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In this issue:

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The Woodcutter, a 1912 oil on canvas by Kasmimir Malevich (1878–1935), Stedelijk Museum, the Netherlands; photograph courtesy of The National Gallery of Art, Washington, DC

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Monthly Labor Review

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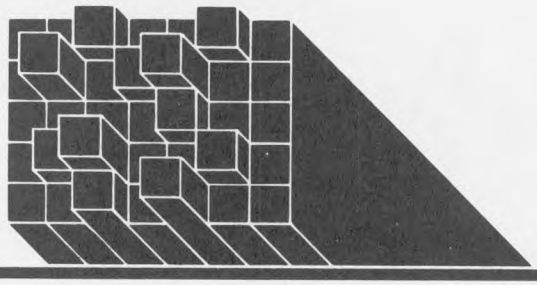
Labor month in review



WORKER TRAINING. The congressional Office of Technology Assessment published a report concluding that American workers will need more training if they are to match the skills now possessed by the work forces of Japan and West Germany, America's major economic competitors. The report warns that, unless more is done to improve the skills of American workers at all levels, the United States could "lose out in what is now a global competition for high wage, high skill jobs—the kind of jobs most likely to contribute to a healthy improvement in the national standard of living." Following are excerpts:

Well-trained, motivated workers have never been more critical to U.S. industrial productivity and competitiveness. More and more, the competitive edge goes to the company or country with flexible workers, able to adjust quickly to changing demands, and with the skills to fully exploit new technology. Many American workers are ill equipped for the changes that industry must continually make to be competitive.

For a slowly increasing number of American businesses, training is becoming an integral part of competitive strategy. However, too often, U.S. firms seek to improve production by focusing more on investments in hardware—equipment and physical plant—than on the people who will make the hardware perform. Effective use of new technology often requires workers to learn new and different skills, as well as new approaches to management and work organization.

Without substantial changes in the performance of the U.S. education and training system, the mismatch between job opportunities and the skills and abilities of the work force will grow. There will be too many people who can qualify only for the least demanding of jobs, too many who will not be able to advance, and too few with the skills needed to drive innovation and economic growth.

Many American workers—20 percent or more in some firms—need stronger basic skills (reading, writing, and arithmetic) before they can handle job-related training. A 1985 survey of adults in the United States aged 21–25 found that 20 percent had not achieved 8th-grade reading levels; another 18 percent could not read at the 11th-grade level. But only a few U.S. companies now offer in-house basic skills training. More needs to be done to encourage the development of both basic educational skills and broader problem-solving and teamwork skills. These broad skills can benefit both workers' careers and the economy as a whole.

In the near term, training people already at work will have the greatest influence on national competitiveness, for they will comprise the majority of the work force for much of the next two decades. Over the long term, improving the educational system and developing more effective ways to help young people make the transition from school to work will be crucial to the Nation's continued economic success.

American firms face barriers that keep them from providing the broad training workers need. High labor mobility and turnover—especially among young workers—cause many employers to view training as a risky investment, since workers trained at their employer's expense might take a job at another firm.

Simply providing more training, however, will not promote industrial competitiveness. Training must be linked to business strategy and delivered effectively. Most training programs lag far behind the state of the art. Following instructional design principles and using training technology can improve the quality of training and increase its chances of transferring back to the job.

Nations such as West Germany and Japan have more effective and extensive public and private training systems than the United States. These countries provide more training, offer government support, and train their workers to higher average standards. They also provide better basic education.

Greater Federal involvement may be required to develop the highly skilled flexible workers needed today. American firms and workers do not place enough emphasis on training. Some look to State programs to fill the gap, but States can provide only very modest direct support to corporate training in economic development programs, plus important, but indirect, support through community colleges.

Options for increased Federal involvement range from providing better information about training, to support for new apprenticeship programs, to payroll-based levies that prompt firms to undertake more training. Incremental strategies that build on current Federal assistance for training research and demonstrations, program evaluation, and best practice dissemination would have low initial implementation costs. However, they would do little to change companies' fundamental training practices.

To encourage widespread corporate action, Congress would have to choose more far-reaching initiatives. A payroll-based levy requiring employers either to invest a percentage of payroll in training or contribute the same amount to a Federal training fund would have the largest potential impact on corporate training. Such a training levy would have little direct effect on Federal revenues, but would spur training commitments among all employers.

New institutional structures also will be needed to make affordable training available to small businesses. Approaches such as industry training consortia, training partnerships with community colleges and other training providers, involvement of industry organizations in training, and joint labor-management training programs show promise in reaching those currently underserved by the training systems. Such efforts are still very limited, however.

COPIES OF THE 281-page report, *Worker Training: Competing in the New International Economy,* are available from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402–9325; phone (202) 783–3238. The GPO stock number of the report is 052–003–01214–6; the price is $12.00. The Office of Technology Assessment is a nonpartisan analytical agency that aids the U.S. Congress in dealing with the complex and often highly technical issues that increasingly confront our society. □

Defense spending in the 1990's—the effect of deeper cuts

Extension of Outlook 2000 *projections explores the economic impact of further military reductions in light of the dramatic improvement occurring in East-West relations*

Norman C. Saunders

In recent years, the United States has placed a strong emphasis on military preparedness and development of future weapons systems. Real defense spending climbed from $159.2 billion in 1977 to $265.2 billion in 1987, increasing the Defense Department's share of real gross national product (GNP) from 5.4 percent to almost 7 percent. The rise in defense spending as a proportion of overall Federal purchases of goods and services was even more striking, jumping from 68.7 percent in 1977 to 78.1 percent by 1987.

