, machinery, equipment, and supplies	X			868.6	1,307.7	1,344.9	50.6	54.8
737	Computer and data processing services	X		X	106.7	304.3	357.5	185.2	235.1
7391	Research and development laboratories	X		X	110.7	163.1	162.7	47.3	47.0
891	Engineering, architectural, and surveying services	X			339.3	544.9	568.7	60.1	67.6
892	Noncommercial educational, scientific and research organizations	X			111.8	113.5	117.8	1.5	5.4

[1] *Group I.* Includes industries with a proportion of technology-oriented workers (engineers, life and physical scientists, mathematical specialists, engineering and science technicians and computer specialists) at least 1.5 times the average for all industries.

Group II. Includes industries with a ratio of R&D expenditures to net sales at least twice the average for all industries.

Group III. Includes manufacturing industries with a proportion of technology-oriented workers equal to or greater than the average for all manufacturing industries, and a ratio of R&D expenditures to sales close to or above the average for all industries. Two nonmanufacturing industries which provide technical support to high tech manufacturing industries also are included.

[2] Not elsewhere classified.

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However, we excluded industries with fewer than 25,000 workers. A total of 48 industries makes this the broadest of the three groups. As indicated in table 1, manufacturing industries account for 3 of every 4 industries in this category, with the remainder in mining, construction, transportation and public utilities, and trade and services.

Group II. R&D expenditures were the factor used to select this group of industries. We included an industry if its *ratio of* R&D *expenditures to net sales was at least twice the average for all industries.* The cutoff point, 6.2 percent, was set high to capture only those industries, such as drugs and communication equipment, heavily involved in developing new products. Because the National Science Foundation data show little R&D outside of manufacturing, we excluded other industries. This group, with only six industries, is the narrowest of the three groups of high tech industries. The industries, as expected, fall into all three groups.

Group III. The criteria for this group are both the utilization of technology-oriented workers and R&D expenditures. In addition, we excluded some industries based on their major products.

We included manufacturing industries if the proportion of technology-oriented workers relative to total employment in the industry was *equal to or greater than the average for all manufacturing industries (6.3 percent) and the ratio of* R&D *expenditures to sales was close to or above the average for all industries (3.1 percent).* We added two industries which provide technical support to manufacturing industries, computer and data processing services (SIC 737) and R&D laboratories.

Group III, with 28 industries, provides a scope of coverage between groups I and II. It excludes most nonmanufacturing industries that are in group I but which have little R&D activity (and therefore little new product development), such as engineering and architectural services and radio and TV broadcasting. The exclusion of nonmanufacturing industries is common in definitions of high tech industries. Group III also excludes some manufacturing industries found in group I, such as motor vehicles, which did not meet both criteria, and certain machinery industries, which met the criteria, but whose products we did not consider high technology. However, using both criteria, we included some manufacturing industries not in group II, such as those in the instruments, chemicals, and electrical equipment groups, industries with moderately high R&D to sales ratios that appear on many lists of high technology.

Employment trends during 1972–82

Employment in high technology industries, no matter which of the three definitions is used, increased faster than all wage and salary employment between 1972 and 1982. (See table 2.) Group II employment, however, increased significantly faster, 39.8 percent, nearly twice as fast as the 20.1-percent increase in total employment. Group III employment increased 27.3 percent and group I, only 23.6 percent. Over the period, each group increased slightly as a percentage of total wage and salary employment, group I from 13.1 to 13.4 percent, group II from 2.4 to 2.8 percent, and group III, from 5.8 to 6.2 percent.

The contribution of high tech industries to total employment growth over this period, no matter how high tech is defined, was relatively small. Group I accounted for 15.3 percent of new wage and salary jobs, group II, 4.7 percent, and group III, 7.9 percent.

Growth was not steady. For example, when wage and salary employment declined below its 1980 level during the 1981–82 recession, employment in group I, which includes some *cyclical* industries, also declined. During this period, employment in group III held steady, and group II continued to grow, despite the recession.

Among the industries included in the high technology groups, growth rates varied widely during 1972–82. Computer and data processing services had the fastest growth, 235.1 percent, followed by communication services, 206.4, crude petroleum and natural gas extraction, 102.2, office,

Table 2. Employment in three groups[1] of high technology industries, 1972, 1980, 1982, and projected 1995

[In thousands]

Employment grouping	Employment			Projected 1995 employment alternatives			Percent change							
									1980–95			1982–95		
	1972	1980	1982	Low	Moderate	High	1972–80	1972–82	Low	Moderate	High	Low	Moderate	High
All wage and salary workers	76,547.0	92,611.2	91,950.1	115,382.9	117,744.9	120,531.1	21.0	20.1	24.6	27.1	30.1	25.5	28.1	31.1
Group I	9,989.7	12,550.1	12,349.6	16,260.7	16,612.9	16,931.6	25.6	23.6	29.6	32.4	34.9	31.7	34.5	37.1
Percent of total employment	13.1	13.6	13.4	14.1	14.1	14.0	—	—	—	—	—	—	—	—
Group II	1,819.4	2,486.9	2,543.0	3,517.5	3,409.6	3,452.9	36.7	39.8	41.4	37.1	38.8	38.3	34.1	35.8
Percent of total employment	2.4	2.7	2.8	3.0	2.9	2.9	—	—	—	—	—	—	—	—
Group III	4,468.9	5,694.8	5,691.1	7,746.6	7,719.8	7,890.0	27.4	27.3	36.0	35.6	38.5	36.1	35.6	38.6
Percent of total employment	5.8	6.2	6.2	6.7	6.6	6.5	—	—	—	—	—	—	—	—

[1]Each group equals the sum of employment in detailed industries listed in Table 1.

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computing, and accounting machines, 88.6, and optical instruments, 84.7. Radio and TV receiving equipment declined by 32.2 percent, household appliances by 24.0, motor vehicles by 21.2, and plastic materials and synthetics, by 20.1 percent. Some of the declines in employment are directly attributed to the 1981–82 recession.

Employment through 1995

Every other year, the Bureau prepares employment projections of roughly 12 years by industry under alternative scenarios. The latest projections of moderate, high, and low growth extend through 1995.[10] Because of employment declines in certain industries in 1981 and 1982, projected growth in wage and salary employment and employment in groups I and III is actually greater from 1982 to 1995 than from 1980. In group II, which had increasing employment from 1980 to 1982, this is not the case. For each of the three groups, using either 1980 or 1982 as a base, high tech employment is projected to grow somewhat faster than total wage and salary employment under all three alternatives. (See table 2.)

For group II, the low growth alternatives shows higher 1995 employment than the moderate alternative. This is because higher defense spending is assumed in the low alternative than in the moderate alternative, and group II has a high proportion of its employment in three defense-related industries, communication equipment, aircraft and parts, and guided missiles and space vehicles. In addition, these projections indicate that certain industries which grew very rapidly over the 1972–82 period, including computer and data processing services and office, computing, and accounting machines, will grow at a slower rate over the 1982–95 period, although still well above the average for all industries.

High tech and displaced workers. The Bureau's projections indicate that between 23.4 and 28.6 million new wage and salary jobs will be created between 1982 and 1995. We estimate that between 1.0 and 4.6 million of these jobs will be in high technology industries. Growth in group I will account for 16 or 17 percent of all new jobs, depending on the projection used, while growth in group II will account for 3 or 4 percent and group III, 8 or 9 percent. The great majority of new jobs will be in industries other than high technology. Therefore, displaced workers and others seeking jobs, and governmental and community organizations seeking to attract jobs to their regions, would be well advised not to limit their search to high tech industries only.

One additional factor may have a negative effect on the ability of high tech industries to save economically depressed industries and provide jobs for displaced workers. The occupational composition of many rapidly growing high tech industries is significantly different from other manufacturing industries that have suffered in recent years. For example, about three-fourths of the workers in the blast furnaces and basic steel industry and the motor vehicles industry are blue-collar workers. These are the workers who have been displaced. However, many high tech industries, especially those projected to grow the fastest, have a much smaller proportion of their workers in these occupations. (See table 3.)

Table 3. Occupational distribution in selected *rapidly growing* high-technology industries and the motor vehicle manufacturing and blast furnaces and basic steel industries, 1980

[In percent]

Occupation	Office, computing, and accounting machines	Electronic components	Computer and data processing services	Blast furnaces and basic steel products	Motor vehicles
Total	100.0	100.0	100.0	100.0	100.0
White-collar	66.3	37.7	96.0	17.7	20.2
Tech-oriented	27.3	15.0	26.0	3.9	5.9
Engineers	11.9	7.2	1.7	1.8	3.4
Life and physical scientists	.1	.2	.1	.2	.1
Mathematical specialists	(1)	(1)	(.3)	(1)	(.2)
Engineering and science technicians	8.8	6.4	2.7	1.5	1.7
Computer specialists	6.5	1.2	21.2	.4	.5
Blue-collar	32.7	61.0	3.4	80.2	76.8
Service	1.0	1.3	.6	2.1	3.0

[1]Less than 0.1 percent.

Table 4. Projected 1982–95 growth in technology-oriented occupations

[In thousands]

Occupational group	Employment				Change 1982–95					
	1982	Projected 1995			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
All occupations	101,510	124,846	127,110	129,902	23,336	25,600	28,392	23.0	25.2	28.0
Professional	16,584	21,545	21,775	22,325	4,961	5,191	5,741	29.9	31.3	34.6
Technology oriented	3,287	4,777	4,795	4,907	1,490	1,508	1,620	45.3	45.9	49.3

One additional factor may have a negative effect on the ability of high tech industries to save economically depressed industries and provide jobs for displaced workers. The occupational composition of many rapidly growing high tech industries is significantly different from other manufacturing industries that have suffered in recent years. For example, about three-fourths of the workers in the blast furnaces and basic steel industry and the motor vehicles industry are blue-collar workers. These are the workers who have been displaced. However, many high tech industries, especially those projected to grow the fastest, have a much smaller proportion of their workers in these occupations. (See table 3.)

High technology occupations

High technology occupations have also been the subject of much concern recently, although here too data on current and projected employment and clear definitions of what occupations are included have been lacking.

Occupations which clearly meet the definition of high technology workers are engineers, life and physical scientists, mathematical specialists, engineering and science technicians, and computer specialists. Most workers in these technology-oriented occupations are directly involved in developing or applying new technologies.[11] Their work requires in-depth knowledge of theories and principles of science, engineering, and mathematics underlying technology—a knowledge which distinguishes them from computer operators, computer service technicians and other high tech machinery repairers, or workers in a wide range of occupations who use word processing machines, computers or other high technology products, but rarely have—or need—such in-depth knowledge. Workers in these technology-

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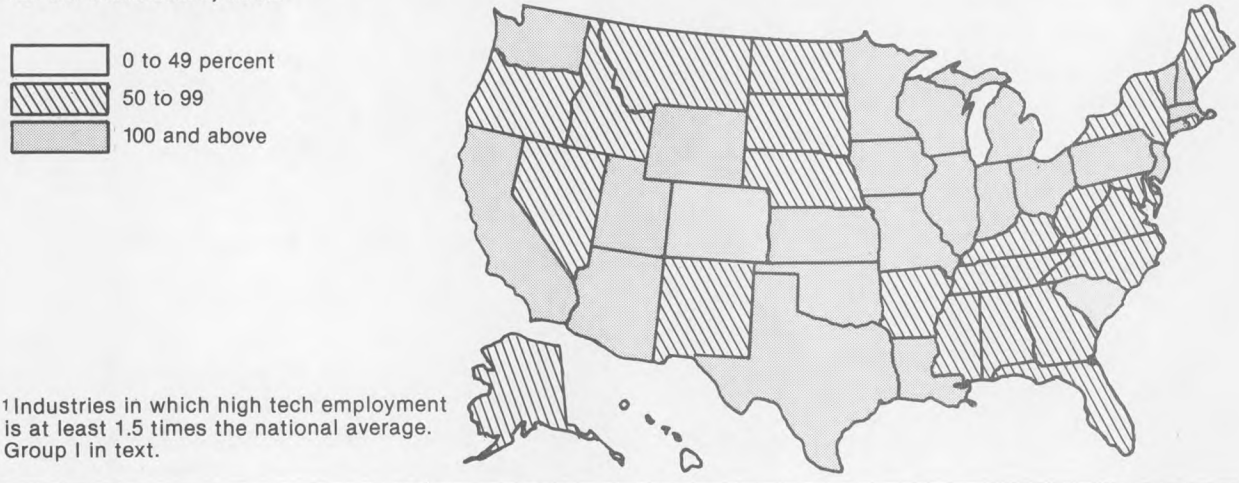
oriented occupations generally need specialized post-high school education in some field of technology—ranging from an associate degree or its equivalent to a doctorate—education with a thorough high school preparation in science and mathematics as a prerequisite.

Technology-oriented workers, while essential to the development of technology, are relatively few in number and will account for a relatively small proportion of new jobs through 1995. In 1982, technology-oriented employment totaled 3.3 million, or about 3.2 percent of total employment. (See table 4.) Through 1995, this employment is projected to show growth ranging from 45.3 to 49.3 percent, much faster than the 23- to 28-percent increase projected for all wage and salary workers. This growth is expected to generate between 1.5 and 1.6 million new jobs over the 13-year period. These occupations are projected to account for 6 percent of all new jobs in the economy, roughly the same proportion as during the 1970's.

Local employment levels

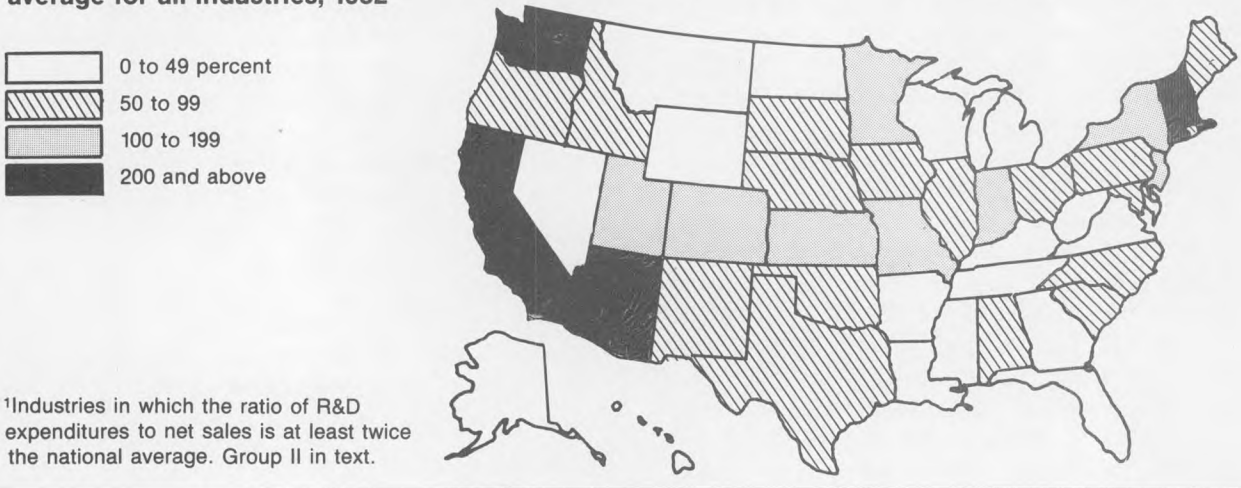
High technology employment is not expected to take up the slack in job generation caused by the long-term decline in heavy durable goods industries, including those we have defined as high tech. What is true for the Nation as a whole of course, does not hold for certain States and areas. (See charts 1 and 2.) High technology employment can have a

Chart 1. The proportion of high technology workers by State in 48 industries[1] compared with the average for all industries, 1982



[1] Industries in which high tech employment is at least 1.5 times the national average. Group I in text.

Chart 2. The proportion of high technology workers by State in six industries[1] compared with the average for all industries, 1982



[1] Industries in which the ratio of R&D expenditures to net sales is at least twice the national average. Group II in text.

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Table 5. Metropolitan areas ranked by high technology employment levels and percentages of total nonagricultural employment in three States, September 1982

[In thousands]

State	Group I			Group II			Group III		
	SMSA[1]	Number of employees	Percent	SMSA[1]	Number of employees	Percent	SMSA[1]	Number of employees	Percent
California, total		1,523.3			616.3			930.0	
Top 5 areas, total		1,321.1			574.5			848.4	
Top 5 areas as percent of State's high tech employment		86.7			93.2			91.2	
	Los Angeles	606.3	17.2	Los Angeles	259.5	7.4	Los Angeles	365.0	10.4
	San Jose	261.3	37.5	San Jose	169.5	24.3	San Jose	227.7	32.7
	Anaheim	175.7	20.9	Anaheim	78.4	9.3	Anaheim	121.3	14.4
	San Francisco	173.0	11.1	San Diego	45.1	6.8	San Francisco	67.4	4.3
	San Diego	104.8	15.8	San Francisco	22.0	1.4	San Diego	67.0	10.1
Texas, total		1,016.8			154.4			362.3	
Top 5 areas, total		739.2			134.0			286.3	
Top 5 areas as percent of State's high tech employment		72.7			86.8			79.0	
	Houston	349.1	22.0	Dallas	102.0	6.6	Dallas	140.9	9.1
	Dallas	284.5	18.4	Houston	10.4	.7	Houston	86.9	5.5
	San Antonio	36.4	8.7	Austin	10.4	3.8	Beaumont	24.0	16.2
	Beaumont	35.3	23.8	San Antonio	7.1	1.7	Austin	21.6	8.1
	Austin	33.9	12.6	Lubbock	4.3	4.8	San Antonio	12.9	3.1
Michigan, total		623.4			28.8			118.4	
Top 5 areas, total		490.3			24.5			88.3	
Top 5 areas as percent of State's high tech employment		78.6			85.1			74.6	
	Detroit	325.5	21.0	Detroit	11.7	.8	Detroit	48.1	3.1
	Flint	59.2	33.9	Kalamazoo	7.9	7.5	Grand Rapids	15.8	6.0
	Ann Arbor	37.4	28.5	Muskegon	2.2	3.9	Kalamazoo	10.6	10.0
	Grand Rapids	34.9	13.3	Grand Rapids	1.4	.6	Ann Arbor	9.5	7.2
	Lansing	33.3	18.6	Benton Harbor	1.3	2.4	Muskegon	4.3	7.6

[1]Standard Metropolitan Statistical Area.

large impact on a local economy. Local success stories include California's Silicon Valley and the Route 128 area in Massachusetts and New Hampshire.[12] In a relatively short period, these areas have developed substantial industrial bases built on high technology industries.

We analyzed data on the distribution of high technology employment in three States—California, Michigan and Texas. The results are shown in table 5.[13]

Regardless of the definition used, we found most employment to be located in the largest metropolitan areas. The top five areas in each State accounted for between 72.7 and 93.2 percent of the high tech jobs, depending on the State and definition used. Nonagricultural employment in these areas ranged from 63.7 to 74.2 percent of all employment in each State. Thus, the distribution of high technology employment appears to be concentrated within the States.

In California, the Los Angeles area, with a large aerospace industry, shows the highest level of high technology employment by a large margin over San Jose. However, the San Jose area, which contains "Silicon Valley," has the highest proportion of high tech jobs in California, regardless of definition. In the San Jose area, from a quarter to more than one-third of the jobs are in high tech industries.

Texas ranked second, third, and fourth in the *number* of high technology jobs. Because of its size and large employment base, however, it ranked no higher than eighth in the *proportion* of workers in high tech jobs. When scrutinized at the metropolitan level, however, several Texas areas emerge as high technology centers.

Dallas provided over 100,000 high technology jobs, regardless of definition. The Houston area is also a major source of jobs, while Beaumont shows a large proportion of high tech jobs in groups I and III, primarily because of its chemical and petroleum refining industries.

Michigan has a high proportion of high technology jobs in group I, which includes auto manufacturing. (See table 6). With groups II and III, Michigan ranks 14th and 39th among all States. Detroit, under the group III definition, shows almost 50,000 high technology jobs, and the Kalamazoo area displays a smaller proportion of high tech workers (7.5 and 10.0 percent in groups II and III).

Outside of those two areas, high technology industry does not appear to be a major factor in the Michigan economy unless auto manufacturing remains in the high technology definition.

If we look at the nonmetropolitan proportion of high tech employment in the three States, we find that California has 1.6 percent in group I, .4 percent in group II, and .5 percent in group III; Texas, 10.4, 4.0, and 5.8; and Michigan, 9.5, 7.8, and 15.6.

Few counties outside metropolitan areas have many high tech jobs. (Hutchinson County in Texas is an exception, with more than 5,000 in group I, and almost 2,500 in group III.)

Employment by State

In 1982, the share of the Nation's high technology employment in the 10 States with the highest levels of high tech employment ranged from 57.4 to 66 percent among

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our three groups, while these States had only 54.1 percent of the total U.S. nonfarm employment. (See table 6.) Eight States—California, New York, Texas, Massachusetts, New Jersey, Florida, Illinois, and Pennsylvania, appear on all three lists. All were also among the 10 States with the most nonagricultural employment in 1982. Only two States not among the top 10 in employment appear on the three lists—Washington and Connecticut—largely because each had more than 10 percent of the national employment in aircraft and parts (SIC 372), which appears in all three high technology definitions.

California not only heads each list but does so by a large margin. New York's total nonagricultural employment was 74 percent of California's in 1982, but it had only half of California's high technology employment in group III, and about a third of its group II employment, illustrating the importance of definitions.

Has the concentration of high tech employment within the larger States increased over the last several years? The following shows the percentage of total U.S. high technology employment in the top 5 States under each definition for selected years from 1975 to 1982:

	1975	*1977*	*1979*	*1982*
Group I	38.4	37.8	38.3	37.4
Group II	46.7	47.1	47.6	47.5
Group III	41.6	40.9	40.4	40.7

The concentration of high technology employment in the largest States does not appear to be increasing, regardless of the definition used.

As we have seen, comparing a State's high technology employment to its total nonagricultural employment produces a much different picture than looking at absolute levels. Small States appear on these lists, as a broad spectrum of industries in large States tends to overshadow small groups of emerging industries. Only under the broadest definition—group I—do as many as 5 of the 10 States with the most nonfarm employment qualify. Under the most restrictive definition—group II—only two large States are included.

Table 6. Employment in three groups of high technology industries in 10 States with highest levels of high technology employment, annual averages,[1] 1982

[In thousands]

Group I		Group II		Group III	
Total, U.S.	13,038.3	Total, U.S.	2,633.7	Total, U.S.	5,943.4
Top 10 States	7,489.5	Top 10 States	1,737.4	Top 10 States	3,566.6
California	1,527.5	California	610.6	California	933.1
Texas	1,068.4	New York	205.3	New York	493.4
New York	924.0	Massachussetts	160.7	Texas	372.0
Ohio	683.0	Texas	157.6	New Jersey	316.8
Illinois	672.0	New Jersey	116.9	Massachussetts	305.5
Michigan	651.0	Florida	108.1	Pennsylvania	277.0
Pennsylvania	615.4	Connecticut	98.5	Illinois	261.5
New Jersey	521.7	Illinois	96.2	Ohio	247.8
Massachusetts	450.0	Pennsylvania	93.3	Connecticut	185.8
Florida	376.5	Washington	90.2	Florida	173.7

[1]Because fourth quarter 1982 data were not available at the time of publication, a 9-month average was used.

Table 7. High technology employment as a percent of total nonagricultural employment in top 10 States under three definitions, 1982 annual average[1]

Group I		Group II		Group III	
Total, U.S.	13.4	Total, U.S.	2.8	Total, U.S.	6.2
Delaware	24.0	New Hampshire	7.2	Delaware	16.2
New Hampshire	21.0	Vermont	7.0	Connecticut	13.0
Michigan	20.4	Connecticut	6.9	New Hampshire	12.5
Connecticut	20.3	Arizona	6.8	Vermont	11.7
Vermont	18.9	California	6.2	Massachussetts	11.7
Indiana	17.6	Massachussetts	6.1	New Jersey	10.3
Massachussetts	17.2	Washington	5.7	California	9.5
Texas	17.0	Kansas	4.7	Arizona	9.0
New Jersey	16.9	Utah	4.2	Washington	8.2
Kansas	16.5	Colorado	3.9	Kansas	7.8
Ohio	16.5				

[1]9 month average.

It is noteworthy that Massachusetts, despite its size, is on all three lists. (See table 7).

Turning again to group I, we find 46 States had 10 percent or more of their nonagricultural employment in high technology industries. However, in group II no State had more than 7.2 percent of high tech employment.

The performance of Delaware under the three definitions is quite interesting. It tops groups I and III with 24.0 and 16.2 percent of its nonfarm employment in high technology. In group II, however, Delaware places 42nd in the Nation, with only .8 percent. Groups I and III both include the entire chemical manufacturing industry (SIC 28). Group II only includes drug manufacturing (SIC 283). Because more than 10 percent of the total employment in Delaware is in chemical manufacturing (about 10 times the national proportion), any high technology definition which includes the entire chemical industry places Delaware at or near the top in the proportion of high tech employment.

A regional pacesetter

The relative importance of high technology among States, however, no matter how defined, shows that the New England States lead other regions in the proportion of high technology employment. The New England area has provided the ideal environment for these industries. Preeminent educational institutions provide the needed skilled workers. Also, for many decades the area has had a decaying industrial base. In 1947, Massachusett's leading nondurable manufacturing industries were textiles, apparel, and leather, with a total employment of almost 250,000 workers. In 1982, employment in those industries totaled slightly more than 75,000 workers. The departure of the textile and apparel industry to the South and overseas left behind an industrial infrastructure, coupled with an awareness of the need to attract and foster industrial development. New England States (with the exception of Massachusetts) also tend to be small, making, as noted, the impact of high technology employment more noticeable.[14]

Although for the Nation as a whole, high technology industries generated only between 4.7 and 15.3 percent of the new jobs in the United States during 1972–82, several

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States showed greater growth. Even in narrowly defined group II, nine States saw high tech jobs account for 10 percent or more of the rise in their total employment between 1975 and 1982. In Massachusetts, growth exceeded 18 percent. (See table 8.) Maine, absent from the top 10 in percentage of high tech employment, appears to have experienced significant job generating effects from high tech expansion under the group II definition.

However, care must be used in analyzing the impact of high technology growth in a State. A State may register a large increase in high tech jobs in a generally expanding economy, or a modest gain in a stagnant economy. Examples of both situations appear in all three groups of high tech industries. Massachusetts, which tops groups II and III and ranks fourth in group I, is an example of the first situation. Massachusetts ranked 10th in total job creation between 1975 and 1982 and depending on definition, 3rd, 2nd, or 4th in high tech job generation. South Dakota, which ranks 1st, 8th, and 3rd in percentage growth of high tech jobs, added a total of only about 20,000 new jobs, one of the smallest increases in the country. However, a large proportion (10.0 to 49.1 percent—according to definition) were high tech, such as those within electrical and nonelectrical machinery manufacturing (SIC 35 and 36).

Table 8. High technology employment growth as a percentage of total nonagricultural employment growth in top ten States, 1975–82, under three definitions

Group I		Group II		Group III	
Total, U.S.	21.0	Total, U.S.	5.8	Total, U.S.	11.3
South Dakota	49.1	Massachussetts	18.3	Massachussetts	30.0
New Hampshire	43.1	New Hampshire	15.8	Vermont	26.9
Vermont	38.7	Vermont	11.5	South Dakota	25.1
Massachussetts	35.2	Arizona	10.6	New Hampshire	25.0
Nebraska	33.1	Maine	10.1	Connecticut	21.4
Rhode Island	32.6	California	10.0	Idaho	19.9
Idaho	32.4	Oregon	10.0	Maryland	19.9
Montana	31.5	South Dakota	10.0	District of Columbia	19.8
Delaware	30.7	Washington	10.0	Rhode Island	19.2
Colorado	30.3	Rhode Island	9.1	Oregon	18.0

IT SHOULD BE REITERATED that even when high tech is very broadly defined, as in group I, it has provided and is expected to provide a relatively small proportion of employment. Thus, for the foreseeable future the bulk of employment expansion will take place in non-high tech fields. □

———*FOOTNOTES*———

[1] Robert Vinson and Paul Harrington, *Defining High Technology Industries in Massachusetts* (Boston, Mass., Department of Manpower Development, September 1979.)

[2] *Ibid.*

[3] *Technology, Innovation, and Regional Economic Development* (Washington, U.S. Congress, Office of Technology Assessment, Sept. 9, 1982). This 14-page report describes a project to assess the implications of high technology to include factors which promote the development of high technology industries in States and localities.

[4] *An Assessment of U.S. Competitiveness in High Technology Industries* (Washington, U.S. Department of Commerce, International Trade Administration, February 1983), 68 pp. See, particularly, Appendix A, "Defining Technology Intensive Trade," pp. 33–37.

[5] Ibid. See also Michael Boretsky, "Concerns About the Present American Position in International Trade," *Technology and International Trade* (Washington, National Academy of Sciences, 1971), and "The Threat to U.S. High Technology Industries: Economic and National Security Implications," draft (Washington, U.S. Department of Commerce, International Trade Administration, March 1982).

[6] Ibid. See also Regina Kelly, "Research and Development in U.S. Trade in Manufactures," paper prepared for International Economics Course, George Washington University, 1974, and "The Impact of Technological Innovation on International Trade Patterns," *Staff Economic Report*, (Washington, U.S. Department of Commerce, Office of Economic Research, December 1977).

[7] Ibid. See also C. Michael Aho, and Howard F. Rosen, "Trends in Technology-Intensive Trade," *Economic Discussion Paper 9* (Washington, U.S. Department of Labor, Bureau of International Labor Affairs, October 1980).

[8] Ibid. See also Lester A. Davis, "Technology Intensity of U.S. Output and Trade," (Washington, U.S. Department of Commerce, International Trade Administration, July 1982.)

[9] Ann M. Lawson, "Technological Growth and High Technology in U.S. Industries" (Washington, U.S. Department of Commerce, Bureau of Industrial Economics, *Industrial Economics Review*, Spring 1982), p. 12.

[10] See Arthur J. Andreassen, Norman C. Saunders, and Betty W. Su, "The economic outlook for the 1990's: three scenarios for economic growth;" Valerie A. Personick, "The job outlook through 1995: industry output and employment projections," and Howard N Fullerton and John Tschetter, "The 1995 labor force: a second look," elsewhere in this issue.

[11] Some managerial jobs also involve the development and application of technology, and many of these jobs are filled by workers transferring from these "technology-oriented" occupations. Data are not available to identify this group.

[12] "America Rushes to High Technology for Growth," *Business Week*, March 28, 1983, p. 87.

[13] The industry employment statistics cited in this study are from two Bureau of Labor Statistics payroll employment programs. The industry classifications are taken from the 1972 Standard Industrial Classification Manual, Office of Management and Budget.

Employment estimates for the Nation were compiled from the Current Employment Statistics program. These data are produced from employer payroll records reported to the Bureau on a voluntary basis each month. Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey.

State and county data were compiled from the ES-202 program, which collects information on the employment and wages of workers covered by unemployment insurance programs. Each quarter all covered employers submit mandatory reports of employment and wages to the appropriate State Employment Security Agency. These reports are edited and summarized by county, State, and detailed industry, and forwarded to the Bureau. Self-employed persons are not covered in this statistical program.

[14] For more on the factors which enabled New England to become a leading area in high technology, see Lynn E. Browne and John S. Hekman, "New England's Economy in the 80's," *New England Economic Review*, January/February 1981, pp. 5–16.

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Import prices decline, export indexes mixed in the first 6 months of 1983

Lower oil prices and the strength of the dollar were major factors in import-export price developments during the first half of the year; the Nation's strong economic recovery relative to the performance abroad also affected U.S. foreign trade prices

MARK J. JOHNSON

U.S. import prices, as measured by the Bureau of Labor Statistics International Price Program, fell 2.8 percent in the first half of 1983, after falling 2.9 percent for all of 1982.[1] (See table 1.) The import price drop contributed to the greatly reduced rate of increase in domestic inflation, as measured by the Consumer Price Index and the Producer Price Index.[2] At the same time, however, the strength of the U.S. dollar abroad and the slow pace of the worldwide economic recovery moderated price rises for U.S. exports.

The price indexes discussed in this article, which are not seasonally adjusted, are based on transaction price information provided by a sample of importers and exporters and their products.[3] They represent 100 percent of the value of all imported products, and 83 percent of the value of all exported products. Indexes are published for 60 detailed and aggregate categories of imports and exports.

An overview

Crude oil prices, which account for 25.8 percent of the weight of the all-import price index, fell 13.6 percent during the first half, exerting substantial downward pressure on the index. The all-import index, excluding crude petroleum, rose by 0.9 percent during the first half, compared with a 2.5-percent decline for all of 1982. Partially offsetting the price decrease for crude oil were increases in the indexes for nonferrous metals and for machinery and transport equipment, which rose 13.0 and 2.6 percent.

The strong U.S. dollar was a major factor affecting the all-import price index. During the first half, the dollar rose 5.0 percent *vis-à-vis* the currencies of our major trading partners. (In the first quarter, the dollar depreciated against the German Deutschemark and the Japanese yen, but registered a net first-half appreciation against the Deutschemark and little net change against the yen.) Between July 1980 and June 1983, the dollar appreciated steadily, rising 47.9 percent.[4] (See chart 1.) This sustained rise in the dollar's value tended to lower the price of imported goods priced in dollars, but acted to raise the price of U.S. goods sold in foreign markets. The dollar's appreciation against certain currencies was especially strong. From June 1982 to June 1983, the dollar rose 212.3 percent against the Mexican peso, 208.5 percent against the Brazilian cruzeiro, 16.5 percent against the French franc, and 13.5 percent against the British pound.

The nascent U.S. economic recovery in the first half boosted demand for imports by consumers and producers. Personal consumption spending increased 5.7 percent, and consumer spending on durables rose 9.6 percent.[5] Respond-

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ing to healthier consumer spending, many sectors of the economy increased output, and demand for imported inputs to manfacturing processes grew.

U.S. industrial production rose 8.3 percent during the first half. Especially important were the sharp production increases in the auto and housing industries. Domestic auto production advanced 24.3 percent in the first half over the corresponding weak period in 1982,[6] generating additional demand for imported inputs such as engines, rubber, and aluminum.

With interest rates lower, U.S. housing starts rebounded strongly in the first half from their worst year since 1946, finishing 78.7 percent above the corresponding period in the previous year.[7] Moreover, new construction put in place during the first half totaled $115.6 billion, compared with $106.3 billion for the first half of 1982. Growing construction activity meant increased business for suppliers of products such as lumber, appliances, and copper.

Key export price indexes registering increases were those for grain and intermediate manufactured products, which rose 14.5 and 2.1 percent.[8] (See table 2.) However, the index for bituminous coal fell 12.6 percent in the first half. Export prices and total dollar values were heavily affected by the strong dollar; U.S. merchandise exports of $98.4 billion in the first half were off 11.0 percent from their level of $110.6 billion in the corresponding period last year.[9]

The slower pace of economic recovery among both industrialized and developing nations also dampened demand for U.S. exports. The European Economic Community (EEC), which includes major U.S. trading partners, experienced very little economic growth in the first half. In particular, the economies of France and Italy continued to decline, while Germany and Britain experienced growth much less than that of the United States. The economy of Mexico, the Nation's third-largest trading partner, contracted significantly, while demand for U.S. exports by many other oil exporting nations fell as oil revenues declined.

Debt problems among developing nations were a major factor in the sharp reduction of U.S. exports to these nations. In the first half, exports to developing nations were $36.4 billion, off 16.1 percent from $43.4 billion in the first half of 1982.[10] In recent years, approximately 40 percent of U.S. merchandise trade (both exports and imports) has been with developing nations. (See chart 2.) However, about 40 nations, including such developing nations as Mexico, Brazil, and Liberia, have recently undertaken economic austerity programs that include reduced spending for imports, in order to conserve scarce foreign exchange to service their international debts. A case in point is Mexico, which purchased $4.4 billion of U.S. merchandise exports in the first half of 1983, compared with $7.2 billion in the first 6 months of last year.[11]

The decline in total exports was a major factor in the record-setting merchandise trade deficit of $23.5 billion for the first half. This compares with deficits of $12.0 billion in the first half of 1982 and $36.4 billion for all of that year. In the first 6 months of 1983, merchandise imports of $121.9 billion were down slightly from $122.6 billion in the first

Table 1. Change in selected import price indexes in the first half of 1983, and share of total trade value

Commodity	Share of total 1980 trade value	Percent change in—		
		First half	First quarter	Second quarter
All commodities, except chemicals[1]	96.524	−2.8	−2.8	0.0
Fuels and related products	32.776	−12.3	−10.2	−2.4
Crude petroleum	25.799	−13.6	−10.8	−3.2
Food	6.554	1.2	1.1	0.1
Coffee, tea, cocoa	2.241	4.0	2.2	1.7
Coffee	1.644	−1.5	−2.8	1.3
Tea	0.054	9.8	4.8	4.7
Sugar, sugar preparations, and honey	0.925	3.9	0.0	3.9
Meat	0.977	−3.8	−1.0	−2.9
Meat of bovine animals	0.652	6.5	2.8	3.6
Meat and edible meat offals	0.243	−13.4	−3.0	−10.7
Other prepared or preserved meat	0.234	−13.8	−3.2	−11.0
Fish	1.088	−1.1	−0.5	−0.6
Fresh fish	0.477	−2.5	0.9	−3.3
Shellfish	0.459	0.1	−1.5	1.6
Fish in airtight containers	0.126	−1.3	−1.0	−0.3
Crude materials	4.275	([2])	([2])	([2])
Cork and wood	0.865	25.0	6.8	16.9
Hardwood and softwood lumber	0.822	26.8	7.6	17.8
Wood pulp	0.708	−2.3	−1.9	−0.4
Sulphate or soda wood pulp	0.563	−2.7	−1.8	−0.9
Intermediate manufactured products	13.520	2.9	1.3	1.6
Nonferrous metals	3.123	13.0	6.9	5.8
Silver and metals of the platinum group	1.037	17.0	13.6	3.0
Copper	0.581	16.4	7.6	8.2
Tin	0.323	11.0	6.5	4.3
Zinc	0.135	−1.1	−1.2	0.1
Iron and steel	3.127	−2.2	−2.0	−0.3
Cork and wood manufactures	0.486	9.5	3.3	6.0
Plywood and veneers	0.267	7.9	4.0	3.7
Nonmetallic mineral manufactures	1.944	5.9	3.1	2.8
Cut and polished diamonds	0.937	10.4	3.9	6.3
Machinery and transport equipment	25.442	2.6	1.8	0.8
Road vehicles and parts	10.887	2.1	1.7	0.4
Automobiles	7.201	1.9	1.3	0.6
Metalworking machinery	0.755	3.7	5.2	−1.4
Machinery specialized for particular industries	1.998	4.6	3.9	0.7
Office machines and automatic data processing equipment	1.217	2.4	2.6	−0.2
Miscellaneous manufactures	9.794	−1.0	−0.3	−0.7
Footwear	1.232	−1.5	0.2	−1.7
Clothing	2.666	−1.0	−1.0	0.0
Photographic apparatus and supplies, optical goods, watches and clocks	1.162	1.0	2.4	−1.4

[1]This category includes indexes other than those shown here. For all of the indexes available in each category, see *U.S. Import and Export Price Indexes*, USDL-83-77 (Bureau of Labor Statistics), Aug. 11, 1983.

[2]Data are not available.

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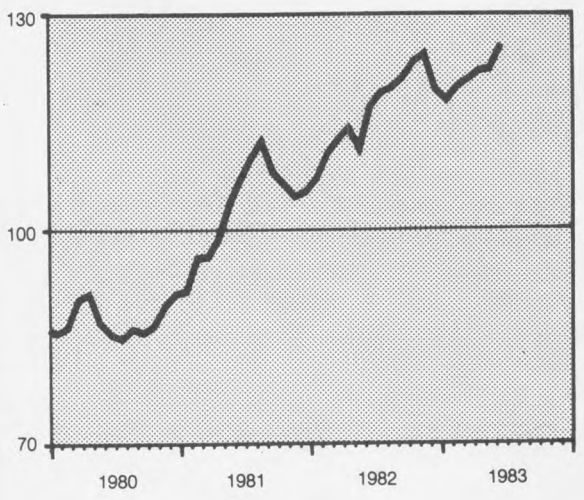
half of 1982, but nonoil imports, at $98.4 billion, were up 4.9 percent from $93.8 billion during the same period a year earlier. (Petroleum imports of $23.5 billion were off 18.4 percent from their level of $28.8 billion in the corresponding period of 1982.[12]) In addition, the U.S. current account, which incorporates the balance on merchandise trade and the balance on services (which includes payments on investments abroad) was in deficit by $13.3 billion in the first half, after recording a deficit of $11.2 billion in 1982 and a surplus of $4.6 billion in 1981.[13]

Gross trade as a percentage of U.S. final goods production is a measure of the importance of foreign trade to the goods sector of the economy.[14] Because of the decline in U.S. export dollar values, the increase in domestic final goods production, and the lack of change in import dollar values, this proportion stood at 27.4 percent in the first half of 1983, down from 29.9 percent in the first half of 1982. In 1970, this figure was 15.9 percent.

Chart 1. Trade-weighted exchange rate of the U.S. dollar, January 1980–June 1983



SOURCE: Federal Reserve Bulletin (Washington, Board of Governors of the Federal Reserve System), July 1983, table 3.28.

Import developments

Crude oil. The 13.6-percent drop in crude oil import prices during the first half of 1983 followed a 3.9-percent decline for all of 1982. Pressure for the price drop had been building for 2 years, in the form of sluggish economic growth, increased substitution of other energy sources for oil, the strong dollar, and continued conservation. In addition, the warm winter of 1982–83 allowed U.S. oil companies to draw down inventories and postpone purchases in anticipation of price drops. On the supply side, decontrol of prices in the United States, rising production by other non-OPEC producers, and sales in excess of production quotas by some OPEC members put further downward pressure on prices. One result of these factors was the March 1983 decision by OPEC to reduce its base price for a barrel of oil from $34 to $29. This action, the first cut in quoted prices in OPEC's 23-year history, brought the organization's prices in line with those of non-OPEC producers, such as Mexico, Britain, the Soviet Union, and Norway.