Combined with continuing pressure to ease the Federal budget deficit, the thaw in East-West relations and the startling political changes in Eastern Europe have led to widespread discussion of defense cuts. This article offers two new scenarios for defense spending based on the moderate-growth version of the *Outlook 2000* economic projections, issued by the Bureau of Labor Statistics last fall.[1]

The first scenario envisions an annual reduction of 4 percent in real defense outlays from 1989 to 2000. The second scenario assumes that defense spending will remain constant (in 1982 dollars). Five alternatives to the first scenario—low-defense—are set forth, and three to the second scenario—high-defense.

This analysis also examines detailed industry and occupational employment projections under three of the new defense alternatives. Finally, the effects of spending less on conventional arms or less on highly sophisticated weapons are assessed.

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The earlier *Outlook 2000* projections had assumed that defense purchases of goods and services, stated in 1982 dollars, would decline at an average annual rate of 1.3 percent, from $262 billion in 1988 to $225 billion in 2000—an overall decrease of about 14 percent. As part of the spending decline, it was projected that the

The Middle East Crisis

When work on this article began, extensive debate was taking place, both in the press and in the U.S. Congress, about the possibility of reduced defense spending. As the article goes to press, attention is focused on U.S. military presence in the Middle East. The quickness of this change points to the large uncertainty about long-run defense expenditures and its implications for Government spending. This article describes the impact on the economy in the year 2000 of alternative trends in defense spending. These alternatives range from continued spending at inflation-adjusted 1989 levels to a 4-percent annual decline in real defense spending between 1989 and 2000. While other scenarios could be envisioned, the alternatives explored in this article provide insight on the long-term implications of changes in defense spending.

level of military forces would drop from 2.1 million to 1.9 million, Defense Department civilian employees by 14,000, and private defense-related employment by just over 1 million jobs between 1988 and 2000:

	1988	*Projected 2000*	*Percent decline, 1988–2000*
Defense purchases of goods and services (billions of 1982 dollars)	261.5	225.3	13.8
Compensation	87.9	85.3	3.0
All other purchases	171.8	140.0	18.5
Total defense-related employment (in thousands)	6,312	5,081	19.5
Military force level	2,121	1,982	6.6
Federal civilian defense employment	1,054	1,040	1.3
Private defense-related employment	3,137	2,089	33.3
Manufacturing	1,549	936	39.6
All other industries	1,588	1,153	27.3

Most of the employment decline was in the private sector because, for the most part, the cuts were assumed to be accomplished by trimming purchases of goods or services, rather than by cutting the armed forces or civilian defense employment.

The increases in defense spending over the 1977–86 period occurred primarily in the areas of research and development and in material purchases. Defense Department civilian employment increased slightly during the 1980's. For that reason, most of the declines that BLS assumed for the 1990's occur not in direct employment levels (either military or civilian) but in material purchases. The effect of this cost-cutting on private sector employment is exacerbated by the fact that many of the largest spending cuts were expected to occur in manufacturing industries with projected high productivity growth:

	Employment	
	Absolute change (in thousands)	*Percent change*
Change, 1988–2000	–1,048	100.0
Due to defense spending declines	–633	60.4
Due to output per hour increases	–388	36.3
Due to structural change in the economy	–027	3.3

As shown, three-fifths of the drop is attributed to lower defense spending, but over one-third is projected to result from productivity—output per hour—increases.

In 1988, 2.9 percent of total private wage and salary employment was estimated to be related to defense expenditures.[2] This estimate includes both direct defense expenditures, such as purchases of aircraft or supplies, and indirect expenditures, such as employment generated by purchases made by defense suppliers. By the year 2000, total defense-related employment was pro-

Table 1. **GNP and alternative defense spending assumptions, 1988 and 2000**

[Billions of 1982 dollars]

Item	1988	Base 2000	Low 1	Low 2	Low 3	Low 4	Low 5	High 1	High 2	High 3
Gross national product	$4,024.4	$5,222.4	$5,215.0	$5,226.1	$5,204.8	$5,209.4	$5,206.9	$5,230.6	$5,222.6	$5,242.8
Government	785.1	858.9	798.6	859.1	799.8	812.7	819.6	895.5	859.0	895.1
Federal	328.9	315.8	258.5	315.8	258.5	264.2	264.2	350.4	315.8	350.8
Defense	261.5	225.3	166.5	166.5	166.5	166.5	166.5	260.9	260.9	260.9
Civilian	67.4	90.5	90.5	144.5	90.5	95.9	95.9	90.5	57.8	90.5
State and local	456.2	543.1	541.1	543.3	542.2	549.3	556.2	544.5	543.2	544.1
Consumption	2,598.4	3,356.5	3,338.7	3,359.4	3,363.3	3,386.8	3,374.4	3,366.7	3,355.6	3,354.2
Investment	715.8	956.2	962.0	960.8	965.8	958.5	958.8	952.8	954.5	954.8
Nonresidential	493.8	697.1	701.8	697.0	703.1	696.1	696.8	695.8	698.0	697.4
Equipment	371.6	530.1	532.1	528.5	532.5	528.3	528.6	529.6	531.4	530.9
Structures	122.2	167.0	169.9	168.9	171.0	168.0	168.4	166.1	166.4	166.3
Residential	194.1	244.9	247.4	249.6	247.2	246.7	246.9	243.3	242.7	244.4
Inventory change	27.9	14.2	13.6	14.4	15.1	15.2	14.8	13.9	14.0	13.5
Exports	530.1	879.9	903.7	874.9	889.7	882.0	880.7	867.7	883.3	876.6
Imports	605.0	829.1	794.9	827.5	815.6	828.7	825.4	848.4	830.1	837.5

Table 1. **Continued—GNP and alternative defense spending assumptions, 1988 and 2000**

[Billions of 1982 dollars]

Item	1988	Base 2000	Low 1	Low 2	Low 3	Low 4	Low 5	High 1	High 2	High 3
	Percent distributions									
Gross national product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Government	19.5	16.4	15.3	16.4	15.4	15.6	15.7	17.1	16.4	17.1
Federal	8.2	6.0	5.0	6.0	5.0	5.1	5.1	6.7	6.0	6.7
Defense	6.5	4.3	3.2	3.2	3.2	3.2	3.2	5.0	5.0	5.0
Civilian	1.7	1.7	1.7	2.8	1.7	1.8	1.8	1.7	1.1	1.7
State and local	11.3	10.4	10.4	10.4	10.4	10.5	10.7	10.4	10.4	10.4
Consumption	64.6	64.3	64.0	64.3	64.6	65.0	64.8	64.4	64.3	64.0
Investment	17.8	18.3	18.4	18.4	18.6	18.4	18.4	18.2	18.3	18.2
Nonresidential	12.3	13.3	13.5	13.3	13.5	13.4	13.4	13.3	13.4	13.3
Equipment	9.2	10.2	10.2	10.1	10.2	10.1	10.2	10.1	10.2	10.1
Structures	3.0	3.2	3.3	3.2	3.3	3.2	3.2	3.2	3.2	3.2
Residential	4.8	4.7	4.7	4.8	4.7	4.7	4.7	4.7	4.6	4.7
Inventory change	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Exports	13.2	16.8	17.3	16.7	17.1	16.9	16.9	16.6	16.9	16.7
Imports	15.0	15.9	15.2	15.8	15.7	15.9	15.9	16.2	15.9	16.0
			Percent change from Base 2000							
Gross national product			–0.14	0.07	–0.34	–0.25	–0.30	0.16	0.00	0.39
Government			–7.02	0.02	–6.88	–5.38	–4.58	4.26	0.01	4.22
Federal			–18.16	0.00	–18.16	–16.34	–16.34	10.96	0.00	11.09
Defense			–26.09	–26.09	–26.09	–26.09	–26.09	15.80	15.80	15.80
Civilian			0.00	59.71	0.00	5.99	5.99	0.00	–36.16	0.00
State and local			–0.37	0.04	–0.17	1.14	2.41	0.26	0.02	0.19
Consumption			–0.53	0.09	0.20	0.90	0.53	0.30	–0.03	–0.07
Investment			0.61	0.48	1.01	0.24	0.28	–0.36	–0.17	–0.14
Nonresidential			0.68	–0.01	0.86	–0.14	–0.04	–0.18	0.12	0.04
Equipment			0.38	–0.30	0.45	–0.33	–0.28	–0.09	0.24	0.16
Structures			1.71	1.12	2.37	0.59	0.86	–0.53	–0.33	–0.40
Residential			1.03	1.93	0.94	0.73	0.82	–0.64	–0.90	–0.21
Inventory change			–4.51	1.64	6.56	7.38	4.51	–2.05	–1.23	–4.92
Exports			2.71	–0.57	1.11	0.24	0.09	–1.38	0.38	–0.37
Imports			–4.12	–0.19	–1.63	–0.05	–0.44	2.32	0.12	1.01

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

jected to decline by one-third, and, as a consequence, would be only 1.7 percent of total private wage and salary employment. Nearly 60 percent of this decline was projected in manufacturing.

The real spending cutbacks had the effect of changing defense spending from a 6.6-percent share of GNP in 1988 to a projected 4.3-percent share by 2000, the lowest proportion since 1980, when defense spending accounted for only 5.1 percent of production.

New defense spending alternatives

The BLS *Outlook 2000* projections illustrate one possible scenario for declining defense expenditures. Obviously, many others with either sharper or more modest declines are possible. Differing periods or differing mixes of personnel/material cuts could also be explored. This article looks at two basic scenarios covering 1989 to 2000: an upper level of defense spending derived by assuming no change in real defense spending, the high-defense scenario, and a lower level of defense spending derived by assuming a 4.0-percent annual decline in real defense spending, the low-defense scenario. This provides a projected range for real defense spending in 2000 of almost $95 billion—$260.9 billion in the high-defense scenario and $166.5 billion in the low-defense scenario.[3]

The effects of the various assumptions on GNP demand categories and on major economic indicators are presented in tables 1 and 2. In each case, the results should be viewed in comparison with the moderate-growth projections from BLS' *Outlook 2000*, noted in the tables as "Base 2000."

Exhibit 1 specifies the alternatives, which range from low-defense 1 to high-defense 3.

Low alternatives. Cutting real defense spending by 4 percent each year results in a cumulative reduction of almost $60 billion by 2000, relative to the Base 2000 projection, the moderate-growth estimate. In the context of the aggregate economic model, however, the decline lowers real gross national product by only $7.4 billion in 2000. As defense spending grows less rapidly, the loss in production generally weakens the economy, at least initially, leading to lower inflation and interest rates.