In 1982, U.S. consumption of crude oil fell for the fourth consecutive year.[15] This trend continued during the first half of 1983. While the economy was recovering strongly from the recession, total oil consumption remained 3.5 percent below the level set during the first half of 1982.[16] U.S. imports of crude were 2.82 million barrels per day (mbd), down 10 percent from 3.14 mbd in the corresponding 1982 period,[17] primarily because of the decline in consumption and the production effects of decontrol. In the first half, energy imports (including crude oil, petroleum products, coal, natural gas, and electricity) were 15.3 percent of total U.S. energy consumption, down from 15.6 percent in the first half of 1982.[18]

Conservation was important in the drop in U.S. demand for oil, despite the fact that retail prices declined for many products. Much of the conservation was part of the continuing response to the large oil price runups in 1973 and 1979–80. Gasoline use was off 0.6 percent in the first half from the same period a year earlier, reflecting the effect of price increases on demand, the greater efficiency of the U.S. vehicle fleet, and continued diesel penetration.[19] The average retail price of gasoline fell to $1.12 per gallon during the first half of 1983, an annual rate of decline of 6 percent.[20] Still, first-half average gasoline prices were up 225 percent from their level in the first half of 1973, the year that crude oil prices quadrupled, while the total Consumer Price Index rose only 127 percent.[21] Demand for home heating oil fell 8.4 percent from the first half of 1982, due to the warm winter and a drop in the number of domestic burners.[22] The average price of home heating oil was $1.11 in the first half, down from the 1982 average of $1.19 per gallon and the 1981 average of $1.21 per gallon.[23]

Utilities and industrial users have switched to nonoil energy sources while increasing conservation efforts. Residual fuel, the type used by utilities to generate electricity, has been steadily displaced by coal, nuclear, and hydroelectric power. In 1982, U.S. utilities burned 50 percent less oil while producing 440 percent more nuclear power than they did a decade earlier.[24] Most industrial users have also found ways to use less oil. For example, many steelmakers have converted to continuous casting technology, a process that uses 40 to 60 percent less energy than conventional mills. In recent years, cement plants continued to switch from oil to coal firing.[25]

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Table 2. Change in selected export price indexes[1] in the first half of 1983 and share of total trade value

Commodity	Share of total 1980 trade value	Percent change in—		
		First half	First quarter	Second quarter
Grain and grain preparations	8.341	14.5	7.2	6.8
Wheat	2.943	−0.8	−1.0	0.2
Yellow corn	3.956	25.7	13.1	11.2
Other grain	0.522	(2)	(2)	(2)
Yellow sorghum	0.498	22.3	10.0	11.2
Crude materials	10.948	(2)	(2)	(2)
Oilseeds and oleaginous fruit	3.024	5.0	−2.0	7.2
Soybeans	2.716	6.7	−0.2	7.0
Textile fibers	1.813	11.2	2.5	8.5
Cotton	1.341	17.3	4.4	12.3
Metalliferous ores and metal scrap	2.062	(2)	(2)	(2)
Scrap metal of iron or steel	0.566	16.0	7.4	8.0
Fuels and related products	3.691	(2)	(2)	(2)
Bituminous coal	2.088	−12.6	−2.6	−10.2
Intermediate manufactured products	10.544	2.1	1.5	0.6
Nonferrous metals	2.280	10.7	8.0	2.5
Silver	0.772	28.7	28.0	0.5
Copper	0.204	3.9	3.9	0.0
Aluminum	0.919	7.4	0.9	6.5
Leather and furskins	0.200	2.8	0.2	2.6
Iron and steel	1.438	−2.0	−2.8	0.7
Machinery and transport equipment	35.261	1.0	0.4	0.5
General industrial machinery and parts	4.939	1.0	0.8	0.3
Telecommunications equipment	1.590	1.2	0.7	0.5
Electrical machinery and equipment	4.738	−0.1	−0.7	0.6
Other transport equipment	2.718	2.4	1.5	0.9
General aviation aircraft and helicopters	0.479	2.7	2.0	0.7
Miscellaneous manufactured articles	7.397	(2)	(2)	(2)
Professional, scientific, and controlling instruments and apparatus	2.437	4.2	2.6	1.6
Photographic apparatus, optical goods, watches and clocks	1.187	−2.3	−3.5	1.2

[1]For all of the indexes available in each category, see *U.S. Import and Export Price Indexes*, USDL-83–77 (Bureau of Labor Statistics), Aug. 11, 1983.
[2]Data are not available.

The strong dollar has also played an important part in holding down oil prices. Because the dollar appreciated strongly against the currencies of most major industrialized nations in the last three years, those nations have had to pay larger amounts of their currencies to obtain dollars to purchase oil. This has further depressed oil demand in world markets.

The United States continued to import an increasing percentage of its crude oil needs from non-OPEC sources during the first half, part of a trend that gained momentum during 1982. Leading suppliers were Mexico, at 849,000 barrels per day, Canada, at 523,000, Venezuela, at 401,000, and Britain, at 348,000. Of these, only Venezuela is an OPEC member. OPEC members supplied 31.9 percent of U.S. oil imports, compared with 42.0 percent during 1982 and 55.4 percent in 1981.[26] The level of crude oil imports from Saudi Arabia is especially noteworthy: in the first half, the United States imported an average of 179,000 barrels per day of Saudi crude, compared with 552,000 barrels per day in 1982 and 1.1 million in 1981.

Food. The price index for food imports rose 1.2 percent during the first 6 months of 1983, after rising 0.2 percent for all of 1982. Food imports totaled $8.5 billion in the first half, compared with $7.6 billion during the same period a year earlier. The food index is one of the most volatile components of the all-import index because of the uncertainties associated with food production, the varying impact of weather conditions, and the difficulty of shipping perishable products.

Prices for coffee, tea, and cocoa rose 4.0 percent, leading the rise in the food index. Cocoa price increases reflected poor harvests in the Ivory Coast and Ecuador. The tea index rose 9.8 percent because of lower output by Sri Lanka and Indonesia and relatively low stock levels in several major importing nations. Coffee prices fell 1.8 percent during the first half, due to plentiful supplies and the continued general decline in U.S. coffee consumption. The International Coffee Organization, whose producing members account for 99 percent of world production, lowered member nations' export quotas in an effort to stabilize coffee prices.[27] Despite this action, however, some members sold coffee at a discount to other nations, many of which are in the Eastern bloc,[28] placing additional downward pressure on coffee prices.

The index for sugar and honey rose 3.9 percent, with all of the increase occurring in the second quarter. World sugar prices were about 12 cents per pound in June, compared with 6.2 cents at the same time last year. The second-quarter price rise was prompted by speculation following reports that weather problems in the third quarter might affect next season's output in major sugar producing regions.[29] Speculative activity also centered on the possibility of U.S. restrictions on imports of sugar-containing formulations, which were entering the country through a loophole in the existing system of raw sugar import quotas. (On June 29, imports of all sugar containing formulations were embargoed.[30])

The decision by two major U.S. soft-drink makers to use high-fructose corn syrup in their beverages placed downward pressure on prices of imported sugar. The move demonstrated the continuing displacement of sugar by the syrup, the use of which is expected to reduce 1983 domestic sugar consumption by 3 to 4 percent.[31] Prices for imported honey fell as an influx of lower-priced honey, mainly from China, increased supplies on the U.S. market.

Imported meat prices fell 3.8 percent. Canned hams and shoulders led the downward trend, dropping 13.8 percent in the first half in response to abundant supplies of pork for canned hams from Poland and Denmark and plentiful supplies on the domestic market. The beef and veal index, which accounts for approximately two-thirds of the value of the meat index, rose 6.5 percent in the first half. U.S. demand for imported beef increased because of tight domestic supplies resulting from wet winter weather in the major cattle breeding areas. At the same time, world production and exports of cattle declined as ranchers held cattle to rebuild severely depleted herds. Supplies from Australia, the world's largest beef exporter, were limited by adverse weather conditions, and exports by New Zealand, another major U.S. beef supplier, also fell.

Fish prices declined 1.1 percent during the first half, in

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response to a 2.5-percent drop in the index for fresh fish, which reflected abundant supplies of cod, haddock, flounder, and tuna. The index for shellfish showed a 0.1-percent increase, as lobster supplies, which were tight at the beginning of the year, recovered to more typical levels by June. Mexico's nationalization of its shrimp industry tended to drive up shellfish prices. Supplies of Mexican shrimp were difficult for U.S. importers to obtain, and the shrimp that was available had risen dramatically in price. Prices for canned fish fell 1.3 percent in the first half, largely due to plentiful supplies of imported canned clams and sardines.

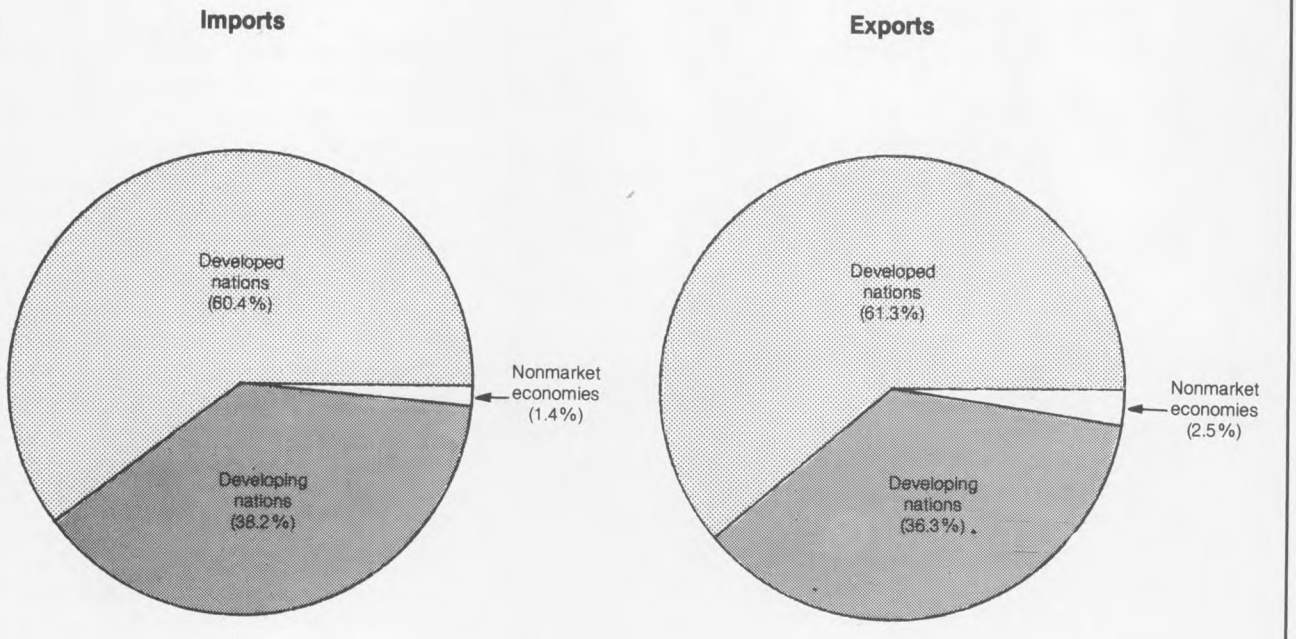
Crude materials. In general, indexes in the crude materials category rose during the first 6 months of 1983. Because products in this category are used extensively as raw materials in manufacturing and construction, the quickening of the U.S. economy generated additional demand for them. The United States imported $4.8 billion of such products in the first half, compared with $4.7 billion during the first half of 1982.[32]

Lumber prices jumped 26.8 percent, rising 7.6 percent in the first quarter and 17.8 percent in the second. Wood prices had been depressed since 1979, and a significant number of marginal suppliers were forced out of business. Canada is the largest supplier of lumber to the United States, and when this country, Saudi Arabia, and China all increased purchases of Canadian wood during the first half, prices were driven up. Greater U.S. consumption of lumber occurred despite a shift to construction of multifamily homes, townhouses, and mobile homes, all of which require significantly less lumber per unit than single-family homes. The construction of single-family homes did not rebound as strongly as general housing construction.

The index for sulphate wood pulp fell 2.7 percent as weakened demand caused many suppliers to discount their prices. Use of pulp products is directly related to kraft paper and paperboard sales. Packaging is the chief use for the unbleached grades and the bleached pulp is used in a wide range of applications from packaging to printing.

Intermediate manufactured products. Large price increases for cork and wood products and for nonferrous metals led the 2.9-percent price rise in the index for intermediate manufactures, which had fallen 7.5 percent during 1982. In the first half, the United States imported $17.3 billion of products in this category, compared with $18.8 billion in the first half of 1982. These products include metals, cork,

Chart 2. U.S. merchandise trade by type of trading partner, January–June 1983



SOURCE: U.S. Department of Commerce.

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wood, textiles, iron and steel, glassware, paperboard, and other basic inputs to manufacturing processes.

Nonferrous metal prices rose 13.0 percent in the first half after falling 14.0 percent during all of 1982. Lower interest rates and increased output in basic industries were key factors boosting consumption of many nonferrous metals. The increase in the index was led by sharply rising prices for silver, copper, platinum, and palladium. While demand by the capital goods sector continued at reduced levels, demand for nonferrous metals from the automotive, construction, and consumer appliance sectors was especially robust. However, in the case of some metals, most notably copper, lead, and nickel, world market prices remained below production costs for some producers.[33]

The index for silver and metals of the platinum group, which accounts for 33.6 percent of the nonferrous index, rose 17.0 percent in the first half. Silver prices rose rapidly in the first quarter as interest rates eased, industrial demand rose, and speculative activity increased, but fell slightly in the second quarter as interest rates edged upward and speculation waned. Growing demand for platinum fueled higher prices: early in the first half, gold was selling at a premium to platinum, a reversal of the historical price relationship between the two metals. However, demand for platinum from such industries as electronics and glass quickly pulled platinum prices back up past gold prices. Palladium prices also rose as the auto industry purchased greater quantities of the metal for use in catalytic convertors. Supplies of both platinum and palladium tightened over the period as the Soviet Union and South Africa cut shipments of these metals.

The index for copper rose 16.4 percent in the first half. Copper prices tend to mirror the general economy, as the metal is used in virtually every major industry. When industrial production began to improve, copper prices quickly rose from the record lows posted in 1982, but these increases were tempered by large stocks on world markets.[34] Tin prices rose 11.0 percent, as the buffer stock manager of the International Tin Council bought tin to support the metal's price, and producer nations continued export controls in an effort to reduce the world tin surplus.[35] Zinc and lead prices remained depressed in the first half.

Cork and wood prices rose 9.5 percent, paced by increased consumption of products related to the construction industry, such as wood moldings, shingles, shakes, and carpentry items. Increased demand for hardwood plywood and veneers from Southeast Asia has been accompanied by reduced demand for products from the traditional suppliers, Korea and Taiwan, and increased demand for products from Indonesia, which previously had supplied only the logs. Nonconstruction items showed less price change over the period.

Prices for nonmetallic mineral manufactures rose 5.9 percent, largely because of a 10.4-percent increase in the index for cut and polished diamonds. The rise in diamond prices resulted from greater demand for smaller gems (those of one carat or less), while production and distribution controls in South Africa reduced supplies on world markets. (South Africa is the world's largest diamond producer.)

The drop in imported steel prices was the result of sluggish demand and vigorous price competition by foreign producers in developing nations. For domestic steelmakers, 1983 showed signs of improvement over 1982; in terms of capacity utilization, last year's 48.4 percent was the worst since the Great Depression for U.S. steelmakers, but the rate rose to 53.6 percent in the first half of 1983.[36] The U.S. economic recovery was uneven in its effect on major steel consuming sectors. Demand for sheet products for the auto industry rose, but the lag in capital spending meant continued depressed demand for plate and structural products. Requirements for oil country tubular goods, which are directly related to levels of exploration and drilling activity, were reduced. And demand was slack for stainless bars, plates, and tool steel, as users in most markets operated with thin inventories.

Import penetration of the U.S. steel market, measured in net tons, was 18.5 percent in the first half, down from 22.6 percent in the first half of 1982.[37] This decline was primarily the result of agreements reached with the EEC and Japan late last year which limit those nations' steel exports to the United States. However, although first-half shipments from the EEC and Japan were down substantially from 1982 levels, steel imports from developing nations such as Brazil, Mexico, and Korea made up much of the shortfall. In recent years, the latter nations have increased capacity in continuous casting steel plants, which have low unit labor costs.

Machinery and transport equipment. This index, which accounts for 25.4 percent of the weight of the all-import price index, rose 2.6 percent in the first half. The economic recovery fueled higher demand for these products; $41.8 billion of merchandise was imported in this category, compared with $39.1 billion in the first half of 1982. Much of the dollar value of this index consists of consumer end-use products such as autos, electric amplifiers, and household appliances. As consumer spending increased, purchases of these types of items rose. The index also includes many important components of manufacturing processes, such as electric motors, air pumps, compressors, valves, and roller bearings, for which demand grew with the increase in U.S. manufacturing output. The continued appreciation of the dollar placed some downward pressure on prices in this index.

Prices for imported autos rose 1.9 percent, largely because of the resurgence in domestic auto sales and the voluntary self-restraint quotas that limit exports of Japanese cars to the United States to 1.68 million units per year. Helped by lower interest rates, first-half U.S. auto sales rebounded from their lowest level since 1961. Retail sales were 4.55 million units in the first half, compared with 4.04

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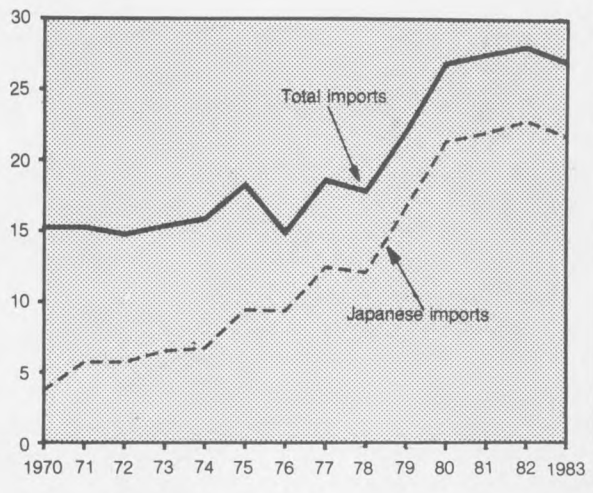
million in the corresponding 1982 period. Import penetration of the U.S. market was 26.7 percent for the first 6 months of 1983, versus 27.9 percent for all of 1982. (See chart 3.) Domestic and imported car sales were limited by the fact that inventories of both types of cars were unusually low, and dealers regularly sold out of the more popular models. Domestic auto inventories reflected conservative production levels, while inventories of Japanese vehicles were thin as a result of the voluntary quotas. On June 1, import inventories sank to 33 days of sales (as compared with a 53-day level a year earlier). Inventories of Japanese cars were even lower, at a 28-day level, with one major Japanese carmaker holding a 14-day supply.[38]

The quotas on exports of Japanese autos were a source of upward pressure on import prices of these cars. During the first half, Japanese cars accounted for 21.5 percent of all new-car sales, compared with 22.6 percent during 1982. Because of the quotas, Japanese automakers were unable to maintain or increase their market share by fully exploiting a cost advantage estimated at $1,500 to $2,000 per car.[39] Instead of competing on price, Japan's carmakers concentrated on selling higher-valued, option-laden cars in the United States, in effect providing a pricing floor for the domestic industry.[40]

In recent years, U.S. consumers have purchased an increasing percentage of higher-valued imported cars. This trend continued in the first half as luxury European models continued to sell well and Japanese carmakers entered several new models in the compact market, which had previously been dominated by domestic models.

Chart 3. Import share of the U.S. auto market, 1970–83



NOTE: 1983 data are for the first half of the year.
SOURCE: Motor Vehicle Facts and Figures '83 (Detroit, Mich., Motor Vehicle Manufacturers Association, 1983), p. 18.

The index for metalworking machinery rose 3.7 percent, reflecting a 5.2-percent first-quarter increase and a 1.4-percent second-quarter decrease. The bulk of the value in this index consists of machine tools—power driven devices used to cut, shape, or form metal in the production of durable goods. The first-quarter increase was influenced by the dollar's depreciation during that time against the German Deutschemark; Germany is our second largest supplier of machine tools, after Japan.

Prices were also affected by the decision of the Japanese Ministry of International Trade and Industry to hike U.S.-dollar-based export floor prices of numerically controlled lathes and machining centers (both major U.S. imports) by a minimum of 10 percent. This decision applied to orders placed after January 1, 1983, and shipments made after April 1, but not to machine tools already in U.S. warehouses.[41]

Conditions in the domestic industry had been depressed since late 1981, and remained that way in the first half. At the end of June, the metalworking machinery index was down 3.3 percent from the June 1982 level, despite the increase during the first 3 months of 1983. Prices in this index are heavily influenced by spending on capital goods, which remained depressed in the first half, as it usually lags the general economy by 6 to 12 months. In the first half of 1983, the United States posted a $297.7 million trade deficit in machine tools (on imports of $501.0 million and exports of $203.3 million), compared with a first-half 1982 deficit of $358.7 million.[42] A large stockpile of Japanese machine tools in U.S. warehouses also dampened price increases.

As domestic firms attempted to deal with the long-term recession in their industry, the cost advantage that the strong U.S. dollar provided to efficient foreign machine tool producers made recovery doubly difficult. A number of U.S. firms have responded to foreign competition by entering into mergers or by filing petitions for import relief with the Federal Government.

The index for machinery specialized for particular industries rose 4.6 percent in the first half, after declining 0.3 percent in 1982. This broad aggregate index covers agricultural equipment, tractors, construction and mining equipment, printing machinery, food processing machinery, and textile and sewing machinery. The index moved up 3.9 percent in the first quarter, reflecting manufacturers' annual price increases and the weakening of the dollar *vis-à-vis* the yen, Deutschemark, and Swiss franc. The slight increase—0.7 percent— in the second quarter is a better indicator of the soft U.S. market for machinery. Construction and mining equipment prices were up 1.2 percent as demand continued to lag, while the index for textile and sewing machinery increased 3.4 percent, with 2.9 percentage points of this change occurring in the first quarter.

Prices for office machines and automatic data processing equipment rose 2.4 percent. This group includes mainframe

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computers, terminals, optical scanners, and printers. The United States has historically posted large trade surpluses in this category, where our manufacturers have a lead in technology. In the first half, the United States exported $5.6 billion of these products, and imported only $3.0 billion. (In 1982, the United States posted a $5.9 billion trade surplus for the category.) Pricing of these products is very competitive, as U.S., Japanese, and European firms vie for shares in the industrialized nations. Technological advances that lower production costs have placed downward pressure on prices in this index; in March they were 4.5 percent lower than they were 3 years earlier. Parts prices rose faster than equipment prices in the first half, illustrating the traditionally more inelastic demand for parts than for equipment. Finally, prices for cash registers continued to decline in the first half.

Miscellaneous manufactures. The import index for miscellaneous manufactures fell 1.0 percent in the first half. The bulk of the weight in this index is derived from professional, scientific, and controlling instruments and apparatus, and products for consumer end use, such as apparel and footwear. U.S. consumer demand for such products increased as the economy rebounded; in the first half, imports were $15.6 billion compared with $14.0 billion in the same period last year. Even so, prices fell because there are numerous foreign suppliers for many of the products in this group, and because competition for sales in the United States is intense. In addition, technological improvements have lowered production costs for many items. As a result of these factors and the strong dollar, the index rose only 0.4 percent from March 1980 to June 1983.

Prices of imported footwear fell 1.5 percent in the first half, continuing the downward price trend in imported footwear which began in 1981. First-half prices were nudged downward by strong worldwide competition among suppliers, decreasing costs for petroleum-based raw materials, and the dollar's appreciation against the currencies of major suppliers. Furthermore, supply increased as the countervailing duties against Brazilian shoes that had been under consideration for the last 3 years failed to materialize. Demand for athletic footwear was strong in the first quarter, and prices rose, but price cutting by domestic suppliers in the second quarter forced established exporters to the United States to lower prices to remain competitive.

The index for apparel fell 1.0 percent, as a pickup in U.S. consumer demand for clothing was counteracted by the continued strength of the dollar and competition among suppliers in the Far East. With consumer confidence growing, promotional efforts by apparel retailers helped to boost apparel sales significantly over first-half 1982 levels.

Trade differences between the United States and suppliers in the Far East limited supplies of some items. The U.S. Government authorized a unilateral freeze on imports of Chinese textiles while the two nations negotiated a new textile agreement.[43] The United States also restricted Taiwanese imports of men's wool suit-type slacks and women's wool suits, slacks, and shorts.[44] Additionally, an embargo was placed on 15 Taiwanese apparel trading firms.

Moderating the decline in miscellaneous manufactures prices, the index for photographic apparatus, watches, and clocks rose 1.0 percent, after falling 10.2 percent during all of 1982. Increased consumer purchases of these products were the main factor behind the increase in the first half. In recent years, new technologies and changing consumer preferences have forced prices steadily downward; since June 1980, the price level of this index has fallen 8.5 percent. Technological advances such as computer chip control, quartz oscillation, and electronic imaging have resulted in lower unit costs for products in this index.

Export trends

Grain. Grain, which consists mainly of corn, wheat, and sorghum, is the largest U.S. export in dollar value, accounting for sales of $14.2 billion in 1982. Export prices for grain rose 14.5 percent in the first half of 1983 after falling 7.3 percent for all of 1982. Prices for corn increased 25.7 percent, and those for sorghum rose 22.3 percent, while wheat prices fell 0.8 percent. These results were greatly influenced by the U.S. Payment-In-Kind (PIK) program, which was implemented in January 1983. Under PIK, the Government provides surplus wheat, corn, rice, cotton, and sorghum to farmers who reduce their plantings of the same commodities. The purpose of the program is to draw down surplus grain stockpiles.

Farmers took advantage of the PIK program to idle 46.6 million acres of cropland, more than twice the number anticipated. Together with the Acreage Reduction Program, PIK brought about the retirement of about 82 million acres this year, the largest reduction ever.[45] Corn export prices greatly increased because of tight supplies. Farmers planted 58.8 million acres in corn this year, 28 percent below last year's plantings and the lowest figure since records were begun in 1890.[46] Export wheat prices were not affected as heavily as corn prices by the PIK program; first-half wheat production was estimated at 15 percent below last year's production, but the huge surplus stored in U.S. silos held prices down. Sorghum prices rose 22.3 percent, reflecting the depletion of stockpiles.

U.S. wheat exporters faced slack demand and stiff competition from other nations for the business available. The U.S. share of world trade in grains fell to about 53 percent this year from a high of 60 percent in 1980. The Soviets continued to purchase only the minimum amount of grain required under the Long Term Agreement. Since the 1980 grain embargo, the U.S. share of world grain exports to the Soviet Union has fallen from 70 percent to 20 percent.[47] China, the largest customer for U.S. wheat last year, did not buy any wheat after January, because of the improved

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outlook for the Chinese grain harvest and a trade dispute with the U.S. involving textiles. Wheat exporting nations such as Canada, Argentina, and France used more aggressive export marketing to make inroads into major U.S. export markets for grain. And finally, several Third World nations with international debt problems substantially reduced 1983 grain imports.

Crude materials. Most major categories of crude materials showed price increases in the first half. These products are generally used in the initial stages of manufacturing processes. Exports in this category totaled $9.3 billion in the first half, compared with $10.6 billion in the corresponding period in 1982.

Soybean prices rose 6.7 percent, after falling 10.4 percent during 1982, largely because of increased demand from the Soviet Union and Japan. As the size of the hog and cattle population in the Soviet Union has grown, the need for soybean meal for livestock feed has also increased. In Japan, soybeans for crushing are imported from the United States to produce soy milk, a product for which local demand has expanded rapidly in recent years. A relatively poor soybean harvest in Argentina this year also placed some upward pressure on prices.

Prices for cotton spurted 17.3 percent, recouping some of the declines recorded over the past 2 years. The PIK program exceeded expectations in restricting cotton supplies, while heavy rains in the South and a prolonged drought in Texas cut U.S. production further. The Soviet Union, a major cotton producer, experienced a poor harvest, and anticipates another one next season. At the same time, worldwide demand has grown as textile mills react to economic recovery. The major factor tending to hold prices down was the increasing domestic cotton output in China, formerly a major importer of cotton.

Prices for most types of metal scrap soared in the first half. The increases were led by a 16.0-percent rise in scrap iron and steel prices and a 76.8-percent increase in scrap aluminum prices. Iron and steel scrap are essential inputs in new steel production. As domestic steel mills purchased larger amounts of scrap to replenish their depleted inventories in anticipation of an upturn in demand, scrap prices were rapidly bid up in the domestic market. This domestic price rise was quickly transmitted to the export market. Demand for aluminum scrap was also robust, as U.S. primary aluminum producers put much idle capacity back into operation in the first half. In addition, demand from Japan, the largest customer for U.S. scrap aluminum exports, was very strong. Japan is not a low cost producer of primary aluminum, and per-unit energy costs in its secondary aluminum industry (that segment which produces aluminum products from aluminum scrap) are much lower than in its primary industry.

Bituminous coal prices dropped 12.6 percent, as world demand for U.S. coal continued to fall. The volume of coal exports in the first half plummeted 37.7 percent from the same period in 1982.[48] Prices for bituminous coal used in the production of steel showed the greatest decline. Japan is the largest market for U.S. exports of this metallurgical coal; in the spring, Japanese buyers negotiated new contracts with U.S. firms that lowered existing prices by 12 to 20 percent. Prices for metallurgical coal exported to other nations also fell, but by lesser amounts. Steam coal, used for generating electricity, also declined in price because of reduced worldwide demand for electricity, sharp competition from other sources of coal, and higher inventories.

Over the last 2 years, the international coal situation changed from a sellers' market to a buyers' market. Two years ago, ships were lined up at U.S. ports as coal customers struggled to build up stockpiles for protection against price increases and supply interruptions. Subsequently, however, Poland and Australia reentered world coal markets with aggressive pricing policies and prices dropped. Projections of world coal demand also proved to be overly optimistic, and continuous rounds of price cuts forced high-cost suppliers out of business.

Intermediate manufactured products. Export prices for intermediate manufactured products rose 2.1 percent in the first half, following a 1.8-percent decline in 1982. The United States exported $7.4 billion of products in this category in the first half, compared with $9.0 billion in the first 6 months of 1982. Nonferrous metals prices advanced 10.7 percent, leading the increase in the index for intermediate manufactures. Prices for leather and furskins rose 2.8 percent, while those for iron and steel fell 2.0 percent, moderating the increase in the index.

The sharp rise in nonferrous metals prices reflected increased demand by basic industries and lower interest rates. These prices are directly related to the level of world economic activity; last year, as world economies slumped, prices for many of these metals posted record lows in real terms, and many U.S. producers had to price output below production costs. The 1983 first-half rise in prices was accompanied by leaner inventories for many metals than existed during the previous year.

The increase in the nonferrous metals index was led by increases in silver, copper, and aluminum prices. Silver prices posted a 28.7-percent gain, virtually all of which occurred in the first quarter, in response to increased U.S. economic activity, lower interest rates, and speculative expectations. Copper export prices were up 3.9 percent, as domestic demand rose in response to production increases in basic industries such as autos, housing, and appliances. Although a strike began at one major U.S. copper producer as the first half ended, most producers achieved early wage agreements with their unions, which helped to cool speculative activity in copper. Aluminum prices rose 7.4 percent, reflecting producers' increases for several product lines.[49] U.S. output of primary aluminum rose from 8,875 short

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tons per day in December 1982 to 9,607 short tons in June 1983 as firms geared up to meet the increased demand for their products.[50] Most U.S. aluminum makers posted losses during 1982, but several posted profits in first-half 1983. For molybdenum and lead, prices and output remained depressed.

Prices for leather and furskins went up 2.8 percent, largely because of a substantial second-quarter increase for wet blues (the product between the raw hide and finished leather stage). Tanners in apparel manufacturing nations (Hong Kong, Taiwan, South Korea, and China) purchased large amounts of raw hides as well as wet blues from the United States during the second quarter in anticipation of increased orders from shoe and clothing manufacturers.

Most finished leather prices were stable during the first half, although there were some slight price increases for high-quality bovine leathers used in shoe manufacture. Domestic demand for finished leathers has declined sharply in recent years as production of leather goods shifted abroad. For example, import penetration of the U.S. footwear market, as measured in numbers of pairs, was 59 percent in 1982, compared with 41 percent in 1975.[51] Conversely, export expansion by U.S. tanners has proved especially difficult because of trade barriers in foreign markets.

Export steel prices fell 2.0 percent, as demand continued at drastically reduced levels. In 1980, U.S. firms exported 4.1 million tons of steel, but by 1982, this had fallen to 1.8 million tons.[52] And in the first half of 1983, U.S. firms exported only 583 thousand tons. U.S. steel products are essentially fungible with low-cost steel products from developing nations such as Brazil, Mexico, and Korea. This, combined with an excess of worldwide steelmaking capacity, has made it difficult for U.S. steelmakers, which generally have higher production costs, to compete in foreign markets.

Machinery and transport equipment. Machinery and transport equipment accounts for 35.3 percent of the value of all U.S. exports. Prices for such products advanced 1.0 percent in the first half, after rising 3.9 percent for all of 1982. Most major aggregate indexes in the category showed marginal first-half price increases. The strengthening of the dollar and continued slack demand abroad were major factors moderating price rises and sales volumes. Exports of machinery and transport equipment were $42.1 billion, compared with $46.0 billion in the first half of 1982. Many of the products in this group, such as computers, electronic components, and telecommunications equipment, require a high degree of technical sophistication, and U.S. firms have a comparative advantage in their manufacture.

The index for general industrial machinery and parts rose 1.0 percent, compared with a 1982 first-half increase of 3.2 percent. This subgroup includes heating and cooling equipment, air pumps and compressors, and pumps and valves for liquids. In the first half, heating equipment prices rose 1.2 percent and machine parts prices advanced 2.9 percent, while prices for pumps for liquids fell 0.8 percent. Although higher prices for aluminum and steel alloys put upward pressure on the costs of many industrial machines, slack demand in overseas markets moderated price increases as U.S. producers kept their export prices relatively stable in dollars to retain market share.

The index for general aviation aircraft and helicopters rose 2.7 percent in the first half, sharply below the average rate of increase over the last 6 years. Demand for aviation products, both at home and abroad, was at reduced levels in the first half. Export sales for the first half were down 56.7 percent (in units) from sluggish 1982 levels, which, in turn, were 49.0 percent below 1981 levels.[53] As a result, some U.S. firms furloughed workers and halted production of certain single-engine models to bring production in line with demand. A large supply of relatively new used aircraft offered at low prices also helped to hold down prices.

The index for telecommunications equipment rose 1.2 percent in the first half, after increasing 3.3 percent during all of 1982. Prices rose 3.4 percent in the miscellaneous telecommunications equipment subgroup, which accounts for 77 percent of the weight of the telecommunications equipment index. The subgroup includes such items as office communications devices, large radio transmitters and receivers, and navigational devices and parts. Demand was strong for these highly sophisticated products in the first half. Prices for television sets declined 4.1 percent, and prices for video and sound reproducers and recorders fell 3.4 percent during the first half, placing downward price pressure on the telecommunications equipment index. Exporters of these products, which include tape recorders and radios, faced stiff competition from Japanese producers. Finally, prices for individual telephones declined in direct response to the impending deregulation of the U.S. telephone industry.

Moderating the rise in the machinery and transport equipment index were prices for electrical machinery and equipment, which fell 0.1 percent after rising 2.2 percent in 1982. During last year and the first half of this year, the United States recorded a slight trade surplus for products in this category. In the first 6 months of 1983, the United States exported $5.72 billion of such merchandise, and imported $5.67 billion.[54]

Lower prices for semiconducting materials and devices such as silicon wafers and chips led the price decline in the electrical machinery and equipment index. Wafer prices fell as competition among American, Japanese, and European producers intensified, and technological advances and economies of scale lowered production costs in many cases as firms moved further up the learning curve. Upward pressure was placed on the index by continuing strong demand for computers, defense equipment, and other types of electronic apparatus; by increased demand for new home electrical appliances as homebuilding activity picked up; and by price

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hikes for inputs such as aluminum, copper, and precious metals.

The indexes in the miscellaneous manufactures category showed mixed changes. Miscellaneous manufactures account for 7.4 percent of the value of all U.S. exports, and include such products as measuring and controlling instruments and apparatus, watches and clocks, toys, games, and musical instruments. During the first half of 1983, exports of such merchandise were $7.6 billion, compared with $8.2 billion for the same period last year. The index for photographic apparatus and supplies, optical goods, and watches and clocks fell 2.3 percent in the first half, while that for professional, scientific, and controlling instruments and apparatus rose 4.2 percent.

The increase in the latter index reflected the industry practice of making major price changes early in the year. (For the first half of last year, for example, this index rose 7.0 percent.) Overseas demand was high for these products, which are used to monitor and control industrial processes and improve production efficiency. Foreign demand for U.S. products in this group has traditionally been robust, and in recent years large trade surpluses have been recorded. Because U.S. exporters are generally able to pass through increases in their production costs, this index increased 69.8 percent from June 1977 to June 1983.

Film, cameras, and related photographic equipment account for the bulk of the weight in the index for photographic apparatus and supplies, optical goods, and watches and clocks. Most producers of photographic supplies adjust their prices at the beginning of the year. Prices fell 3.4 percent in the first quarter, reflecting efforts by exporters to counteract the effects of the strong dollar on sales abroad. □

FOOTNOTES

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[1] In this article, the "all-import-price index" refers to the all-commodities-import-price index, excluding chemicals. This measure accounts for 96.5 percent of the value of all imports. A new all-import index which includes chemicals and covers 100 percent of the value of all imports is now available, starting with fourth-quarter 1982 data.

[2] For a detailed look at import-export price movements in 1982, see Mark J. Johnson, "U.S. import-export prices in 1982," *Monthly Labor Review*, May 1983, pp. 20–29.

[3] Import price indexes are weighted by 1980 import values and are published on an f.o.b. (free-on-board) foreign port or c.i.f. (cost, insurance, and freight) U.S. port basis. Export price indexes are weighted by 1980 U.S. merchandise export trade values and are published on an f.o.b. factory or f.a.s. (free-alongside-ship) U.S. port basis. See "International Price Program" (Washington, U.S. Bureau of Labor Statistics).

[4] For details on the value of the U.S. dollar against currencies of other nations, see *Federal Reserve Bulletin*, July 1983, p. A68.

[5] *U.S. Department of Commerce News*, BEA 83–38 (U.S. Department of Commerce, Bureau of Economic Analysis), July 20, 1983, table 4, p. 8.

[6] *P-1 Report* (Detroit, Mich., Motor Vehicle Manufacturers' Association), July 6, 1983, p. 1.

[7] *U.S. Department of Commerce News*, CB 83-108 (Bureau of the Census), July 19, 1983, p. 1.

[8] Information on U.S. merchandise trade exports, imports, and trade deficits is from *Survey of Current Business*, September 1983.

[9] Ibid.

[10] *Highlights of U.S. Export and Import Trade—FT-990* (U.S. Department of Commerce, Bureau of the Census), June 1983, table E-3.

[11] Ibid, table 8.

[12] *U.S. Department of Commerce News*, BEA 83–40 (Bureau of Economic Analysis), Sept. 15, 1983.

[13] *Summary of U.S. International Transactions* (U.S. Department of Commerce, Bureau of Economic Analysis), Sept. 15, 1983.

[14] The share of final goods production that is accounted for by gross trade (merchandise imports plus merchandise exports) is calculated as:

$$\frac{\text{Merchandise imports} + \text{Merchandise exports}}{\text{Final goods} + \text{Merchandise imports}} \times 100$$

It is computed using data from *Survey of Current Business*, various issues.

[15] Robert J. Beck, "U.S. Demand, Imports to Edge Down; Production Rising," *Oil and Gas Journal*, July 25, 1983, p. 114.

[16] Ibid., p. 114.

[17] *Petroleum Supply Monthly* (U.S. Department of Energy, Energy Information Administration), August 1983.

[18] *Monthly Energy Review* (U.S. Department of Energy, Energy Information Administration), September 1983, p. 6. This figure is derived by using the information given in the Executive Summary and dividing total energy imports by total domestic energy consumption.

[19] Beck, "U.S. Demand," p. 127.

[20] Ibid.

[21] See "Consumer Price Index (CPI-U), All Urban Consumers," USDL 83–366 (Bureau of Labor Statistics), July 1983.

[22] Beck, "U.S. Demand," p. 127.

[23] Ibid.

[24] "Now OPEC Feels an Oil Shock," *Business Week*, July 18, 1983, p. 52.

[25] Ibid.

[26] *Petroleum Supply Monthly*, DOE/EIA—0109(83/07) (U.S. Department of Energy, Energy Information Administration), June 1983, pp. 17–18.

[27] Neil Behrmann, "World Coffee Accord Faces Tough Session as Producers Seek Bigger Share of Market," *The Wall Street Journal*, Sept. 3, 1982, p. 24.

[28] *Foreign Agriculture Circular* (USDA, Foreign Agricultural Service), July, 1983, p. 6.

[29] *Sugar and Sugar Sweetener Outlook and Situation* (U.S. Department of Agriculture, Economic Research Service), June 1983, p. 8.

[30] Presidential Proclamation Number 5071; the proclamation was issued on June 28, 1983, and took effect on June 29, 1983.

[31] *Sugar and Sweetener Outlook and Situation* p. 11.

[32] *Summary of U.S. Export and Import Merchandise Trade—FT900-83-06* (Bureau of the Census), June 1983, p. 10.

[33] "Quarterly Forecast—Nonferrous," *Iron Age*, July 4, 1983, p. 28.

[34] Ibid.

[35] For information on tin pricing, see "Tin Prices In General Improved in April," *Tin News* (Washington, The Malaysian Tin Bureau), May 15, 1983, p. 1; and "May and June Tin Prices," *Tin News*, July 15, 1983, p. 1.

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[36] *Pig Iron and Steel Report*, AIS-7 (Washington, American Iron and Steel Institute), July, 1983.