Exhibit 1. Defense spending alternatives, 1989–2000

Base 2000. The moderate-growth economic projection from *Outlook 2000*.

The eight alternatives (in 1988 dollars):

Low-defense 1. Spending assumed to decline at a 4-percent annual rate. No other modifications to Base 2000.

Low-defense 2. Spending declines at 4 percent annually, and offsetting increases assumed in real civilian purchases of goods and services.

Low-defense 3. Spending declines at 4 percent annually, offset by personal tax cuts or like amounts.

Low-defense 4. Spending declines at 4 percent annually, offset by increases in other Federal spending: 10 percent for purchases of goods and services, 10 percent for grants-in-aid to State and local governments, and 80 percent for Federal transfer programs.

Low-defense 5. Spending declines at 4 percent annually, offset by increases in other Federal spending: 10 percent for purchases of goods and services, 30 percent for grants-in-aid to State and local governments, and 60 percent for Federal transfer programs.

High-defense 1. No change in levels from 1989. No other modifications to Base 2000.

High-defense 2. No change in spending levels, offset by lower civilian purchases of goods and services.

High-defense 3. No change in spending levels, offset by increased personal tax revenues.

These results, combined with a much larger Federal surplus, lead to lower pressure on foreign exchange rates. The exchange value of the dollar drops approximately 4.0 percent in 2000, resulting in higher exports and lower imports, both of which offset part of the defense cut. Further offsets are provided by small increases in investment as demand is spurred by the lower interest rates. The investment increases are broad-based, occurring in both business spending for plant and equipment and in new residential construction. Personal spending on nondurable goods and services generally declines slightly. The spending cut also results in a military force level in 2000 that is 460,000 lower than the Base 2000 projection. Most of the veterans enter the civilian labor force and account for increased employment levels in the private economy (table 2). Because GNP is changing very little, this implies slightly lower labor productivity growth.

Under the low-defense 1 alternative, the so-called "peace dividend" appears as a large budget surplus in 2000 and opens the possibility of exploring alternative approaches that offset the defense spending cut. (See table 2.) One approach is to increase Federal nondefense purchases of goods and services by an amount equal to the cuts in defense spending (low-defense 2). This leads to a year 2000 economy virtually identical with that in the base run. Shifts would no doubt be seen at the industry level of detail, but the differences between what the nondefense portion of the Federal Government is buying and what the defense portion is buying are not great enough at the aggregate level to make appreciable differences in either the level or the distribution of GNP. As in the low-defense 1 alternative, however, major military reductions in force result, leading to small increases in the civilian labor force and employment and compensating small declines in labor productivity, relative to the Base 2000 projection.

Another way to absorb the "peace dividend" would be through lower taxes, offsetting defense cuts with a like cut in personal taxes (low-defense 3). Under this alternative, GNP drops slightly because defense reductions are only partially offset by increases in consumption and investment. The balance of the higher spendable income flows into personal savings, providing a further small boost to investment. As in the low-defense 2 alternative, the Federal surplus is virtually unchanged from that in the Base 2000 projection.

Yet another approach to account for the "peace dividend" is to assume increases among several major categories of Federal civilian

Table 2. **Impact of alternative defense assumptions on major economic variables, 1988 and 2000**

[Numbers in millions]

Economic variable	1988	Base 2000	Low 1	Low 2	Low 3	Low 4	Low 5	High 1	High 2	High 3
Civilian labor force	121.7	141.1	141.4	141.4	141.4	141.4	141.4	141.4	141.0	141.0
Civilian employment	115.0	133.3	133.6	133.6	133.7	133.6	133.6	133.2	133.2	133.3
Unemployment rate	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Military force level	2.121	1.982	1.525	1.525	1.525	1.525	1.525	2.243	2.243	2.243
Nonagricultural establishment employment	104.9	122.1	122.7	122.5	122.6	122.4	122.6	122.0	122.0	122.1
Nonagricultural private productivity	1.111	1.285	1.281	1.281	1.279	1.282	1.282	1.287	1.288	1.289
GNP implicit deflator	1.213	2.265	2.233	2.244	2.211	2.246	2.241	2.282	2.276	2.291
Federal surplus/deficit	–145.8	26.4	98.8	22.0	25.9	–2.2	–9.0	–59.0	29.8	27.2
Personal savings rate	4.2	4.0	4.0	4.0	4.1	4.1	4.1	4.0	4.0	3.9
Corporate bond rate	9.71	7.17	6.04	6.94	6.36	6.79	6.80	7.81	7.30	7.60
Real disposable personal income	2,793.2	3,590.1	3,566.1	3,593.7	3,604.2	3,632.1	3,616.1	3,604.1	3,589.3	3,584.2
			Percent change from Base 2000							
Civilian labor force			0.2	0.2	0.2	0.2	0.2	–0.1	–0.1	–0.1
Civilian employment			0.2	0.2	0.3	0.2	0.2	–0.1	–0.1	0.0
Unemployment rate			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Military force level			–23.1	–23.1	–23.1	–23.1	–23.1	13.1	13.1	13.1
Nonagricultural establishment employment			0.4	0.3	0.4	0.2	0.2	–0.2	–0.2	–0.1
Nonagricultural private productivity			–0.3	–0.3	–0.5	–0.2	–0.2	0.2	0.2	0.3
GNP implicit deflator			–1.4	–0.9	–2.4	–0.8	–1.1	0.8	0.5	1.1
Federal surplus or deficit			274.2	–16.7	–1.9	([1])	([1])	([1])	12.9	3.0
Personal savings rate			0.0	0.0	3.5	3.5	3.5	0.0	0.0	–1.8
Corporate bond rate			–15.8	–3.2	–11.3	–5.3	–5.1	9.0	1.8	6.0
Real disposable personal income			–0.7	0.1	0.4	1.2	0.7	0.4	0.0	–0.2

[1] Not computable.

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

spending (low-defense 4 and 5). The major effect is to raise personal disposable income, and hence personal consumption spending, by increasing transfer payments, while allowing the Federal budget to shift from a $26 billion surplus in Base 2000 to a deficit in both of these alternatives. The redistribution of income from taxable sources to nontaxable transfers leads to revenue loss. Investment is virtually unchanged, as small declines in business spending are offset by increases in residential investment. Overall GNP is $14 billion lower in these alternatives than in Base 2000, as interest rates remain high, and there is no consequent boom in investment spending (table 1).

High alternatives. Allowing real defense expenditures to remain unchanged from their 1989 level, high-defense 1, puts defense spending approximately $36 billion higher than in the Base 2000 projection, but GNP rises by only $8.0 billion. The Federal deficit continues over the entire decade, ending up at $60 billion. The budget shortfalls exert more pressure on prices and interest rates, resulting in slower growth for both business and residential investment, lower export growth, and somewhat higher import growth, all offsetting the economic stimulus of high defense spending. Military force levels are 261,000 higher than the Base 2000 projection,

Table 3. **Industries with the most defense-related employment, 1988 and projected to 2000**

[Thousands of jobs]

Industry	1988	Projected 2000	Absolute difference	Percent change
Aircraft and missile engines and equipment	211.5	121.6	–89.9	–42.5
Radio and TV communications equipment	193.3	105.4	–87.9	–45.5
Wholesale trade	214.8	136.1	–78.7	–36.6
Aircraft	179.3	113.1	–66.2	–36.9
Construction	178.7	124.4	–54.3	–30.4
Trucking and warehousing	92.6	57.8	–34.8	–37.5
Guided missiles and space vehicles	135.0	102.6	–32.4	–24.0
Eating and drinking places	113.4	83.1	–30.3	–26.7
Ship- and boatbuilding and repair	100.9	71.3	–29.6	–29.3
Miscellaneous electronic components	59.1	32.7	–26.4	–44.7
Hotels and other lodging places	69.9	48.3	–21.6	–30.9
Research, management, and consulting services	143.4	125.7	–17.7	–12.3
Ordnance	51.8	34.6	–17.2	–33.2
Semiconductors and related devices	32.7	17.8	–14.9	–45.6
Miscellaneous nonelectrical machinery	31.5	18.4	–13.1	–41.6
All other industries	1,329.1	896.1	–433.0	–32.6

NOTE: 1988 is based on preliminary data.

reducing the labor force somewhat and leading to slightly lower private employment levels, especially in construction and durable manufacturing.

The higher Federal deficit is offset in high-defense 2 by a cut of Federal civilian purchases of goods and services and in high-defense 3 by an increase in personal taxes. The first alternative results in only very minor differences from the Base 2000 projection. In the second alternative, the higher personal tax rates reduce personal consumption and result in higher inflation and interest rates, as well as a less favorable foreign trade situation. Although GNP ends up slightly higher in this alternative compared to Base 2000, the costs are clear.

Military force levels. The armed forces stood at 2.1 million in 1988. The BLS moderate-growth projections to 2000 included a modest cut of 139,000 in personnel to slightly under 2 million. All of the low-defense alternatives result in a much sharper drop in military levels: 1.5 million or a cut of almost 600,000 from 1988. The resulting inflow of labor to the private sector increases the civilian labor force by almost 400,000 above the level of the moderate-growth projection. In the high-defense alternatives, holding real defense expenditures constant at 1989 levels actually results in a small increase in military force levels over the period, a rise of 120,000 to 2.2 million in 2000. The military increase in turn leads to a decline of 100,000 in the civilian labor force, compared to the moderate-growth labor force.

Although large relative to overall defense spending, the 4-percent annual reductions in 5 of the 8 alternatives remain relatively small proportions of aggregate U.S. demand. To explore the economic effects, it is necessary to carry the analysis further, to the industry and occupational level of detail.

Table 4. **Defense-related employment in industries that are the most dependent on defense spending, 1988 and 2000**

[Thousands of jobs]

Industry	1988	Projected 2000	Absolute difference	1988 percent share of total employment
Guided missiles and space vehicles	135.0	102.6	–32.4	87.2
Ordnance	51.8	34.6	–17.2	67.9
Aircraft and missile engines and equipment	211.5	121.6	–89.9	54.9
Ship- and boatbuilding and repair	100.9	71.3	–29.5	52.2
Aircraft	179.3	113.1	–66.2	48.8
Radio and TV communication equipment	193.3	105.4	–87.9	42.4
Engineering and scientific instruments	21.5	15.8	–5.7	22.7
Forgings	8.1	3.5	–4.6	21.4
Electronic tubes	6.9	3.1	–3.9	17.8
Research, management, and consulting services	143.4	125.7	17.7	17.7
Miscellaneous electronic components	59.1	32.7	–26.3	17.7
Miscellaneous transportation equipment	8.3	4.8	–3.5	13.5
Metal coating, engraving, and services	15.9	9.1	–6.8	13.1
Nonferrous foundries except aluminum	4.4	2.6	–1.8	12.9
Engines and turbines	11.8	6.4	–5.4	12.6

NOTE: 1988 is based on preliminary data.