[37] *Monthly Apparent Supply* (Washington, American Iron and Steel Institute), August 1982 and August 1983.

[38] *The Automotive News*, June 20, 1983, pp. 1–61.

[39] Amal Nag, "High New Car Prices Keep Many Lookers Looking, Not Buying," *The Wall Street Journal*, Aug. 3, 1983, p. 8.

[40] Ibid.

[41] "MITI Boosts Prices of Japanese Machines," *American Machinist*, February 1983, p. 27.

[42] "U.S. Foreign Trade in Machine Tools, First Quarter, 1983 (McLean, Va., National Machine Tool Builders' Association), Sept. 29, 1983.

[43] For information regarding this unilateral curb, see Richard Wightman, "U.S. and China Quota Talks Collapse," *Women's Wear Daily*, Jan 14, 1983; and Amanda Berrett, "U.S.-China Textile Trade Talks Ended on Calm Note, but Sides Remain Far Apart," *The Wall Street Journal*, Mar. 21, 1983, p. 25.

[44] "U.S. Lowers Boom on Some Taiwan Imports," *Women's Wear Daily*, Apr. 27, 1983, p. 17.

[45] Jeffrey H. Birnbaum, "Some Farmers Like it, But Critics Call PIK a Major Miscalculation," *The Wall Street Journal*, July 19, 1983, p. 1.

[46] *Feed Outlook and Situation Report* (U.S. Dept. of Agriculture, Economic Research Service), May 1983, p. 2.

[47] Jeffrey H. Birnbaum, "U.S. Will Negotiate with Soviets, Chinese this Week to Boost Lagging Farm Exports," *The Wall Street Journal*, July 25, 1983, p. 4.

[48] *International Coal Review* (Washington, National Coal Association and Coal Exporters' Association of U.S.), Aug. 3, 1983, p. 8.

[49] "Alcoa Buys Metal to Meet Certain Orders as Aluminum Prices and Demand Surge," *The Wall Street Journal*, July 27, 1983, p. 48.

[50] *Primary Aluminum Production Monthly Report* (Washington, The Aluminum Association), July 1983.

[51] *U.S. Leather Industry Statistics, 1983 Edition* (Washington, Tanners' Council of America, 1983), pp. 20, 28.

[52] *Exports of Steel Products* (Washington, American Iron and Steel Institute), June 1983.

[53] *News* (Washington, General Aviation Manufacturers Association), July 11, 1983.

[54] *FT-990, Highlights of U.S. Export and Import Trade* (U.S. Department of Commerce, Bureau of the Census), June 1983, tables E-2 and I–2.

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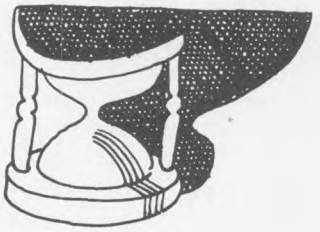
Major Agreements Expiring Next Month



This list of selected collective bargaining agreements expiring in December 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
American National Insurance Co. (Interstate)	Insurance	Insurance Workers	3,000
Atlantic City Electric Co. (New Jersey)	Utilities	Electrical Workers (IBEW)	1,000
Building Service League, Commercial Agreement (New York, N.Y.)	Services	Service Employees	10,000
Blue Cross of Northern California (California)	Insurance	Office Employees	1,300
Campbell Soup, Inc. (Paris, Tex.)	Food products	Food and Commercial Workers	1,650
Constructors Association of Western Pennsylvania (Pennsylvania)	Construction	Operating Engineers	8,000
Constructors Association of Western Pennsylvania (Pennsylvania)	Construction	Teamsters (Ind.)	6,000
Florida Power Corp. (Florida)	Utilities	Electrical Workers (IBEW)	2,050
Heavy engineering, railroad contracting, highway and utilities construction agreement (Pennsylvania)[2]	Construction	Laborers	5,000
Huntington Alloys, Inc. (Huntington, W. Va.)	Primary metals	Steelworkers	1,300
Illinois Association of Health Care Facilities (Illinois)	Hospitals	Service Employees	3,200
Lockheed Aircraft Corp., Lockheed California Co. Division (California)	Transportation equipment	Engineers and Scientists Guild, Lockheed Section (Ind.)	2,750
Marriott Corp., Bob's Big Boy Restaurants (California)	Restaurants	Bob's Employees' Association (Ind.)	5,700
McDonnell Douglas Corp. (Interstate)	Transportation equipment	Southern California Professional Engineering Association (Ind.)	2,500
Metropolitan Marine Maintenance Contractors' Association, Inc., 2 agreements (New York)	Services	Longshoremen's Association	3,500
Neenah Foundry Co. (Neenah, Wis.)	Primary metals	Molders	1,100
New York Lamp and Shade Manufacturers Association, Inc. (New York, N.Y.)	Electrical products	Electrical Workers (IBEW)	1,500
Northwest Airlines, flight attendants (Interstate)[3]	Air transportation	Teamsters (Ind.)	2,600
Ozark Airlines, clerical/office employees (Interstate)[3]	Air transportation	Machinists	1,750
Plastic Soft Materials Manufacturers Association, Inc. (New York, N.Y.)	Apparel	Ladies Garment Workers	5,000
Realty Advisory Board on Labor Relations, Inc. (New York, N.Y.)	Real Estate	Service Employees	20,000
Realty Advisory Board on Labor Relations, Inc. (New York, N.Y.)	Real Estate	Operating Engineers	1,700
San Mateo County Restaurant-Hotel Owners Association (California)	Restaurants	Hotel Employees and Restaurant Employees	5,200
Southern California Edison Co. (Interstate)	Utilities	Electrical Workers (IBEW)	4,600
Southern California Edison Co. (California)	Utilities	Utility Workers	1,500
Standard Brands, Inc., Curtiss Division (Franklin Park, Ill.)	Food products	Bakery, Confectionery and Tobacco Workers	1,000
Stewart-Warner Corp. (Chicago, Ill.)	Transportation equipment	Electrical Workers (UE-Ind.)	2,300
Timex Corp. (Little Rock, Ark.)	Instruments	Machinists	1,200
Trans World Airlines, Inc., pilots (Interstate)[3]	Air transportation	Air Line Pilots Association	3,100
West Bend Co., West Bend Division (Wisconsin)	Fabricated metal products	Allied Industrial Workers	1,200
Government activity			
Maryland: Baltimore Mass Transit Administration	Transportation	Transit Union	2,000
New York: Chautauqua County employees	Multidepartments	State, County and Municipal Employees	1,200
Erie County blue collar employees	Multidepartments	State, County and Municipal Employees	2,200
Erie County white collar employees	Multidepartments	State, County and Municipal Employees	4,500
Ohio: Toledo Board of Education, teachers	Education	Teachers	2,500

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

[2]Industry area (group of companies signing same contract).

[3]Information is from newspaper reports.

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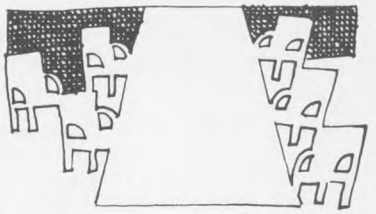
Developments in Industrial Relations



Airline industry update

The airlines transportation industry continues to be buffeted by adverse developments, as a number of carriers report operating losses, pay cuts, and strikes. The difficulties are generally attributed to one or more of a number of factors, such as the drop in travel resulting from the state of the economy; deregulation of the industry and the resulting influx of carriers, leading to fare cuts; high fuel costs; and the high cost of replacing aging air fleets.

Trans World Airlines, which lost $109 million during the first half of 1983, reduced the pay of 5,100 nonunion salaried employees by 10 percent. In addition, their scheduled September general salary increase was indefinitely postponed, as were all individual merit and longevity salary increases, an increase in shift premiums scheduled for October, and improvements in medical and life insurance scheduled for November.

Company President C. E. Meyer attributed the airlines' problems to "higher costs, especially employment costs." TWA's labor costs amounted to 38.4 percent of revenue, compared with 29.8 percent at Pan American World Airways, which had won wage-and-benefit concessions from its employees starting in late 1981. According to the Civil Aeronautics Board, in 1982, wage-and-benefit costs for all U.S. carriers averaged 38 percent of revenue; fuel costs averaged 29 percent of revenue, down from 32 percent in mid-1981.

In another move to improve its condition, TWA began negotiations with three unions on possible wage-and-benefit concessions. The three unions, representing a total of 19,000 workers, are the International Association of Machinists, the Air Line Pilots Association, and the Independent Federation of Flight Attendants.

TWA announced plans to reduce its 29,500 work force to 26,000 by the end of the year. The cut will include 1,250 flight attendants and 750 workers represented by the Machinists.

At Delta Air Lines, 48 senior executives agreed to unspecified cuts in compensation after the carrier announced an $86.7 million loss for the year ended June 30, 1983. The loss, the first in 36 years, also induced the airline's pilots to increase their monthly work schedule without an increase in pay and to extend their contract by 1 year, to March 1985. The pilots are represented by the Air Line Pilots Association. In 1982, as appreciation for a pay increase, Delta's 36,000 employees contributed $30 million to buy the company an airplane.

Republic Airlines and six unions representing 10,000 employees agreed on a temporary 15-percent pay cut after the company announced a $102.9 million loss during the first half of 1983. The first of the concession agreements, with the Machinists, occurred just 2 months after the union had won a 3-year contract which provided for wage increases. From September 1, 1983, to May 30, 1984, pay of union-represented mechanics will be lowered to $13.50 an hour (formerly $15.91). The other large unions involved were the Air Line Employees Association (representing 6,700 workers), the Association of Flight Attendants (2,200), and the Air Line Pilots Association (1,800).

Republic Airlines began compensating 7,100 employees who had aggregated $22 million by deferring a month's pay in February 1982. The individual employees, who were given several options, took $13.5 million in cash, $3.7 million in company stock, and credited $900,000 to an investment plan. In addition, the employees agreed to defer $3.8 million for another year, and some employees elected to permit Republic to retain $82,000.

Several months before termination of their existing contract, Northwest Orient Airlines and the Air Line Pilots Association negotiated a 3-year contract which froze wages until January 1, 1984, increased the number of flying hours to 83 a month (formerly 75), and called for "productivity concessions" by the 1,600 employees. The cockpit crew members will receive pay increases of 7.5 percent at the end of the freeze, 6.5 percent in 1985, and 3 percent in 1986. The contract also provided for improvements in pension and insurance benefits.

Western Airlines, which has been operating at a loss since 1979, proposed a "partnership plan" under which it would give its 10,000 employees at least 25 percent of shares in exchange "for past and future (wage) concessions." (Basically, a 10-percent pay cut extending for 12 months was being sought from all employees.) Members of the Air Line Pilots Association were asked to extend their 10-percent pay

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

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cut until September 1, 1984, instead of the current expiration date of January 1, 1984. This means they would not receive an 8-percent pay increase scheduled for January 1, 1984. Also, nonunion employees would extend to September 30, 1984, a 12.5-percent pay cut instituted in December 1981 and scheduled to expire January 1, 1984. Western also proposed a profit-sharing plan calling for distributions to all employees equal to 15 percent of pre-tax earnings up to $25 million a year, and 20 percent of earnings over $25 million.

Braniff International Corp. proceeded with a plan to reorganize its operations under protection of Chapter 11 of the Federal Bankruptcy Code. Under the plan, the Hyatt Corp. will purchase 80 percent of the carrier, which would then resume operation at about 50 percent of the level in May 1982, when Braniff shut down and sought protection from its creditors. The 2,000 former Braniff employees who will operate the airline had agreed to a number of wage-and-benefit concessions.

Continental Airlines files for bankruptcy

Continental Airlines, the Nation's eighth largest air passenger carrier, filed for protection under Chapter 11 of the Bankruptcy Code. According to Continental, the bankruptcy move was triggered by the Air Line Pilots and Flight Attendants unions' rejection of an offer of company stock in exchange for wage, benefit, and work-rule concessions.

Three days after the filing, Continental resumed operations on about 30 percent of its former system, using those flight crew members willing to cross picket lines set up by the two unions to protest the bankruptcy move and pay cuts imposed by Continental. The new pay scales were a flat $43,000 a year for pilots and $14,000 for flight attendants, compared with the previous averages of $77,000 and $29,000. Continental, which lost $84 million in the first half of the year, also instituted changes in work rules to reduce labor costs.

Actually, the carrier was being struck by three unions, as 2,000 members of the Machinists union had walked out before the bankruptcy move. The major issues were union demands for a $17.70-an-hour pay rate for mechanics by the end of 1984 (Continental had offered a $2.55 increase in the existing $13.45 rate), and company demands for changes in rules that the union contended would cost more than 500 jobs.

Trucking agreement rejected

The organized trucking industry suffered a serious blow when Teamsters members overwhelmingly rejected a package of wage-and-benefit concessions intended to aid the stricken industry in reopening and expanding operations. The vote was 94,086 to 13,082 against the "Voluntary Laid Off Employee Relief Plan."

The rejection also was a blow to the prestige of Teamsters President Jackie Presser, who had entered office in April. Presser had urged the members to approve the proposed "rider" to the 1982 accord with Trucking Management Inc., the industry's bargaining leader, to "restore union jobs in the face of nonunion competition." He was referring to the influx of nonunion carriers since 1980, when the Motor Carrier Act eliminated many of the regulations governing entry into and functioning of the trucking industry.

Trucking Management and the Teamsters had hoped that their 1982 concessionary agreement would end the financial problems of the organized companies, but apparently it did not. As a result, some individual carriers won additional wage, benefit, and work rule changes from Teamsters' locals. This continuing "erosion" of the standards of the National Master Freight Agreement led to the proposed "rider" which was rejected by union members despite unanimous approval by the union's 21-member executive board. (See *Monthly Labor Review*, April 1982, p. 64, for terms of the 1982 master agreement, and April 1983, p. 42, for details of the union leadership's rejection of Trucking Management's early 1983 request for concession talks.)

The "Voluntary Laid Off Employee Relief Plan" would have applied only to workers who were on layoff on April 1, 1983, and were later recalled to work. Covered employees would have been permitted to refuse to participate without losing their seniority, but they would have lost their eligibility for casual daily work. Other provisions of the rejected agreement included:

- a 22-cent-a-mile pay rate for recalled over-the-road drivers, compared with a 32-cent rate for other over-the-road drivers;
- an $11-an-hour pay rate for recalled local drivers and terminal workers, compared with a $13.41 rate for other local drivers;
- a $5.50 pay rate for recalled drivers while their vehicles are being repaired, loaded, or unloaded, and a $13.30 rate while driving;
- a reduction in paid sick leave;
- elimination of automatic cost-of-living pay adjustments; and
- inducements for employers to establish new divisions to handle only "full truckload" lots of cargo and thus enhance their ability to compete with nonunion carriers.

There was no immediate indication of whether the union would renew national concession talks, "live with" the terms of the 1982 contract, or enter into local talks with individual carriers beset by financial difficulties.

GM-Auto Workers announce retraining program

In a move that could alleviate the continuing high rate of unemployment in the automobile industry, General Motors Corp. and the Auto Workers announced a plan to retrain up to 9,300 laid-off GM employees in the Flint, Mich., area. A new regional skills development and training center will assess job availability, train workers, and help them find

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jobs within the GM system or in other industries. The training will be in such fields as computer systems operation, computer programming, electronics, building maintenance, medical technology, and machine operation.

More than $7 million has been allocated to the first year of the program. The money will come from a fund into which GM is paying 5 cents per employee for each hour worked, as specified in the parties' 1982 labor contract.

National work standards for bricklayers

The Bricklayers union and the National Refractory Contractors' Association concluded 3 years of discussions by signing an accord that sets national standards for working conditions, hours, and wages. Union Vice President L. Gerald Carlisle said the national approach was necessary because the past practice of negotiating locally "often didn't address the specific jobsite conditions which are unique to fire bricklayers and refractory contractors."

The 2-year National Refractory Agreement will be administered by a joint committee that will meet every 6 months to review the negotiated gross wage rates. The settlement established 71 such rates with an index to determine which rate will apply in each local union's jurisdiction. Contractors will deduct from the local gross wage rate the locally negotiated amount to be paid into benefit funds.

According to the union, the contract will cover 3 million hours of work per year performed by its members. The union already has national contracts covering work on smoke stacks; acid tile and tanks, and cooling towers.

Brewery cuts jobs, offers early retirement

A 2-month strike against the Miller Brewing Co. of Milwaukee ended when members of Local 9 of the Brewery Workers accepted a contract calling for the elimination of 297 jobs. Alan Easton, a Miller vice president, said the jobs were "in excess of the manning required to produce the volume of beer that comes out of the brewery." He denied that Miller had threatened to move its operations to a new brewery in Trenton, Ohio, but admitted that "the longer the strike went, it was clear it was an option."

George Hibert, president of Local 9, said that layoffs could be averted if enough of the 340 eligible employees accepted a new early retirement option. Under the new incentive, a 55-year-old worker retiring after 30 years of service would receive 24 monthly payments of $2,250, after which a regular pension would begin. Older employees would receive fewer special payments: a retiring employee age 65 with 30 years of service would only receive six of the $2,250 payments.

Worker job security was improved by a new provision prohibiting Miller from subcontracting work involving brewing, packaging, and preparing beer for shipment. Miller also agreed to a 3-year contract, instead of the 28-month contract it had first offered.

The accord provided for two $1.10 an hour pay increases, one effective immediately and the other on August 2, 1984, which will bring the standard pay rate to $15.17. In the third year, the employees will receive a pay increase equal to "the national brewing industry level general wage increase."

Benefit changes included improvements in health and life insurance and regular pension benefits and an additional paid holiday.

Equipment workers accept group pay plan

In the farm and construction equipment industry, workers at International Harvester Co.'s Melrose Park (Ill.) plant agreed to change to a group incentive pay plan from individual incentive pay. The company had indicated that it would probably close the engine plant if the employees rejected the 4-year accord, but would move $40 million of production equipment destined for Spain into the half-empty plant if the workers accepted. Similar plans aimed at increasing productivity have kept two International Harvester foundries open.

The plant has about 700 production workers, represented by the Auto Workers, and 230 salaried workers, compared with a total employment of 4,250 in 1974. Harvester lost $1.64 billion in 1982.

ILA convention

Delegates to the International Longshoremen's Association's quadrennial convention elected Thomas W. Gleason to a sixth 4-year term as head of the union. Walter L. Sullivan, who had been appointed secretary-treasurer in February, also was elected to a 4-year term.

The 600 delegates approved resolutions calling for strengthening the U.S. merchant marine to compete with foreign-flag fleets and to strengthen the national defense, strong support of the union's political action committee, and abolition of the waterfront commission of the port of New York City and New Jersey, which the union contends interferes with collective bargaining and other union affairs.

Lone Star steel workers accept deeper pay cuts

In a major deviation from the pattern of settlements in the steel industry, the United Steelworkers union negotiated a 37-month contract with Lone Star Steel Co. that called for a $2.80-an-hour cut in the $13 hourly average pay. The union's earlier settlement with the seven Coordinating Committee Steel Companies had provided for a $1.31 pay cut, of which $1.25 was to be restored over the contract term. (See *Monthly Labor Review,* May 1983, pp. 47–48) Following that settlement, the union negotiated similar wage-and-benefit terms at most of the 200 other steel companies with which it bargains. In a few cases, pay cuts ranged up to $3.25 an hour. The Lone Star accord covers 1,600 active employees and 2,200 on layoff. It provides for 20 cents of

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the pay cut to be restored in April 1985, 24 cents in October 1985, and 24 cents in April 1986. Other terms included a 10-cent-an-hour reduction (to 20 cents) in the premium for the afternoon shift, and a 15-cent reduction (to 30 cents) in the premium for the night shift; elimination of two of 11 paid holidays; revision of the supplemental unemployment benefits plan to provide for a flat benefit of $100 a week, rather than a percentage of pay, and a 19-cent-an-hour increase (to 35 cents) in the company's financing of the plan. A company official maintained that Lone Star's settlements often differ from the industry pattern, and that the $13 an hour average pay was higher than at other producers. The plant is located in Lone Star, Tex.

New plan to control plant closures, cutbacks

In possibly the first action of its kind, a coalition of union, community, and religious groups negotiated an agreement with the City of Vacaville, Calif., requiring certain employers to give a year's notice of plant closings or major cuts in operations. The agreement is limited to companies that move to the city and take advantage of tax-supported financial aid. It requires the companies to file an equal employment opportunity plan with the city and also requires unionized companies moving into the city to continue to either recognize the union or negotiate with the union an agreement regarding relocation and transfer arrangements.

The accord ended a dispute that arose when the coalition, the Plant Closures Project, and Local 1412 of the United Electrical Workers sued Simpson Dura-Vent Co., a chimney pipe manufacturer, of Redwood City, Calif., charging that the company's plan to relocate to Vacaville violated a California law prohibiting tax funds from being used to induce companies to move from one community within the State to another. Vacaville, which had negotiated a $2.5 million low-interest financing plan with Simpson, claimed the suit threatened its $38 million industrial development program. The agreement provided for withdrawal of the suit.

California wineries settle

More than 3,500 employees were covered by a settlement between 16 California wineries and two locals of the Distillery, Wine and Allied Workers union. The 3-year contract did not provide for an immediate pay increase but the workers will receive 4 percent increases at the beginning of the second and third years. A winery official said the increases were low because of lagging sales resulting from the state of the economy and increasing competition from foreign wineries.

The agreement covered wineries throughout California. Other terms included termination of the automatic cost-of-living wage adjustment clause, which had resulted in a 30-cent-an-hour pay increase during the previous contract. There were no changes in benefits.

Women win sex bias award

In a decision which could have national repercussions, a Federal judge has held that the State of Washington discriminated against female employees by paying them less than male employees performing comparable work. The case was based on a perceived pay disparity between workers in jobs that are "traditionally" held by women and jobs that are "traditionally" held by men. Past decisions and existing laws specifically bar unequal pay for performing the *same* job, but the current decision supports recent efforts to validate the principle of "comparable worth." According to this principle, workers in different classes or types of work should be paid the same if their performance requires degrees of aptitude, training, and diligence of comparable worth to society.

The case began in 1974, when the State, acting in response to a complaint of pay disparities by the State, County and Municipal Employees, commissioned a study which showed that women were paid about 20 percent less than men in comparable jobs. The union, which represents 20,000 of the State's 50,000 employees, cited as one example the $1,114 monthly pay rate for laundry workers (who are predominantly women), and the $1,574 monthly rate for truckdrivers (who are predominantly men) although both occupations had the same 97-point job evaluation rate based on the requirements of the job.

This and subsequent studies led the State in early 1983 to agree to institute a plan to eliminate the disparities over a 10-year period. However, the State budgeted only $1.5 million to start the program, leading the union to charge that correction of the problem would require about 85 years if financing was continued at that level.

Accordingly, the union filed suit against the State in July 1982, seeking more than $500 million in pay adjustments retroactive for 3 years for 14,000 employees, including some men. The union asserted that the State had violated the U.S. Civil Rights Act of 1964, Washington's civil service law, and the Equal Rights Amendment to the State constitution.

The Federal District Court found the State guilty of "direct, overt and institutionalized discrimination" against women in administering its 3,000 categories of workers. The State argued that it was following the private job market, which also pays less for traditionally female jobs, and announced that it would appeal the decision. The size of the award will be set in November. □

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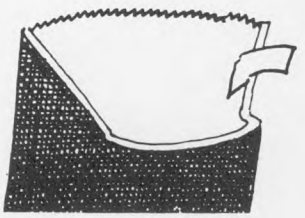
Book Reviews



Social indicators: everyone's problem

How We Live: An Economic Perspective on Americans from Birth to Death. By Victor R. Fuchs. Cambridge, Mass., Harvard University Press, 1983. 293 pp. $17.50.

It is hard to accept the notion that the important decisions we make during the course of our lives—including the choice as to family size—are based in large part on economic considerations. Even the idea that we can always apply an economic yardstick to the consequences of our decisions is not easy to grasp. Yet, in this book, Victor Fuchs shows us that our lives can, indeed, be viewed from "an economic perspective."

Fuchs, whose previous books have focused on the growth of the service economy and on the rising costs of health care, describes how, as we go through the various stages of our lives—childhood, adolescence and youth, young adulthood, mature adulthood, and old age—the important choices that we make (or that may be made for us) are greatly influenced and often constrained by economic factors. Life, says Fuchs, is not "a bowl of cherries" but "a succession of difficult decisions" that must be made with an eye on such "externalities" as prices, wages, and other economic variables.

In his discussions on the principal stages of the life cycle, Fuchs shares a great deal of information on the relevant trends of recent decades—such as the declining birth rate, rising school attendance, the growing divorce rate, the entry of women into the job market, and the growing number of elderly. In describing these trends and their economic setting, he displays an excellent knowledge of a vast array of statistics, but he does not bore us with a slew of numbers or with the technical jargon one usually finds in most economic analyses. His easy-to-follow style should appeal to a wide audience. However, he does not shy away from discussing the difficult, socioeconomic problems which we confront, nor from discussing the pros and cons of measures which might be used in dealing with these problems.

Fuchs begins by discussing the trends in fertility, focusing on the postwar "boom" and subsequent "bust" in births, and exploring both the causes and implications of these trends. For an "economic perspective," he leans toward Richard Easterlin's "relative income theory" as the most plausible explanation for the wide swings in fertility. According to this theory, the persons who are born when the birth rate is very low (and who are thus in relatively small numbers) grow up to find economic prospects somewhat brighter than they had expected and, buoyed by such prospects, will tend to marry early and have relatively large families, thus raising the birth rate. On the other hand, those who are born when the birth rate is very high will grow up to find stiff competition for jobs and other economic opportunities. Faced with economic conditions which do not live up to their previously formed expectations, these "cohorts" tend to delay family formation and therefore bring about a new downward swing in fertility. This theory would imply an upward swing in the birth rate during the 1980's.

Fuchs is aware of other theories concerning trends in fertility, with some demographers believing that it is unreasonable to expect a sharp reversal of what they see as a secular downtrend. He is concerned that a truly prolonged decline will have serious consequences on the structure of the American population—and for living conditions—in the decades to come. To the possible consternation of the "zero population growth" movement, he even suggests that the country may at some point have to adopt policies designed to give a boost to fertility. Surprisingly, nothing is said about the allegedly large inflow of illegal aliens into the country, which, along with fertility and mortality trends, is also an important element in shaping the future makeup of the American population.

Moving to the relevant trends in the lives of youths and adults, Fuchs discusses the economic implications of the increases in school attendance and educational levels, and he dwells at length on the employment trends for the various population groups. His views concerning the tremendous rise in labor force participation among women are particularly interesting. He sees the gains in real wages and the growth of the service economy—both economic phenomena—as the principal magnets which have drawn women into the job market in large numbers. He is, of course, aware of other factors such as the rising divorce rates, the declining fertility rate, and the influence of the feminist movement, but says these factors played only a secondary role in facilitating the entry of women into the job market.

Regarding the elderly, Fuchs notes with some concern that their number is growing faster than the population as a whole, and he is even more concerned that fewer and

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fewer are working in their sixties and seventies. Again, he says economic forces are the main reasons for the trend toward early retirement. He points, in particular, to the general increase in social security benefits and to the secular decline in self-employment opportunities, but he is aware that other factors such as age discrimination and mandatory retirement have also played a part in these trends. It should be noted that while Fuchs is correct about the historical trends, he seems to have overlooked the recent rebound in self-employment, which has actually risen by 2 million, or nearly 30 percent, since the early 1970's.

Fuchs would like to see a reversal of the trend toward early retirement, and suggests measures which seem to be very much in line with those recently enacted into law, including an eventual increase in the minimum age for retirement under social security. Fuchs is also worried about the rising costs of health care for the elderly. He endorses a health insurance scheme that would no longer automatically reimburse doctors and hospitals in line with their costs but would, instead, "deliver care for a fixed amount per person or per family per year," with medicare and medicaid beneficiaries being given vouchers entitling them to join such plans.

Throughout the book, Fuchs recognizes—and laments—the diminishing role of the family in American society. For example, he finds it unfair that schools are blamed for the prolonged decline in scholastic test scores among children and youth. He blames, instead, too little discipline at home (where many children now have only one parent) and too much TV watching. And while lamenting the declining role of the family, Fuchs cannot help but note the growing role of government, which he views, at best, with mixed feelings. He recognizes that . . . "Government is needed to help people cope with forces that would otherwise overwhelm them" . . . but he would clearly like to see the government out of certain areas which it has entered. For example, he is totally convinced that the imposition of a minimum wage by the Federal Government has adversely affected the job market for youths in general, and for black youths in particular.

In short, Fuchs' book gives us a very insightful look at our lives in an economic setting. In suggesting various measures that might be adopted to help us cope with the most common problems we are likely to encounter during our life cycle, Fuch offers no panaceas. He is aware of the pros and cons of the initiatives he is suggesting and he lays them out in a most pragmatic fashion. This book offers a lot to the reader, both in terms of what it tells us about our lives, as well as what it suggests to improve our lives.

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The burden of daily work

Women and Poverty in the Third World. Edited by Mayra Buvinic, Margaret A. Lycette, William Paul McGreevey. Baltimore, Md., The Johns Hopkins University Press, 1983. 329 pp. $27.95

During a lecture tour in Zambia, I became fully aware of the critical role played by women in that developing country's agriculture. Wherever one travels in the Third World, women are engaged in agricultural work. But, like many others, I had been of the opinion that these women were additional, supplemental, marginal labor who worked in the fields between household chores and child rearing, while the men were responsible for the organization and overall success or failure of the yield of the land.

Zambia caused me to refocus my thinking. In Zambia, copper was where the money had been in colonial times and mining and its related occupations offered high wages and opportunities. While the men had traditionally migrated or commuted to these jobs, the women were left behind to plant the crops, organize the season's work, and market surplus products. In entire regions, agriculture has largely been the responsibility of women. Yet, I knew that training programs sponsored by foreign donors were generally designed to teach men better farming methods and women cottage industry type activities. Traditional concepts on the part of Western nations have been slow to give way to the actualities of the Third World.

If the authors had accomplished nothing more than to inform policymakers that women are a critical and viable element of the production process in Third World nations and that economic change requires skills training for both men and women, they would have made a major contribution. But the book does more than this. In a series of essays, the authors cover a broad range of problems affecting women in an attempt to show how these, and resultant poverty, continue to be countervailing forces for the economic development efforts of international donors. The 12 essays are preceded by two authored by the editors, which summarize and highlight findings of the individual chapters. They also skillfully analyze the effects of these findings on Third World women, the next generation, and the prospects for development.

This book will be of particular interest to those who are involved in the status of women, but it will also appeal to a general audience. It presents a thesis which, in the continual redesign of our Western approach to aid for the Third World, has never been properly developed and, therefore, has never received the attention it deserves. As Nancy Birdsall and William McGreevey state on the initial page of the book ". . . The 'woman issue,' once thought of as no more than a welfare issue, affects the prospects of efficiency, growth, and development in the economy as a whole." Because it calls for a serious reconsideration of development strategies in a number of areas and a review of the allocation

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of funds for various purposes such as improving female productivity versus family welfare efforts, this book will also be of special interest to project directors of international economic development.

Making Birdsall's and McGreevey's point reflected in that sentence is the main objective of the book. The first section, containing four essays, deals with women and work. It concentrates on the numerous roles played by women in developing countries. The role of homemaker in itself is a dual one because the wife and mother not only performs the customary functions of the homemaker in the Western world but also transforms raw materials into products usually produced in the manufacturing industry in the West. In addition, she also performs labor market work outside the home.

Both the qualitative and quantitative problems inherent in these multifunctions are examined in the four chapters which make up the second section of the book entitled "women and welfare." Its findings indicate that productivity suffers all around. The need to work reflects on the time women can spend with their children, but the time spent with the children dictates the type of market work they can take on. The fact that women must combine child rearing with work outside the home requires that the older children help with both homework and market work as soon as they are capable of doing so, resulting in fatigue, neglect of their studies, and, often, poor health.

The authors make it clear that in most instances it is not the societal structure that dictates the lot of these women—it's economics. It is the financial need to perform three different types of jobs, none of which, given the circumstances, can be done properly. How much better the supply of food and quality of nutrition for the family had the women received proper instruction in agriculture. How much better the quality of their lives and those of their neighbors were they able to have surplus to sell from their agricultural labors. How much better the quality of the nation's labor force were they able to free their children from early labor to attend school or training, supply them with better nutrition, and devote more time to overseeing their fullest development.

All of the above are especially true for households that are headed by women. These are discussed in the two essays contained in section 3 of the book. Although, as the authors point out, statistics on the proportion of families headed by women are poor or totally lacking, it is clear that this proportion of the population is rapidly increasing. Major reasons are the rapid migration of males to the cities for work, partly as a result of better communication and transportation, and the general disintegration of the family structure as a result of divorce and separation.

The final two essays—in section 4—deal with the lack of statistical information on women in the Third World. It would have been helpful to the reader if this discussion had appeared earlier in the book. Perhaps the editors thought the book would be more readable if statistical data were placed at the end. However, the lack of official interest in the plight of women shown in this chapter is of major consequence and would have been a useful reminder as the reader progressed through the remainder of the book.

Women and Poverty in the Third World is an exceptionally thoughtful, scholarly, well-researched, and documented work. In addition to their own rigorous research, the authors have drawn extensively on other literature and have succeeded in pulling together a wide variety of material. They have attempted to draw attention away from the welfare-oriented programs which focused on women, to policies designed to increase women's productivity whether in the home or in market work. They also point to the important misconception that the economic status of women is a zero-sum game—that is, gains to women must be a loss to men. They plead, instead, for an antipoverty strategy that justifies assistance to poor women in terms of economic growth rather than welfare and is embodied in projects to raise women's productivity and income. This reviewer, who has been active for many years in the labor economic aspects of economic development, wholeheartedly concurs with this plea.

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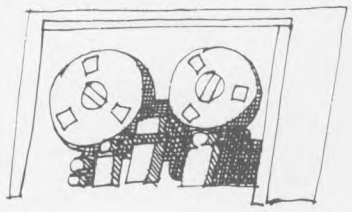

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NOTES ON CURRENT LABOR STATISTICS

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 3–8 were revised in the February 1983 issue of the *Review*, to reflect experience through 1982.

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 11, 13, and 15 were made in August 1981 using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 29 and 30 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. More information from household and establishment surveys is provided in *Employment and Earnings*, a monthly publication of the Bureau. Comparable household information is published in a two-volume data book–*Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2096. Comparable establishment information appears in two 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 BLS statistical series

Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment Cost Index	November 3	3rd quarter	.....	.....	.....	.....	32–34
Employment situation	November 4	October	December 2	November	January 6	December	1–11
U.S. Import and Export Price Indexes	November 9	3rd quarter	.....	.....	.....	.....	.....
Producer Price Index	November 10	October	December 16	November	January 13	December	23–27
Consumer Price Index	November 23	October	December 21	November	January 24	December	19–22
Real earnings	November 23	October	December 21	November	January 24	December	12–16
Productivity and costs:							
Nonfinancial corporations	November 30	3rd quarter	.....	.....	.....	.....	28–31
Nonfarm business and manufacturing	.....	.....	.....	.....	January 25	4th quarter	28–31
Major collective bargaining settlements	.....	.....	.....	.....	January 27	1983	35–36

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

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

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

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the preceding years. These adjustments affect the comparability of historical data 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 2–8 are seasonally adjusted, based on the seasonal experience through December 1982.

1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950–82

[Numbers in thousands]

Year	Noninstitutional population	Labor force									Not in labor force
		Number	Percent of population	Employed						Unemployed		
				Total	Percent of population	Resident Armed Forces	Civilian			Number	Percent of labor force	
							Total	Agriculture	Nonagricultural industries			
1950	106,164	63,377	59.7	60,087	56.6	1,169	58,918	7,160	51,758	3,288	5.2	42,787
1955	111,747	67,087	60.0	64,234	57.5	2,064	62,170	6,450	55,722	2,852	4.3	44,660
1960	119,106	71,489	60.0	67,639	56.8	1,861	65,778	5,458	60,318	3,852	5.4	46,617
1965	128,459	76,401	59.5	73,034	56.9	1,946	71,088	4,361	66,726	3,366	4.4	52,058
1966	130,180	77,892	59.8	75,017	57.6	2,122	72,895	3,979	68,915	2,875	3.7	52,288
1967	132,092	79,565	60.2	76,590	58.0	2,218	74,372	3,844	70,527	2,975	3.7	52,527
1968	134,281	80,990	60.3	78,173	58.2	2,253	75,920	3,817	72,103	2,817	3.5	53,291
1969	136,573	82,972	60.8	80,140	58.7	2,238	77,902	3,606	74,296	2,832	3.4	53,602
1970	139,203	84,889	61.0	80,796	58.0	2,118	78,678	3,463	75,215	4,093	4.8	54,315
1971	142,189	86,355	60.7	81,340	57.2	1,973	79,367	3,394	75,972	5,016	5.8	55,834
1972	145,939	88,847	60.9	83,966	57.5	1,813	82,153	3,484	78,669	4,882	5.5	57,091
1973	148,870	91,203	61.3	86,838	58.3	1,774	85,064	3,470	81,594	4,355	4.8	57,667
1974	151,841	93,670	61.7	88,515	58.3	1,721	86,794	3,515	83,279	5,156	5.5	58,171
1975	154,831	95,453	61.6	87,524	56.5	1,678	85,845	3,408	82,438	7,929	8.3	59,377
1976	157,818	97,826	62.0	90,420	57.3	1,668	88,752	3,331	85,421	7,406	7.6	59,991
1977	160,689	100,665	62.6	93,673	58.3	1,656	92,017	3,283	88,734	6,991	6.9	60,025
1978	153,541	103,882	63.5	97,679	59.7	1,631	96,048	3,387	92,661	6,202	6.0	59,659
1979	166,460	106,559	64.0	100,421	60.3	1,597	98,824	3,347	95,477	6,137	5.8	59,900
1980	169,349	108,544	64.1	100,907	59.6	1,604	99,303	3,364	95,938	7,637	7.0	60,806
1981	171,775	110,315	65.2	102,042	59.4	1,645	100,397	3,368	97,030	8,273	7.5	61,460
1982	173,939	111,872	64.3	101,194	58.2	1,668	99,526	3,401	96,125	10,578	9.5	62,067

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2. Employment status of the population, including Armed Forces in the United States, by sex, seasonally adjusted

[Numbers in thousands]

Employment status and sex	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
TOTAL															
Noninstitutional population[1,2]	171,775	173,939	174,360	174,549	174,718	174,864	175,021	175,169	175,320	175,465	175,622	175,793	175,970	176,122	176,297
Labor force[2]	110,315	111,872	112,528	112,420	112,702	112,794	112,215	112,217	112,148	112,457	112,418	113,600	113,539	113,943	114,063
Participation rate[3]	64.2	64.3	64.5	64.4	64.5	64.5	64.1	64.1	64.0	64.1	64.0	64.6	64.5	64.7	64.7
Total employed[2]	102,042	101,194	101,213	100,844	100,796	100,758	100,770	100,727	100,767	101,129	101,226	102,454	102,949	103,245	103,640
Employment-population[4]	59.4	58.2	58.0	57.8	57.7	57.6	57.6	57.5	57.5	57.6	57.6	58.3	58.5	58.6	58.8
Resident Armed Forces[1]	1,645	1,668	1,670	1,668	1,660	1,665	1,667	1,664	1,664	1,671	1,669	1,668	1,664	1,682	1,695
Civilian employed	100,397	99,526	99,543	99,176	99,136	99,093	99,103	99,063	99,103	99,458	99,557	100,786	101,285	101,563	101,945
Agriculture	3,368	3,401	3,363	3,413	3,466	3,411	3,412	3,393	3,375	3,371	3,367	3,522	3,527	3,489	3,290
Nonagricultural industries	97,030	96,125	96,180	95,763	95,670	95,682	95,691	95,670	95,729	96,088	96,190	97,264	97,758	98,074	98,655
Unemployed	8,273	10,678	11,315	11,576	11,906	12,036	11,446	11,490	11,381	11,328	11,192	11,146	10,590	10,699	10,423
Unemployment rate[5]	7.5	9.5	10.1	10.3	10.6	10.7	10.2	10.2	10.1	10.1	10.0	9.8	9.3	9.4	9.1
Not in labor force	61,460	62,067	61,832	62,129	62,016	62,070	62,806	62,952	63,172	63,008	63,204	62,193	62,431	62,179	62,234
Men, 16 years and over															
Noninstitutional population[1,2]	82,023	83,052	83,231	83,323	83,402	83,581	83,652	83,720	83,789	83,856	83,931	84,014	84,099	84,173	84,261
Labor force[2]	63,486	63,979	64,301	64,300	64,414	64,384	63,916	63,996	63,957	64,207	64,276	64,816	64,864	64,814	64,944
Participation rate[3]	77.4	77.0	77.3	77.2	77.2	77.0	76.4	76.4	76.3	76.6	76.6	77.1	77.1	77.0	77.1
Total employed[2]	58,909	57,800	57,598	57,456	57,408	57,338	57,283	57,234	57,300	57,476	57,656	58,464	58,625	58,570	58,826
Employment-population rate[4]	71.8	69.6	69.2	69.0	58.8	68.6	68.5	68.4	68.4	68.5	68.7	69.6	69.7	69.6	69.8
Resident Armed Forces[1]	1,512	1,527	1,526	1,524	1,516	1,529	1,531	1,528	1,528	1,530	1,528	1,525	1,521	1,538	1,549
Civilian employed	57,397	56,271	56,072	55,932	55,892	55,809	55,752	55,706	55,772	55,946	56,128	56,939	57,104	57,032	57,277
Unemployed	4,577	6,179	6,703	6,844	7,006	7,046	6,633	6,762	6,657	6,731	6,620	6,351	6,238	6,244	6,118
Unemployment rate[5]	7.2	9.7	10.4	10.6	10.9	10.9	10.4	10.6	10.4	10.5	10.3	9.8	9.6	9.6	9.4
Women, 16 years and over															
Noninstitutional population[1,2]	89,751	90,887	91,129	91,226	91,316	91,283	91,369	91,449	91,532	91,609	91,691	91,779	91,871	91,949	92,036
Labor force[2]	46,829	47,894	48,227	48,120	48,288	48,410	48,299	48,220	48,191	48,251	48,142	48,784	48,675	49,130	49,119
Participation rate[3]	52.2	52.7	52.9	52.7	42.9	43.0	52.9	52.7	52.6	52.7	52.5	53.2	53.0	53.4	53.4
Total employed[2]	43,133	43,395	43,615	43,388	43,388	43,420	43,486	43,493	3,467	43,653	43,569	43,990	44,324	44,675	44,814
Employment-population rate[4]	48.1	47.7	47.9	47.6	47.5	47.6	47.6	47.6	47.5	47.7	47.5	47.9	48.2	48.6	48.7
Resident Armed Forces[1]	133	139	144	144	144	136	136	136	136	141	141	143	143	144	146
Civilian employed	43,000	43,256	43,471	43,244	43,244	43,284	43,350	43,357	43,331	43,512	43,428	43,847	44,181	44,531	44,668
Unemployed	3,696	4,499	4,612	4,732	4,900	4,990	4,813	4,727	4,724	4,597	4,572	4,995	4,351	4,455	4,305
Unemployment rate[5]	7.9	9.4	9.6	9.8	10.1	10.3	10.0	9.8	9.8	9.5	9.5	9.8	8.9	9.1	8.8

[1] The population and Armed Forces figures are not adjusted for seasonal variation.
[2] Includes members of the Armed Forces stationed in the United States.
[3] Labor force as a percent of the noninstitutional population.
[4] Total employed as a percent of the noninstitutional population.
[5] Unemployment as a percent of the labor force (including the resident Armed Forces).