Table 5. **Occupations with the largest decrease in defense-related employment, 1988–2000**

Occupation	Employment decline (thousands)
Electrical and electronic assemblers	21.6
Electrical and electronic equipment assemblers, precision	19.1
Machinists	14.0
Electrical and electronics engineers	14.0
Aeronautical and astronautical engineers	11.0
Electrical and electronics technicians and technologists	9.1
Production, planning, and expediting clerks	9.1
Mechanical engineers	7.7
Aircraft assemblers, precision	7.2
Machine tool cutting operators and tenders, metal and plastic	6.8
	Percentage decrease
Electrical and electronic assemblers	69.4
Electrical and electronic equipment assemblers, precision	69.0
Electronic semiconductor processors	54.3
Coil winders, tapers, and finishers	51.7
Machine builders and other precision machine assemblers	50.3
Electrolytic plating machine operators and tenders	49.1
Electromechanical equipment assemblers, precision	48.5
Heat treating machine operators and tenders, metal and plastic	47.4
Solderers and brazers	46.7
Machine tool cutting operators and tenders, metal and plastic	45.4

NOTE: Includes only occupations for which 1988 defense-related employment was over 10 percent.

Industry and occupational projections

The decline in defense expenditures in the original 1988–2000 BLS projections has been used to calculate future employment requirements for defense. When those calculations are performed, total defense-related employment is projected to drop by almost 20 percent between 1988 and 2000. Table 3 identifies those industries with the largest absolute declines in employment. While some industries are directly related to defense purchases, such as aircraft and missile engines and

equipment, others are indirectly related but provide jobs, such as wholesale trade. Table 4 shows the industries most dependent on defense spending in 1988, ranked by projected employment decline. This grouping includes only those industries directly related to defense, such as ordnance, ships, and aircraft.

Table 5 shows occupations with the sharpest projected defense-related declines in the original 1988–2000 projections. The table lists occupations prominent in defense production, such as electrical and electronic assemblers, machinists, electrical and electronic engineers, and mechanical engineers. Employment in all of the occupations examined and 11 of the 25 industries listed in table 6 is projected to decline in absolute terms from 1988–2000.

Employment alternatives

The employment impact under three of the economic alternatives is now examined in industry and occupational detail. For each alternative the following calculations are made: (1) demand GNP was translated into detailed commodity distributions of sales to final users; (2) total output estimates at both the commodity and industry level of detail were estimated based upon interindustry flows for 2000 from the previously published moderate-growth BLS projections and

Table 6. **Industries with largest percentage loss in employment due to alternative defense spending**

[Employment in thousands]

Industry	Base 2000	Percent change from Base 2000
	Low- defense 1	
Guided missiles and space vehicles	170.8	–16.6
Ordnance, except vehicles and missiles	65.8	–15.8
Ship- and boatbuilding and repairing	175.2	–11.0
Federal general government	1975.8	–10.1
Aircraft and missile engines and equipment	404.0	–8.3
Aircraft	385.9	–7.7
Radio and TV communication equipment	464.5	–6.0
Miscellaneous transportation equipment	51.6	–2.9
New nonbuilding facilities[1]	77.7	–2.8
Engineering and scientific instruments	125.8	–2.5
	Low-defense 5	
Guided missiles and space vehicles	170.8	–16.2
Ordnance, except vehicles and missiles	65.9	–15.6
Federal general government	1975.8	–10.1
Ship- and boatbuilding and repairing	175.2	–9.9
Aircraft and missile engines and equipment	404.0	–8.6
Aircraft	385.9	–8.6
Radio and TV communication equipment	464.5	–6.5
Engineering and scientific instruments	125.8	–5.6
Miscellaneous electronic components	360.5	–3.4
Forgings	29.5	–3.1
	High-defense 1	
Footwear, except rubber and plastic	70.7	–4.9
Watches, clocks, and parts	9.1	–2.9
Luggage, handbags, and leather products[1]	45.6	–2.8
Metal mining	50.7	–2.1
Electronic home entertainment equipment	71.0	–2.0
Jewelry, silverware, and plated ware	59.0	–1.9
Office and accounting machines	44.0	–1.8
Toys and sporting goods	101.4	–1.7
Crude petroleum, natural gas, and gas liquids	175.9	–1.4
Primary nonferrous metals, except aluminum	13.8	–1.3

[1] Not elsewhere classified.

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

Table 7. **Industries with largest percentage gain in total employment due to alternative defense spending**

[Employment in thousands]

Industry	Base 2000	Percent change from Base 2000
	Low-defense 1	
Footwear, except rubber and plastic	70.7	8.3
Watches, clocks, and parts	9.1	5.5
Luggage, handbags, and leather products[1]	45.6	4.8
Metal mining	50.7	3.7
Office and accounting machines	44.0	3.6
Electronic home entertainment equipment	71.0	3.4
Jewelry, silverware, and plated ware	59.0	3.4
New commercial buildings except offices	338.3	3.3
Toys and sporting goods	101.4	3.2
Primary nonferrous metals except aluminum	13.8	2.9
	Low-defense 5	
Footwear, except rubber and plastic	70.7	4.1
New conservation and development facilities	40.3	2.9
New roads	222.7	2.4
New local transit facilities	12.3	2.4
State and local government[1]	5538.7	2.4
State and local education	8275.6	2.4
State and local hospitals	1150.2	2.4
Luggage, handbags, and leather products[1]	45.6	2.2
New water supply and sewer facilities	141.2	2.2
New educational buildings	129.8	1.9
	High-defense 1	
Guided missiles and space vehicles	170.8	11.5
Ordnance, except vehicles and missiles	65.9	10.9
Ship- and boatbuilding and repairing	175.2	7.5
Aircraft and missile engines and equipment	404.0	6.0
Aircraft	385.9	5.5
Federal Government	1975.8	5.1
Radio and TV communication equipment	464.5	4.3
New nonbuilding facilities[1]	77.7	2.5
Miscellaneous transportation equipment	51.6	2.0
Engineering and scientific instruments	125.8	2.0