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3. Employment status of the civilian population by sex, age, race, and Hispanic origin, seasonally adjusted

[Numbers in thousands]

	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
TOTAL															
Civilian noninstitutional population[1]	170,130	172,271	172,690	172,881	173,058	173,199	173,354	173,305	173,656	173,794	173,953	174,125	174,306	174,440	174,602
Civilian labor force	108,670	110,204	110,858	110,752	111,042	111,129	110,548	110,553	110,484	110,786	110,749	111,932	111,875	112,261	112,368
Participation rate	63.9	64.0	64.2	64.1	64.2	64.2	63.8	63.7	63.6	63.7	63.7	64.3	64.2	64.4	64.4
Employed	100,397	99,526	99,543	99,176	99,136	99,093	99,103	99,063	99,103	99,458	99,557	100,786	101,285	101,563	101,945
Employment-population ratio[2]	59.0	57.8	57.6	57.4	57.3	57.2	57.2	57.1	57.1	57.2	57.2	57.9	58.1	58.2	58.4
Agriculture	33,68	3,401	3,363	3,413	3,466	3,411	3,412	3,393	3,375	3,371	3,367	3,522	3,527	3,489	3,290
Nonagricultural industries	97,030	96,125	96,180	95,763	95,670	95,682	95,691	95,670	95,729	96,088	96,190	97,264	97,758	98,074	98,655
Unemployed	8,273	10,678	11,315	11,576	11,906	12,036	11,446	11,490	11,381	11,328	11,192	11,146	10,590	10,699	10,423
Unemployment rate	7.6	9.7	10.2	10.5	10.7	10.8	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5	9.3
Not in labor force	61,460	62,067	61,832	62,129	62,016	62,070	62,806	62,952	63,172	63,008	63,204	62,193	62,431	62,179	62,234
Men, 20 years and over															
Civilian noninstitutional population[1]	72,419	73,644	73,867	73,984	74,094	74,236	74,339	74,434	74,528	74,611	74,712	74,814	74,927	75,012	75,115
Civilian labor force	57,197	57,980	58,354	58,363	58,454	58,443	58,048	58,177	58,170	58,454	58,506	58,804	59,016	58,945	59,053
Participation rate	79,0	78.7	79.0	78.9	78.9	78.7	78.1	78.2	78.1	78.3	78.3	78.6	78.8	78.6	78.6
Employed	53,582	52,891	52,776	52,649	52,589	52,534	52,452	52,428	52,589	52,752	52,901	53,516	53,808	53,771	53,928
Employment-population ratio[2]	74.0	71.8	71.4	71.2	71.0	70.8	70.6	70.4	70.6	70.7	70.8	71.5	71.8	71.7	71.8
Agriculture	2,384	2,422	2,436	2,444	2,434	2,389	2,426	2,374	2,420	2,404	2,443	2,529	2,544	2,496	2,431
Nonagricultural industries	51,199	50,469	50,340	50,205	50,155	50,145	50,025	50,054	50,169	50,348	50,458	50.987	51,264	51,275	51,497
Unemployed	3,615	5,089	5,578	5,714	5,865	5,909	5,597	5,749	5,581	5,702	5,605	5,288	5,208	5,174	5,125
Unemployment rate	6.3	8.8	9.6	9.8	10.0	10.1	9.6	9.9	9.6	9.8	9.6	9.0	8.8	8.8	8.7
Women, 20 years and over															
Civilian noninstitutional population[1]	81,497	82,864	83,152	83,271	83,385	83,383	83,490	83,593	83,699	83,794	83,899	84,008	84,122	84,224	84,333
Civilian labor force	42,485	43,699	43,996	43,936	44,112	44,286	44,201	44,216	44,166	44,238	44,228	44,648	44,685	45,003	45,132
Participation rate	52.1	52.7	52.9	52.8	52.9	53.1	52.9	52.9	52.8	52.8	52.7	53.1	53.1	53.4	53.5
Employed	39,590	40,086	40,286	40,112	40,123	40,215	40,238	40,291	40,277	40,509	40,484	40,789	41,164	41,394	41,614
Employment-population ratio[2]	48.6	48.4	48.4	48.2	48.1	48.2	48.2	48.2	48.1	48.3	48.3	48.6	48.9	49.1	49.3
Agriculture	604	601	588	578	590	628	625	657	647	622	597	636	607	630	574
Nonagricultural industries	38,986	39,485	39,698	39,534	39,533	39,587	39,613	39,634	39,630	39,886	39,887	40,153	40,557	40,764	41,040
Unemployed	2,895	3,613	3,710	3,824	3,989	4,071	3,963	3,925	3,889	3,729	3,744	3,859	3,521	3,609	3,518
Unemployment rate	6.8	8.3	8.4	8.7	9.0	9.2	9.0	8.9	8.8	8.4	8.5	8.6	7.9	8.0	7.8
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	16,214	15,763	15,671	15,625	15,579	15,580	15,525	15,478	15,429	15,389	15,342	15,303	15,257	15,204	15,154
Civilian labor force	8,988	8,526	8,508	8,453	8,476	8,400	8,299	8,160	8,148	8,094	8,015	8,480	8,173	8,313	8,184
Participation rate	55.4	54.1	54.3	54,1	54.4	53.9	53.5	52.7	52.8	52.6	52.2	55.4	53.6	54.7	54.0
Employed	7,225	6,549	6,481	6,415	6,424	6,344	6,413	6,345	6,237	6,197	6,172	6,481	6,313	6,397	6,404
Employment-population ratio[2]	44.6	41.5	41.4	41.1	41.2	40.7	41.3	41.0	40.4	40.3	40.2	42.4	41.4	42.1	42.3
Agriculture	380	378	339	391	442	394	361	362	308	344	327	357	376	362	285
Nonagricultural industries	6,845	6,171	6,142	6,024	5,982	5,950	6,052	5,983	5,929	5,853	5,845	6,124	5,937	6,035	6,119
Unemployed	1,763	1,977	2,027	2,038	2,052	2,056	1,886	1,815	1,911	1,897	1,843	1,999	1,860	1,916	1,780
Unemployment rate	19.6	23.2	23.8	24.1	24.2	24.5	22.7	22.2	23.5	23.4	23.0	23.6	22.8	23.0	21.8
White															
Civilian noninstitutional population[1]	147,908	149,441	149,652	149,838	149,887	150,056	150,129	150,187	150,382	150,518	150,671	150,810	150,959	151,003	151,021
Civilian labor force	95,052	96,143	96,640	96,453	96,719	96,864	96,176	95,987	95,996	96,287	96,362	97,250	97,341	97,602	97,605
Participation rate	64.3	64.3	64.6	64.4	64.5	64.6	64.1	63.9	63.8	64.0	64.0	64.5	64.5	64.6	64.6
Employed	88,709	87,903	87,872	98,477	87,435	87,443	87,466	87,194	87,324	87,709	87,777	88,880	89,382	89,573	89,719
Employment-population ratio[2]	60.0	58.8	58.7	58.4	58.3	58.3	58.3	58.1	58.1	58.3	58.3	58.9	59.2	59.3	59.4
Unemployed	6,343	8,241	8,768	8,976	9,284	9,421	8,711	8,793	8,672	8,577	8,585	8,370	7,959	8,029	7,885
Unemployment rate	6.7	8.6	9.1	9.3	9.6	9.7	9.1	9.2	9.0	8.9	8.9	8.6	8.2	8.2	8.1
Black															
Civilian noninstitutional population[1]	18,219	18,584	18,659	18,692	18,723	18,740	18,768	18,796	18,823	18,851	18,880	18,911	18,942	18,966	18,994
Civilian labor force	11,086	11,331	11,443	11,398	11,475	11,522	11,542	11,548	11,554	11,631	11,672	11,783	11,764	11,745	11,729
Participation rate	60.8	61.0	61.3	61.0	61.3	61.5	61.5	61.4	61.4	61.7	61.8	62.3	62.1	61.9	61.7
Employed	9,355	9,189	9,172	9,102	9,159	9,127	9,142	9,276	9,253	9,209	9,270	9,352	9,469	9,398	9,505
Employment-population ratio[2]	51.3	49.4	49.2	48.7	48.9	48.7	48.7	49.4	49.2	48.8	49.1	49.5	50.0	49.6	50.0
Unemployed	1,731	2,142	2,271	2,296	2,316	2,395	2,400	2,271	2,302	2,423	2,402	2,432	2,295	2,347	2,224
Unemployment rate	15.6	18.9	19.8	20.1	202	20.8	20.8	19.7	19.9	20.8	20.6	20.6	19.5	20.0	19.0
Hispanic origin															
Civilian noninstitutional population[1]	9,310	9,400	9,464	9,474	9,355	9,301	9,328	9,368	9,551	9,665	9,747	9,738	9,640	9,690	9,700
Civilian labor force	5,972	5,983	5,961	5,973	5,923	5,898	5,981	5,992	6,074	6,206	6,167	6,253	6,079	6,124	6,200
Participation rate	64.1	63.6	63.0	63.0	63.3	63.4	64.1	64.0	63.6	64.2	63.3	64.2	63.1	63.2	63.9
Employed	5,348	5,158	5,097	5,075	5,012	4,998	5,053	5,042	5,088	5,304	5,318	5,379	5,331	5,333	5,390
Employment-population ratio[2]	57.4	54.9	53.9	53.6	53.6	53.7	54.2	53.8	53.3	54.9	54.6	55.2	55.3	55.0	55.6
Unemployed	624	825	864	898	911	900	929	950	986	902	849	874	748	790	811
Unemployment rate	10.4	13.8	14.5	15.0	15.4	15.3	15.5	15.8	16.2	14.5	13.8	14.0	12.3	12.9	13.1

[1] The population figures are not seasonally adjusted.

[2] Civilian employment as a percent of the civilian noninstitutional population.

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

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4. Selected employment indicators, seasonally adjusted

[Numbers in thousands]

Selected categories	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
CHARACTERISTIC															
Civilian employed, 16 years and over	100,397	99,526	99,543	99,176	99,136	99,093	99,103	99,063	99,103	99,458	99,557	100,786	101,285	101,563	101,945
Men	57,397	56,271	56,073	55,932	55,892	55,809	55,752	55,706	55,772	55,946	56,128	56,939	57,104	57,032	57,277
Women	43,000	43,256	43,471	43,244	43,244	43,284	43,350	43,357	43,331	43,512	43,428	43,847	44,181	44,531	44,668
Married men, spouse present	38,882	38,074	37,998	37,852	37,641	37,507	37,450	37,428	34,452	37,523	37,560	37,925	38,293	38,308	38,253
Married women, spouse present	23,915	24,053	24,159	24,081	23,985	24,155	24,205	24,070	24,171	24,371	24,229	24,335	24,640	24,972	24,996
Women who maintain families	4,998	5,099	5,118	5,107	5,025	4,985	5,038	5,050	5,097	4,944	4,942	5,016	5,088	5,104	5,124
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,464	1,505	1,537	1,576	1,584	1,547	1,637	1,624	1,515	1,560	1,595	1,636	1,663	1,664	1,585
Self-employed workers	1,638	1,636	1,569	1,621	1,628	1,627	1,587	1,541	1,585	1,607	1,558	1,608	1,583	1,566	1,473
Unpaid family workers	266	261	254	229	241	224	231	223	260	208	229	263	259	245	237
Nonagricultural industries:															
Wage and salary workers	89,543	88,462	88,562	88,064	87,936	87,976	87,813	87,794	87,912	88,187	88,395	89,354	89,765	89,995	90,813
Government	15,689	15,562	15,681	15,436	15,514	15,477	15,386	15,501	15,452	15,518	15,523	15,498	15,615	15,697	15,549
Private industries	73,853	72,945	72,881	72,628	72,422	72,499	72,427	72,293	72,459	72,668	72,872	73,856	74,150	74,299	75,265
Private households	1,208	1,207	1,220	1,216	1,221	1,163	1,162	1,232	1,235	1,205	1,228	1,317	1,286	1,290	1,295
Other	72,645	71,738	71,661	71,412	71,201	71,336	71,265	71,061	71,225	71,463	71,644	72,539	72,864	73,009	73,969
Self-employed workers	7,097	7,262	7,422	7,332	7,349	7,335	7,465	7,385	7,453	7,528	7,408	7,493	7,598	7,658	7,660
Unpaid family workers	390	401	378	403	382	383	380	353	342	353	335	345	320	376	376
PERSONS AT WORK[1]															
Nonagricultural industries	91,377	90,552	90,884	90,232	90,238	90,219	90,903	90,207	90,271	92,267	90,941	90,539	92,253	91,986	93,737
Full-time schedules	74,339	72,245	71,723	71,394	71,442	71,499	71,786	71,564	71,878	73,594	72,975	72,978	74,004	73,495	74,883
Part time for economic reasons	4,499	5,852	6,495	6,903	6,411	6,425	6,845	6,481	6,202	6,082	5,928	5,729	5,636	5,789	6,106
Usually work full time	1,738	2,169	2,519	2,381	2,228	2,153	2,200	2,097	1,927	1,871	1,685	1,702	1,809	1,718	1,798
Usually work part time	2,761	3,683	3,976	4,022	4,183	4,272	4,645	4,384	4,275	4,211	4,243	4,027	3,826	4,071	4,309
Part time for noneconomic reasons	12,539	12,455	12,666	12,435	12,385	12,295	12,271	12,162	12,191	12,592	12,038	11,833	12,614	12,701	12,748

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

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5. Selected unemployment indicators, seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
CHARACTERISTIC															
Total, all civilian workers	7.6	9.7	10.2	10.4	10.7	10.8	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5	9.3
Both sexes, 16 to 19 years	19.6	23.2	23.8	24.1	24.2	24.5	22.7	22.2	23.5	23.4	23.0	23.6	22.8	23.0	21.8
Men, 20 years and over	6.3	8.8	9.6	9.8	10.0	10.1	9.6	9.9	9.6	9.8	9.6	9.0	8.8	8.8	8.7
Women, 20 years and over	6.8	8.3	8.4	8.7	9.0	9.2	9.0	8.9	8.8	8.4	8.5	8.6	7.9	8.0	7.8
White, total	6.7	8.6	9.1	9.3	9.6	9.7	9.1	9.2	9.0	8.9	8.9	8.6	8.2	8.2	8.1
Both sexes, 16 to 19 years	17.3	20.4	20.7	21.5	21.2	21.6	20.0	19.7	21.4	20.4	19.8	20.0	19.5	19.8	17.9
Men, 16 to 19 years	17.9	21.7	22.2	23.0	22.6	22.8	21.2	21.1	22.9	21.7	20.2	19.8	20.4	21.1	18.7
Women, 16 to 19 years	16.6	19.0	19.1	19.9	19.8	20.4	18.7	18.2	19.7	19.0	19.4	20.2	18.5	18.4	17.1
Men, 20 years and over	5.6	7.8	8.6	8.8	9.1	9.2	8.4	8.7	8.5	8.6	8.6	7.8	7.7	7.7	7.8
Women, 20 years and over	5.9	7.3	7.5	7.6	8.0	8.1	7.8	7.7	7.4	7.2	7.3	7.4	6.7	6.7	6.6
Black, total	15.6	18.9	19.8	2.1	20.2	20.8	20.8	19.7	19.9	20.8	20.6	20.6	19.5	20.0	19.0
Both sexes, 16 to 19 years	41.4	48.0	48.6	47.7	49.8	49.5	45.7	45.4	43.5	49.0	48.2	50.6	48.1	53.0	52.0
Men, 16 to 19 years	40.7	48.9	51.0	49.2	53.0	52.5	45.9	45.3	44.5	48.0	53.1	51.1	47.6	56.8	54.8
Women, 16 to 19 years	42.2	47.1	45.9	45.9	46.2	46.2	45.5	45.4	42.3	50.0	42.3	50.0	48.8	48.9	48.7
Men, 20 years and over	13.5	17.8	9.2	19.6	19.2	20.5	19.7	18.7	18.8	20.3	19.8	19.2	18.7	18.4	16.9
Women, 20 years and over	13.4	15.4	15.7	16.2	16.5	16.5	18.2	17.0	17.7	17.0	17.1	17.0	16.0	16.4	16.1
Hispanic origin, total	10.4	13.8	14.5	15.0	15.4	15.3	15.5	15.8	16.2	14.5	13.8	14.0	12.3	12.9	13.1
Married men, spouse present	4.3	6.5	7.2	7.5	7.6	7.8	7.1	7.2	7.1	7.1	7.0	6.6	6.1	6.3	6.1
Married women, spouse present	6.0	7.4	7.6	7.9	8.2	8.2	7.8	7.6	7.5	7.3	7.5	7.8	7.0	6.9	6.8
Women who maintain families	10.4	11.7	12.4	11.3	12.5	13.2	13.2	13.0	13.5	13.2	12.9	12.8	11.6	11.6	12.2
Full-time workers	7.3	9.6	10.2	10.5	10.6	10.8	10.3	10.4	10.3	10.2	9.9	9.7	9.4	9.4	9.2
Part-time workers	9.4	10.5	10.6	10.3	11.3	11.1	10.6	10.1	10.5	10.6	11.0	12.1	10.2	10.1	10.0
Unemployed 15 weeks and over	2.1	3.2	3.5	3.8	4.1	4.3	4.2	4.2	4.2	3.9	4.1	4.1	3.9	3.6	3.4
Labor force time lost[1]	8.5	11.0	11.7	12.0	12.4	12.7	11.7	12.0	11.8	11.4	11.5	10.8	10.4	10.6	10.6
INDUSTRY															
Nonagricultural private wage and salary workers	7.7	10.1	11.0	11.0	11.4	11.6	10.8	10.8	10.8	10.5	10.5	10.0	9.6	9.8	9.4
Mining	6.0	13.4	18.5	17.9	18.1	18.1	17.1	18.4	18.6	20.3	22.7	18.2	16.6	14.8	17.2
Construction	15.6	20.0	22.3	22.3	21.8	22.0	20.0	19.7	20.3	20.3	20.4	18.1	18.0	18.1	18.2
Manufacturing	8.3	12.3	14.1	14.1	14.8	14.8	13.0	13.3	12.8	12.4	12.3	11.5	10.5	11.2	10.2
Durable goods	8.2	13.3	16.0	16.0	17.0	17.1	14.7	14.7	14.1	13.5	13.5	12.2	11.2	11.6	10.9
Nondurable goods	8.4	10.8	11.2	11.2	11.4	11.4	10.5	11.4	11.1	10.8	10.5	10.4	9.6	10.6	9.2
Transportation and public utilities	5.2	6.8	7.9	7.9	8.3	8.0	7.8	8.0	7.8	7.7	7.0	7.8	7.0	8.0	7.4
Wholesale and retail trade	8.1	10.0	10.4	10.4	10.6	11.0	10.8	10.9	11.2	10.4	10.1	10.2	9.7	9.8	9.6
Finance and service industries	5.9	6.9	7.1	7.1	7.7	7.9	7.6	7.3	7.2	7.3	7.5	7.2	7.3	7.2	7.1
Government workers	4.7	4.9	4.9	4.9	5.1	5.1	5.7	6.0	5.9	6.1	5.8	5.1	5.5	5.0	4.9
Agricultural wage and salary workers	12.1	14.7	13.3	13.3	15.6	16.5	16.0	16.4	16.3	17.2	17.0	17.0	14.2	14.6	16.1

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

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6. Unemployment rates by sex and age, seasonally adjusted

[Civilian workers]

Sex and age	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Total, 16 years and over	7.6	9.7	10.2	10.5	10.7	10.8	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5	9.3
16 to 24 years	14.9	17.8	18.3	18.7	19.0	18.9	18.3	18.3	18.1	18.1	18.1	17.6	16.8	17.4	16.5
16 to 19 years	19.6	23.2	23.8	24.1	24.2	24.5	22.7	22.2	23.5	23.4	23.0	23.6	22.8	23.0	21.8
16 to 17 years	21.4	24.9	26.5	26.1	26.3	27.4	24.1	23.4	25.1	26.3	26.2	25.8	25.3	24.7	23.9
18 to 19 years	18.4	22.1	22.0	22.9	22.8	22.7	21.7	21.5	22.7	21.8	21.1	22.4	21.1	22.0	20.4
20 to 24 years	12.3	14.9	15.3	15.8	16.3	16.0	16.1	16.3	15.4	15.4	15.6	14.4	13.8	14.5	13.8
25 years and over	5.4	7.4	7.9	8.1	8.3	8.6	8.1	8.2	8.1	8.0	7.9	7.9	7.4	7.3	7.3
25 to 54 years	5.8	7.9	8.6	8.7	8.9	9.1	8.7	8.7	8.7	8.5	8.5	8.3	7.8	7.8	7.7
55 years and over	3.6	5.0	5.2	5.5	5.7	5.8	5.4	5.4	5.4	5.6	5.3	5.6	5.3	5.1	5.1
Men, 16 years and over	7.4	9.9	10.7	10.9	11.1	11.2	10.6	10.8	10.7	10.7	10.6	10.0	9.8	9.9	9.7
16 to 24 years	15.7	19.1	20.0	20.2	20.6	20.5	19.7	19.8	19.5	19.4	19.7	18.4	18.4	18.8	17.6
16 to 19 years	20.1	24.4	25.4	25.6	25.7	25.8	23.9	23.6	25.3	24.4	23.9	23.7	23.8	24.7	22.9
16 to 17 years	22.0	26.4	29.0	28.8	28.2	29.0	24.4	23.6	26.0	27.0	27.4	25.4	27.9	26.2	23.5
18 to 19 years	18.8	23.1	23.0	23.4	24.1	24.0	23.5	23.4	24.8	22.8	22.0	22.9	21.2	23.7	22.5
20 to 24 years	13.2	16.4	17.3	17.4	18.0	17.8	17.6	17.8	16.6	17.0	17.6	15.7	15.7	15.9	15.0
25 years and over	5.1	7.5	8.2	8.5	8.6	8.8	8.2	8.5	8.4	8.5	8.2	7.8	7.6	7.5	7.6
25 to 54 years	5.5	8.0	9.0	9.1	9.2	9.4	8.7	9.1	9.0	8.9	8.8	8.4	8.1	8.0	8.1
55 years and over	3.5	5.1	5.5	6.0	6.2	6.3	5.8	5.7	5.8	6.3	5.8	5.4	5.4	5.3	5.6
Women, 16 years and over	7.9	9.4	9.6	9.9	10.2	10.3	10.0	9.8	9.8	9.6	9.5	9.9	9.0	9.1	8.8
16 to 24 years	14.0	16.2	16.3	17.0	17.2	17.1	16.7	16.6	16.6	16.5	16.2	16.6	14.9	15.9	15.2
16 to 19 years	19.0	21.9	22.1	22.5	22.6	23.0	21.5	20.7	21.5	22.4	21.9	23.4	21.6	21.2	20.5
16 to 17 years	20.7	23.2	23.8	22.9	24.2	25.6	23.7	23.2	24.2	25.5	24.7	26.2	22.3	23.1	24.3
18 to 19 years	17.9	21.0	20.9	22.3	21.4	21.3	19.8	19.3	20.5	20.7	20.2	21.9	21.0	20.3	17.9
20 to 24 years	11.2	13.2	13.1	14.0	14.4	14.0	14.2	14.5	14.1	13.5	13.3	12.9	11.5	13.0	12.5
25 years and over	5.9	7.3	7.5	7.6	7.9	8.2	7.9	7.7	7.7	7.4	7.6	7.9	7.2	7.0	6.8
25 to 54 years	6.3	7.7	8.0	8.2	8.5	8.8	8.7	8.2	8.3	7.9	8.2	8.2	7.6	7.5	7.3
55 years and over	3.8	4.8	4.8	4.8	4.9	5.1	4.8	4.9	4.7	4.5	4.6	5.8	5.3	4.7	4.4

7. Unemployed persons by reason for unemployment, seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Job losers	4,257	6,258	6,979	7,325	7,369	7,295	6,704	6,809	6,823	6,750	6,766	6,513	6,193	6,202	6,002
On layoff	1,430	2,127	2,625	2,519	2,531	2,468	2,131	2,024	1,945	1,948	1,943	1,822	1,719	1,658	1,591
Other job losers	2,837	4,141	4,354	4,806	4,838	4,827	4,573	4,784	4,878	4,803	4,823	4,691	4,474	4,545	4,411
Job leavers	923	840	786	803	794	826	839	848	901	815	801	782	738	767	866
Reentrants	2,102	2,384	2,437	2,322	2,546	2,529	2,623	2,491	2,426	2,488	2,365	2,425	2,429	2,524	2,351
New entrants	981	1,185	1,303	1,296	1,244	1,288	1,174	1,161	1,155	1,245	1,251	1,440	1,225	1,214	1,247
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	51.6	58.7	60.7	62.4	61.5	60.6	59.1	60.2	60.4	59.7	60.5	58.4	58.5	57.9	57.3
On layoff	17.3	19.9	22.8	21.4	21.2	20.5	18.8	17.9	17.2	17.2	17.4	16.3	16.2	15.5	15.2
Other job losers	34.3	38.8	37.8	40.9	40.5	40.1	40.3	42.3	43.1	42.5	43.1	42.0	42.3	42.4	42.1
Job leavers	11.2	7.9	6.8	6.8	6.6	6.9	7.4	7.5	8.0	7.2	7.2	7.0	7.0	7.2	8.3
Reentrants	25.4	22.3	21.2	19.8	21.3	21.8	23.1	22.0	21.5	22.0	21.1	21.7	22.9	23.6	22.5
New entrants	11.9	11.1	11.3	11.0	10.4	10.7	10.4	10.3	10.2	11.0	11.2	12.9	11.6	11.3	11.9
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.9	5.7	6.3	6.6	6.6	6.6	6.1	6.2	6.2	6.1	6.1	5.8	5.5	5.5	5.3
Job leavers	.8	.8	.7	.7	.7	.7	.8	.8	.8	.7	.7	.7	.7	.7	.8
Reentrants	1.9	2.2	2.2	2.1	2.3	2.4	2.4	2.3	2.2	2.2	2.1	2.2	2.2	2.2	2.1
New entrants	.9	1.1	1.2	1.2	1.1	1.2	1.1	1.1	1.0	1.1	1.1	1.3	1.1	1.1	1.1

8. Duration of unemployment, seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Less than 5 weeks	3,449	3,883	4,004	3,930	3,963	4,019	3,536	3,731	3,440	3,547	3,519	3,655	3,498	3,660	3,774
5 to 14 weeks	2,539	3,311	3,549	3,511	3,549	3,460	3,328	3,106	3,140	3,154	2,979	2,915	2,794	3,026	2,810
15 weeks and over	2,285	3,485	3,856	4,167	4,524	4,732	4,634	4,618	4,615	4,356	4,517	4,589	4,417	4,020	3,850
15 to 26 weeks	1,122	1,708	1,830	1,951	2,191	2,125	1,928	1,928	1,875	1,662	1,731	1,638	1,830	1,573	1,344
27 weeks and over	1,162	1,776	2,026	2,216	2,333	2,607	2,706	2,689	2,740	2,694	2,786	2,951	2,587	2,447	2,506
Mean duration in weeks	13.7	15.6	16.6	17.1	17.3	18.0	19.4	19.0	19.1	19.0	20.4	22.0	21.7	19.9	20.2
Median duration in weeks	6.9	8.7	9.4	9.6	10.0	10.1	11.5	9.6	10.3	11.3	12.3	11.8	9.9	8.9	9.1

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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 189,000 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 12–17 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.

The Diffusion Index, introduced in table 17 of the May issue, represents the percent of 186 nonagricultural industries in which employment was rising over the indicated period. One-half of the industries with unchanged employment are counted as rising. In line with Bureau practice, data for the 3-, 6-, and 9-month spans are seasonally adjusted, while that for the 12-month span is unadjusted. The diffusion index is useful for measuring the dispersion of economic gains or losses and is also an economic indicator.

Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1983 data, published in the July 1983 issue of the *Review*. Consequently, data published in the *Review* prior to that issue are not necessarily comparable to current data. Unadjusted data have been revised back to April 1981; seasonally adjusted data have been revised back to January 1978. Unadjusted data from April 1982 forward, and seasonally adjusted data from January 1979 forward are subject to revision in future benchmarks. Earlier comparable unadjusted and seasonally adjusted data are published in a *Supplement to Employment and Earnings* (unadjusted data from April 1977 through February 1983 and seasonally adjusted data from January 1974 through February 1983) 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*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982).

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9. Employment by industry, selected years, 1950–82

[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	50,589	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	14,706	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	4,045	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	19,582	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	5,180	17,890	16,241	2,866	13,375
1981	91,156	75,126	25,497	1,139	4,188	20,170	65,659	5,165	20,547	5,358	15,189	5,298	18,619	16,031	2,772	13,259
1982	89,596	73,793	23,907	1,143	3,911	18,853	65,689	5,081	20,401	5,280	15,122	5,340	19,064	15,803	2,739	13,064

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

10. Employment by State

[Nonagricultural payroll data, in thousands]

State	August 1982	July 1983	August 1983[p]	State	August 1982	July 1983	August 1983[p]
Alabama	1,312.6	1,319.2	1,312.4	Montana	271.5	267.9	266.2
Alaska	220.2	230.6	231.4	Nebraska	598.3	594.6	595.5
Arizona	1,002.5	1,018.1	1,009.8	Nevada	408.1	417.8	419.4
Arkansas	715.2	721.9	722.5	New Hampshire	401.5	400.7	401.7
California	9,748.9	9,846.9	9,800.3	New Jersey	3,126.8	3,134.5	3,120.7
Colorado	1,306.4	1,332.9	1,327.5	New Mexico	473.6	482.7	482.0
Connecticut	1,407.4	1,419.8	1,407.0	New York	7,242.4	7,201.1	7,160.5
Delaware	261.8	265.6	264.3	North Carolina	2,301.5	2,320.9	2,333.6
District of Columbia	609.3	611.1	599.8	North Dakota	251.9	254.2	252.5
Florida	3,679.4	3,810.7	3,783.2	Ohio	4,116.7	4,092.8	4,085.9
Georgia	2,206.5	2,236.7	2,246.9	Oklahoma	1,230.8	1,201.3	1,194.1
Hawaii	403.9	401.8	400.2	Oregon	957.5	946.1	948.9
Idaho	307.6	313.9	313.9	Pennsylvania	4,534.9	4,473.9	4,457.9
Illinois	4,592.1	4,535.9	4,516.0	Rhode Island	392.7	388.3	392.5
Indiana	1,997.9	1,992.7	1,988.1	South Carolina	1,146.4	1,166.1	1,165.3
Iowa	1,013.0	998.7	990.0	South Dakota	230.9	235.0	234.4
Kansas	898.5	902.5	896.7	Tennessee	1,681.6	1,671.5	1,679.1
Kentucky	1,156.8	1,150.2	1,153.9	Texas	6,248.1	6,158.1	6,109.9
Louisiana	1,601.1	1,583.5	1,577.0	Utah	558.4	558.9	558.2
Maine	424.5	418.0	428.0	Vermont	203.8	203.7	204.4
Maryland	1,658.5	1,687.5	1,675.5	Virginia	2,134.2	2,162.6	2,152.8
Massachusetts	2,606.0	2,595.5	2,585.6	Washington	1,558.9	1,576.8	1,564.3
Michigan	3,153.7	3,184.1	3,163.6	West Virginia	613.2	590.8	590.4
Minnesota	1,704.6	1,703.5	1,708.3	Wisconsin	1,873.0	1,855.3	1,849.6
Mississippi	781.1	783.0	776.8	Wyoming	218.2	214.1	213.3
Missouri	1,917.6	1,903.9	1,905.1				
				Virgin Islands	36.7	36.2	35.6

[1] Data not available.

p = preliminary.

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

[Nonagricultural payroll data, in thousands]

Industry division and group	Annual average		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.p	Sept.p
TOTAL	91,156	89,596	89,235	88,938	88,785	88,665	88,885	88,746	88,814	89,101	89,421	89,844	90,152	89,735	90,468
PRIVATE SECTOR	75,126	73,793	73,451	73,158	73,013	72,907	73,132	73,004	73,090	73,377	73,677	74,123	74,472	74,083	74,810
GOODS-PRODUCING	25,497	23,907	23,530	23,287	23,131	23,061	23,186	23,049	23,030	23,159	23,347	23,518	23,724	23,832	23,927
Mining	1,139	1,143	1,100	1,082	1,066	1,053	1,037	1,014	1,006	997	994	1,003	1,017	1,025	1,023
Construction	4,188	3,911	3,875	3,847	3,843	3,815	3,905	3,790	3,757	3,786	3,860	3,933	3,974	4,022	4,050
Manufacturing	20,170	18,853	18,555	18,358	18,222	18,193	18,244	18,245	18,267	18,376	18,493	18,582	18,733	18,785	18,854
Production workers	14,020	12,790	12,542	12,368	12,252	12,241	12,291	12,303	12,323	12,435	12,531	12,615	12,756	12,797	12,866
Durable goods	12,109	11,100	10,862	10,685	10,577	10,559	10,594	10,608	10,617	10,689	10,788	10,844	10,961	11,018	11,073
Production workers	8,294	7,350	7,150	6,992	6,900	6,892	6,931	6,949	6,961	7,035	7,115	7,169	7,278	7,325	7,380
Lumber and wood products	666	603	603	605	608	614	625	631	638	651	662	679	688	700	704
Furniture and fixtures	464	433	428	426	427	429	430	427	433	440	446	450	459	458	457
Stone, clay, and glass products	638	578	570	565	559	554	557	557	559	565	570	573	577	582	585
Primary metal industries	1,122	922	869	840	823	816	817	810	816	820	828	830	839	839	849
Fabricated metal products	1,590	1,435	1,402	1,378	1,362	1,359	1,364	1,364	1,362	1,369	1,379	1,384	1,391	1,413	1,414
Machinery, except electrical	2,498	2,267	2,184	2,122	2,088	2,066	2,048	2,042	2,030	2,031	2,064	2,066	2,094	2,104	2,114
Electric and electronic equipment	2,094	2,016	1,992	1,976	1,975	1,957	1,974	1,981	1,988	1,999	2,010	2,030	2,047	2,042	2,076
Transportation equipment	1,898	1,744	1,724	1,691	1,661	1,696	1,710	1,729	1,723	1,743	1,757	1,762	1,794	1,804	1,797
Instruments and related products	730	716	710	705	700	695	695	693	691	690	689	687	687	693	694
Miscellaneous manufacturing	408	386	380	377	374	373	374	374	377	381	383	383	385	383	383
Nondurable goods	8,061	7,753	7,693	7,673	7,645	7,634	7,650	7,637	7,650	7,687	7,705	7,738	7,772	7,767	7,781
Production workers	5,727	5,440	5,392	5,376	5,352	5,349	5,360	5,354	5,362	5,400	5,416	5,446	5,478	5,472	5,486
Food and kindred products	1,671	1,638	1,633	1,636	1,632	1,626	1,626	1,620	1,619	1,633	1,632	1,643	1,638	1,624	1,630
Tobacco manufactures	70	68	66	66	63	69	69	67	67	66	66	65	65	62	64
Textile mill products	823	750	734	733	727	727	726	726	730	733	736	745	746	753	753
Apparel and other textile products	1,244	1,164	1,149	1,148	1,141	1,140	1,150	1,148	1,143	1,149	1,153	1,159	1,180	1,175	1,175
Paper and allied products	689	662	659	653	654	653	653	652	652	654	656	657	658	660	660
Printing and publishing	1,266	1,269	1,266	1,265	1,263	1,263	1,266	1,265	1,269	1,274	1,276	1,281	1,284	1,287	1,289
Chemicals and allied products	1,109	1,079	1,070	1,066	1,064	1,059	1,057	1,056	1,056	1,058	1,058	1,056	1,059	1,057	1,061
Petroleum and coal products	214	201	202	201	200	199	200	199	199	199	198	198	197	195	194
Rubber and miscellaneous plastics products	737	701	696	689	685	685	688	691	699	707	716	721	732	738	739
Leather and leather products	238	221	218	216	216	213	215	214	216	214	214	213	213	216	216
SERVICE-PRODUCING	65,659	65,689	65,705	65,651	65,654	65,604	65,699	65,697	65,784	65,942	66,074	66,326	66,428	65,903	66,541
Transportation and public utilities	5,165	5,081	5,054	5,033	5,019	5,008	4,979	4,966	4,963	4,988	4,993	4,992	4,984	4,343	5,015
Wholesale and retail trade	20,547	20,401	20,380	20,344	20,320	20,256	20,355	20,343	20,350	20,329	20,356	20,494	20,529	20,591	20,494
Wholesale trade	5,358	5,280	5,252	5,237	5,212	5,192	5,185	5,181	5,176	5,180	5,197	5,222	5,229	5,246	5,254
Retail trade	15,189	15,122	15,128	15,107	15,108	15,064	15,170	15,162	15,174	15,149	15,159	15,272	15,300	15,345	15,240
Finance, insurance, and real estate	5,298	5,340	5,351	5,350	5,356	5,367	5,374	5,384	5,391	5,423	5,435	5,451	5,465	5,488	5,485
Services	18,619	19,064	19,136	19,144	19,187	19,215	19,238	19,262	19,356	19,478	19,546	19,668	19,770	19,829	19,889
Government	16,031	15,803	15,784	15,780	15,772	15,758	15,753	15,742	15,724	15,724	15,744	15,721	15,680	15,652	15,658
Federal	2,772	2,739	2,735	2,742	2,746	2,747	2,748	2,742	2,742	2,749	2,756	2,742	2,738	2,733	2,741
State and local	13,259	13,064	13,049	13,038	13,026	13,011	13,005	13,000	12,982	12,975	12,988	12,979	12,942	12,919	12,917

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12. Hours and earnings, by industry division, selected years, 1950–82

[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	$1.34	$67.16	37.9	$1.77	$69.68	37.4	$1.86	$58.32	40.5	$1.44
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	112.57	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	439.75	43.7	10.04	299.26	36.9	10.82	318.00	39.8	7.99
1982	266.92	34.8	7.67	459.23	42.6	10.78	426.45	36.7	11.62	330.65	38.9	8.50
	Transportation and public utilities			Wholesale and retail trade			Finance, insurance, and real estate			Services		
1950	.....	.....	.....	$44.55	40.5	$1.10	$50.52	37.7	$1.34	.....	.....	.....
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	190.62	32.2	5.92	229.05	36.3	6.31	208.97	32.6	6.41
1982	401.70	39.0	10.30	198.10	31.9	6.21	245.44	36.2	6.78	224.94	32.6	6.90

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

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13. 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		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.p	Sept.p
PRIVATE SECTOR	35.2	34.8	34.8	34.7	34.7	34.8	35.1	34.5	34.8	34.9	35.1	35.1	35.0	35.0	35.2
MANUFACTURING	39.8	38.9	38.8	38.9	39.0	39.0	39.7	39.2	39.5	40.1	40.0	40.1	40.2	40.3	40.7
Overtime hours	2.8	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.6	2.9	2.7	2.9	3.0	3.1	3.3
Durable goods	40.2	39.3	39.1	39.2	39.3	39.3	40.1	39.7	39.9	40.5	40.4	40.6	40.8	40.8	41.3
Overtime hours	2.8	2.2	2.1	2.1	2.1	2.2	2.2	2.3	2.5	2.8	2.6	2.8	3.0	3.1	3.4
Lumber and wood products	38.7	38.0	38.4	38.1	38.7	38.8	40.5	39.5	39.5	40.0	39.8	40.0	39.9	40.1	40.3
Furniture and fixtures	38.4	37.2	37.5	37.5	37.6	37.8	38.6	37.9	38.3	39.3	39.2	39.6	39.7	39.5	39.8
Stone, clay, and glass products	40.6	40.0	40.2	40.2	40.2	40.1	41.4	40.5	40.6	41.0	41.2	41.6	41.7	41.7	42.0
Primary metal industries	40.5	38.6	37.8	38.2	38.3	38.8	38.9	39.1	39.4	39.9	40.3	40.3	40.8	41.0	41.1
Fabricated metal products	40.3	39.2	38.9	39.0	39.2	39.2	39.9	39.6	39.7	40.5	40.4	40.5	40.7	40.8	41.5
Machinery, except electrical	40.9	39.7	39.2	39.3	39.3	39.3	39.6	39.4	39.7	40.2	40.0	40.4	40.7	40.7	40.9
Electric and electronic equipment	40.0	39.3	39.0	39.2	39.3	39.4	39.9	39.5	39.8	40.4	40.3	40.5	40.8	40.7	41.0
Transportation equipment	40.9	40.5	40.1	40.4	40.9	40.1	41.6	41.2	41.7	42.3	41.6	41.9	42.0	41.9	43.4
Instruments and related products	40.4	39.8	39.9	39.6	39.4	39.7	40.4	39.7	40.0	40.5	40.4	40.1	40.7	40.2	40.4
Nondurable goods	39.1	38.4	38.6	38.5	38.6	38.6	39.1	38.5	39.0	39.5	39.4	39.6	39.5	39.5	39.9
Overtime hours	2.8	2.5	2.6	2.6	2.5	2.5	2.6	2.6	2.7	3.0	2.9	3.0	3.0	3.1	3.2
Food and kindred products	39.7	39.4	39.4	39.5	39.4	39.1	39.3	39.0	39.2	39.6	39.4	39.8	39.4	39.6	39.8
Textile mill products	39.6	37.5	38.1	38.3	38.8	38.9	39.7	39.0	39.6	40.6	40.4	40.7	40.7	41.0	41.4
Apparel and other textile products	35.7	34.7	35.1	35.1	35.0	35.1	36.6	35.2	35.6	36.2	36.1	36.1	35.8	36.2	36.7
Paper and allied products	42.5	41.8	41.6	41.7	41.7	41.7	41.8	41.4	42.1	42.4	42.7	42.8	42.9	42.8	43.1
Printing and publishing	37.3	37.1	37.0	37.1	37.1	37.1	37.5	37.1	37.4	37.7	37.4	37.6	37.7	37.5	37.7
Chemicals and allied products	41.6	40.9	41.0	40.8	40.7	40.9	41.0	41.0	41.2	41.5	41.6	41.9	41.8	41.6	41.6
Petroleum and coal products	43.2	43.9	44.2	43.8	44.1	44.4	44.5	44.4	44.9	43.5	43.6	43.8	43.7	43.4	43.0
Leather and leather products	36.7	35.6	35.7	35.4	35.8	35.8	36.3	34.9	36.0	37.0	36.8	36.8	37.4	37.4	38.1
TRANSPORTATION AND PUBLIC UTILITIES	39.4	39.0	38.8	38.8	38.9	38.9	38.6	38.6	38.8	38.8	38.9	38.9	38.9	39.0	39.2
WHOLESALE AND RETAIL TRADE	32.2	31.9	31.9	31.9	31.8	32.1	31.9	31.4	31.7	31.7	31.9	32.0	31.9	31.8	31.8
WHOLESALE TRADE	38.5	38.4	38.4	38.4	38.4	38.4	38.5	38.2	38.4	38.5	38.6	38.7	38.6	38.5	38.7
RETAIL TRADE	30.1	29.9	29.9	29.9	29.8	30.1	29.9	29.3	29.7	29.6	29.9	29.9	29.8	29.7	29.6
SERVICES	32.6	32.6	32.8	32.6	32.6	32.6	32.9	32.5	32.7	32.7	32.9	32.7	32.6	32.7	32.9

p = preliminary.

NOTE: Miscellaneous manufacturing (a major manufacturing group, durable goods) and rubber and miscellaneous plastics products (a major manufacturing group, nondurable goods) 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.

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14. 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		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.p	Sept.p
PRIVATE SECTOR	$7.25	$7.67	$7.76	$7.79	$7.81	$7.82	$7.90	$7.92	$7.90	$7.94	$7.97	$7.97	$8.00	$7.94	$8.11
Seasonally adjusted	(1)	(1)	7.73	7.76	7.78	7.82	7.88	7.91	7.91	7.95	7.97	8.00	8.03	7.98	8.08
MINING	10.04	10.78	10.99	10.96	11.01	11.03	11.21	11.25	11.19	11.28	11.20	11.25	11.29	11.25	11.34
CONSTRUCTION	10.82	11.62	11.74	11.88	11.72	11.96	11.95	12.00	11.95	11.90	11.80	11.74	11.78	11.84	11.98
MANUFACTURING	7.99	8.50	8.59	8.56	8.61	8.68	8.71	8.75	8.74	8.77	8.78	8.81	8.86	8.79	8.91
Durable goods	8.54	9.06	9.17	9.13	9.17	9.24	9.26	9.31	9.29	9.31	9.34	9.37	9.40	9.34	9.49
Lumber and wood products	6.99	7.46	7.65	7.57	7.59	7.55	7.68	7.72	7.68	7.74	7.78	7.85	7.82	7.83	7.85
Furniture and fixtures	5.91	6.31	6.40	6.40	6.43	6.46	6.49	6.50	6.51	6.51	6.52	6.60	6.65	6.67	6.72
Stone, clay, and glass products	8.27	8.86	9.03	9.03	9.04	9.08	9.10	9.10	9.13	9.16	9.20	9.28	9.34	9.30	9.39
Primary metal industries	10.81	11.33	11.54	11.41	11.49	11.49	11.56	11.53	11.24	11.25	11.28	11.23	11.37	11.28	11.39
Fabricated metal products	8.19	8.78	8.90	8.85	8.90	8.96	8.98	9.04	9.05	9.07	9.08	9.11	9.10	9.10	9.22
Machinery, except electrical	8.81	9.29	9.41	9.36	9.38	9.43	9.40	9.44	9.46	9.48	9.59	9.63	9.65	9.61	9.73
Electric and electronic equipment	7.62	8.21	8.37	8.41	8.45	8.51	8.53	8.56	8.60	8.60	8.60	8.63	8.69	8.64	8.77
Transportation equipment	10.39	11.12	11.24	11.29	11.34	11.43	11.40	11.49	11.49	11.53	11.52	11.63	11.62	11.53	11.81
Instruments and related products	7.42	8.10	8.24	8.26	8.31	8.38	8.42	8.48	8.47	8.46	8.48	8.48	8.57	8.50	8.61
Miscellaneous manufacturing	5.97	6.43	6.50	6.50	6.56	6.67	6.72	6.73	6.75	6.76	6.82	6.81	6.82	6.80	6.83
Nondurable goods	7.18	7.73	7.84	7.80	7.88	7.95	7.97	7.99	8.00	8.03	8.03	8.04	8.11	8.05	8.11
Food and kindred products	7.44	7.89	7.91	7.88	8.00	8.06	8.09	8.11	8.16	8.20	8.18	8.17	8.17	8.13	8.13
Tobacco manufactures	8.88	9.78	9.55	9.50	10.16	9.63	9.87	9.96	10.43	10.61	10.74	10.91	10.84	10.23	9.92
Textile mill products	5.52	5.83	5.86	5.88	5.92	6.04	6.08	6.10	6.11	6.14	6.14	6.16	6.17	6.19	6.23
Apparel and other textile products	4.97	5.20	5.23	5.21	5.24	5.28	5.33	5.33	5.33	5.35	5.33	5.36	5.35	5.36	5.42
Paper and allied products	8.60	9.32	9.63	9.53	9.60	9.65	9.65	9.65	9.67	9.72	9.81	9.91	10.06	10.01	10.09
Printing and publishing	8.19	8.75	8.91	8.89	8.92	9.00	8.97	8.99	9.03	9.03	9.05	9.06	9.10	9.16	9.25
Chemicals and allied products	9.12	9.96	10.19	10.22	10.26	10.32	10.34	10.41	10.39	10.43	10.50	10.52	10.58	10.60	10.73
Petroleum and coal products	11.38	12.46	12.61	12.57	12.68	12.71	13.16	13.25	13.28	13.27	13.17	13.17	13.20	13.15	13.30
Rubber and miscellaneous plastics products	7.17	7.65	7.78	7.74	7.81	7.91	7.91	7.91	7.92	7.95	7.97	7.96	8.06	8.03	8.08
Leather and leather products	4.99	5.32	5.41	5.39	5.41	5.44	5.50	5.50	5.52	5.52	5.51	5.49	5.52	5.50	5.57
TRANSPORTATION AND PUBLIC UTILITIES	9.70	10.30	10.46	10.48	10.59	10.62	10.69	10.72	10.68	10.72	10.74	10.73	10.86	10.70	10.99
WHOLESALE AND RETAIL TRADE	5.92	6.21	6.245	6.27	6.30	6.27	6.42	6.45	6.43	6.45	6.46	6.46	6.48	6.46	6.54
WHOLESALE TRADE	7.56	8.02	8.10	8.13	8.14	8.20	8.31	8.28	8.27	8.34	8.36	8.35	8.42	8.40	8.47
RETAIL TRADE	5.25	5.47	5.50	5.53	5.56	5.54	5.65	5.69	5.68	5.69	5.71	5.71	5.72	5.70	5.77
FINANCE, INSURANCE, AND REAL ESTATE	6.31	6.78	6.90	6.97	7.00	7.01	7.19	7.22	7.19	7.23	7.31	7.26	7.30	7.23	7.32
SERVICES	6.41	6.90	6.99	7.04	7.08	7.12	7.18	7.19	7.17	7.20	7.23	7.20	7.18	7.18	7.29

[1] Not available.

p = preliminary.

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

[1977 = 100]

Industry	Not seasonally adjusted					Seasonally adjusted						
	Sept. 1982	July 1983	Aug. 1983p	Sept. 1983p	Percent change from: Sept. 1982 to Sept. 1983	Sept. 1982	May 1983	June 1983	July 1983	Aug. 1983p	Sept. 1983p	Percent change from: Aug. 1983 to Sept. 1983
PRIVATE SECTOR (in current dollars)	150.3	155.0	154.6	156.2	3.9	150.0	154.6	154.8	155.2	155.0	155.9	0.6
Mining	162.8	167.6	167.1	168.3	3.4	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Construction	143.1	144.2	144.9	146.4	2.3	141.6	144.5	144.6	144.0	144.2	144.8	.4
Manufacturing	154.8	158.2	157.5	158.7	2.6	154.6	157.7	157.8	158.2	158.0	158.6	.2
Transportation and public utilities	151.0	157.2	156.2	159.4	5.5	150.1	156.6	156.8	157.9	156.1	158.5	1.5
Wholesale and retail trade	146.3	152.1	151.8	153.0	4.5	146.2	151.2	151.6	152.2	152.0	152.9	.5
Finance, insurance, and real estate	150.6	159.1	157.9	159.7	6.1	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Services	149.6	154.6	154.6	156.5	4.6	149.8	154.9	155.5	155.6	155.9	156.6	.5
PRIVATE SECTOR (in constant dollars)	93.2	94.3	93.7	(2)	(2)	93.1	94.7	94.8	94.7	94.0	(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.

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16. 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		1982				1983								
	1981	1982	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.p	Sept.p
PRIVATE SECTOR															
Current dollars	$255.20	$266.92	$270.05	$270.31	$271.01	$273.70	$273.34	$270.86	$274.13	$275.52	$278.15	$280.54	$283.20	$281.08	$286.28
Seasonally adjusted	(1)	(1)	269.00	269.27	269.97	272.14	276.59	272.90	275.27	277.46	279.75	280.80	281.05	279.30	284.42
Constant (1977) dollars	170.13	167.87	167.42	167.06	167.81	170.11	169.88	168.24	169.85	169.55	170.33	171.37	172.37	170.35	(1)
MINING	438.75	459.23	461.58	459.22	458.02	465.47	476.43	464.63	467.74	469.25	472.64	478.13	475.31	480.38	486.49
CONSTRUCTION	399.26	426.45	433.21	440.75	423.09	440.13	440.96	424.80	434.98	436.73	441.32	444.95	450.00	449.92	456.44
MANUFACTURING															
Current dollars	318.00	330.65	334.15	333.84	338.37	344.60	341.43	339.50	346.10	349.05	350.32	355.04	354.40	353.36	362.64
Constant (1977) dollars	212.00	207.96	207.16	206.33	209.52	214.17	212.20	210.87	214.44	214.80	214.53	216.88	215.70	214.16	(1)
Durable goods	343.31	356.06	357.63	357.90	363.13	371.45	367.62	366.81	372.53	375.19	377.34	382.30	379.76	379.20	390.99
Lumber and wood products	270.51	283.48	296.06	289.93	292.97	293.70	300.29	299.54	302.59	308.05	312.76	320.28	313.58	318.68	317.93
Furniture and fixtures	226.94	234.73	241.28	243.20	244.34	250.00	243.38	243.10	251.29	253.89	254.28	263.34	258.69	266.13	268.80
Stone, clay, and glass products	335.76	354.40	365.72	366.62	366.12	366.83	364.91	358.54	368.85	374.64	380.88	390.69	391.35	391.53	397.20
Primary metal industries	437.81	437.34	438.52	431.30	440.07	450.41	450.84	450.82	456.23	451.13	452.33	454.82	460.49	459.10	470.41
Fabricated metal products	330.06	344.18	345.32	346.04	350.66	359.30	354.71	354.37	361.10	364.61	366.83	371.69	365.82	370.37	380.79
Machinery except electrical	360.33	368.81	367.93	365.98	371.45	380.97	372.24	371.94	377.40	379.20	382.64	388.09	386.97	387.28	396.98
Electric and electronic equipment	304.80	322.65	325.59	329.67	334.62	342.95	338.64	336.41	344.00	344.86	345.72	350.38	350.21	349.92	358.69
Transportation equipment	424.95	450.36	443.98	457.25	467.21	474.35	468.54	469.94	480.28	484.26	482.69	491.95	484.55	476.19	504.29
Instruments and related products	299.77	322.38	328.78	327.10	331.57	338.55	337.64	335.81	340.49	339.25	341.74	340.90	344.51	340.85	347.84
Miscellaneous manufacturing	231.64	247.56	250.90	253.50	256.50	260.13	260.06	253.72	263.25	263.64	264.62	264.91	264.62	265.88	269.10
Nondurable goods	280.74	296.83	304.19	301.08	305.74	310.85	307.64	305.22	311.20	313.97	315.58	319.19	319.53	319.59	324.40
Food and kindred products	295.37	310.87	315.61	312.05	317.60	319.18	315.51	312.24	316.61	318.98	321.47	325.17	322.72	325.20	327.64
Tobacco manufactures	344.54	369.68	379.14	370.50	386.08	364.98	360.26	339.64	378.61	395.75	401.68	420.04	398.91	384.65	372.99
Textile mill products	218.59	218.63	223.85	227.56	231.47	236.77	237.12	236.07	242.57	246.83	248.67	253.18	248.03	255.03	258.55
Apparel and other textile products	177.43	180.44	183.57	183.91	184.97	186.38	188.68	185.48	190.28	192.07	192.41	196.18	193.14	196.18	198.91
Paper and allied products	365.50	389.58	402.53	397.40	402.24	410.13	402.41	396.62	406.14	410.18	415.94	425.14	429.56	427.43	436.90
Printing and publishing	305.49	324.63	331.45	329.82	332.72	341.10	332.79	330.83	338.63	337.72	337.57	338.84	341.25	344.22	350.58
Chemicals and allied products	379.39	407.36	419.83	416.98	420.66	427.25	421.87	425.77	428.07	432.85	435.75	440.79	440.13	438.84	448.51
Petroleum and coal products	491.62	546.99	572.49	555.59	564.26	563.05	572.46	573.73	584.32	581.23	575.73	579.48	584.76	570.71	586.53
Rubber and miscellaneous plastics products	288.95	302.94	308.09	304.18	309.28	319.56	317.19	314.03	321.55	326.75	327.57	328.75	329.65	330.84	337.74
Leather and leather products	183.13	189.39	192.06	189.73	194.22	196.38	196.90	190.30	197.06	201.48	204.42	207.52	207.00	207.35	211.10
TRANSPORTATION AND PUBLIC UTILITIES	382.18	401.70	405.85	406.62	413.01	416.30	409.43	411.65	413.32	413.79	415.64	419.54	425.71	419.44	430.81
WHOLESALE AND RETAIL TRADE	190.62	198.10	200.30	199.39	199.71	203.15	201.59	199.31	201.90	203.18	205.43	207.37	210.60	209.30	208.63
WHOLESALE TRADE	291.06	307.97	311.04	313.01	313.39	317.34	318.27	313.81	316.74	319.42	321.86	323.15	326.70	325.08	327.79
RETAIL TRADE	158.03	163.55	165.55	164.79	164.58	168.97	164.98	163.30	166.42	167.29	169.59	171.87	175.03	173.85	171.95
FINANCE, INSURANCE, AND REAL ESTATE	229.05	245.44	249.09	252.31	253.40	254.46	262.44	260.64	258.84	261.00	265.35	262.09	264.99	261.00	263.52
SERVICES	208.97	224.94	228.57	228.80	230.10	232.11	234.79	232.96	233.74	234.72	236.42	236.88	237.66	237.66	239.11

[1] Not available.
p = preliminary.

17. Indexes of diffusion: industries in which employment increased

[In percent]

Time span	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Over 1-month span	1981	57.8	52.4	52.2	65.6	60.2	58.9	62.6	49.5	42.2	33.3	29.3	30.9
	1982	28.5	45.4	36.0	39.0	47.6	32.8	38.4	37.1	34.1	29.3	32.0	42.2
	1983	56.5	45.7	62.4	69.1	71.0	64.5	68.5	P67.7	P58.9	—	—	—
Over 3-month span	1981	58.3	54.6	59.1	65.9	67.5	66.7	60.5	50.5	33.3	30.1	24.5	23.4
	1982	25.3	28.8	32.0	34.1	32.5	33.6	27.2	27.2	26.1	25.5	24.7	40.6
	1983	45.4	55.1	65.6	75.8	76.1	77.2	P74.7	P76.9	—	—	—	—
Over 6-month span	1981	68.5	65.3	63.7	69.4	64.2	58.6	45.7	34.4	29.6	24.2	25.0	22.0
	1982	20.2	23.7	25.3	29.8	26.1	26.1	23.4	19.1	21.2	26.1	26.6	35.8
	1983	50.5	63.2	73.4	76.3	P79.3	P80.9	—	—	—	—	—	—
Over 12-month span	1981	74.5	71.2	70.4	58.1	47.6	41.4	34.9	29.8	27.4	23.7	25.3	23.1
	1982	22.0	20.7	18.0	19.4	18.3	20.7	20.7	22.8	24.2	31.5	37.6	44.1
	1983	48.9	P57.3	P61.8	—	—	—	—	—	—	—	—	—

p = preliminary.

NOTE: Figures are the percent of industries with employment rising. (Half of the unchanged components are counted as rising.) Data are centered within the spans. See the "Definitions" in this section.

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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.

Average weekly seasonally adjusted insured unemployment data are computed by BLS' Weekly Seasonal Adjustment program. This procedure incorporated the X-11 Variant of the Census Method II Seasonal Adjustment program.

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.

18. Unemployment insurance and employment service operations

[All items except average benefits amounts are in thousands]

Item	1982					1983							
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.p
All programs:													
Insured unemployment	4,398	4,283	4,391	4,635	5,074	5,459	5,437	5,134	4,642	3,947	3,481	3,275	2,917
State unemployment insurance program:[1]													
Initial claims[2]	2,358	2,342	2,443	2,661	3,080	3,143	2,065	2,075	1,874	1,666	r1,740	1,804	1,669
Insured unemployment (average weekly volume)	3,831	3,712	3,828	4,156	4,581	4,923	4,759	4,401	3,906	3,361	3,063	3,049	2,766
Rate of insured unemployment	4.4	4.2	4.4	4.7	5.2	5.6	5.5	5.0	4.5	3.9	3.5	3.5	3.2
Weeks of unemployment compensated	15,015	14,547	13,786	15,170	17,873	18,307	16,895	19,529	14,986	13,133	r12,819	10,959	11,306
Average weekly benefit amount for total unemployment	$118.97	$120.78	$122.81	$123.43	$123.42	$124.29	$124.47	$125.47	$124.85	$124.49	r$123.44	$121.59	$121.45
Total benefits paid	$1,746,195	$1,710,573	$1,647,343	$1,820,019	$2,135,302	$2,205,551	$2,052,415	$2,367,752	$1,816,539	$1,587,888	$1,549,758	$1,298,189	$1,337,817
State unemployment insurance program:[1] (Seasonally adjusted data)													
Initial claims[2]	2,814	2,902	2,688	2,680	2,586	2,187	2,138	2,148	1,952	1,993	1,836	1,574	1,992
Insured unemployment (average weekly volume)	4,137	4,446	4,680	4,618	4,355	3,980	3,979	3,884	3,774	3,538	3,301	3,086	2,987
Rate of insured unemployment	4.7	5.1	5.3	5.3	5.0	4.6	4.6	4.5	4.3	4.1	3.8	3.6	3.5
Unemployment compensation for ex-servicemen:[3]													
Initial claims[1]	11	11	10	17	24	21	16	18	15	14	16	16	19
Insured unemployment (average weekly volume)	7	8	9	14	26	37	37	34	30	26	25	25	26
Weeks of unemployment compensated	24	25	28	33	90	132	143	156	117	104	107	94	108
Total benefits paid	$2,793	$2,900	$3,366	$4,006	$11,191	$16,807	$18,032	$19,588	$14,776	$13,111	r$13,588	$12,118	$13,857
Unemployment compensation for Federal civilian employees:[4]													
Initial claims	12	13	16	14	15	16	10	11	10	9	13	12	11
Insured unemployment (average weekly volume)	27	26	28	31	33	35	33	31	26	22	21	23	22
Weeks of unemployment compensated	118	111	110	126	146	142	131	146	109	93	90	85	94
Total benefits paid	$13,140	$12,303	$12,144	$14,023	$16,114	$16,045	$15,083	$16,871	$12,422	$10,603	r$10,272	$9,640	$10,767
Railroad unemployment insurance:													
Applications	68	14	20	17	17	20	7	8	94	4	30	55	14
Insured unemployment (average weekly volume)	55	61	82	81	83	102	72	65	79	90	49	49	46
Number of payments	100	137	159	162	172	219	158	169	172	183	123	92	107
Average amount of benefit payment	$202.54	$216.14	$212.35	$216.55	$217.00	$220.32	$214.54	$213.44	$203.87	$215.15	$203.54	$199.87	$214.21
Total benefits paid	$17,998	$31,123	$31,638	$35,061	$39,500	$44,514	$33,100	$36,243	$27,783	$29,411	$14,984	$17,551	$21,789
Employment service:[5]													
New applications and renewals	....	14,320	....	....	4,527	....	....	8,381	....	....	11,987	....	....
Nonfarm placements	....	2,804	....	....	642	....	....	1,184	....	....	1,921	....	....

[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 or 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.
p = preliminary.
r = revised.

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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. It introduced a CPI for All Urban Consumers, covering 80 percent of the total noninstitutional population, and revised the CPI for Urban Wage Earners and Clerical Workers, covering about half the new index population. The All Urban Consumers index covers 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, doctors' and dentists' 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. Data are collected from more than 24,000 retail establishments and 24,000 tenants 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 products 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

Regional CPI's cross classified by population size were introduced in the May 1978 *Review*. These indexes 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 are published bimonthly. (See table 20.)

For details concerning the 1978 revision of the CPI, see *The Consumer Price Index: Concepts and Content Over the Years*, Report 517, revised edition (Bureau of Labor Statistics, May 1978).

As of January 1976, the Producer Price Index incorporated a revised weighting structure reflecting 1972 values of shipments.

Additional data and analyses of price changes are provided in the *CPI Detailed Report* and *Producer Prices and Price Indexes*, both monthly publications of the Bureau.

For a discussion of the general method of computing producer, and industry price indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 7. For consumer prices, see *BLS Handbook of Methods for Surveys and Studies* (1976), chapter 13. See also John F. Early, "Improving the measurement of producer price change," *Monthly Labor Review*, April 1978. For industry prices, see also Bennett R. Moss, "Industry and Sector Price Indexes," *Monthly Labor Review*, August 1965.

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19. Consumer Price Index for Urban Wage Earners and Clerical Workers, annual averages and changes, 1967–82

[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	115.8	5.8
1971	121.3	4.3	118.3	3.1	123.4	4.4	119.8	3.3	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	8.0	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	287.2	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
1982	288.6	6.0	278.5	4.0	314.7	7.3	190.9	2.3	293.1	4.2	326.9	10.8	232.4	6.1	257.0	10.2

20. 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						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
All items	292.8	293.4	295.5	297.1	298.1	299.3	300.3	292.4	293.0	294.9	296.3	297.2	298.2	299.5
Food and beverages	279.9	283.2	284.6	285.0	284.7	284.7	284.9	280.2	283.5	284.9	285.4	285.0	285.0	285.1
Housing	320.1	318.6	320.3	321.8	323.1	324.5	324.8	320.5	319.2	320.3	321.3	322.3	323.1	324.3
Apparel and upkeep	191.8	194.5	195.5	196.1	195.6	195.0	197.3	190.7	194.0	194.8	195.3	194.7	194.0	196.3
Transportation	296.2	287.4	292.3	296.2	298.3	300.4	302.4	298.0	288.6	293.5	297.5	299.6	301.9	304.1
Medical care	333.3	352.3	353.5	354.3	355.4	357.7	360.0	331.3	350.0	351.2	352.1	353.3	355.6	357.9
Entertainment	237.4	244.6	244.6	244.8	245.4	246.0	246.6	233.9	240.8	241.1	241.3	241.9	242.5	243.1
Other goods and services	258.3	281.9	283.2	283.6	284.5	287.5	289.0	255.7	280.0	281.4	281.8	282.8	286.4	288.0
Commodities	266.4	266.7	269.2	270.9	271.6	272.5	273.4	266.8	268.4	270.9	272.7	273.3	274.2	275.1
Commodities less food and beverages	255.9	254.3	257.3	259.7	260.9	262.3	263.6	256.5	257.4	260.3	262.7	263.7	264.9	266.1
Nondurables less food and beverages	268.8	263.4	267.8	271.3	272.3	273.5	274.7	270.7	265.0	269.7	273.3	274.4	275.7	276.9
Durables	244.6	247.4	248.7	249.5	251.2	252.9	254.3	244.0	249.7	251.2	252.8	253.7	254.8	256.0
Services	338.9	339.4	341.2	342.6	344.0	345.6	346.8	340.0	338.5	339.5	340.1	341.4	342.8	344.8
Rent, residential	226.0	233.6	234.5	235.1	235.9	237.1	238.2	225.5	233.1	234.0	234.6	235.3	236.5	237.6
Household services less rent of shelter (12/82 = 100)	....	101.6	102.0	103.2	104.2	104.8	104.8	....	....	....	....	....	....	....
Transportation services	297.8	299.8	300.8	301.2	301.4	302.3	304.0	296.5	296.7	297.2	297.6	297.5	298.4	300.2
Medical care services	361.0	382.2	382.8	383.5	384.6	387.2	389.8	358.3	379.0	379.7	380.5	381.7	384.4	387.0
Other services	259.7	272.9	274.2	274.7	275.6	276.3	276.9	258.4	270.6	272.0	272.6	273.5	274.2	274.8
Special indexes:														
All items less food	292.5	292.4	294.7	296.5	297.8	299.3	300.5	292.4	292.4	294.4	296.1	297.2	298.5	300.0
All items less homeowners' costs	....	100.3	101.0	101.6	101.9	102.3	102.7	....	....	....	....	....	....	....
All items less mortgage interest costs	....	....	....	....	....	....	....	275.8	279.0	279.7	281.7	283.5	285.3	286.3
Commodities less food	253.8	252.4	255.4	257.6	258.9	260.2	261.4	254.4	255.4	258.2	260.6	261.6	262.7	263.9
Nondurables less food	263.6	258.9	263.0	266.3	267.3	268.4	269.6	265.4	260.6	265.0	268.4	269.3	270.6	271.7
Nondurables less food and apparel	304.2	296.5	302.1	306.7	308.4	310.4	310.9	305.5	297.4	303.5	308.2	309.9	312.1	312.7
Nondurables	275.5	274.4	277.3	279.3	279.7	280.3	281.0	276.5	275.3	278.4	280.4	280.8	281.4	282.1
Services less rent of shelter (12/82 = 100)	....	101.3	101.6	102.2	102.7	103.1	103.5	....	....	....	....	....	....	....
Services less medical care	334.1	332.7	334.5	336.0	337.4	338.9	339.9	335.6	332.0	333.0	333.5	334.9	336.1	338.1
Domestically produced farm foods	268.4	268.4	269.9	270.6	269.6	269.6	269.2	267.4	267.6	269.0	269.6	268.7	268.5	268.0
Selected beef cuts	280.8	272.6	279.4	281.5	278.5	275.8	270.5	281.9	274.0	280.7	283.0	279.8	277.2	271.6
Energy[1]	424.5	399.9	410.0	421.3	427.3	430.1	429.8	426.1	399.8	410.8	422.1	428.1	430.9	430.7
Energy commodities[1]	436.6	388.3	403.2	416.3	420.7	423.4	423.7	437.3	388.7	404.3	417.3	421.7	424.5	424.9
All items less energy	282.7	285.6	287.0	287.6	288.2	289.2	290.3	281.5	284.4	285.6	286.1	286.5	287.4	288.8
All items less food and energy	279.8	282.6	284.0	284.7	285.5	286.8	288.2	278.7	281.6	282.6	283.2	283.8	284.9	286.6
Commodities less food and energy	233.6	239.1	240.2	240.8	241.5	242.7	244.2	232.8	240.0	241.2	242.3	242.9	243.8	245.1
Services less energy	333.6	333.1	334.8	335.6	336.4	337.9	339.3	334.7	331.9	332.7	332.6	333.2	334.5	336.8
Purchasing power of the consumer dollar, 1967 = $1	$0.342	$0.341	$0.338	$0.337	$0.335	$0.334	$0.333	$0.342	$0.341	$0.339	$0.337	$0.336	$0.335	$0.334

See footnotes at end of table.

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
FOOD AND BEVERAGES	279.9	283.2	284.6	285.0	284.7	284.7	284.9	280.2	283.5	284.9	285.4	285.0	285.0	285.1
Food	287.4	290.5	291.9	292.4	292.0	292.0	292.2	287.5	290.7	292.1	292.6	292.2	292.1	292.2
Food at home	280.8	281.9	283.4	283.8	283.0	282.8	282.5	279.8	281.2	282.5	282.9	282.1	281.8	281.5
Cereals and bakery products	284.8	289.8	291.1	291.7	292.4	293.7	294.0	283.4	288.5	289.6	290.2	291.0	292.3	292.5
Cereals and cereal products (12/77 = 100)	154.5	155.0	156.1	157.0	157.9	158.3	158.6	155.5	155.8	156.9	157.7	158.7	159.2	159.5
Flour and prepared flour mixes (12/77 = 100)	141.6	139.4	140.2	141.3	142.2	142.8	143.9	142.1	139.9	140.4	141.7	142.7	143.3	144.6
Cereal (12/77 = 100)	166.5	171.3	173.8	175.7	176.4	176.7	177.2	168.6	173.5	175.9	177.8	178.5	178.8	179.5
Rice, pasta, and cornmeal (12/77 = 100)	149.3	146.0	145.8	144.8	146.2	146.5	145.6	150.5	147.0	146.8	145.8	147.3	147.7	146.8
Bakery products (12/77 = 100)	149.4	152.8	153.3	153.5	153.7	154.4	154.5	148.1	151.6	152.0	152.2	152.4	153.2	153.3
White bread	246.6	252.0	252.1	252.6	[c]253.1	254.3	253.1	242.5	247.8	247.6	248.2	248.8	249.9	248.7
Other breads (12/77 = 100)	146.2	149.0	148.8	149.7	149.8	149.5	150.1	148.2	151.1	150.7	151.8	151.8	151.6	152.2
Fresh biscuits, rolls, and muffins (12/77 = 100)	150.5	152.0	152.5	152.0	151.7	153.2	153.4	146.6	148.0	148.4	147.9	148.0	149.6	149.6
Fresh cakes and cupcakes (12/77 = 100)	149.5	153.8	154.9	154.7	154.6	155.4	154.9	147.6	152.1	153.3	153.0	152.9	153.6	153.3
Cookies (12/77 = 100)	149.6	155.1	156.8	156.1	155.7	157.0	157.6	150.6	156.0	157.6	156.8	156.4	157.9	158.5
Crackers, bread, and cracker products (12/77 = 100)	141.3	146.0	147.2	147.9	149.5	150.3	151.4	142.6	147.3	148.7	149.5	151.0	151.8	152.8
Fresh sweetrolls, coffeecake, and donuts (12/77 = 100)	148.9	154.2	153.7	154.0	153.7	154.1	155.3	151.5	156.9	156.2	156.7	156.6	156.9	158.0
Frozen and refrigerated bakery products and fresh pies, tarts, and turnovers (12/77 = 100)	156.6	156.2	157.1	157.4	158.8	159.4	159.4	149.5	149.4	150.2	150.5	152.0	152.5	152.5
Meats, poultry, fish, and eggs	265.4	264.2	264.2	263.8	261.5	260.4	258.8	265.1	264.0	263.9	263.6	261.3	260.1	258.4
Meats, poultry, and fish	273.7	271.4	271.4	270.5	268.7	267.2	265.0	273.3	271.1	271.0	270.2	268.3	266.8	264.4
Meats	276.5	272.8	273.3	272.7	270.2	267.8	264.2	275.8	272.4	272.9	272.1	269.7	267.3	263.7
Beef and veal	280.5	272.8	279.4	281.3	278.6	275.8	270.7	280.8	273.5	280.0	282.0	279.2	276.5	271.1
Ground beef other than canned	268.1	263.6	267.0	266.9	264.5	261.4	256.5	269.0	264.7	268.0	268.3	265.7	262.7	258.0
Chuck roast	289.7	284.8	291.2	289.5	277.4	277.6	272.4	298.9	293.0	300.2	298.8	285.7	286.3	280.6
Round roast	245.0	239.9	251.1	249.6	245.6	240.7	232.4	247.9	242.8	254.0	252.3	249.1	243.8	235.0
Round steak	263.4	257.9	263.9	268.8	262.1	257.8	250.3	261.1	257.1	262.0	267.7	260.5	256.5	248.5
Sirloin steak	285.5	262.8	274.8	284.3	286.1	285.2	280.9	286.8	264.5	276.0	285.9	287.5	287.5	281.8
Other beef and veal (12/77 = 100)	169.7	164.4	168.3	170.2	170.5	168.8	166.6	168.0	163.0	166.8	168.6	169.1	167.4	165.1
Pork	268.2	271.1	262.1	257.3	254.1	251.2	249.6	267.6	270.4	261.7	256.8	253.9	250.8	249.3
Bacon	295.6	288.7	276.6	272.5	267.4	267.3	264.7	300.4	293.1	281.4	276.8	271.9	271.6	268.8
Chops	248.0	246.4	241.8	237.7	234.3	232.9	232.4	246.3	244.7	239.7	235.9	232.5	231.1	230.5
Ham other than canned (12/77 = 100)	116.8	125.6	116.7	112.0	110.3	108.3	109.6	113.8	122.4	113.9	109.3	107.5	105.5	106.8
Sausage	332.2	336.9	332.5	330.6	326.5	318.9	313.9	333.5	337.0	333.1	331.1	327.3	320.0	315.3
Canned ham	257.6	277.3	272.0	266.6	260.9	256.8	254.0	261.1	282.2	277.1	271.6	266.4	262.6	259.8
Other pork (12/77 = 100)	150.8	148.1	143.5	141.4	141.7	140.0	138.4	150.0	147.3	142.8	140.6	141.1	139.3	137.8
Other meats	272.8	269.7	268.6	267.7	267.4	266.9	264.6	272.3	269.3	268.3	267.3	266.9	266.6	264.4
Frankfurters	275.6	270.8	267.4	266.7	265.8	265.9	266.7	274.9	270.1	266.4	265.2	264.9	264.9	265.9
Bologna, liverwurst, and salami (12/77 = 100)	157.5	155.2	154.4	154.2	155.6	154.0	153.2	157.6	155.1	154.3	154.1	155.6	154.1	153.3
Other lunchmeats (12/77 = 100)	138.3	139.0	139.7	137.7	136.6	137.1	136.4	136.1	137.0	137.7	135.8	134.6	135.2	134.5
Lamb and organ meats (12/77 = 100)	142.3	138.2	137.0	139.1	139.3	138.4	133.8	145.6	140.9	140.0	142.2	142.3	141.6	136.6
Poultry	196.2	193.7	191.0	192.0	193.6	198.1	200.5	194.4	191.6	189.0	190.1	191.8	196.1	198.5
Fresh whole chicken	193.8	190.7	184.5	187.7	192.1	198.7	202.1	191.8	188.4	182.3	185.7	190.4	196.6	200.0
Fresh and frozen chicken parts (12/77 = 100)	128.2	126.6	125.7	126.6	126.3	129.6	131.7	126.5	125.1	124.2	124.9	124.7	127.7	129.9
Other poultry (12/77 = 100)	127.7	126.6	127.2	125.4	125.3	126.0	125.7	127.4	125.6	126.6	124.9	124.7	125.3	125.1
Fish and seafood	367.6	380.1	379.4	372.6	371.2	368.9	372.7	365.8	378.9	377.5	371.5	369.8	367.3	370.8
Canned fish and seafood	139.4	138.3	137.9	137.2	138.6	135.7	135.9	138.8	137.8	137.4	136.8	138.1	135.2	135.4
Fresh and frozen fish and seafood (12/77 = 100)	140.4	148.6	148.4	144.7	143.0	143.3	145.5	139.7	148.3	147.7	144.4	142.5	142.8	144.8
Eggs	161.2	175.0	174.9	181.8	173.8	177.9	183.7	162.3	175.8	175.8	182.7	174.8	178.7	184.6
Dairy products	247.5	249.6	250.1	250.3	249.8	249.8	250.2	246.8	248.9	249.4	249.6	249.1	249.0	249.4
Fresh milk and cream (12/77 = 100)	135.4	136.8	136.6	136.5	136.3	136.2	136.5	134.8	136.3	136.1	136.0	135.9	135.7	135.9
Fresh whole milk	221.2	223.4	223.5	223.2	222.9	222.8	223.2	220.3	222.6	222.7	222.3	222.1	222.0	222.3
Other fresh milk and cream (12/77 = 100)	136.0	137.7	136.7	136.8	136.8	136.4	136.8	135.5	137.1	136.1	136.3	136.3	135.8	136.2
Processed dairy products	146.3	147.2	148.1	148.6	148.1	148.2	148.4	146.6	147.4	148.4	148.8	148.3	148.5	148.6
Butter	252.1	253.5	253.9	254.4	252.7	253.3	254.2	254.6	256.1	256.5	256.9	255.4	255.8	256.8
Cheese (12/77 = 100)	144.8	145.5	146.5	146.5	146.0	146.9	146.4	145.1	145.8	146.8	146.8	146.3	147.3	146.7
Ice cream and related products (12/77 = 100)	150.6	150.7	152.0	153.6	154.0	151.6	152.5	149.6	149.8	151.1	152.7	153.0	150.7	151.5
Other dairy products (12/77 = 100)	140.7	143.9	144.5	144.6	143.1	144.5	145.9	141.6	144.6	145.3	145.3	143.7	145.1	146.5
Fruits and vegetables	291.4	286.9	294.9	298.2	298.2	298.7	299.4	286.7	282.9	291.1	294.5	294.5	294.7	295.1
Fresh fruits and vegetables	296.9	288.6	304.3	311.0	310.9	310.6	310.7	289.7	283.0	298.9	305.5	305.4	304.8	304.3
Fresh fruits	336.1	282.8	291.9	300.6	310.5	326.5	328.9	323.2	272.5	282.2	290.6	299.7	315.3	317.5
Apples	314.5	249.3	259.9	266.4	281.9	287.5	310.0	316.7	249.6	260.5	266.8	283.4	288.8	311.9
Bananas	233.7	257.1	295.1	312.5	318.1	325.2	291.0	231.3	254.6	293.0	311.1	316.7	323.1	290.7
Oranges	473.0	299.1	301.3	297.2	309.1	347.9	359.8	433.5	272.7	274.4	270.2	280.1	321.5	329.9
Other fresh fruits (12/77 = 100)	163.9	154.4	155.8	162.4	166.3	173.3	173.2	158.1	149.0	150.9	156.9	160.0	166.6	166.3
Fresh vegetables	260.2	294.0	316.0	320.8	311.3	295.8	293.8	259.6	292.5	314.0	319.2	310.8	295.5	292.5
Potatoes	328.1	241.1	258.7	282.3	304.7	320.7	342.2	323.4	236.1	253.3	277.3	301.3	318.2	338.2
Lettuce	246.3	247.9	316.0	340.9	363.5	280.5	293.9	247.5	246.6	311.6	338.0	360.8	280.6	294.2
Tomatoes	194.3	352.2	327.5	307.8	262.3	243.1	200.5	198.2	358.1	332.1	313.2	267.1	247.3	204.0
Other fresh vegetables (12/77 = 100)	138.3	175.8	186.9	184.1	169.4	167.6	163.6	137.8	174.9	186.4	183.4	169.5	167.3	162.5
Processed fruits and vegetables	288.0	287.6	287.1	286.7	286.9	288.2	289.5	285.9	285.3	284.8	284.6	284.7	285.9	287.4
Processed fruits (12/77 = 100)	148.7	151.3	150.6	150.3	149.7	150.6	150.7	148.2	151.0	150.2	150.0	149.3	150.2	150.4
Frozen fruit and fruit juices (12/77 = 100)	142.8	145.0	143.9	142.3	140.0	140.6	141.1	141.7	144.1	143.0	141.4	139.0	139.8	140.3
Fruit juices other than frozen (12/77 = 100)	153.0	156.6	155.7	155.7	155.1	156.4	155.6	151.9	155.6	154.6	154.7	154.0	155.4	154.7
Canned and dried fruits (12/77 = 100)	148.9	151.0	150.8	151.3	152.0	152.6	153.5	149.6	151.5	151.4	151.8	152.6	153.1	153.8
Processed vegetables (12/77 = 100)	140.7	137.7	138.0	137.9	138.7	139.0	140.2	139.6	136.6	136.8	136.8	137.5	137.9	139.1
Frozen vegetables (12/77 = 100)	147.7	149.7	150.9	151.2	151.4	151.7	152.8	149.0	151.3	152.5	152.8	153.1	153.3	154.5