[1] Not elsewhere classified.

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

the foregoing GNP estimates; (3) the resulting industry output levels were then used to determine associated industry employment levels; and (4) the structure of occupational demand in 2000 was estimated. Defense Department expenditure distributions were patterned after the Base 2000 projection.

The effects of reduced defense spending on industry and occupational employment are viewed from two perspectives, the largest percent changes and the largest absolute differences. For industry employment, see tables 6 through 9 and for occupational employment, tables 10–13. The following discussion focuses on the employment changes associated with the low-defense 1 alternative. Generally, the apposite results and interpretations apply to high-defense 1. For example, employment rises 3.3 percent in construction and new commercial buildings, except offices, under the low alternative (table 6) but falls 3.7 percent under the high alternative (table 7).

Industry perspective. Turning first to the largest percentage job losers, we note those industries most heavily dependent upon direct defense spending, such as guided missiles and space vehicles; ordnance; ship- and boatbuild-

Table 8. **Industries with largest absolute loss in total employment due to alternative defense spending**

[Employment in thousands]

Industry	Base 2000	Difference from Base 2000
	Low-defense 1	
Federal Government	1,975.8	–200.0
Retail trade, except eating and drinking places	16,834.9	–169.2
Eating and drinking places	7,984.2	–51.1
Research, management, and consulting services	1,352.9	–33.9
Aircraft and missile engines and equipment	404.0	–33.7
State and local government education	8,275.6	–30.6
Aircraft	385.9	–29.9
Guided missiles and space vehicles	170.8	–28.4
Radio and TV communication equipment	464.5	–27.8
Personnel supply services	2,326.1	–27.7
	Low-defense 5	
Federal Government	1,975.8	–200.0
Aircraft and missile engines and equipment	404.0	–38.9
Aircraft	385.9	–33.1
Radio and TV communication equipment	464.5	–30.3
Guided missiles and space vehicles	170.8	–27.6
Research, management, and consulting services	1,352.9	–26.7
Ship- and boatbuilding and repairing	175.2	–17.3
Miscellaneous electronic components	360.4	–12.2
Ordnance, except vehicles and missiles	65.8	–10.3
Semiconductors and related devices	286.4	–6.8
	High-defense 1	
New nonfarm housing, single units	1,374.2	–8.7
Other agricultural products	1,290.2	–5.1
Agricultural services, forestry, fishing	1,228.4	–3.9
New commercial buildings, except offices	338.3	–3.7
Electronic computing equipment	454.2	–3.7
Apparel	746.0	–3.6
Footwear, except rubber and plastic	70.7	–3.5
New office buildings	327.0	–2.8
Motor vehicle parts and accessories	377.5	–2.7
Crude petroleum, natural gas, and gas liquids	175.9	–2.4

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

Table 9. **Industries with largest absolute gain in total employment, alternative scenarios regarding defense cuts in spending, 1988–2000**

[Employment in thousands]

Industry	Base 2000	Difference from Base 2000
	Low-defense 1	
New nonfarm housing, single units	1,374.2	14.1
New commercial buildings, except offices	338.3	11.2
Other agricultural products	1,290.2	10.3
New office buildings	327.0	8.8
Agricultural services, forestry, fishing	1,228.4	8.6
Electronic computing equipment	454.2	8.1
Real estate	1,843.5	7.0
Apparel	746.0	6.0
Footwear, except rubber and plastic	70.7	5.9
Crude petroleum, natural gas, and gas liquids	175.9	5.0
	Low-defense 5	
State and local government education	8,275.6	199.4
State and local general government[1]	5,538.7	133.5
Retail trade, except eating and drinking places	16,834.9	113.4
State and local government hospitals	1,150.1	27.7
Hospitals, private	4,252.0	17.4
Offices of health practitioners	3,176.0	11.4
New nonfarm housing, single units	1,374.2	11.2
Educational services, private	1,917.3	11.0
Apparel	746.0	8.5
Nursing and personal care facilities	1,926.1	6.8
	High-defense 1	
Federal Government	1,975.8	100.0
Retail trade, except eating and drinking places	16,834.9	88.5
Eating and drinking places	7,984.2	32.1
Research, management, and consulting services	1,352.9	24.5
Aircraft and missile engines and equipment	404.0	24.3
State and local government education	8,275.6	21.5
Aircraft	385.9	21.2
Personnel supply services	2,326.1	20.0
Radio and TV communication equipment	464.5	19.9
Guided missiles and space vehicles	170.8	19.6

[1] Not elsewhere classified.