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
FOOD AND BEVERAGES—Continued														
Food—Continued														
Food at home—Continued														
Fruits and vegetables—Continued														
Cut corn and canned beans except lima (12/77 = 100)	143.6	138.9	139.6	138.4	140.5	140.9	142.0	141.2	136.4	137.1	136.2	138.1	138.6	139.5
Other canned and dried vegetables (12/77 = 100)	135.6	131.1	130.6	130.8	131.2	131.7	132.9	134.2	129.7	129.2	129.5	129.8	130.2	131.5
Other foods at home	333.3	339.1	339.2	339.1	338.8	338.7	339.1	334.0	339.9	340.0	339.8	339.5	339.3	339.9
Sugar and sweets	370.1	372.8	373.2	373.1	374.5	376.1	375.8	370.3	372.5	373.0	372.9	374.1	376.0	375.7
Candy and chewing gum (12/77 = 100)	150.0	150.3	150.8	151.0	151.3	151.8	151.6	150.1	150.3	150.8	151.0	151.2	[c]151.8	151.6
Sugar and artificial sweeteners (12/77 = 100)	166.7	166.9	168.3	167.2	168.5	169.7	169.7	168.2	168.3	169.7	168.7	169.8	171.0	171.0
Other sweets (12/77 = 100)	149.6	153.4	151.4	152.0	152.5	153.0	152.8	147.5	151.0	149.1	149.6	150.2	150.8	150.6
Fats and oils (12/77 = 100)	258.3	258.4	258.6	258.3	258.3	259.0	258.1	258.2	258.4	258.4	258.2	258.0	258.7	257.8
Margarine	257.9	255.8	259.6	257.1	259.3	259.5	257.2	257.3	254.5	258.1	255.5	257.5	257.6	255.1
Nondairy substitutes and peanut butter (12/77 = 100)	154.2	151.4	151.5	150.7	149.4	150.5	149.8	152.4	149.7	149.9	149.1	147.7	148.8	148.1
Other fats, oils, and salad dressings (12/77 = 100)	128.5	130.4	129.5	130.2	130.1	130.3	130.3	129.0	131.0	130.1	130.8	130.7	130.9	130.9
Nonalcoholic beverages	423.8	432.7	431.8	431.1	431.0	428.7	430.7	425.3	434.5	433.5	432.4	432.6	430.3	432.5
Cola drinks, excluding diet cola	304.3	314.1	313.1	311.5	312.3	310.3	312.4	301.7	311.5	310.4	308.5	309.7	307.8	309.9
Carbonated drinks, including diet cola (12/77 = 100)	144.8	146.7	146.8	147.3	146.3	145.1	146.3	142.6	144.5	144.5	144.9	143.9	142.6	144.1
Roasted coffee	365.5	363.2	361.4	360.8	359.3	356.6	356.0	360.4	357.9	356.2	355.6	354.3	351.7	350.8
Freeze dried and instant coffee	344.9	349.2	349.5	351.6	352.2	351.4	352.3	344.4	348.8	349.0	351.0	351.6	350.7	351.5
Other noncarbonated drinks (12/77 = 100)	137.7	141.1	140.6	140.1	140.5	140.4	140.5	137.8	141.3	140.9	140.4	140.7	140.7	140.8
Other prepared foods	269.9	276.0	276.9	277.2	276.1	276.8	276.9	271.5	277.5	278.5	278.8	277.7	278.4	278.5
Canned and packaged soup (12/77 = 100)	137.9	140.0	140.9	141.6	141.6	141.9	141.8	140.0	141.9	142.7	143.6	143.4	143.7	143.7
Frozen prepared foods (12/77 = 100)	149.1	153.1	155.0	154.4	153.8	154.4	155.1	148.5	152.2	154.2	153.7	153.1	153.5	154.2
Snacks (12/77 = 100)	153.1	157.9	159.2	160.6	159.0	159.3	159.3	155.1	160.1	161.2	162.7	161.1	161.3	161.4
Seasonings, olives, pickles, and relish (12/77 = 100)	154.1	161.6	159.3	159.3	158.6	158.5	158.3	153.2	160.4	158.3	158.4	157.6	157.5	157.4
Other condiments (12/77 = 100)	151.9	154.9	155.3	155.6	155.4	156.1	156.0	153.6	156.7	157.1	157.4	157.2	157.9	157.9
Miscellaneous prepared foods (12/77 = 100)	150.2	151.7	151.6	152.0	151.2	151.6	151.5	150.3	151.9	151.8	152.3	151.5	151.8	151.8
Other canned and packaged prepared foods (12/77 = 100)	145.4	146.8	147.4	146.2	146.2	146.8	146.5	146.8	148.0	148.7	147.5	147.6	148.0	147.7
Food away from home	308.7	316.5	318.0	318.6	319.3	319.8	321.0	311.8	319.7	321.3	321.9	322.5	323.0	324.3
Lunch (12/77 = 100)	150.3	153.7	154.4	154.6	154.9	154.9	155.4	152.0	155.3	156.1	156.2	156.5	156.5	157.1
Dinner (12/77 = 100)	148.6	152.0	152.5	152.7	153.1	153.4	153.9	150.3	153.7	154.2	154.4	154.8	155.1	155.6
Other meals and snacks (12/77 = 100)	150.7	156.0	157.1	157.9	158.2	158.6	159.5	151.3	156.5	157.7	158.4	158.7	159.1	160.0
Alcoholic beverages	210.1	215.1	216.1	216.6	217.0	217.2	217.1	212.1	217.3	218.5	219.1	219.6	219.8	219.7
Alcoholic beverages at home (12/77 = 100)	136.1	139.1	139.7	140.0	140.3	140.7	140.3	137.4	140.6	141.3	141.7	142.0	142.5	142.1
Beer and ale	211.9	219.8	222.5	222.7	224.1	224.8	224.4	210.9	218.6	221.2	221.5	222.8	223.6	223.2
Whiskey	149.6	151.3	151.4	151.3	151.6	152.1	151.6	150.4	151.9	151.9	151.9	152.1	152.6	152.1
Wine	238.9	239.1	236.3	239.1	236.3	237.1	234.8	247.1	246.8	243.9	247.0	244.1	245.2	242.4
Other alcoholic beverages (12/77 = 100)	120.3	121.5	121.5	121.5	122.1	121.7	122.4	120.5	121.2	121.3	121.4	122.0	121.8	122.4
Alcoholic beverages away from home (12/77 = 100)	141.2	145.7	146.5	147.0	147.1	146.1	147.3	142.4	146.9	147.7	148.2	148.3	147.1	148.5
HOUSING	320.1	318.6	320.3	321.8	323.1	324.5	324.8	320.5	319.2	320.3	321.3	322.3	323.1	324.3
Shelter (CPI-U)	344.2	339.3	341.7	342.7	343.6	345.3	346.6	346.5	....	....	....	....	....	....
Renters' costs	....	101.4	101.8	102.2	102.5	103.1	103.7	225.5	....	....	....	....	....	....
Rent, residential	226.0	233.6	234.5	235.1	235.9	237.1	238.2	333.3	....	....	....	....	....	....
Other renters' costs	333.9	340.6	343.7	347.5	347.9	352.3	355.8	359.5	....	....	....	....	....	....
Homeowners' costs[2]	....	100.9	101.7	102.0	102.2	102.7	103.0	....	....	....	....	....	....	....
Owners' equivalent rent	....	100.8	101.7	101.9	102.2	102.7	103.0	....	....	....	....	....	....	....
Household insurance	....	101.5	102.0	102.4	102.4	102.7	103.5	....	....	....	....	....	....	....
Maintenance and repairs	335.9	339.9	343.6	344.3	345.1	346.1	347.9	332.5	....	....	....	....	....	....
Maintenance and repair services	368.5	376.7	382.8	382.7	381.6	383.3	388.6	369.6	....	....	....	....	....	....
Maintenance and repair commodities	258.8	257.7	258.7	260.0	262.3	262.6	261.2	253.0	....	....	....	....	....	....
Shelter (CPI-W)	....	....	....	....	....	....	....	....	341.1	342.4	342.9	343.3	344.1	346.4
Rent, residential	....	....	....	....	....	....	....	....	233.1	234.0	234.6	235.3	236.5	237.6
Other renters' costs	....	....	....	....	....	....	....	....	339.0	342.3	345.5	345.8	350.4	354.0
Lodging while out of town	....	....	....	....	....	....	....	....	353.1	358.2	363.0	363.5	370.7	375.7
Tenants' insurance (12/77 = 100)	....	....	....	....	....	....	....	....	152.6	153.2	154.0	153.5	153.8	155.4
Homeownership	....	....	....	....	....	....	....	....	379.9	381.2	381.7	381.9	382.5	385.2
Home purchase	....	....	....	....	....	....	....	....	298.9	301.0	303.9	303.5	303.3	304.1
Financing, taxes, and insurance	....	....	....	....	....	....	....	....	491.8	492.2	489.1	490.0	491.3	496.6
Property insurance	....	....	....	....	....	....	....	....	419.2	422.3	426.3	430.6	430.8	430.8
Property taxes	....	....	....	....	....	....	....	....	231.7	232.9	233.8	234.6	235.1	237.1
Contracted mortgage interest costs	....	....	....	....	....	....	....	....	625.7	625.5	620.1	620.8	622.5	629.8
Mortgage interest rates	....	....	....	....	....	....	....	....	207.5	206.0	202.4	203.0	203.8	205.5
Maintenance and repairs	....	....	....	....	....	....	....	....	337.5	339.0	339.9	341.0	342.0	344.3
Maintenance and repair services	....	....	....	....	....	....	....	....	376.6	378.9	379.5	380.0	381.4	385.1
Maintenance and repair commodities	....	....	....	....	....	....	....	....	254.2	253.9	255.6	257.5	258.0	257.5
Paint and wallpaper, supplies, tools, and equipment (12/77 = 100)	....	....	....	....	....	....	....	....	146.0	145.7	148.1	149.4	149.2	147.6
Lumber, awnings, glass, and masonry (12/77 = 100)	....	....	....	....	....	....	....	....	124.1	123.4	124.3	124.2	125.8	126.8
Plumbing, electrical, heating, and cooling supplies (12/77 = 100)	....	....	....	....	....	....	....	....	137.5	137.4	138.0	138.8	138.7	139.5
Miscellaneous supplies and equipment (12/77 = 100)	....	....	....	....	....	....	....	....	142.4	143.1	141.3	144.1	143.3	143.3

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
Fuel and other utilities	356.3	363.8	363.6	369.3	373.6	375.5	375.1	357.7	365.2	365.1	370.8	375.5	377.3	376.8
Fuels	454.0	459.7	459.2	468.3	475.2	477.7	476.5	453.8	459.5	459.3	468.2	475.6	477.9	476.6
Fuel oil, coal, and bottled gas	659.9	625.3	610.6	621.0	620.0	619.3	619.0	662.7	627.3	612.8	623.4	622.4	621.7	621.5
Fuel oil	686.8	636.4	618.4	629.6	628.5	627.2	626.5	689.1	637.9	620.4	631.8	630.7	629.5	628.9
Other fuels (6/78 = 100)	169.2	185.9	186.7	188.6	188.6	189.3	190.0	170.5	187.0	187.7	189.7	189.5	190.2	190.8
Gas (piped) and electricity	404.4	418.0	420.5	429.1	437.4	440.5	439.1	403.7	417.5	420.1	428.5	437.4	440.3	438.7
Electricity	333.7	321.2	319.9	324.7	337.4	341.1	340.7	333.7	320.7	319.3	324.2	337.9	341.6	341.2
Utility (piped) gas	500.6	568.3	578.3	593.9	591.8	593.0	589.8	497.5	565.9	576.5	591.0	588.8	589.5	585.8
HOUSING														
Fuel and other utilities														
Other utilities and public services	202.4	211.4	211.7	212.5	213.2	214.2	214.8	203.1	212.2	212.5	213.4	214.1	215.3	215.9
Telephone services	164.2	172.1	171.9	172.8	173.4	173.8	173.9	164.6	172.5	172.4	173.2	173.9	174.3	174.5
Local charges (12/77 = 100)	132.5	140.3	139.9	140.9	141.8	141.8	142.1	132.9	140.6	140.3	141.3	142.2	142.3	142.6
Interstate toll calls (12/77 = 100)	119.7	121.8	121.8	121.8	121.8	121.9	121.9	120.1	122.2	122.3	122.3	122.2	122.3	122.4
Intrastate toll calls (12/77 = 100)	110.0	116.3	116.6	117.1	117.4	118.2	118.3	109.6	116.2	116.6	117.1	117.4	118.2	118.3
Water and sewerage maintenance	331.9	345.6	347.5	348.2	348.9	353.5	355.9	334.8	349.0	350.8	351.8	352.6	357.7	360.2
Household furnishings and operations	233.4	237.6	239.9	238.4	238.6	238.9	238.0	230.0	234.6	236.0	235.4	235.5	235.8	234.8
Housefurnishings	193.3	197.1	198.7	197.6	197.8	198.1	196.7	191.3	195.3	196.7	195.8	195.9	196.1	194.7
Textile housefurnishings	220.4	230.3	229.4	228.7	226.8	227.3	226.1	222.9	234.8	233.6	232.7	230.5	231.1	229.6
Household linens (12/77 = 100)	132.9	136.7	134.2	136.2	135.4	134.4	133.4	134.1	137.9	135.3	137.3	136.4	135.6	134.5
Curtains, drapes, slipcovers, and sewing materials (12/77 = 100)	142.2	150.9	152.4	149.4	147.7	149.3	149.0	144.7	156.2	157.8	154.1	152.1	154.0	153.3
Furniture and bedding	210.3	215.8	221.6	220.0	220.0	220.5	217.2	206.9	213.2	218.1	216.7	216.5	217.6	214.3
Bedroom furniture (12/77 = 100)	141.4	148.9	152.9	151.9	152.3	156.5	151.3	137.3	146.0	149.4	148.8	148.9	153.0	148.2
Sofas (12/77 = 100)	117.0	118.3	118.9	118.1	118.0	117.7	117.3	117.5	118.9	119.1	118.6	118.3	118.0	117.6
Living room chairs and tables (12/77 = 100)	121.1	122.0	126.2	123.9	124.2	123.9	123.5	121.4	122.6	126.6	124.5	124.9	125.0	124.5
Other furniture (12/77 = 100)	137.1	139.7	144.6	144.5	143.8	141.1	139.8	133.3	136.0	140.2	139.8	139.0	137.1	135.6
Appliances including TV and sound equipment	151.3	151.9	152.3	151.2	151.4	150.9	150.6	151.2	151.7	152.4	151.7	151.9	151.2	150.8
Television and sound equipment	108.3	106.9	107.1	106.1	105.9	105.2	105.1	107.5	105.9	106.2	105.1	105.0	104.3	104.3
Television	103.9	101.2	100.9	100.2	100.8	100.1	100.1	102.7	99.9	99.7	99.0	99.6	99.0	99.0
Sound equipment (12/77 = 100)	113.3	113.1	113.6	112.3	111.6	110.8	110.6	112.6	111.9	112.6	111.3	110.5	109.8	109.7
Household appliances	184.1	187.7	188.5	187.8	188.4	188.6	188.0	184.6	188.0	188.9	188.9	189.5	189.0	188.0
Refrigerators and home freezers	187.4	193.3	193.3	194.1	194.0	192.7	191.4	192.9	198.9	199.2	200.3	200.2	199.2	197.2
Laundry equipment	137.3	142.5	142.7	143.5	144.6	143.0	142.0	137.5	142.9	143.6	144.6	145.2	143.5	142.8
Other household appliances (12/77 = 100)	124.3	124.6	125.4	124.3	124.7	125.6	125.4	122.7	122.7	123.5	122.6	123.2	123.6	123.4
Stoves, dishwashers, vacuums, and sewing machines (12/77 = 100)	122.7	124.2	125.0	123.2	123.9	124.0	123.7	121.4	122.4	123.3	121.7	122.8	122.6	122.1
Office machines, small electric appliances, and air conditioners (12/77 = 100)	126.0	125.2	126.1	125.5	125.7	127.3	127.2	124.2	122.9	123.8	123.6	123.7	124.8	124.8
Other household equipment (12/77 = 100)	138.2	140.7	140.4	139.9	141.2	142.0	141.2	136.0	138.6	138.4	138.0	139.0	139.7	138.9
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment (12/77 = 100)	142.9	143.0	143.2	143.2	142.2	145.1	144.4	135.4	135.0	135.3	135.5	134.3	137.3	136.4
Clocks, lamps, and decor items (12/77 = 100)	129.8	133.9	133.3	132.5	133.0	133.6	132.3	125.1	129.2	128.3	128.3	128.8	129.3	128.3
Tableware, serving pieces, and nonelectric kitchenware (12/77 = 100)	143.8	146.4	145.5	145.1	149.2	149.1	148.7	140.0	142.6	142.0	141.6	145.0	144.9	144.4
Lawn equipment, power tools, and other hardware (12/77 = 100)	132.3	135.5	135.9	135.1	135.0	135.5	134.2	137.2	140.9	141.4	140.2	139.9	140.4	139.3
Housekeeping supplies	288.7	295.4	296.9	296.6	296.3	296.8	295.8	284.9	292.2	293.9	293.6	293.2	293.5	292.7
Soaps and detergents	279.4	292.3	294.5	294.5	294.9	294.6	294.4	275.4	288.1	290.4	290.6	290.9	290.3	290.2
Other laundry and cleaning products (12/77 = 100)	144.6	149.5	150.6	150.3	151.5	151.4	151.0	143.6	148.3	149.5	149.2	150.4	150.2	149.8
Cleansing and toilet tissue, paper towels and napkins (12/77 = 100)	148.5	149.3	148.8	148.0	147.3	148.1	148.1	148.3	149.1	148.9	148.0	147.4	148.2	148.1
Stationery, stationery supplies, and gift wrap (12/77 = 100)	135.4	139.3	139.6	139.8	139.9	140.3	139.5	138.6	142.3	142.7	142.9	142.8	143.2	142.5
Miscellaneous household products (12/77 = 100)	150.7	154.4	154.5	154.4	154.0	153.9	154.1	145.5	149.2	149.2	149.1	148.7	148.6	148.8
Lawn and garden supplies (12/77 = 100)	145.7	145.0	147.2	147.3	145.8	146.6	144.6	138.1	138.5	141.4	141.4	139.4	139.7	137.8
Housekeeping services	312.9	316.4	317.1	318.0	318.5	318.7	319.3	312.2	316.1	316.5	317.5	318.0	318.3	319.1
Postage	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5
Moving, storage, freight, household laundry, and drycleaning services (12/77 = 100)	156.1	160.6	160.8	161.7	162.3	162.2	162.8	156.4	160.7	160.8	161.7	162.3	162.3	163.1
Appliance and furniture repair (12/77 = 100)	137.7	141.5	141.7	142.9	143.3	144.0	144.9	136.1	139.8	140.0	141.2	141.6	142.2	143.1
APPAREL AND UPKEEP	191.8	194.5	195.5	196.1	195.6	195.0	197.3	190.7	194.0	194.8	195.3	194.7	194.0	196.3
Apparel commodities	180.8	182.8	183.7	184.2	183.6	182.8	185.3	180.3	182.9	183.5	183.9	183.2	182.4	184.7
Apparel commodities less footwear	176.9	178.9	179.4	180.2	179.7	179.3	181.9	176.2	178.9	179.4	179.8	179.2	178.7	181.2
Men's and boys'	183.7	186.7	187.8	189.5	189.1	188.2	188.3	183.5	187.0	187.9	189.7	189.0	188.1	188.3
Men's (12/77 = 100)	115.9	117.1	117.9	119.2	118.8	118.3	118.5	116.2	117.6	118.3	119.9	119.2	118.7	118.9
Suits, sport coats, and jackets (12/77 = 100)	108.0	109.1	110.3	110.9	111.2	110.7	111.4	101.2	102.1	103.5	103.9	103.9	103.3	104.4
Coats and jackets	99.1	100.0	100.0	101.1	100.7	98.2	99.5	100.3	102.2	102.4	104.3	103.3	100.7	101.7
Furnishings and special clothing (12/77 = 100)	138.4	141.4	142.8	144.5	144.3	145.3	144.8	134.9	137.6	138.6	140.4	140.3	141.3	140.8
Shirts (12/77 = 100)	121.9	121.7	122.0	124.6	122.6	120.9	121.6	123.9	124.4	125.0	127.6	125.8	124.2	124.7
Dungarees, jeans, and trousers (12/77 = 100)	110.5	111.5	112.0	113.2	113.0	112.8	112.3	116.0	117.4	117.7	119.1	118.6	118.4	
Boys' (12/77 = 100)	118.4	123.2	123.5	123.3	123.7	123.0	122.6	116.7	121.4	121.5	121.4	121.6	120.9	120.7
Coats, jackets, sweaters, and shirts (12/77 = 100)	110.5	115.5	115.2	115.4	116.3	114.9	115.4	113.3	116.4	115.7	116.1	116.6	115.5	116.2
Furnishings (12/77 = 100)	131.1	134.0	134.9	136.1	135.8	134.9	134.2	127.2	129.6	130.4	131.6	131.2	130.4	129.9
Suits, trousers, sport coats, and jackets (12/77 = 100)	119.5	124.9	125.5	124.4	124.7	124.6	123.5	117.1	122.3	122.6	121.7	121.9	121.6	120.7
Women's and girls'	159.2	160.0	160.6	160.1	159.7	158.8	164.2	160.9	162.8	163.1	162.4	161.5	160.8	165.8
Women's (12/77 = 100)	105.4	106.2	106.5	106.1	106.1	105.5	109.5	106.9	108.4	108.3	107.6	107.4	107.0	111.1
Coats and jackets	163.0	170.1	168.1	164.7	164.7	164.8	171.6	171.0	178.4	177.1	172.7	171.8	169.4	175.3
Dresses	158.5	158.5	161.5	162.7	164.3	161.4	171.4	145.9	144.4	145.7	146.7	148.8	147.2	158.7

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
APPAREL AND UPKEEP—Continued														
Apparel Commodities—Continued														
Apparel commodities less footwear—Continued														
Separates and sportswear (12/77 = 100)	98.3	98.5	100.1	98.1	97.7	96.3	99.4	99.1	99.2	101.0	98.9	98.4	96.9	99.7
Underwear, nightwear, and hosiery (12/77 = 100)	129.3	131.0	131.1	133.0	132.8	131.7	133.2	129.0	130.7	130.8	132.7	132.4	131.4	132.9
Suits (12/77 = 100)	85.6	83.7	80.5	77.8	77.2	81.0	87.3	99.8	104.7	99.4	95.9	93.9	99.8	108.1
Girls' (12/77 = 100)	108.2	107.6	108.2	108.4	106.5	106.2	107.7	107.4	108.0	109.2	109.4	107.4	106.6	106.8
Coats, jackets, dresses, and suits (12/77 = 100)	101.4	98.4	97.1	96.3	96.3	100.1	101.9	99.4	97.6	98.5	97.3	96.5	100.0	98.7
Separates and sportswear (12/77 = 100)	105.8	105.6	107.5	108.1	103.5	99.8	102.0	105.9	107.5	109.1	110.3	106.1	101.3	102.9
Underwear, nightwear, hosiery, and accessories (12/77 = 100)	124.0	126.4	127.8	128.6	128.6	127.7	127.8	123.0	125.6	126.9	127.4	127.5	126.8	126.7
Infants' and toddlers'	272.4	280.1	280.4	280.7	283.0	282.4	281.9	283.0	291.1	291.0	290.9	293.4	293.1	292.3
Other apparel commodities	210.8	213.4	214.4	215.0	214.0	215.9	216.2	199.5	201.9	202.5	203.3	203.0	204.6	204.6
Sewing materials and notions (12/77 = 100)	121.5	120.4	121.8	122.9	122.4	123.0	121.6	119.6	118.4	119.4	120.6	120.5	121.0	119.8
Jewelry and luggage (12/77 = 100)	142.6	145.4	145.8	145.9	145.1	146.7	147.5	133.3	136.1	136.2	136.5	136.2	137.4	138.0
Footwear	204.4	206.6	207.5	208.0	206.8	203.8	205.7	204.1	206.1	207.2	207.7	206.6	203.7	205.5
Men's (12/77 = 100)	130.9	133.2	133.9	133.7	133.7	132.8	132.3	132.7	134.8	135.6	135.4	135.5	134.7	134.2
Boys' and girls' (12/77 = 100)	128.7	131.1	130.7	131.7	130.7	128.9	130.3	131.3	133.2	133.4	134.3	133.1	131.0	132.6
Women's (12/77 = 100)	125.4	125.5	126.5	126.9	125.6	122.9	125.3	121.1	121.1	122.0	122.5	121.3	118.9	121.1
Apparel services	277.4	286.7	288.7	290.3	290.9	291.8	292.3	275.2	284.9	287.1	288.6	289.2	290.0	290.4
Laundry and drycleaning other than coin operated (12/77 = 100)	165.6	170.8	171.7	172.8	173.5	174.1	174.5	164.1	169.3	170.3	171.3	171.9	172.5	172.9
Other apparel services (12/77 = 100)	145.0	150.4	152.0	152.5	152.4	152.7	152.7	145.5	151.4	153.1	153.7	153.7	153.9	153.9
TRANSPORTATION	296.2	287.4	292.3	296.2	298.3	300.4	302.4	298.0	288.6	293.5	297.5	299.6	301.9	304.1
Private	292.4	282.7	287.5	291.7	293.8	296.0	298.0	295.2	285.0	289.9	294.1	296.3	298.6	300.8
New cars	198.7	201.2	201.1	201.6	201.6	201.4	202.1	198.6	200.9	200.7	201.3	201.2	201.0	201.7
Used cars	304.4	309.3	312.7	317.1	322.7	329.6	336.8	304.4	309.3	312.7	317.1	322.7	329.6	336.8
Gasoline	398.4	348.6	367.6	380.9	386.1	389.3	389.5	399.7	350.3	369.3	382.4	387.4	390.6	391.0
Automobile maintenance and repair	319.2	326.6	327.4	328.7	329.5	329.8	331.0	320.0	327.4	328.1	329.4	330.2	330.4	331.7
Body work (12/77 = 100)	158.2	163.6	164.7	165.5	166.4	166.6	167.1	156.8	162.5	163.4	164.3	165.3	165.6	166.0
Automobile drive train, brake, and miscellaneous mechanical repair (12/77 = 100)	198.7	156.3	157.3	157.7	157.7	158.3	158.9	156.6	160.3	161.2	161.6	161.7	162.2	162.8
Maintenance and servicing (12/77 = 100)	148.5	150.9	151.0	151.7	152.2	152.0	152.8	147.8	150.3	150.4	151.0	151.5	151.3	152.2
Power plant repair (12/77 = 100)	152.4	156.2	156.2	156.8	157.0	157.3	157.5	151.9	155.6	155.7	156.3	156.4	156.6	156.9
Other private transportation	260.8	259.2	258.4	258.7	258.1	258.6	260.0	263.9	260.5	259.3	259.6	258.9	259.4	261.1
Other private transportation commodities	214.8	213.3	212.2	210.9	210.4	209.6	208.9	217.1	215.8	214.7	213.3	212.9	212.1	211.2
Motor oil, coolant, and other products (12/77 = 100)	153.2	154.8	156.1	155.1	156.0	155.3	153.5	151.8	153.8	155.0	153.9	154.8	154.1	152.6
Automobile parts and equipment (12/77 = 100)	136.8	135.5	134.5	133.6	133.2	132.7	132.4	138.6	137.4	136.4	135.4	135.0	134.5	134.1
Tires	189.5	188.1	186.4	185.1	184.3	183.5	183.4	193.0	191.7	190.1	188.8	187.9	187.2	186.9
Other parts and equipment (12/77 = 100)	135.8	133.9	133.4	132.7	132.7	132.3	131.6	136.0	133.8	133.4	132.4	132.5	132.1	131.3
Other private transportation services	275.5	273.9	273.1	273.9	273.3	274.1	276.0	278.9	274.8	273.7	274.4	273.6	274.5	276.8
Automobile insurance	275.8	297.0	299.0	301.2	301.1	302.4	302.9	275.2	296.3	298.2	300.5	300.5	302.0	302.5
Automobile finance charges (12/77 = 100)	193.5	161.9	157.3	154.5	152.2	151.7	155.4	192.9	161.0	156.6	153.8	151.4	151.1	155.0
Automobile rental, registration, and other fees (12/77 = 100)	138.0	141.1	141.4	143.8	144.7	145.6	146.0	138.8	141.9	142.2	144.9	146.0	146.9	147.2
State registration	183.8	186.6	186.6	192.3	192.3	194.8	194.6	183.4	186.3	186.3	192.1	192.1	194.7	194.5
Drivers' licenses (12/77 = 100)	132.8	133.9	133.9	133.9	150.3	152.9	153.0	133.1	134.1	134.1	134.1	150.6	153.4	153.4
Vehicle inspection (12/77 = 100)	128.5	129.2	131.1	131.2	131.2	139.0	139.0	129.9	130.5	132.4	132.5	132.5	139.8	139.8
Other vehicle-related fees (12/77 = 100)	151.9	157.0	157.6	158.5	159.0	157.9	158.8	159.4	165.1	165.4	166.5	167.0	165.5	166.3
Public	348.1	354.5	361.1	359.1	361.2	363.2	365.0	341.0	347.3	353.3	351.2	352.7	354.4	355.7
Airline fare	397.5	402.9	417.2	411.2	415.4	418.8	420.7	393.5	398.9	415.9	407.4	410.9	415.9	417.1
Intercity bus fare	370.5	389.4	394.6	401.7	403.9	404.2	412.8	372.3	392.0	396.9	403.0	405.2	404.1	412.7
Intracity mass transit	312.8	320.1	320.2	321.7	321.7	322.6	323.7	312.3	319.0	319.1	320.1	320.6	320.7	321.6
Taxi fare	299.7	300.8	302.0	302.1	301.0	301.0	302.4	309.3	310.4	311.4	311.6	311.0	311.0	311.8
Intercity train fare	388.6	351.9	352.0	352.3	353.2	361.3	364.5	338.6	352.3	352.5	352.7	353.6	362.3	365.2
MEDICAL CARE	333.3	352.3	353.5	354.3	355.4	357.7	360.0	331.3	350.0	351.2	352.1	353.3	355.6	357.9
Medical care commodities	208.2	218.6	221.2	222.5	223.2	224.2	225.4	208.8	219.0	221.6	222.8	223.6	224.5	225.8
Prescription drugs	195.6	208.7	211.6	212.9	213.7	214.5	215.7	196.6	209.9	212.8	214.1	214.8	215.6	216.9
Anti-infective drugs (12/77 = 100)	146.0	153.8	155.2	155.8	156.6	157.2	157.9	147.5	155.8	157.2	157.8	158.8	159.2	160.1
Tranquilizers and sedatives (12/77 = 100)	157.6	171.4	174.7	176.3	177.0	177.6	179.1	157.4	171.2	174.5	176.1	176.7	177.2	178.7
Circulatories and diuretics (12/77 = 100)	140.7	151.2	153.4	153.5	153.3	154.0	155.4	140.6	151.0	153.2	153.4	153.2	153.9	155.4
Hormones, diabetic drugs, biologicals, and prescription medical supplies (12/77 = 100)	181.6	192.4	196.1	197.8	198.1	198.1	199.2	183.1	194.2	198.1	199.7	199.9	199.8	201.1
Pain and symptom control drugs (12/77 = 100)	157.6	170.0	171.7	172.3	173.3	175.1	175.7	159.3	171.7	173.4	174.1	175.1	176.8	177.5
Supplements, cough and cold preparations, and respiratory agents (12/77 = 100)	149.6	157.8	159.4	160.7	161.8	162.3	162.6	149.8	158.1	159.7	161.0	162.0	162.5	162.9
Nonprescription drugs and medical supplies (12/77 = 100)	147.2	152.3	153.8	154.7	155.2	155.9	156.7	147.9	153.1	154.6	155.4	156.0	156.7	157.5
Eyeglasses (12/77 = 100)	131.6	134.9	135.1	134.8	135.0	135.8	136.2	130.3	133.7	133.9	133.8	133.9	134.6	135.1
Internal and respiratory over-the-counter drugs	236.6	245.5	248.7	250.9	251.9	253.5	255.0	237.9	246.8	250.2	252.1	253.3	254.9	256.3
Nonprescription medical equipment and supplies (12/77 = 100)	...	148.0	149.4	150.0	150.4	150.3	151.0	144.2	149.4	150.6	151.3	151.4	151.3	152.4
Medical care services	361.0	382.2	382.8	383.5	384.6	387.2	389.8	358.3	379.0	379.7	380.5	381.7	384.4	387.0
Professional services	304.4	316.7	318.0	319.7	322.0	324.2	326.0	304.6	316.9	318.4	320.0	322.2	324.6	326.5
Physicians' services	330.4	346.4	348.2	349.4	351.7	353.9	354.9	333.5	349.8	351.8	353.9	355.3	357.6	358.8

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
MEDICAL CARE—Continued														
Medical care service—Continued														
Professional services—Continued														
Dental services	286.4	294.6	295.7	298.6	301.2	303.8	306.5	294.4	292.3	293.4	296.1	298.9	301.6	304.3
Other professional services (12/77 = 100)	145.6	151.6	151.9	151.8	152.3	153.0	154.0	142.5	148.3	148.5	148.5	148.7	149.6	150.5
Other medical care services	429.4	461.4	461.1	460.5	460.4	463.3	466.9	425.4	457.1	456.9	456.4	456.4	459.4	462.9
Hospital and other medical services (12/77 = 100)	177.1	189.5	190.2	190.8	191.5	193.8	196.7	175.2	187.8	188.4	189.0	189.6	191.9	194.6
Hospital room	565.5	606.2	608.0	609.6	609.6	619.1	627.6	557.6	598.8	600.7	601.8	602.2	611.2	619.5
Other hospital and medical care services (12/77 = 100)	173.6	185.6	186.3	187.0	188.3	189.9	193.0	172.2	184.3	184.9	185.6	186.8	188.4	191.2
ENTERTAINMENT	237.4	244.6	244.6	244.8	245.4	246.0	246.6	233.9	240.8	241.1	241.3	241.9	242.5	243.1
Entertainment commodities	240.5	246.8	246.0	246.3	246.3	246.7	248.0	234.4	240.8	240.5	240.7	240.7	241.4	242.5
Reading materials (12/77 = 100)	149.4	159.3	158.4	159.7	158.5	158.5	160.9	148.9	158.7	157.8	159.1	158.0	158.0	160.2
Newspapers	286.3	299.6	300.2	301.6	302.0	302.7	303.5	286.0	299.8	300.4	301.7	302.0	302.7	303.4
Magazines, periodicals, and books (12/77 = 100)	153.8	167.1	164.8	166.8	164.2	163.6	168.4	153.6	167.3	164.8	167.0	164.2	163.6	168.5
Sporting goods and equipment (12/77 = 100)	133.2	134.2	133.6	133.2	134.0	134.2	134.1	124.9	127.2	127.5	127.3	127.7	128.3	128.3
Sport vehicles (12/77 = 100)	135.7	137.3	136.3	135.7	136.7	137.1	136.4	122.4	126.4	126.7	126.5	126.8	127.8	127.8
Indoor and warm weather sport equipment (12/77 = 100)	119.7	120.8	121.3	120.5	119.9	118.6	118.5	117.5	118.4	118.9	118.0	117.6	116.4	116.6
Bicycles	199.4	197.8	196.1	196.6	199.2	199.8	199.9	200.4	198.0	197.4	197.9	200.2	200.7	200.7
Other sporting goods and equipment (12/77 = 100)	130.3	131.6	132.0	132.2	132.2	132.8	133.1	130.9	131.5	132.0	132.3	132.2	132.7	132.9
Toys, hobbies, and other entertainment (12/77 = 100)	136.9	138.6	138.5	138.4	138.6	139.0	139.3	135.7	137.3	137.2	137.1	137.3	137.7	138.0
Toys, hobbies, and music equipment (12/77 = 100)	136.4	137.6	137.3	137.4	137.4	137.7	137.7	132.8	133.7	133.4	133.5	133.6	134.0	133.9
Photographic supplies and equipment (12/77 = 100)	130.2	131.6	131.6	131.7	131.4	131.6	131.6	131.4	132.8	132.6	132.6	132.4	132.7	132.8
Pet supplies and expenses (12/77 = 100)	142.5	145.6	145.8	145.1	145.9	146.6	147.5	143.6	146.5	146.9	146.1	146.9	147.6	148.6
Entertainment services	233.5	241.9	243.1	243.2	244.7	245.4	245.0	234.2	242.1	243.3	243.5	245.1	245.8	245.4
Fees for participant sports (12/77 = 100)	143.4	150.9	151.3	150.8	151.3	151.8	152.2	144.8	152.2	152.4	152.1	152.5	152.8	153.2
Admissions (12/77 = 100)	137.4	140.1	141.7	142.4	144.7	146.4	145.4	136.5	139.1	140.7	143.7	143.7	145.4	144.5
Other entertainment services (12/77 = 100)	128.3	131.0	131.6	131.9	131.8	130.6	129.8	129.2	131.8	132.4	132.6	132.6	131.4	130.7
OTHER GOODS AND SERVICES	258.3	281.9	283.2	283.6	284.5	287.5	289.0	255.7	280.0	281.4	281.8	282.8	286.4	288.0
Tobacco products	240.1	283.3	284.9	285.3	285.9	294.6	297.7	239.3	282.7	284.3	284.8	285.4	294.3	297.5
Cigarettes	243.1	290.4	292.0	292.4	293.1	302.8	306.1	242.3	289.3	290.9	291.5	292.0	301.7	305.2
Other tobacco products and smoking accessories (12/77 = 100)	142.4	148.6	149.6	149.6	149.9	150.5	150.9	142.5	148.5	149.5	149.6	149.8	150.5	150.9
Personal care	250.6	257.8	259.1	259.4	260.9	261.3	262.1	248.8	255.8	257.1	257.3	259.0	259.4	260.1
Toilet goods and personal care appliances	249.5	257.1	258.5	258.6	261.4	262.3	261.9	250.5	257.8	259.3	259.3	262.1	263.0	262.6
Products for the hair, hairpieces, and wigs (12/77 = 100)	145.0	148.5	150.9	150.8	151.7	152.5	152.8	144.4	147.8	150.3	150.0	150.9	151.7	151.9
Dental and shaving products (12/77 = 100)	153.1	160.4	160.5	161.2	162.5	162.6	160.0	151.6	158.9	158.9	159.6	160.8	160.8	158.5
Cosmetics, bath and nail preparations, manicure and eye makeup implements (12/77 = 100)	141.3	146.0	145.6	145.1	148.5	148.8	148.6	142.0	146.7	146.3	145.7	149.2	149.5	149.2
Other toilet goods and small personal care appliances (12/77 = 100)	142.5	144.9	146.0	146.7	147.1	147.9	148.9	146.2	148.5	149.8	150.3	150.7	151.6	152.4
Personal care services	252.5	259.5	260.7	261.1	261.6	261.5	263.3	247.6	254.3	255.4	255.7	256.3	256.4	258.1
Beauty parlor services for women	255.0	262.4	264.2	264.5	265.0	264.3	266.5	248.7	255.5	257.2	257.4	258.0	257.5	259.7
Haircuts and other barber shop services for men (12/77 = 100)	140.2	143.7	143.8	144.1	144.4	145.1	145.6	139.0	142.6	142.7	143.0	143.2	143.9	144.4
Personal and educational expenses	295.8	323.9	324.9	325.6	326.0	327.2	328.1	297.9	325.7	326.8	327.7	328.1	329.4	330.5
Schoolbooks and supplies	265.3	292.3	292.5	292.9	293.6	294.2	294.6	269.6	296.3	296.5	296.8	297.6	298.3	298.8
Personal and educational services	303.1	331.5	332.7	333.5	333.8	335.1	336.2	305.1	333.2	334.5	335.5	335.8	337.3	338.6
Tuition and other school fees	152.6	167.4	167.6	167.7	167.6	168.0	168.2	153.2	167.9	168.2	168.2	168.2	168.5	168.8
College tuition (12/77 = 100)	151.9	167.0	167.4	167.4	167.3	167.8	168.0	152.0	167.1	167.5	167.5	167.4	167.9	168.0
Elementary and high school tuition (12/77 = 100)	154.6	168.8	168.8	168.9	168.9	168.9	169.2	155.6	169.8	169.8	169.9	169.9	169.9	170.3
Personal expenses (12/77 = 100)	167.4	181.2	183.1	185.1	186.1	187.9	189.8	167.6	181.1	183.1	185.3	186.2	188.3	190.4
Special indexes:														
Gasoline, motor oil, coolant, and other products	393.2	345.2	363.4	376.2	381.2	384.3	384.5	394.4	346.7	365.0	377.6	382.4	385.4	385.9
Insurance and finance	441.3	....	....	....	....	....	....	441.7	411.8	411.6	410.0	410.2	411.4	415.6
Utilities and public transportation	320.3	331.1	333.4	337.2	341.5	343.6	343.6	317.8	330.4	332.6	336.5	341.1	343.1	342.9
Housekeeping and home maintenance services	351.4	356.0	357.3	358.2	358.6	358.9	360.1	351.0	357.9	359.5	360.3	360.8	361.7	364.2

[1]Excludes motor oil, coolant, and other products as of January 1983.
[2]See box with "Price Data."

c = corrected.

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21. 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)		
	1983			1983			1983			1983		
	Apr.	June	Aug.	Apr.	June	Aug.	Apr.	June	Aug.	Apr.	June	Aug.
	Northeast											
EXPENDITURE CATEGORY												
All items	153.1	153.9	155.0	159.0	160.8	161.5	163.5	164.2	165.5	158.2	158.5	160.0
Food and beverages	147.0	147.4	147.5	146.2	146.8	147.4	151.1	150.6	151.6	145.8	146.3	147.7
Housing	158.0	158.9	159.6	169.1	170.7	169.7	176.4	176.7	176.7	165.1	163.9	164.2
Apparel and upkeep	122.6	122.6	123.2	122.4	124.4	125.8	128.5	128.9	128.6	130.2	129.5	128.8
Transportation	160.1	161.7	164.2	165.4	169.2	171.4	164.3	166.6	169.5	164.3	166.7	169.7
Medical care	159.6	160.9	164.4	163.0	163.5	167.1	166.0	166.7	171.2	165.8	168.5	171.9
Entertainment	143.1	144.1	144.3	139.1	138.8	139.6	139.8	142.1	143.8	146.5	148.1	149.3
Other goods and services	156.2	156.7	160.3	158.6	159.8	162.8	162.3	163.1	165.9	162.1	162.2	166.7
COMMODITY AND SERVICE GROUP												
Commodities	148.4	149.1	150.1	153.0	154.8	156.0	153.6	154.3	155.4	151.3	152.3	153.9
Commodities less food and beverages	149.0	150.0	141.6	155.7	158.3	159.8	154.3	155.8	156.8	153.4	154.8	156.3
Services	159.0	160.0	161.3	168.2	169.8	169.8	179.4	180.1	181.7	168.5	167.9	169.2
	North Central Region											
EXPENDITURE CATEGORY												
All items	163.6	165.2	166.6	161.1	162.0	162.2	157.3	158.3	159.6	158.1	159.3	160.7
Food and beverages	145.4	145.0	144.5	144.1	143.8	143.6	145.6	145.0	145.0	150.9	151.7	151.9
Housing	181.9	185.3	186.3	171.7	172.2	171.7	164.1	165.2	165.7	163.8	163.9	165.2
Apparel and upkeep	117.9	116.8	119.5	128.8	129.2	128.9	128.4	127.0	129.9	123.5	122.2	125.4
Transportation	161.7	164.2	167.4	164.0	167.1	168.6	163.9	167.1	169.8	161.2	165.7	167.8
Medical care	165.3	166.1	168.4	168.3	168.5	172.4	165.8	166.3	167.5	172.2	173.1	175.4
Entertainment	141.9	141.9	143.3	136.7	136.9	131.8	145.9	147.3	148.4	136.5	137.1	136.6
Other goods and services	156.2	156.7	158.1	167.4	168.5	170.4	152.6	153.8	158.3	165.2	166.3	169.3
COMMODITY AND SERVICE GROUP												
Commodities	152.7	153.5	154.7	151.7	152.8	153.1	149.1	150.0	151.5	148.5	149.9	151.3
Commodities less food and beverages	155.9	157.5	159.7	154.6	156.8	157.1	150.3	152.2	154.5	147.3	149.0	151.0
Services	179.9	182.4	184.3	176.1	176.8	176.8	170.7	171.7	172.8	173.0	174.1	175.6
	South											
EXPENDITURE CATEGORY												
All items	159.1	161.2	162.4	160.9	161.7	162.9	160.2	161.2	162.3	160.8	162.0	162.8
Food and beverages	150.5	150.9	150.9	149.2	148.9	149.9	147.4	147.3	147.8	149.9	150.7	150.7
Housing	163.5	168.5	169.7	166.9	167.9	168.4	167.8	168.7	169.5	169.9	170.3	171.9
Apparel and upkeep	128.7	129.8	131.8	126.2	124.6	126.2	123.1	123.0	124.1	112.5	113.9	111.3
Transportation	163.8	166.8	168.7	167.1	170.3	172.2	165.9	168.5	170.3	162.9	166.0	167.3
Medical care	168.7	169.0	170.0	167.9	167.5	169.0	177.5	178.5	180.0	183.0	184.4	184.2
Entertainment	138.6	139.4	140.7	169.0	153.0	154.4	146.5	146.1	146.2	145.6	145.5	146.4
Other goods and services	158.4	159.3	162.1	154.5	162.9	164.9	153.5	160.0	161.6	160.4	161.0	162.9
COMMODITY AND SERVICE GROUP												
Commodities	152.3	153.7	155.0	153.8	154.5	155.6	151.0	152.0	153.7	151.1	153.0	153.2
Commodities less food and beverages	152.7	154.8	156.8	155.5	156.8	157.9	152.4	154.1	156.4	151.4	153.8	154.2
Services	168.6	171.5	172.7	171.6	172.6	173.9	174.4	175.3	175.6	175.3	175.7	177.1
	West											
EXPENDITURE CATEGORY												
All items	159.2	161.4	162.7	159.5	161.8	162.5	152.2	153.5	155.2	157.0	160.0	162.2
Food and beverages	151.8	153.2	150.9	152.8	153.7	152.8	148.6	148.6	148.3	153.1	154.4	154.1
Housing	164.0	166.2	168.3	163.5	165.1	165.4	151.8	151.2	152.9	154.4	159.1	163.2
Apparel and upkeep	121.0	121.8	123.3	121.7	128.4	126.9	122.7	123.3	122.8	139.8	142.9	142.4
Transportation	165.1	171.3	173.0	165.8	171.6	174.4	162.4	167.7	170.6	161.1	165.6	167.8
Medical care	175.3	176.7	177.3	171.5	172.6	175.8	174.8	176.4	180.0	175.0	177.5	179.2
Entertainment	139.7	139.6	139.8	145.6	145.9	146.7	139.6	144.8	148.7	157.0	157.3	158.5
Other goods and services	163.5	155.5	165.0	162.8	163.4	165.5	158.1	158.0	161.2	169.3	169.2	173.4
COMMODITY AND SERVICE GROUP												
Commodities	149.9	152.4	152.6	151.7	154.6	155.2	149.8	152.1	153.3	149.0	151.2	152.4
Commodities less food and beverages	147.0	148.6	153.6	150.1	150.7	156.4	148.6	149.6	155.4	146.8	147.0	151.7
Services	170.7	171.6	175.9	169.0	170.2	172.6	154.0	155.3	157.6	172.5	168.8	176.6

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22. 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)						
	1982	1983						1982	1983					
	Aug.	Mar.	Apr.	May	June	July	Aug.	Aug.	Mar.	Apr.	May	June	July	Aug.
U.S. city average[2]	292.9	293.4	295.5	297.1	298.1	299.3	300.3	292.4	293.0	294.9	296.3	297.2	298.2	299.5
Anchorage, Alaska (10/67 = 100)	...	261.0	...	262.5	...	265.8	...	...	253.9	...	254.7	...	257.5	...
Atlanta, Ga.	295.6	...	297.6	...	302.3	...	303.9	297.1	...	300.1	...	302.0	...	304.3
Baltimore, Md.	...	292.4	...	296.5	...	300.4	...	...	295.0	...	296.7	...	297.4	...
Boston, Mass.	...	285.9	...	287.3	...	289.1	...	...	284.3	...	285.1	...	288.0	...
Buffalo, N.Y.	267.7	...	282.5	...	284.3	...	285.9	265.5	...	278.4	...	283.3	...	285.1
Chicago, Ill.-Northwestern Ind.	293.2	293.7	295.3	296.3	298.6	299.6	301.6	292.5	291.4	293.6	294.8	295.8	296.4	297.4
Cincinnati, Ohio-Ky.-Ind.	...	307.6	...	311.3	...	312.4	...	...	307.6	...	309.5	...	308.0	...
Cleveland, Ohio	312.2	...	320.6	...	325.5	...	327.3	310.6	...	315.4	...	316.8	...	317.6
Dallas-Ft. Worth, Tex.	304.3	...	308.6	...	314.1	...	315.9	300.2	...	301.7	...	306.3	...	309.0
Denver-Boulder, Colo.	...	329.6	...	334.7	...	335.8	...	...	326.8	...	331.9	...	331.7	...
Detroit, Mich.	292.7	292.4	294.9	294.9	296.6	298.4	298.8	289.3	289.8	295.0	298.9	300.7	303.8	303.7
Honolulu, Hawaii	269.4	...	272.8	...	271.4	...	273.5	269.5	...	276.9	...	273.4	...	278.2
Houston, Tex.	318.6	...	316.7	...	321.3	...	324.0	315.3	...	317.6	...	319.7	...	321.6
Kansas City, Mo.-Kansas	285.0	...	295.9	...	297.5	...	301.3	283.6	...	293.5	...	298.3	...	299.3
Los Angeles-Long Beach, Anaheim, Calif.	289.1	287.1	289.5	292.0	293.6	294.5	295.2	292.8	289.6	290.2	292.1	292.1	293.2	293.7
Miami, Fla. (11/77 = 100)	...	159.0	...	159.4	...	160.8	...	...	159.7	...	161.4	...	162.8	...
Milwaukee, Wis.	...	305.0	...	308.8	...	310.1	...	...	311.0	...	315.4	...	325.0	...
Minneapolis-St. Paul, Minn.-Wis.	313.8	...	309.4	...	312.6	...	316.2	313.3	...	312.4	...	311.8	...	308.5
New York, N.Y.-Northeastern N.J.	278.5	283.5	286.5	287.4	288.1	289.1	289.5	277.1	280.3	282.2	283.8	285.9	286.1	288.4
Northeast, Pa. (Scranton)	...	278.9	...	281.7	...	283.4	...	...	280.6	...	282.9	...	286.5	...
Philadelphia, Pa.-N.J.	281.3	283.0	283.5	284.3	286.1	288.3	289.9	280.7	285.5	286.8	286.5	288.7	291.1	293.3
Pittsburgh, Pa.	291.4	...	305.2	...	305.4	...	310.2	291.8	...	300.7	...	299.5	...	304.2
Portland, Oreg.-Wash.	...	284.7	...	288.5	...	291.5	...	...	283.0	...	283.8	...	286.4	...
St. Louis, Mo.-Ill.	...	293.2	...	295.4	...	299.3	...	...	293.2	...	294.0	...	296.7	...
San Diego, Calif.	...	327.5	...	332.0	...	335.2	...	...	315.4	...	314.8	...	320.0	...
San Francisco-Oakland, Calif.	304.3	...	299.3	...	303.0	...	306.0	302.8	...	294.7	...	298.6	...	301.6
Seattle-Everett, Wash.	...	297.8	...	300.9	...	306.3	...	...	290.8	...	290.4	...	294.2	...
Washington, D.C.-Md.-Va.	...	289.0	...	292.6	...	296.8	...	...	294.3	...	297.5	...	300.0	...

[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.

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23. Producer Price Indexes, by stage of processing

[1967 = 100]

Commodity grouping	Annual average 1982	1982				1983								
		Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[1]	June	July	Aug.	Sept.
FINISHED GOODS														
Finished goods	280.6	281.2	284.1	284.9	285.5	283.9	284.1	283.4	283.1	r284.2	285.0	285.7	286.2	285.1
Finished consumer goods	281.0	281.9	284.3	285.3	285.6	283.5	283.7	282.7	282.3	r283.6	284.4	285.2	285.6	285.1
Finished consumer foods	259.3	259.9	257.7	257.4	258.3	258.4	261.0	261.1	262.9	r262.6	261.0	260.8	261.0	263.3
Crude	252.7	228.2	232.4	236.1	247.6	232.9	240.8	247.9	265.8	r267.2	250.9	249.7	262.4	269.8
Processed	257.7	260.6	257.9	257.2	257.1	258.5	260.7	260.1	260.5	260.1	259.8	259.6	258.7	260.5
Nondurable goods less foods	333.6	338.3	340.0	342.5	342.2	336.6	333.7	332.0	328.7	332.0	335.6	337.8	338.4	338.6
Durable goods	226.7	223.0	231.0	231.2	232.0	231.7	232.9	231.9	232.2	r232.9	232.8	233.1	233.5	228.9
Consumer nondurable goods less food and energy	223.8	225.5	227.8	228.4	229.2	228.3	228.9	229.4	230.1	r230.3	230.4	232.2	232.3	232.8
Capital equipment	279.4	278.8	283.2	283.8	284.9	285.2	285.6	285.6	286.2	r286.5	286.9	287.4	288.0	285.4
INTERMEDIATE MATERIALS														
Intermediate materials, supplies, and components	310.4	310.5	309.9	309.9	310.1	309.2	309.9	309.5	308.7	r309.7	311.7	313.0	314.4	315.7
Materials and components for manufacturing	289.8	289.9	289.4	288.7	288.3	288.6	291.1	290.2	291.0	r291.9	292.4	293.4	294.8	296.3
Materials for food manufacturing	255.1	257.3	254.2	251.0	249.8	250.9	254.1	252.8	255.1	r257.0	257.1	257.3	260.8	269.3
Materials for nondurable manufacturing	284.4	281.7	280.4	279.2	278.0	277.0	277.0	276.6	277.3	277.7	278.0	278.3	281.4	281.9
Materials for durable manufacturing	310.1	310.5	309.8	309.3	309.4	312.0	319.2	315.7	316.6	318.4	318.4	320.1	320.6	322.8
Components for manufacturing	273.9	275.8	276.7	276.9	277.3	276.8	277.6	278.3	278.9	r279.4	280.6	281.8	281.7	281.8
Materials and components for construction	293.7	294.2	293.7	293.6	294.7	296.5	298.8	299.6	300.9	r301.2	301.5	302.9	303.6	302.8
Processed fuels and lubricants	591.7	592.3	590.0	593.0	595.0	577.9	565.4	564.2	543.3	r547.8	567.4	572.7	576.4	579.2
Manufacturing industries	497.8	496.4	496.6	500.4	502.2	485.2	475.5	480.6	460.4	r462.9	483.6	487.7	491.1	495.4
Nonmanufacturing industries	674.3	676.9	672.1	674.2	676.4	659.4	644.6	637.2	615.9	r622.2	640.5	647.0	650.9	652.1
Containers	285.6	285.3	285.1	284.9	285.0	285.0	285.3	285.2	284.8	r285.8	285.9	286.5	286.8	287.3
Supplies	272.1	272.2	272.0	272.8	273.0	273.1	273.5	273.9	275.5	r275.6	275.9	276.4	278.0	280.1
Manufacturing industries	265.8	266.7	266.9	266.9	267.2	267.4	267.8	268.1	268.6	r268.9	270.2	270.4	270.6	271.2
Nonmanufacturing industries	275.7	275.3	274.9	276.1	276.3	276.4	276.8	277.1	279.3	r279.3	279.1	279.8	282.0	285.0
Feeds	207.0	198.1	192.9	199.8	204.7	206.5	207.4	207.7	219.8	r218.1	213.6	216.1	230.2	247.1
Other supplies	289.8	291.3	291.9	291.9	291.1	290.9	291.2	291.6	291.9	r292.2	292.8	293.1	293.1	293.5
CRUDE MATERIALS														
Crude materials for further processing	319.5	316.1	312.0	313.2	312.7	313.9	320.2	321.6	325.8	r325.8	323.2	320.6	326.9	328.3
Foodstuffs and feedstuffs	247.8	242.9	236.3	236.3	237.1	239.6	249.3	249.1	256.8	256.5	252.1	248.6	256.6	257.4
Nonfood materials	473.9	473.7	474.8	478.6	475.3	473.6	473.0	477.7	474.6	r475.4	476.4	475.5	478.4	481.1
Nonfood materials except fuel	376.8	369.5	371.9	369.2	365.8	368.0	366.0	366.8	367.0	r369.0	369.9	370.5	374.2	376.6
Manufacturing industries	387.2	379.1	382.2	379.2	375.0	377.6	375.1	375.9	376.1	r378.3	379.6	379.6	383.9	386.5
Construction	270.3	268.8	266.3	265.6	268.1	267.5	269.1	269.3	270.0	270.3	268.1	272.9	272.5	273.1
Crude fuel	886.1	923.5	917.2	954.7	952.2	930.7	937.7	961.8	941.6	r935.9	937.7	929.1	926.8	931.2
Manufacturing industries	1,034.8	1,083.6	1,075.3	1,125.5	1,121.4	1,093.8	1,103.9	1,134.3	1,107.6	r1,100.9	1,103.6	1,091.9	1,089.5	1,094.7
Nonmanufacturing industries	782.2	810.7	805.9	834.2	832.2	815.5	820.0	839.2	824.0	r819.1	820.1	814.1	811.7	815.7
SPECIAL GROUPINGS														
Finished goods excluding foods	285.8	286.3	290.8	292.0	292.5	290.3	289.6	288.7	287.7	289.3	290.8	291.9	292.4	290.3
Finished consumer goods excluding foods	287.8	288.9	293.3	294.8	295.0	291.4	290.3	288.9	287.3	289.4	291.4	292.7	293.2	291.3
Finished consumer goods less energy	244.1	243.9	246.5	246.7	247.6	247.1	248.7	248.6	249.5	r249.7	249.2	249.8	250.1	249.6
Intermediate materials less foods and feeds	315.7	315.9	315.5	315.5	315.7	314.6	315.2	314.8	313.6	314.6	316.8	318.1	319.2	319.8
Intermediate materials less energy	290.4	290.5	290.1	289.8	290.0	290.5	292.4	292.1	293.2	293.9	294.3	295.3	296.6	297.8
Intermediate foods and feeds	239.4	238.1	234.4	234.4	235.1	236.4	238.8	238.0	243.6	r244.4	242.9	243.8	250.9	262.2
Crude materials less agricultural products	536.3	535.5	537.2	541.9	537.4	536.0	535.1	539.7	536.1	536.2	537.5	536.3	539.0	541.7
Crude materials less energy	240.4	235.6	230.0	229.2	229.9	232.5	241.4	242.7	248.6	r249.0	246.0	243.7	250.9	252.2

[1]Data for May 1983 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.

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24. Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1982	1982				1983								
			Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[1]	June	July	Aug.	Sept.
	All commodities	299.3	299.3	299.8	300.3	300.7	299.9	300.9	300.6	300.6	r301.5	302.5	303.2	304.9	305.3
	All commodities (1957-59 = 100)	317.6	317.6	318.1	318.6	319.0	318.2	319.3	318.9	318.9	r319.9	321.0	321.7	323.5	323.9
	Farm products and processed foods and feeds	248.9	247.4	243.8	243.9	244.8	245.8	250.4	250.6	254.7	254.7	352.4	251.6	255.7	259.2
	Industrial commodities	312.3	312.7	314.3	315.0	315.2	313.9	313.9	313.5	312.4	r313.6	315.4	316.6	317.5	317.2
	FARM PRODUCTS AND PROCESSED FOODS AND FEEDS														
01	Farm products	242.4	234.5	299.2	230.7	232.6	233.2	240.7	241.5	250.5	r250.4	247.3	244.3	253.5	256.3
01-1	Fresh and dried fruits and vegetables	253.7	221.0	223.0	233.4	248.8	227.6	227.8	234.9	266.6	r260.1	263.9	258.0	269.9	275.5
01-2	Grains	210.9	187.3	183.2	198.6	262.3	206.3	222.4	227.4	243.8	242.2	241.5	236.7	251.8	258.0
01-3	Livestock	257.8	259.0	248.5	239.1	237.2	242.3	251.1	251.4	260.6	258.0	251.7	240.7	242.2	231.5
01-4	Live poultry	191.9	196.5	177.1	181.6	177.8	177.1	200.1	177.8	170.8	186.9	199.3	214.5	221.4	242.2
01-5	Plant and animal fibers	202.9	196.8	198.1	195.3	200.6	201.7	206.4	217.0	213.6	r223.8	229.7	230.4	240.7	238.7
01-6	Fluid milk	282.5	281.9	285.0	285.9	285.5	284.5	284.3	282.9	280.8	279.8	278.6	278.7	281.7	284.4
01-7	Eggs	178.7	173.3	177.9	172.5	170.0	170.0	170.0	170.0	170.0	185.1	169.3	177.2	189.5	200.1
01-8	Hay, hayseeds, and oilseeds	212.8	201.8	194.3	204.8	209.0	212.4	217.9	217.8	226.3	227.3	213.3	227.3	262.8	297.8
01-9	Other farm products	274.5	276.8	274.0	276.3	280.1	279.9	281.2	280.3	279.2	281.0	284.4	282.5	285.7	287.3
02	Processed foods and feeds	251.5	253.5	250.8	250.2	250.5	251.7	254.7	254.5	256.0	256.1	254.2	254.6	255.8	259.7
02-1	Cereal and bakery products	253.8	254.0	253.0	254.2	256.2	257.3	256.8	256.9	258.8	r259.1	260.0	261.9	262.6	263.2
02-2	Meats, poultry, and fish	257.6	265.7	256.9	251.6	249.9	252.3	261.0	260.7	259.1	r257.8	250.3	248.2	245.1	244.3
02-3	Dairy products	248.9	249.1	249.8	250.2	250.8	250.7	250.9	250.7	251.0	250.9	250.4	250.3	250.4	250.5
02-4	Processed fruits and vegetables	274.5	272.8	273.4	272.8	275.7	274.8	274.3	274.9	273.7	r275.3	276.8	277.0	278.2	278.1
02-5	Sugar and confectionery	269.7	278.5	276.3	280.4	280.1	282.1	286.4	283.7	287.4	r289.9	296.0	296.4	298.9	300.1
02-6	Beverages and beverage materials	256.9	257.1	257.9	258.4	258.8	260.1	261.3	262.0	263.0	r263.6	262.8	263.0	263.4	264.5
02-7	Fats and oils	215.1	211.4	213.8	207.2	203.0	201.7	205.3	206.0	214.6	r220.0	219.4	222.7	245.7	303.7
02-8	Miscellaneous processed foods	248.6	247.0	247.9	247.8	248.6	248.8	249.3	248.5	249.9	249.9	250.4	253.9	251.8	257.5
02-9	Prepared animal feeds	211.3	204.3	199.8	206.0	210.1	211.6	212.3	212.4	222.8	r221.3	217.3	219.9	232.6	247.2
	INDUSTRIAL COMMODITIES														
03	Textile products and apparel	204.6	204.3	204.1	203.9	202.6	202.7	202.6	203.4	203.5	r204.3	204.5	205.1	205.7	205.8
03-1	Synthetic fibers (12/75 = 100)	162.1	162.5	161.1	161.2	159.7	156.7	153.1	153.9	153.8	r155.6	156.6	159.1	158.4	158.6
03-2	Processed yarns and threads (12/75 = 100)	138.3	136.6	136.5	136.7	136.7	134.7	135.0	135.8	136.0	r137.4	137.6	138.5	140.2	140.5
03-3	Gray fabrics (12/75 = 100)	145.3	143.6	143.7	143.1	143.3	144.4	144.3	145.1	145.8	r146.2	145.8	146.0	146.6	147.1
03-4	Finished fabrics (12/75 = 100)	124.6	123.7	123.2	123.0	122.8	122.2	122.3	122.4	123.1	r122.8	122.5	122.4	123.5	123.3
03-81	Apparel	194.4	195.4	195.7	195.4	193.0	194.4	195.0	196.1	195.8	r196.5	196.6	197.1	197.3	197.4
03-82	Textile housefurnishings	238.5	238.2	236.2	236.2	236.2	236.5	234.3	234.2	234.2	r237.6	239.5	238.9	238.5	238.6
04	Hides, skins, leather, and related products	262.6	263.5	263.2	263.2	264.1	266.7	264.3	264.9	267.4	r269.4	270.6	272.7	275.5	275.3
04-2	Leather	311.4	309.2	309.5	312.8	314.4	314.4	312.8	316.2	320.5	r326.6	334.0	333.3	345.7	341.8
04-3	Footwear	245.0	248.3	248.0	249.1	247.7	251.5	247.7	248.1	250.0	248.7	249.0	249.9	250.1	250.9
04-4	Other leather and related products	247.4	247.7	247.2	247.1	249.1	250.8	251.0	250.9	251.0	r251.7	252.1	257.4	257.6	257.0
05	Fuels and related products and power	693.2	700.4	698.8	706.1	703.4	683.6	668.6	658.0	644.8	r651.9	668.7	671.6	674.3	675.7
05-1	Coal	534.7	538.5	538.1	539.6	538.7	535.6	533.4	538.6	538.0	r535.2	534.0	535.5	534.0	536.1
05-2	Coke	461.7	460.0	452.3	562.3	452.3	450.9	450.9	447.3	447.3	438.4	438.4	438.4	434.6	453.9
05-3	Gas fuels[2]	1,060.8	1,112.2	1,130.1	1,190.0	1,181.2	1,147.3	1,154.7	1,180.0	1,156.1	r1,156.7	1,157.4	1,151.2	1,148.2	1,149.3
05-4	Electirc power	406.5	415.0	408.7	404.9	409.9	410.8	410.8	411.4	409.2	r412.2	419.7	425.1	425.9	428.2
05-61	Crude petroleum[3]	733.4	718.3	735.3	733.6	720.0	719.7	692.9	678.0	678.0	r678.0	678.4	676.1	675.5	676.1
05-7	Petroleum products, refined[4]	761.2	761.6	754.6	758.0	754.2	720.6	692.8	666.6	645.9	r659.3	690.1	694.9	701.1	701.8
06	Chemicals and allied products	292.3	290.7	289.9	290.5	289.6	289.3	290.5	289.8	291.3	r291.1	291.3	291.3	294.9	294.8
06-1	Industrial chemicals[5]	352.6	346.5	345.8	345.2	342.4	339.3	340.1	338.8	338.7	r338.8	339.7	338.8	348.5	346.3
06-21	Prepared paint	262.8	264.7	264.7	264.7	264.7	264.7	264.7	264.7	264.7	r264.7	265.1	265.6	265.7	264.5
06-22	Paint materials	304.6	303.0	303.0	302.4	301.7	301.5	299.5	298.4	299.8	r300.2	299.3	300.4	305.5	316.0
06-3	Drugs and pharmaceuticals	210.1	212.4	214.9	215.5	216.0	218.6	222.2	222.9	225.1	r225.2	225.7	227.5	227.8	228.0
06-4	Fats and oils, inedible	267.1	254.1	242.3	239.6	240.8	242.0	253.4	262.2	278.3	r287.1	277.9	263.6	277.8	305.5
06-5	Agricultural chemicals and chemical products	292.4	289.9	288.8	286.5	285.2	283.2	283.3	284.2	282.8	r282.4	281.7	278.6	277.6	276.0
06-6	Plastic resins and materials	283.4	281.6	281.3	282.2	282.5	283.8	283.1	282.1	285.4	r288.0	289.1	290.6	294.1	293.1
06-7	Other chemicals and allied products	270.1	271.2	268.6	272.3	272.0	272.8	274.4	272.0	274.7	r272.0	272.0	273.6	274.4	274.5
07	Rubber plastic products	241.4	242.5	242.2	241.7	242.2	242.9	242.3	241.8	243.0	r243.2	242.7	244.4	244.6	244.5
07-1	Rubber and rubber products	267.8	269.5	268.9	267.9	268.2	269.6	268.3	267.1	267.0	r267.0	267.8	267.6	267.2	266.8
07-11	Crude rubber	278.9	276.6	272.5	2709	271.1	271.1	274.3	281.2	281.3	r280.6	280.1	283.1	284.4	284.3
07-12	Tires and tubes	255.2	255.6	255.7	254.5	256.0	259.1	250.5	246.6	246.5	r246.3	244.0	242.7	242.4	242.5
07-13	Miscellaneous rubber products	276.9	281.6	281.4	280.7	279.7	284.5	289.6	285.8	285.7	r286.0	291.5	291.5	290.6	289.3
07-2	Plastic products (6/78 = 100)	132.3	132.7	132.7	132.7	133.0	133.0	133.1	133.2	134.6	r134.8	133.9	135.9	136.3	136.4
08	Lumber and wood products	284.7	283.0	279.4	279.9	285.6	293.3	303.1	305.8	307.2	r308.0	312.5	314.5	313.9	306.0
08-1	Lumber	310.8	310.3	305.6	305.1	312.6	326.8	344.7	349.3	354.2	r358.6	371.3	372.5	366.6	348.2
08-2	Millwork	279.4	279.5	278.6	280.3	286.5	293.7	r300.5	304.0	302.8	r299.0	294.7	296.1	307.7	305.7
08-3	Plywood	232.1	228.5	224.0	227.8	231.2	235.3	239.5	238.9	239.4	r241.1	253.4	252.5	244.8	242.4
08-4	Other wood products	236.2	235.6	235.8	233.0	231.2	232.0	233.2	231.6	230.8	231.1	229.6	229.7	229.3	229.6

See footnotes at end of table.

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24. Continued—Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1982	1982				1983								
			Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[1]	June	July	Aug.	Sept.
	INDUSTRIAL COMMODITIES—Continued														
09	Pulp, paper, and allied products	288.7	289.4	289.8	289.8	290.5	293.6	294.2	294.8	295.4	r296.0	296.7	297.7	298.0	299.1
09–1	Pulp, paper,and products,excluding building paper and board	273.2	271.5	270.3	269.4	268.8	269.8	268.7	268.7	268.5	r268.7	269.4	269.9	270.1	271.7
09–11	Woodpulp	379.0	365.0	350.4	347.3	347.2	346.6	345.7	343.0	342.5	r343.2	346.5	347.5	348.2	348.4
09–12	Wastepaper	121.1	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0
09–13	Paper	286.3	285.3	285.4	280.6	279.2	279.3	278.8	278.4	278.5	r279.0	179.6	281.7	281.0	285.3
09–14	Paperboard	254.9	250.7	248.0	247.6	244.1	243.3	244.1	246.3	248.1	r248.7	249.6	249.5	250.4	252.8
09–15	Converted paper and paperboard products	264.4	264.2	264.0	264.7	264.8	265.0	265.1	265.1	264.2	r264.1	264.7	264.5	265.0	265.3
09–2	Building paper and board	239.5	243.4	242.1	241.0	242.0	241.1	241.4	244.2	247.0	249.3	255.7	256.2	252.1	252.8
10	Metals and metal products	301.6	301.8	301.6	300.5	299.9	300.3	304.7	304.4	304.6	r306.1	306.4	307.4	308.5	310.9
10–1	Iron and steel	339.0	336.5	337.6	335.9	332.8	333.3	339.9	341.6	341.5	r340.9	340.4	341.3	342.8	347.6
10–17	Steel mill products	349.5	348.2	349.8	348.6	344.7	343.7	351.1	349.8	349.7	r349.8	349.0	349.9	351.4	357.7
10–2	Nonferrous metals	263.6	265.1	262.9	261.7	263.2	267.0	275.8	270.6	271.8	r277.7	275.5	277.6	279.6	282.1
10–3	Metal containers	328.5	328.8	329.7	329.0	328.3	327.9	331.1	331.4	331.9	r337.1	336.8	337.4	338.0	338.3
10–4	Hardware	280.3	282.7	283.0	283.1	285.8	287.2	287.9	288.2	288.6	r288.5	289.2	289.7	289.8	289.8
10–5	Plumbing fixtures and brass fittings	278.7	277.1	277.8	278.3	279.2	280.6	283.5	285.6	287.7	r289.1	290.6	292.1	291.9	291.5
10–6	Heating equipment	237.2	239.1	238.4	238.8	239.3	240.7	240.7	241.1	242.3	r242.7	142.6	249.0	244.8	244.7
10–7	Fabricated structural metal products	304.8	306.4	305.9	305.3	304.7	303.6	302.8	303.7	302.5	302.1	301.9	302.2	302.8	303.8
10–8	Miscellaneous metal products	282.3	283.8	284.1	283.4	283.2	279.1	279.0	280.4	280.7	r280.8	287.4	287.4	287.6	287.7
11	Machinery and equipment	278.8	280.2	281.1	281.8	282.4	283.3	284.3	284.7	285.4	r286.0	285.8	286.9	287.1	287.5
11–1	Agricultural machinery and equipment	311.1	314.1	317.5	318.7	320.7	322.4	323.3	323.5	323.9	r326.4	325.5	326.2	327.1	328.0
11–2	Construction machinery and equipment	343.9	347.5	347.6	347.9	348.1	348.3	349.3	349.6	350.9	r352.3	352.5	352.7	352.8	353.4
11–3	Metalworking machinery and equipment	320.9	323.1	323.1	323.5	323.6	324.1	325.2	325.5	326.2	r326.7	326.6	326.5	326.1	326.3
11 4	General purpose machinery and equipment	304.0	305.0	305.9	306.4	307.0	307.4	307.9	307.5	308.2	308.4	308.5	308.4	308.2	308.1
11–6	Special industry machinery and equipment	325.1	326.8	327.8	329.1	329.9	331.8	332.6	333.6	334.5	r335.8	336.3	337.8	338.9	339.7
11–7	Electrical machinery and equipment	231.6	231.7	232.6	233.7	234.2	235.2	237.2	237.5	238.4	r238.5	238.2	240.8	241.2	242.1
11–9	Miscellaneous machinery	268.4	271.5	271.6	272.0	272.3	272.9	272.7	273.7	274.2	r275.3	274.8	274.9	275.0	274.5
12	Furniture and household durables	206.9	208.3	208.9	208.9	209.2	210.7	212.5	212.3	212.8	r213.6	213.6	214.4	214.5	214.9
12–1	Household furniture	229.8	230.7	231.2	231.4	232.0	231.9	232.6	231.1	231.8	r234.4	234.8	235.3	235.4	236.3
12–2	Commercial furniture	275.5	278.2	278.3	278.6	278.5	281.1	282.2	285.1	286.2	r285.9	287.0	287.9	287.2	287.7
12–3	Floor coverings	181.2	181.5	181.6	181.3	181.5	182.2	182.1	182.0	182.2	r182.1	180.6	185.1	188.1	188.2
12–4	Household appliances	199.1	201.2	201.3	201.2	201.8	203.9	204.9	205.0	206.3	r207.5	207.0	207.4	207.3	207.6
12–5	Home electronic equipment	88.1	87.4	87.8	87.0	87.1	87.3	87.0	87.0	86.6	r86.4	86.4	86.1	86.0	85.8
12–6	Other household durable goods	289.3	293.4	296.5	297.2	298.1	302.8	314.8	312.9	312.0	r312.7	312.9	313.5	312.3	313.0
13	Nonmetallic mineral products	320.2	321.2	321.1	321.2	320.5	321.5	322.3	322.0	324.1	r324.1	324.6	325.4	326.2	327.2
13–11	Flat glass	221.5	221.1	221.1	225.3	225.3	229.7	229.7	229.7	229.7	229.7	229.7	229.8	229.8	229.6
13–2	Concrete ingredients	310.0	310.8	309.9	310.0	306.7	307.2	310.0	308.5	312.8	r313.7	315.4	315.4	317.2	318.9
13–3	Concrete products	297.8	298.7	298.6	298.2	298.5	299.4	300.1	300.4	301.0	r301.1	301.4	302.2	302.3	302.8
13–4	Structural clay products, excluding refractories	260.8	264.0	264.0	264.8	264.8	264.9	264.3	270.7	275.7	r277.6	280.8	281.7	281.7	281.7
13–5	Refractories	337.1	340.8	340.8	337.2	337.2	337.7	337.7	337.7	338.2	r338.2	337.3	338.7	339.9	340.7
13–6	Asphalt roofing	298.4	413.4	406.7	399.0	397.0	393.7	380.4	374.7	384.0	r380.0	378.1	383.9	381.9	385.7
13–7	Gypsum products	256.1	253.9	255.1	255.0	253.9	263.1	267.4	265.9	271.9	r275.7	273.5	276.0	289.2	295.7
13–8	Glass containers	355.5	358.6	358.5	357.8	357.6	356.6	355.8	354.1	353.5	351.8	351.7	351.7	351.3	351.2
13–9	Other nonmetallic minerals	471.8	467.7	470.4	471.3	471.0	471.5	476.1	476.4	478.7	r478.5	479.4	480.8	481.5	482.4
14	Transportation equipment (12/68 = 100)	249.7	244.5	256.0	256.3	257.5	256.3	255.8	255.2	255.6	r255.8	256.3	256.4	257.0	250.3
14–1	Motor vehicles and equipment	251.3	244.6	257.8	257.8	258.1	257.0	256.3	255.4	255.9	256.2	256.6	256.7	256.9	248.9
14–4	Railroad equipment	346.5	348.0	350.8	350.8	350.8	350.8	350.5	350.3	350.0	r350.4	356.8	358.1	357.8	357.5
15	Miscellaneous products	276.4	279.5	285.4	285.2	290.4	285.7	288.8	287.4	287.4	287.1	288.0	291.7	291.5	291.3
15–1	Toys, sporting goods, small arms, ammunition	221.5	221.8	221.2	221.3	223.7	222.7	225.3	225.7	226.3	r226.0	226.4	224.8	225.0	225.3
15–2	Tobacco products	323.1	329.1	365.4	364.5	382.9	356.2	356.4	353.8	354.1	r353.8	352.2	373.5	373.3	376.5
15–3	Notions	277.0	280.1	280.1	279.8	279.8	280.5	280.6	280.6	280.3	280.3	280.3	280.3	279.7	279.7
15–4	Photograhic equipment and supplies	210.4	209.9	209.7	209.7	210.0	210.0	211.8	216.6	216.6	r216.6	216.8	216.8	216.9	216.9
15–5	Mobile homes (12/74 = 100)	161.9	162.9	162.6	161.6	161.7	161.8	161.7	162.9	162.3	r162.4	163.0	163.4	163.5	164.0
15–9	Other miscellaneous products	338.3	345.2	345.2	345.1	351.6	350.8	359.8	350.5	350.3	r349.2	352.7	353.5	352.3	349.0

[1] Data for May 1983 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.

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25. Producer Price Indexes, for special commodity groupings

[1967 = 100 unless otherwise specified]

Commodity grouping	Annual average 1982	1982				1983								
		Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[1]	June	July	Aug.	Sept.
All commodities—less farm products	303.0	303.7	304.7	305.1	305.4	304.4	304.9	304.5	303.8	r304.8	306.1	307.1	308.2	308.4
All foods	254.4	255.3	252.8	251.9	252.7	252.4	255.7	255.8	258.2	258.2	256.5	256.4	257.5	261.0
Processed foods	256.0	259.2	256.2	254.7	254.7	255.8	259.3	258.9	259.5	259.6	257.8	258.0	258.1	261.3
Industrial commodities less fuels	272.8	272.5	274.4	274.4	274.9	275.4	277.0	276.9	277.6	r278.2	278.6	279.5	280.4	279.8
Selected textile mill products (Dec. 1975 = 100)	138.2	137.8	137.4	137.1	136.8	136.7	136.8	137.2	137.4	r137.7	137.2	137.7	138.8	138.7
Hosiery	138.3	138.7	138.7	139.7	139.7	141.7	144.5	144.5	144.5	144.5	144.5	144.5	145.6	145.6
Underwear and nightwear	217.6	219.6	220.1	219.7	219.7	223.3	222.6	223.8	223.4	r223.5	223.1	223.2	223.5	224.4
Chemicals and allied products, including synthetic rubber and fibers and yarns	283.8	282.5	281.8	282.3	281.4	280.8	281.4	280.7	281.8	r281.6	282.0	282.5	285.5	285.0
Pharmaceutical preparations	206.0	209.0	211.7	212.3	212.8	215.8	219.4	220.3	223.3	r223.5	223.9	226.0	226.6	227.2
Lumber and wood products, excluding millwork	288.8	287.2	282.5	283.4	289.6	300.7	314.3	317.2	320.8	r324.3	337.0	337.6	331.0	317.6
Steel mill products, including fabricated wire products	349.4	347.8	349.1	348.5	344.8	343.1	349.9	348.4	348.4	r348.5	347.7	348.4	349.8	355.4
Finished steel mill products, excluding fabricated wire products	348.4	346.9	348.6	348.0	344.0	342.1	349.8	348.3	348.4	r348.5	347.7	348.5	350.1	356.7
Finished steel mill products, including fabricated wire products	348.1	346.3	347.8	347.2	343.3	341.6	348.5	347.0	347.0	r347.1	346.4	347.0	348.4	354.4
Special metals and metal products	286.6	284.0	289.5	288.9	288.7	288.6	290.9	290.3	290.7	r291.7	292.1	292.7	293.5	291.5
Fabricated metal products	291.6	292.9	293.0	292.5	292.5	291.1	291.3	292.3	292.2	r292.6	295.2	295.5	295.9	296.2
Copper and copper products	185.5	181.0	178.8	181.2	181.8	190.7	201.5	198.9	200.9	206.7	201.5	202.2	201.2	198.0
Machinery and motive products	272.1	270.7	276.4	277.0	277.9	277.8	278.2	278.1	278.7	r279.2	279.3	279.9	280.3	277.5
Machinery and equipment, except electrical	306.4	308.6	309.4	310.0	310.6	311.3	311.9	312.2	312.9	r313.8	313.7	313.9	314.1	314.2
Agricultural machinery, including tractors	323.1	325.5	330.6	332.2	335.1	337.0	337.7	337.8	338.2	r341.7	340.4	341.4	342.4	343.5
Metalworking machinery	350.4	353.5	354.1	354.2	354.1	354.6	355.7	355.6	356.3	358.0	357.7	357.7	357.6	357.3
Total tractors	355.0	359.6	361.4	361.4	364.2	365.6	365.6	365.7	366.1	370.5	370.6	370.7	369.9	372.5
Agricultural machinery and equipment less parts	313.8	315.8	320.1	321.5	324.3	325.9	326.6	326.8	327.1	r330.1	329.0	329.8	330.9	332.0
Farm and garden tractors less parts	327.8	333.0	336.1	336.1	340.3	342.2	342.2	342.2	342.2	348.8	348.8	348.8	347.6	350.6
Agricultural machinery, excluding tractors less parts	319.6	319.6	326.4	329.3	331.1	333.1	334.4	334.5	335.2	r336.2	333.8	335.6	338.4	337.9
Construction materials	288.0	288.4	288.0	287.8	287.9	290.3	294.6	295.0	296.1	r296.8	297.7	299.1	299.8	299.8

[1]Data for May 1983 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.

26. Producer Price Indexes, by durability of product

[1967 = 100]

Commodity grouping	Annual average 1982	1982				1983								
		Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[1]	June	July	Aug.	Sept.
Total durable goods	279.0	278.6	281.2	281.2	282.0	282.6	284.8	284.6	285.3	r286.0	286.4	287.3	287.8	286.7
Total nondurable goods	315.3	315.7	314.3	315.3	315.3	313.3	313.4	313.0	312.4	r313.5	315.0	315.5	318.2	319.9
Total manufactures	292.7	292.9	293.8	293.9	294.3	293.5	293.9	293.2	292.7	r293.7	295.1	296.1	297.1	297.3
Durable	279.8	279.5	282.3	282.4	283.2	283.7	285.7	285.3	286.0	r286.7	287.0	287.9	288.3	287.1
Nondurable	306.4	307.1	306.0	306.1	305.9	303.8	302.5	301.4	299.7	r301.0	303.6	304.7	306.4	308.1
Total raw or slightly processed goods	331.2	329.9	327.9	330.9	331.6	330.4	335.2	337.3	340.4	r340.9	339.3	338.3	343.7	346.0
Durable	233.8	226.2	224.2	219.2	217.4	224.2	235.4	243.3	244.1	r246.1	250.2	250.7	257.6	261.5
Nondurable	337.3	336.5	334.5	338.1	339.0	337.2	341.5	343.2	346.5	r346.8	344.8	343.7	348.9	351.1

[1]Data for May 1983 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.

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

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1982	1982				1983								
			Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[1]	Apr.	May[1]	June	July	Aug.	Sept.
	MINING														
1011	Iron ores (12/75 = 100)	175.2	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1
1092	Mercury ores (12/75 = 100)	312.2	289.5	312.5	308.3	312.5	306.2	289.5	285.4	272.9	268.7	254.1	237.5	231.2	243.3
1311	Crude petroleum and natural gas	925.8	937.6	945.9	969.0	958.4	945.2	931.2	934.4	922.1	r921.8	925.0	917.4	916.6	920.8
1455	Kaolin and ball clay (6/76 = 100)	151.2	151.7	151.7	151.7	151.7	153.6	156.3	158.4	164.3	164.3	164.3	164.3	164.3	164.3
	MANUFACTURING														
2021	Creamery butter	276.0	276.8	276.8	276.5	277.8	275.5	275.6	275.6	275.6	275.6	275.6	275.6	276.1	278.4
2044	Rice milling	185.1	183.0	183.0	175.2	196.1	191.3	183.0	183.0	188.9	191.3	194.5	193.7	198.1	201.1
2067	Chewing gum	304.1	304.7	304.8	306.0	306.1	326.0	326.0	326.1	326.1	326.1	327.2	327.2	327.3	327.3
2074	Cottonseed oil mills	168.3	164.4	157.6	r164.1	169.4	157.5	173.4	167.1	186.8	r186.2	179.2	192.4	220.6	265.6
2083	Malt	256.9	251.2	251.2	240.6	240.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6
2091	Canned and cured seafoods (12/73 = 100)	187.0	186.2	186.3	186.4	186.6	182.8	179.2	177.9	177.7	175.7	173.4	173.7	169.4	169.8
2098	Macaroni and spaghetti	258.5	259.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5
2251	Women's hosiery, except socks (12/75 = 100)	116.8	116.9	116.9	118.5	118.3	118.5	122.6	122.7	122.7	r122.7	122.8	122.9	123.0	123.0
2261	Finishing plants, cotton (6/76 = 100)	139.5	138.5	136.8	136.2	136.1	135.3	136.0	136.1	139.8	r138.0	132.9	132.6	133.8	133.5
2262	Finishing plants, synthetics, silk (6/76 = 100)	128.2	128.2	127.5	127.8	127.3	125.7	126.7	126.2	127.2	r126.9	125.8	125.1	127.2	125.8
2284	Thread mills (6/76 = 100)	157.2	158.0	157.9	157.9	157.8	157.9	161.9	165.6	165.7	165.7	165.7	165.7	165.7	166.1
2298	Cordage and twine (12/77 = 100)	141.5	142.6	142.6	142.6	142.6	142.6	142.7	142.8	137.6	137.6	137.6	137.6	137.6	139.0
2323	Men's and boys' neckwear (12/75 = 100)	119.5	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	123.5
2361	Children's dresses and blouses (12/77 = 100)	120.6	118.6	118.6	117.0	117.0	117.0	117.0	115.5	115.5	115.5	117.0	117.0	117.0	117.0
2381	Fabric dress and work gloves	292.1	288.2	287.4	287.4	287.4	288.8	288.8	288.8	291.0	291.7	291.7	296.3	296.3	296.3
2394	Canvas and related products (12/77 = 100)	145.4	144.8	147.3	147.3	147.3	148.7	148.7	146.2	146.2	r146.2	146.8	146.8	146.8	146.8
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
2448	Wood pallets and skids (12/75 = 100)	145.6	143.8	144.3	144.2	144.6	144.6	145.2	145.7	146.9	r148.5	149.3	150.8	151.2	150.9
2521	Wood office furniture	270.3	271.3	271.4	271.4	271.4	271.4	273.4	279.6	282.5	r282.5	283.6	284.7	284.7	284.7
2654	Sanitary food containers	259.7	260.8	261.7	261.7	261.7	261.7	261.7	265.1	265.2	r265.2	266.7	268.6	268.7	269.3
2655	Fiber cans, drums, and similar products (12/75 = 100)	177.8	177.5	177.9	180.7	183.8	183.8	183.8	183.8	185.6	r185.6	185.9	187.7	187.7	187.7
2911	Petroleum refining (6/76 = 100)	278.3	279.6	278.3	280.1	278.3	267.2	257.4	250.4	240.6	r246.0	254.9	256.3	258.1	257.8
2952	Asphalt felts and coating (12/75 = 100)	173.5	180.4	177.2	173.7	172.9	171.4	165.8	163.2	166.9	r165.1	164.2	166.8	165.8	167.4
3251	Brick and structural clay tile	307.4	314.0	314.0	315.5	315.5	315.7	315.6	328.3	332.2	r333.8	335.7	337.5	337.5	337.5
3253	Ceramic wall and floor tile (12/75 = 100)	140.6	140.7	140.7	140.7	140.7	140.7	140.7	140.7	140.7	r142.4	146.8	146.8	146.8	146.8
3255	Clay refractories	352.8	356.9	357.0	350.3	350.3	351.1	351.1	351.2	352.2	r352.2	350.4	353.0	355.3	356.8
3259	Structural clay products, n.e.c.	219.7	219.0	219.0	218.9	219.0	219.0	215.7	215.7	232.7	r234.7	234.8	235.4	235.4	235.5
3261	Vitreous plumbing fixtures	265.0	267.2	269.1	270.3	269.7	272.1	273.3	275.1	275.3	r276.1	276.9	277.2	277.2	281.3
3262	Vitreous china food utensils	357.8	360.2	360.8	370.2	377.7	380.1	380.1	380.1	380.1	r380.1	369.2	369.2	369.2	369.2
3263	Fine earthenware food utensils	318.2	316.9	323.5	324.8	326.0	365.7	365.7	365.7	365.7	r365.9	364.3	364.3	364.3	364.3
3269	Pottery products, n.e.c. (12/75 = 100)	167.3	167.4	169.6	171.9	173.7	186.5	186.6	186.6	186.6	r186.6	183.8	183.8	183.8	183.8
3274	Lime (12/75 = 100)	186.3	187.8	187.7	187.5	185.7	187.3	185.5	185.1	187.8	r185.2	186.5	187.3	187.9	186.6
3297	Nonclay refractories (12/74 = 100)	201.8	203.8	203.8	203.7	203.6	203.7	203.6	203.6	203.8	r203.6	203.7	203.8	203.8	203.8
3482	Small arms ammunition (12/75 = 100)	164.2	149.0	150.1	150.6	174.1	175.1	175.1	181.6	181.6	r181.6	187.6	187.6	187.6	187.6
3623	Welding apparatus, electric (12/72 = 100)	239.6	242.8	243.0	243.3	243.3	243.6	244.0	243.4	243.3	r243.1	237.3	238.4	238.4	238.5
3636	Sewing machines (12/75 = 100)	154.6	153.6	154.2	154.2	154.2	154.2	154.4	155.0	156.8	r156.8	156.1	156.1	156.1	156.1
3641	Electric lamps	294.0	296.3	302.9	303.0	303.4	306.0	311.5	311.4	313.8	313.8	316.7	319.4	319.8	332.4
3648	Lighting equipment, n.e.c. (12/75 = 100)	170.0	171.2	171.3	171.3	171.4	171.4	171.5	171.6	172.6	172.6	173.1	173.4	173.4	173.6
3671	Electron tubes, receiving type	382.1	380.2	380.3	414.0	414.1	431.6	432.0	431.9	432.1	r432.1	432.2	432.4	432.4	432.6
3942	Dolls (12/75 = 100)	136.7	136.8	136.8	136.8	136.5	137.1	136.8	136.8	137.7	r137.7	137.4	137.3	137.3	137.3
3944	Games, toys, and children's vehicles	234.0	234.8	235.3	235.3	235.5	235.3	243.4	241.8	242.2	r242.2	237.9	231.9	231.9	232.1
3955	Carbon paper and inked ribbons (12/75 = 100)	140.0	139.3	139.3	139.2	139.4	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2
3995	Burial caskets (6/76 = 100)	148.4	150.8	150.8	150.8	150.8	147.0	152.1	152.1	152.1	152.1	152.1	155.4	155.4	155.4
3996	Hard surface floor coverings (12/75 = 100)	155.9	156.9	158.9	158.9	156.8	159.2	159.2	159.2	159.7	r159.6	159.4	162.0	163.4	163.5

[1]Data for May 1983 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.

NOTE: Indexes which were deleted in the September issue may now be found in Table 4 of the BLS monthly report, *Producer Prices and Price Indexes*.
r = revised.

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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 plants. 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.

Hours of all persons describes the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all employee hour** describes 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.

28. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years, 1950–82

[1977 = 100]

Item	1950	1955	1960	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982
Business sector:													
Output per hour of all persons	50.4	58.3	65.2	78.3	86.2	94.5	97.6	100.0	100.6	99.4	98.9	101.3	101.2
Compensation per hour	20.0	26.4	33.9	41.7	58.2	85.5	92.9	100.0	108.6	118.7	131.2	143.9	155.1
Real compensation per hour	50.5	59.6	69.5	80.1	90.8	96.3	98.9	100.0	100.9	99.1	96.5	95.9	97.4
Unit labor costs	39.8	45.2	52.1	53.3	67.5	90.5	95.1	100.0	108.0	119.5	132.7	142.1	153.3
Unit nonlabor payments	43.4	47.6	50.6	57.6	63.2	90.4	94.0	100.0	106.7	112.8	119.0	136.2	136.9
Implicit price deflator	41.0	46.0	51.6	54.7	66.0	90.4	94.7	100.0	107.5	117.2	128.1	140.1	147.7
Nonfarm business sector:													
Output per hour of all persons	56.3	62.7	68.3	80.5	86.8	94.7	97.8	100.0	100.6	99.1	98.4	100.3	100.2
Compensation per hour	21.8	28.3	35.7	42.8	58.7	86.0	93.0	100.0	108.6	118.4	130.7	143.5	154.7
Real compensation per hour	55.0	64.0	73.0	82.2	91.5	96.8	99.0	100.0	100.9	98.9	96.1	95.6	97.1
Unit labor costs	38.8	45.1	52.3	53.2	67.6	90.8	95.1	100.0	108.0	119.5	132.8	143.0	154.4
Unit nonlabor payments	42.7	47.8	50.4	58.0	63.8	88.5	93.5	100.0	105.3	110.4	118.5	135.0	137.0
Implicit price deflator	40.1	46.0	51.6	54.8	66.3	90.0	94.6	100.0	107.1	116.5	128.1	140.4	148.6
Nonfinancial corporations:													
Output per hour of all persons	(1)	(1)	68.0	81.9	87.4	95.5	98.2	100.0	100.9	100.7	99.8	102.3	102.8
Compensation per hour	(1)	(1)	37.0	43.9	59.4	86.1	92.9	100.0	108.5	118.7	130.9	143.6	154.8
Real compensation per hour	(1)	(1)	75.8	84.3	92.7	96.9	98.9	100.0	100.7	99.1	96.3	95.7	97.2
Unit labor costs	(1)	(1)	54.4	53.5	68.0	90.2	94.6	100.0	107.5	117.8	131.2	140.3	150.6
Unit nonlabor payments	(1)	(1)	54.6	60.8	63.1	90.8	95.0	100.0	104.2	106.9	117.4	134.4	137.6
Implicit price deflator	(1)	(1)	54.5	56.1	66.3	90.4	94.7	100.0	106.4	114.1	126.4	138.3	146.1
Manufacturing:													
Output per hour of all persons	49.4	56.4	60.0	74.5	79.1	93.4	97.5	100.0	100.8	101.5	101.7	105.3	106.5
Compensation per hour	21.5	28.8	36.7	42.8	57.6	85.4	92.3	100.0	108.3	118.8	132.7	145.8	158.2
Real compensation per hour	54.0	65.1	75.1	82.3	89.8	96.2	98.3	100.0	100.6	99.2	97.6	97.2	99.3
Unit labor costs	43.4	51.0	61.1	57.5	72.7	91.5	94.6	100.0	107.4	117.0	130.5	138.5	148.5
Unit nonlabor payments	54.3	58.5	61.1	69.3	65.0	87.3	93.7	100.0	102.5	99.9	97.7	110.2	109.2
Implicit price deflator	46.6	53.2	61.1	61.0	70.5	90.3	94.4	100.0	106.0	112.0	120.9	130.2	137.0

[1] Not available.

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29. Annual changes in productivity, hourly compensation, unit costs, and prices, 1972–82

Item	Year											Annual rate of change	
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1950-82	1972-82
Business sector:													
Output per hour of all persons	3.5	2.6	−2.4	2.2	3.3	2.4	0.6	−1.2	−0.5	2.4	−0.1	2.2	0.9
Compensation per hour	6.5	8.0	9.4	9.6	8.6	7.7	8.6	9.4	10.5	9.7	7.7	6.6	8.9
Real compensation per hour	3.1	1.6	−1.4	0.5	2.6	1.2	0.9	−1.7	−2.6	−0.6	1.5	2.1	0.2
Unit labor costs	2.9	5.3	12.1	7.3	5.1	5.1	8.0	10.7	11.1	7.1	7.9	4.3	7.9
Unit nonlabor payments	4.5	5.9	4.4	15.1	4.0	6.4	6.7	5.8	5.5	14.4	0.5	3.7	6.8
Implicit price deflator	3.4	5.5	9.5	9.8	4.7	5.6	7.5	9.0	9.2	9.4	5.4	4.1	7.6
Nonfarm business sector:													
Output per hour of all persons	3.7	2.4	−2.5	2.0	3.2	2.2	0.6	−1.5	−0.7	1.9	−0.1	1.8	0.8
Compensation per hour	6.7	7.6	9.4	9.6	8.1	7.5	8.6	9.0	10.4	9.8	7.8	6.3	8.8
Real compensation per hour	3.3	1.3	−1.4	0.4	2.2	1.0	0.9	−2.0	−2.8	−0.6	1.6	1.8	0.1
Unit labor costs	2.8	5.0	12.2	7.5	4.8	5.2	8.0	10.7	11.1	7.7	7.9	4.4	8.0
Unit nonlabor payments	3.2	1.3	5.9	16.7	5.7	6.9	5.3	4.8	7.4	13.9	1.4	3.7	6.8
Implicit price deflator	3.0	3.8	10.2	10.3	5.1	5.7	7.1	8.8	10.0	9.6	5.8	4.2	7.6
Nonfinancial corporations:													
Output per hour of all employees	2.9	2.4	−3.7	2.9	2.9	1.8	0.9	−0.2	−0.9	2.5	0.5	[1]	0.9
Compensation per hour	5.7	7.5	9.4	9.6	7.9	7.6	8.5	9.4	10.3	9.7	7.8	[1]	8.8
Real compensation per hour	2.4	1.2	−1.5	0.4	2.0	1.1	0.7	−1.7	−2.8	−0.6	1.6	[1]	0.0
Unit labor costs	2.8	4.9	13.6	6.5	4.9	5.7	7.5	9.6	11.3	7.0	7.3	[1]	7.8
Unit nonlabor payments	2.7	1.5	7.1	20.1	4.6	5.3	4.2	2.6	9.8	14.5	2.4	[1]	7.1
Implicit price deflator	2.8	3.8	11.4	10.9	4.8	5.6	6.4	7.2	10.8	9.4	5.7	[1]	7.6
Manufacturing:													
Output per hour of all persons	5.0	5.4	−2.4	2.9	4.4	2.5	0.8	0.7	0.2	3.5	1.2	2.4	1.9
Compensation per hour	5.4	7.2	10.6	11.9	8.0	8.3	8.3	9.7	11.7	9.9	8.5	6.4	9.4
Real compensation per hour	2.0	0.9	−0.3	2.5	2.1	1.8	0.6	−1.4	−1.6	−4	2.2	1.9	0.6
Unit labor costs	0.3	1.7	13.3	8.8	3.4	5.7	7.4	9.0	11.5	6.1	7.2	3.9	7.4
Unit nonlabor payments	0.8	−3.3	−1.8	25.9	7.4	6.7	2.5	−2.6	−2.2	12.8	−0.9	2.2	4.1
Implicit price deflator	0.5	0.3	9.0	13.1	4.6	6.0	6.0	5.7	7.9	7.7	5.2	3.4	6.5

[1] Not available.

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

[1977 = 100]

Item	Annual average		Quarterly indexes										
			1981				1982				1983		
	1981	1982	I	II	III	IV	I	II	III	IV	I	II	III
Business sector:													
Output per hour of all persons	101.3	101.2	100.5	101.1	102.3	101.2	101.1	100.7	101.1	101.9	102.5	r103.8	p105.0
Compensation per hour	143.9	155.1	139.7	142.2	145.5	148.2	151.6	153.9	156.5	158.7	160.7	162.1	p164.3
Real compensation per hour	95.9	97.4	96.3	96.1	95.6	95.6	97.1	97.4	97.1	98.0	99.4	99.2	p99.5
Unit labor costs	142.1	153.3	139.0	140.7	142.3	146.4	149.9	152.9	154.7	155.6	156.9	r156.2	p156.5
Unit nonlabor payments	136.2	136.9	131.2	133.4	139.9	140.2	137.0	137.0	136.3	137.4	140.8	145.8	p148.2
Implicit price deflator	140.1	147.7	136.3	138.2	141.5	144.3	145.5	147.5	148.5	149.4	151.5	r152.7	p153.7
Nonfarm business sector:													
Output per hour of all persons	100.3	100.2	100.1	100.1	101.1	99.9	100.0	99.9	100.4	100.8	101.7	r103.3	p104.5
Compensation per hour	143.5	154.7	139.3	141.8	145.1	147.7	151.3	153.5	156.1	158.3	161.0	162.7	p164.5
Real compensation per hour	95.6	97.1	96.0	95.8	95.3	95.4	96.9	97.1	96.9	97.8	99.5	99.6	p99.5
Unit labor costs	143.0	154.4	139.2	141.6	143.5	147.8	151.3	153.6	155.4	157.1	158.3	r157.4	p157.3
Unit nonlabor payments	135.0	137.0	130.3	132.2	138.3	139.5	136.4	137.7	136.5	137.2	140.7	r145.9	p149.3
Implicit price deflator	140.4	148.6	136.2	138.4	141.8	145.0	146.4	148.3	149.1	150.5	152.4	153.6	p154.6
Nonfinancial corporations:													
Output per hour of all employees	102.3	102.8	101.8	102.1	103.0	102.2	102.4	102.3	103.2	103.4	104.3	r105.9	([1])
Compensation per hour	143.6	154.8	139.5	142.0	145.0	147.8	151.7	153.7	156.1	158.1	160.4	161.6	([1])
Real compensation per hour	95.7	97.2	96.2	95.9	95.2	95.4	97.2	97.2	96.9	97.7	99.2	98.9	([1])
Total unit costs	142.7	153.5	138.4	141.1	143.6	147.7	150.9	153.1	153.8	156.3	156.7	r155.3	([1])
Unit labor costs	140.3	150.6	137.0	139.0	140.7	144.6	148.1	150.2	151.1	152.9	153.9	r152.5	([1])
Unit nonlabor costs	149.4	161.8	142.3	147.0	151.9	156.6	158.9	161.2	161.3	165.9	164.7	r163.1	([1])
Unit profits	104.1	88.9	103.0	100.3	108.6	104.2	90.8	90.3	91.2	83.0	96.1	r115.0	([1])
Implicit price deflator	138.3	146.1	134.3	136.4	139.6	142.7	144.0	145.9	146.6	147.9	149.7	r150.7	([1])
Manufacturing:													
Output per hour of all persons	105.3	106.5	105.1	105.4	106.1	104.4	105.1	105.3	107.8	108.1	110.2	r112.6	p115.8
Compensation per hour	145.8	158.2	141.6	144.3	147.0	150.5	155.1	157.1	159.6	161.4	165.5	166.4	p167.6
Real compensation per hour	97.2	99.3	97.6	97.5	96.5	97.1	99.4	99.4	99.1	99.7	102.3	101.8	p101.4
Unit labor costs	138.5	148.5	134.8	136.9	138.5	144.1	147.6	149.1	148.1	149.3	150.2	r147.8	p144.7

r = revised.
p = preliminary.

[1]Not available.

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

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	I 1982 to II 1982	II 1982 to III 1982	III 1982 to IV 1982	IV 1982 to I 1983	I 1983 to II 1983	II 1983 to III 1983	II 1981 to II 1982	III 1981 to III 1982	IV 1981 to IV 1982	I 1982 to I 1983	II 1982 to II 1983	III 1982 to III 1983
Business sector:												
Output per hour of all persons	c−1.6	1.7	3.3	2.0	r5.4	p4.8	−0.4	r−1.1	0.7	1.3	r3.1	p3.9
Compensation per hour	6.4	6.7	5.7	5.4	3.5	p5.6	8.2	7.5	7.1	6.1	5.3	p5.0
Real compensation per hour	1.1	−1.0	3.7	5.8	−0.7	p0.8	1.3	1.6	2.5	2.4	1.9	p2.4
Unit labor costs	8.1	5.0	2.3	3.3	r−1.8	p6.7	8.7	8.7	6.3	4.7	r2.2	p1.1
Unit nonlabor payments	−0.1	c−2.0	3.2	10.5	15.0	p2.7	2.7	r−2.6	r−2.0	2.8	6.5	p8.8
Implicit price deflator	5.5	2.7	2.6	5.5	r3.3		6.7	4.9	3.5	4.1	3.5	p3.5
Nonfarm business sector:												
Output per hour of all persons	−0.4	2.3	1.3	3.7	r6.6	p5.0	−0.3	−0.6	0.8	1.7	r3.4	p4.1
Compensation per hour	5.8	7.2	5.8	6.8	4.3	p4.5	8.2	7.6	7.2	6.4	6.0	p5.3
Real compensation per hour	0.5	−0.6	3.7	7.2	0.1	p−0.3	1.3	1.7	2.6	2.7	2.6	p2.7
Unit labor costs	6.2	4.7	4.4	3.0	r−2.1	p−0.5	8.5	8.3	6.3	4.6	r2.5	p1.2
Unit nonlabor payments	3.7	−3.4	2.0	10.6	r15.7	p9.2	4.2	−1.3	−1.6	3.1	r6.0	p9.3
Implicit price deflator	5.4	2.2	3.7	5.3	r3.2	p2.5	7.1	5.2	3.7	4.1	3.6	p3.7
Nonfinancial corporations:												
Output per hour of all employees	c−0.5	3.8	0.6	3.4	r6.5	([1])	0.1	0.2	1.2	1.8	r3.6	([1])
Compensation per hour	5.4	6.4	5.4	6.0	2.9	([1])	8.2	7.6	7.0	5.8	5.2	([1])
Real compensation per hour	0.1	−1.3	3.4	6.4	r−1.2	([1])	1.3	1.7	2.4	2.1	1.7	([1])
Total units costs	6.0	1.8	6.7	1.0	r−3.5	([1])	8.5	7.1	5.8	3.8	r1.4	([1])
Unit labor costs	6.0	2.4	4.8	2.5	r−3.4	([1])	8.1	7.4	5.7	3.9	r1.5	([1])
Unit nonlabor costs	6.0	0.1	11.9	−2.8	r−3.8	([1])	9.7	6.2	6.0	3.7	r1.2	([1])
Unit profits	−2.1	3.8	−31.4	79.9	r104.7	([1])	−9.9	−16.1	20.3	5.8	r27.3	([1])
Implicit price deflator	5.4	1.9	3.6	5.1	r2.5	([1])	7.0	5.0	3.6	4.0	r3.3	([1])
Manufacturing:												
Output per hour of all persons	0.8	9.6	1.2	8.0	r9.0	p12.1	−0.1	1.6	3.5	4.8	r6.9	p7.5
Compensation per hour	5.1	6.5	4.5	10.7	2.1	p3.1	8.8	8.6	7.3	6.7	5.9	p5.0
Real compensation per hour	−0.2	−1.2	2.5	11.1	−21	p−1.6	1.9	2.6	2.7	3.0	2.5	p2.4
Unit labor costs	4.3	−2.8	3.3	2.5	r−6.4	p−8.0	8.9	6.9	3.6	1.8	r−0.9	−2.3

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

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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 11, "The Employment Cost Index," of the BLS *Handbook of Methods* (Bulletin 2134–1), 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 publication of the Bureau.

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32. Employment Cost Index, by occupation and industry group

[June 1981 = 100]

Series	1981			1982				1983		Percent change	
										3 months ended	12 months ended
	June	Sept.	Dec.	March	June	Sept.	Dec.	March	June	June 1983	
Civilian workers[1]	100.0	102.6	104.5	106.3	107.5	110.1	111.4	113.2	114.5	1.1	6.5
Workers, by occupational group											
White-collar workers	100.0	102.7	104.9	106.5	107.7	110.7	111.9	113.7	114.9	1.1	6.7
Blue-collar workers	100.0	102.3	104.1	105.7	107.1	109.2	110.5	112.3	113.6	1.2	6.1
Service workers	100.0	102.8	104.2	107.2	108.3	110.8	112.4	114.3	115.1	.7	6.3
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	106.0	107.2	109.3	110.4	112.5	113.5	.9	5.9
Nonmanufacturing	100.0	102.8	104.8	106.4	107.7	110.5	111.8	113.5	114.9	1.2	6.7
Services	100.0	104.4	107.1	108.2	109.2	113.5	115.0	116.6	117.1	.4	7.2
Public administration[2]	100.0	104.3	106.0	108.1	109.1	112.8	113.6	116.2	117.0	.7	7.2
Private industry workers	100.0	102.0	104.0	105.8	107.2	109.3	110.7	112.6	113.9	1.2	6.3
Workers, by occupational group											
White-collar workers	100.0	101.8	104.0	105.8	107.2	109.5	110.8	112.8	114.2	1.2	6.5
Blue-collar workers	100.0	102.2	104.0	105.6	107.0	109.0	110.3	112.1	113.5	1.2	6.1
Service workers	100.0	101.9	103.1	106.7	107.9	109.6	111.8	113.8	114.6	.7	6.2
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	106.0	107.2	109.3	110.4	112.5	113.5	.9	5.9
Nonmanufacturing	100.0	102.0	103.9	105.7	107.1	109.3	110.8	112.6	114.2	1.4	6.6
State and local government workers	100.0	106.3	107.4	108.8	109.3	114.3	115.1	116.5	117.1	.5	7.1
Workers, by occupational group											
White-collar workers	100.0	106.7	107.8	109.1	109.5	114.9	115.8	117.0	117.5	.4	7.3
Blue-collar workers	100.0	104.2	105.9	108.2	108.9	112.7	113.0	114.9	115.8	.8	6.3
Workers, by industry division											
Services	100.0	105.8	107.9	109.0	109.4	114.9	115.9	116.8	117.4	.5	7.3
Schools	100.0	106.0	107.9	108.9	109.1	114.8	115.8	116.6	116.9	.3	7.1
Elementary and secondary	100.0	106.3	108.3	109.3	109.5	115.6	116.6	117.2	117.4	.2	7.2
Hospitals and other services[3]	100.0	105.0	107.8	109.5	110.3	115.3	116.0	117.5	118.8	1.1	7.7
Public administration[2]	100.0	104.3	106.0	108.1	109.1	112.5	113.6	116.2	117.0	.7	7.2

[1] Excludes farm, household, and Federal workers.
[2] Consists of legislative, judicial, administrative, and regulatory activities.
[3] Includes, for example, library, social, and health services.

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

[June 1981 = 100]

Series	1981			1982				1983		Percent change	
										3 months ended	12 months ended
	June	Sept.	Dec.	March	June	Sept.	Dec.	March	June	June 1983	
Civilian workers[1]	100.0	102.5	104.4	106.3	107.3	109.7	110.9	112.2	113.4	1.1	5.7
Workers, by occupational group											
White-collar workers	100.0	102.6	104.7	106.7	107.6	110.4	111.4	113.0	114.2	1.1	6.1
Blue-collar workers	100.0	102.4	104.0	106.5	106.7	108.6	109.8	110.8	112.0	1.1	5.0
Service workers	100.0	102.5	103.6	106.8	107.9	110.1	111.8	113.2	113.9	.6	5.6
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	105.9	107.0	108.8	109.8	111.0	112.0	.9	4.7
Nonmanufacturing	100.0	102.7	104.5	106.5	107.5	110.1	111.3	112.7	114.0	1.2	6.0
Services	100.0	104.4	106.6	108.6	109.5	113.2	114.4	115.8	116.3	.4	6.2
Public administration[2]	100.0	103.8	106.5	107.5	108.4	111.9	112.6	114.6	115.4	.7	6.5
Private industry workers	100.0	102.0	103.8	105.9	107.1	109.0	110.3	111.6	112.9	1.2	5.4
Workers, by occupational group											
White-collar workers	100.0	101.8	103.9	106.2	107.3	109.4	110.6	112.2	113.6	1.2	5.9
Professional and technical workers	100.0	103.3	105.5	108.0	109.4	111.8	112.9	114.8	115.9	1.0	5.9
Managers and administrators	100.0	101.6	102.8	105.8	107.2	108.5	109.3	112.0	114.0	1.8	6.3
Salesworkers	100.0	98.0	101.9	102.2	101.8	104.5	106.2	105.7	107.1	1.3	5.2
Clerical workers	100.0	102.7	104.2	107.0	108.3	110.3	111.6	113.4	114.6	1.1	5.8
Blue-collar workers	100.0	102.3	103.9	105.4	106.6	108.5	109.7	110.7	111.9	1.1	5.0
Craft and kindred workers	100.0	102.9	104.3	106.2	107.6	109.6	111.2	112.2	113.4	1.1	5.4
Operatives, except transport	100.0	102.1	104.1	105.4	106.6	108.3	109.3	110.0	111.1	1.0	4.2
Transport equipment operatives	100.0	101.0	102.7	103.2	104.1	106.0	106.9	108.0	110.3	2.1	6.0
Nonfarm laborers	100.0	101.5	103.3	104.1	105.1	106.5	107.8	109.0	109.8	.7	4.5
Service workers	100.0	101.8	102.7	106.7	107.9	109.3	111.4	112.9	113.5	.5	5.2
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	105.9	107.0	108.8	109.8	111.0	112.0	.9	4.7
Durables	100.0	102.1	104.5	106.3	107.4	109.0	110.3	111.1	111.8	.6	4.1
Nondurables	100.0	102.0	103.1	105.3	106.3	108.5	109.1	110.9	112.3	1.3	5.6
Nonmanufacturing	100.0	102.0	103.8	105.9	107.1	109.1	110.5	112.0	113.4	1.3	5.9
Construction	100.0	103.0	104.3	105.9	107.3	109.1	109.7	110.4	112.1	1.5	4.5
Transportation and public utilities	100.0	102.0	103.6	105.7	106.9	109.5	111.1	112.9	114.7	1.6	7.3
Wholesale and retail trade	100.0	101.3	102.3	103.9	105.8	106.5	107.2	108.5	110.8	2.1	4.7
Wholesale trade	100.0	102.0	103.4	106.3	108.9	109.0	109.8	111.8	114.1	2.1	4.8
Retail trade	100.0	101.0	101.9	103.0	104.5	106.5	106.1	107.2	109.4	2.1	4.7
Finance, insurance, and real estate	100.0	98.3	102.3	103.7	102.4	106.1	109.0	110.6	111.1	.5	8.5
Services	100.0	103.6	105.8	108.8	110.0	112.5	114.3	116.0	116.6	.5	6.0
State and local government workers	100.0	105.0	107.0	108.2	108.7	113.5	114.0	115.1	115.7	.5	6.4
Workers, by occupational group											
White-collar workers	100.0	105.4	107.5	108.5	108.9	114.2	114.6	115.6	116.1	.4	6.6
Blue-collar workers	100.0	103.9	105.5	107.5	107.9	111.5	112.0	113.3	114.3	.9	5.9
Workers, by industry division											
Services	100.0	105.5	107.6	108.4	108.8	114.2	114.6	115.5	115.9	.3	6.5
Schools	100.0	105.7	107.7	108.3	108.5	114.2	114.5	115.2	115.4	.2	6.4
Elementary and secondary	100.0	106.0	107.9	108.7	108.8	114.9	115.1	115.6	115.8	.2	6.4
Hospitals and other services[3]	100.0	104.6	107.3	108.8	109.5	114.3	114.9	116.5	117.7	1.0	7.5
Public administration[2]	100.0	103.8	105.5	107.5	108.4	111.9	112.6	114.6	115.4	.7	6.5

[1] Excludes farm, household, and Federal workers.

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

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

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34. Employment Cost Index, private industry workers, by bargaining status, region, and area size

[June 1981 = 100]

Series	1981			1982				1983		Percent change	
										3 months ended	12 months ended
	June	Sept.	Dec.	March	June	Sept.	Dec.	March	June	June 1983	
COMPENSATION											
Workers, by bargaining status[1]											
Union	100.0	102.5	104.8	106.5	108.4	110.6	112.3	114.5	116.0	1.3	7.0
Manufacturing	100.0	102.3	104.6	106.3	108.0	110.3	111.8	114.0	114.8	.7	6.3
Nonmanufacturing	100.0	102.7	105.0	106.8	108.7	111.0	112.8	114.9	117.1	1.9	7.7
Nonunion	100.0	101.7	103.5	105.3	106.5	108.5	109.7	111.5	112.8	1.2	5.9
Manufacturing	100.0	101.8	103.5	105.7	106.6	106.4	109.2	111.2	112.3	1.0	5.3
Nonmanufacturing	100.0	101.7	103.5	106.2	106.4	108.6	109.9	111.6	113.0	1.3	6.2
Workers, by area size[1]											
Metropolitan areas	100.0	102.1	104.1	105.7	107.2	109.4	110.9	112.9	114.2	1.2	6.5
Other areas	100.0	101.8	103.2	106.2	107.0	108.6	109.1	110.8	112.3	1.4	5.0
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	100.0	102.7	105.0	106.5	108.1	110.3	111.8	112.9	114.2	1.2	5.6
Manufacturing	100.0	102.6	104.7	105.9	107.3	109.5	110.8	111.4	112.3	.8	4.7
Nonmanufacturing	100.0	102.8	105.2	107.0	108.8	111.1	112.7	114.3	116.0	1.5	6.6
Nonunion	100.0	101.6	103.2	105.6	106.5	108.3	109.5	110.9	112.2	1.2	5.4
Manufacturing	100.0	101.7	103.3	105.9	106.7	108.2	109.1	110.7	111.8	1.0	4.8
Nonmanufacturing	100.0	101.6	103.2	105.5	106.4	108.3	109.6	111.0	112.4	1.3	5.6
Workers, by region[1]											
Northeast	100.0	101.7	104.4	106.1	106.7	109.7	111.5	112.0	113.6	1.4	6.5
South	100.0	101.9	102.8	105.7	107.4	108.8	109.8	111.4	112.5	1.0	4.7
North Central	100.0	101.6	103.3	104.7	106.1	107.6	108.6	110.1	111.5	1.3	5.1
West	100.0	103.2	105.1	107.9	108.6	110.7	112.0	114.1	114.9	.7	5.8
Workers by area size[1]											
Metropolitan areas	100.0	102.1	104.0	105.9	107.1	109.1	110.5	111.9	113.2	1.2	5.7
Other areas	100.0	101.8	103.1	106.0	106.8	108.3	108.8	110.1	111.4	1.2	4.3

[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.

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35. Wage and compensation change, major collective bargaining settlements, 1978 to date

[In percent]

Measure	Annual average					Quarterly average							
						1981		1982				1983p	
	1978	1979	1980	1981	1982	III	IV	I	II	III	IV	I	II
Total compensation changes, covering 5,000 workers or more, all industries:													
First year of contract	8.3	9.0	10.4	10.2	3.2	10.5	11.0	1.9	2.6	6.2	3.3	−1.7	4.7
Annual rate over life of contract	6.3	6.6	7.1	8.3	2.8	8.1	5.8	1.2	2.1	4.7	4.8	1.5	3.9
Wage rate changes covering at least 1,000 workers, all industries:													
First year of contract	7.6	7.4	9.5	9.8	3.8	10.8	9.0	3.0	3.4	5.4	3.8	−1.2	2.9
Annual rate over life of contract	6.4	6.0	7.1	7.9	3.6	8.7	5.7	2.8	3.2	4.5	4.8	2.3	3.1
Manufacturing:													
First year of contract	8.3	6.9	7.4	7.2	2.8	9.0	6.6	2.5	1.8	5.1	4.1	−3.4	1.3
Annual rate over life of contract	6.6	5.4	5.4	6.1	2.6	7.5	5.4	2.7	1.7	3.9	4.5	.9	1.6
Nonmanufacturing (excluding construction):													
First year of contract	8.0	7.6	9.5	9.8	4.3	8.6	9.6	2.7	6.6	5.5	3.6	3.9	6.8
Annual rate over life of contract	6.5	6.2	6.6	7.3	4.1	7.2	5.6	2.1	6.1	4.8	5.2	5.9	6.1
Construction:													
First year of contract	6.5	8.8	13.6	13.5	6.5	16.4	11.4	8.6	6.2	6.3	3.4	.3	1.9
Annual rate over life of contract	6.2	8.3	11.5	11.3	6.3	12.4	11.7	8.2	6.3	5.9	2.9	2.6	2.5

p = preliminary.

36. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1978 to date

Measure	Year					Year and quarter							
						1981		1982				1983p	
	1978	1979	1980	1981	1982	III	IV	I	II	III	IV	I	II
Average percent adjustment (including no change):													
All industries	8.2	9.1	9.9	9.5	6.8	3.3	1.5	1.0	2.0	2.4	1.3	0.4	1.3
Manufacturing	8.6	9.6	10.2	9.4	5.2	3.1	1.9	.9	1.0	1.7	1.5	−.4	1.0
Nonmanufacturing	7.9	8.8	9.7	9.5	7.9	3.4	1.1	1.1	2.7	2.9	1.2	.9	1.4
From settlements reached in period	2.0	3.0	3.6	2.5	1.7	.5	.4	.2	.4	.5	.6	−.2	.2
Deferred from settlements reached in earlier period	3.7	3.0	3.5	3.8	3.6	1.5	.4	.6	1.4	1.3	.4	.4	1.0
From cost-of-living clauses	2.4	3.1	2.8	3.2	1.4	1.2	.6	.3	.2	.6	.3	.1	.1
Total number of workers receiving wage change (in thousands)[1]	—	—	—	8,648	7,852	4,364	3,225	2,878	3,423	3,760	3,441	3,030	3,108
From settlements reached in period	—	—	—	2,270	1,907	540	604	204	511	620	825	434	454
Deferred from settlements reached in earlier period	—	—	—	6,267	4,846	3,023	882	1,001	1,594	2,400	860	840	1,446
From cost-of-living clauses	—	—	—	4,593	3,830	2,934	2,179	1,920	1,568	2,251	1,970	2,075	1,395
Number of workers receiving no adjustments (in thousands)	—	—	—	145	483	4,428	5,568	5,457	4,912	4,575	4,895	5,085	5,007

[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.

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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 fewer than 1,000 workers was discontinued with the December 1981 data.

37. 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	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
1982	96		656		9,061	.04
1982 January	2	4	6.1	11.4	202.8	.01
February	3	7	3.9	15.3	241.1	.01
March	4	9	13.3	26.1	357.0	.02
April	14	21	59.5	79.1	533.1	.03
May	15	23	42.7	66.1	657.6	.04
June	18	27	42.8	66.9	907.2	.05
July	13	25	38.4	65.9	844.7	.04
August	9	23	18.8	58.0	754.3	.04
September	14	27	390.0	427.0	2,088.8	.11
1983p January	1	3	1.6	38.0	794.8	.04
February	5	7	14.0	50.4	844.4	.05
March	5	10	10.5	54.9	1,131.5	.05
April	2	9	2.8	52.4	789.5	.04
May	11	16	23.6	32.9	493.9	.03
June	15	24	59.8	79.7	689.0	.03
July	r10	r23	r49.9	r85.1	r1,198.1	r.07
August	r7	r19	r675.8	r730.4	r10,655.7	r.51
September	4	16	18.2	47.3	10,655.7	.03

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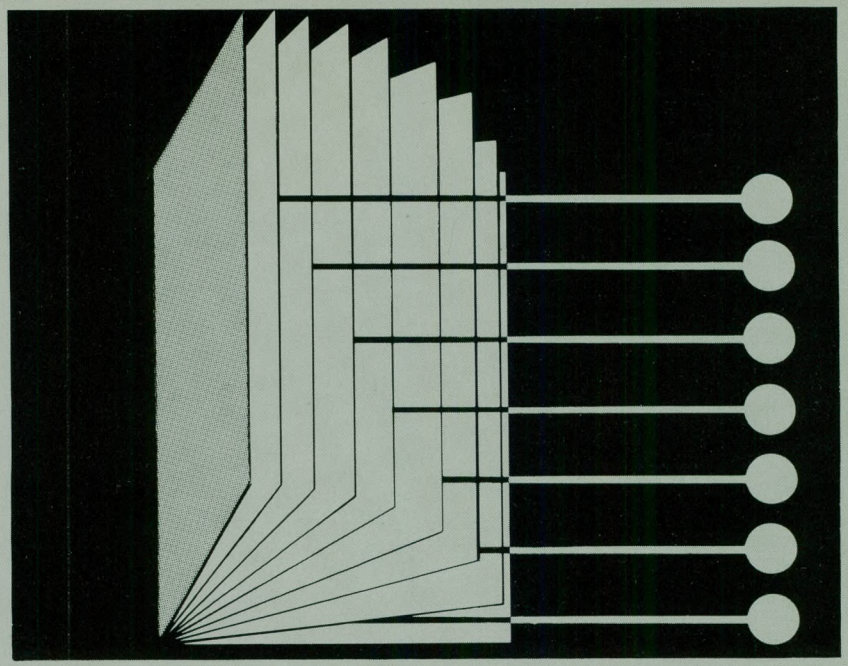

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