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

Table 10. **Occupations with largest percentage loss in employment due to alternative defense spending**

[Employment in thousands]

Occupation	Base 2000	Percent change from Base 2000
	Low-defense 1	
Shipfitters	12.2	–15.0
Riggers	14.7	–8.9
Electronics repairers, commercial and industrial equipment	79.3	–8.9
Aircraft engine specialists	19.1	–8.8
Aircraft assemblers, precision	30.8	–8.7
Aeronautical and astronautical engineers	85.4	–7.3
All other motor vehicle operators	53.8	–6.8
Procurement clerks	46.6	–6.8
Budget analysts	72.0	–5.2
Aircraft mechanics	123.4	–5.1
	Low-defense 5	
Shipfitters	12.2	–14.1
Aircraft assemblers, precision	30.8	–9.6
Aircraft engine specialists	19.1	–9.0
Riggers	14.7	–8.8
Electronics repairers, commercial and industrial equipment	79.3	–8.7
Aeronautical and astronautical engineers	85.4	–7.8
Procurement clerks	46.6	–7.0
All other motor vehicle operators	53.8	–6.4
Aircraft mechanics	123.4	–4.8
Budget analysts	72.0	–4.7
	High-defense 1	
Shoe sewing machine operators and tenders	13.3	–4.1
Shoe and leather workers and repairers, precision	19.0	–3.0
Sewers, hand	13.7	–1.1
Fallers and buckers	16.4	–1.0
Log handling equipment operators	13.6	–0.9
Petroleum engineers	18.1	–0.8
All other timber cutters and related logging workers	15.2	–0.8
Logging tractor operators	25.4	–0.8
Chemical plant and system operators	27.6	–0.5
Cementing and gluing machine operators and tenders	35.8	–0.5

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

Table 11. **Occupations with largest percentage gain in employment due to alternative defense spending**

[Employment in thousands]

Occupation	Base 2000	Percent change from Base 2000
	Low-defense 1	
Shoe sewing machine operators	13.3	7.1
Shoe and leather workers and repairers, precision	19.0	5.1
Sewers, hand	13.7	1.9
Fallers and buckers	16.5	1.8
Log handling equipment operators	13.6	1.7
All other timber cutting and related logging workers	15.2	1.5
Logging tractor operators	25.4	1.5
Petroleum engineers	18.1	1.5
Chemical plant and system operators	27.6	1.2
Cementing and gluing machine operators and tenders	35.9	1.1
	Low-defense 5	
Shoe sewing machine operators and tenders	13.3	3.4
Shoe and leather workers and repairers, precision	19.0	2.6
Correction officers and jailers	262.2	2.1
Teachers, kindergarten and elementary	1,566.8	2.1
Teachers, special education	316.4	2.1
Teachers, secondary school	1,387.9	2.1
College and university faculty	868.9	2.1
Court clerks	51.3	2.1
Highway maintenance workers	190.2	2.1
Government chief executives and legislators	71.4	2.0
	High-defense 1	
Shipfitters	12.2	9.0
Aircraft assemblers, precision	30.8	6.2
Aeronautical and astronautical engineers	85.4	5.2
Aircraft engine specialists	19.1	4.8
Riggers	14.7	4.7
Electronics repairers, commercial and industrial equipment	79.3	4.6
Procurement clerks	46.6	3.5
All other motor vehicle operators	53.8	3.4
Budget analysts	72.0	2.9
Aircraft mechanics	123.4	2.7

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

ing; and aircraft. Significant job losses occur in the five most affected industries, with percentage losses tapering sharply in the other industries. The only industry among the biggest 10 job losers that may be unfamiliar is "new nonbuilding facilities." This industry covers a myriad of facilities: ports, military base road and rail systems, and missile silo systems, to name just a few.

Because military spending inherently affects certain industries, the list of job losers presents no real surprises. Other areas of the economy benefit from the reduction in defense spending, as the deficit improves (table 7). Increasing consumer demand results in significant employment increases in the manufacture of footwear; watches, clocks, and parts; luggage and handbags; electronic home entertainment equipment; jewelry and silverware; and toys and sporting goods. Increases in the demand for producers' durable equipment lead to significant employment increases in metal mining and in office and accounting machines. Finally, rising demand for commercial buildings leads to signif-

icant employment increases in construction and in primary nonferrous metal mining. Many other industries show similar but smaller positive effects from the defense spending cutback.

The industries with the largest percentage changes in employment are either those most closely related to the Defense Department or those with relatively low employment levels. In the latter case, even a small change in employment can significantly alter the overall level. Another perspective is to examine the industries with the largest absolute changes in employment. The industries selected tend to show small percentage changes in employment.

However, a few categories also show large percent changes—Federal Government; aircraft and missile engines; aircraft; guided missiles and space vehicles; and radio and TV communication equipment. Perhaps more interesting, though, are those industries or activities which undergo relatively large job losses but which are generally not readily associated with defense spending: retail trade; eating and drinking places; research, management, and consulting

Table 12. **Occupations with largest absolute loss in employment due to alternative defense spending**

[Employment in thousands]

Occupation	Base 2000	Difference from Base 2000
	Low-defense 1	
Sales persons, retail	4,393.8	–41.9
All other clerical and administrative support workers	644.7	–24.7
Accountants and auditors	1,055.6	–23.3
Cashiers	2,583.0	–22.2
Janitors and cleaners, including maids and housekeeping cleaners	3,194.4	–19.6
Typists and word processors	892.2	–17.8
All other sales and related workers	4,368.0	–16.9
General managers and top executives	3,508.7	–15.8
Computer systems analysts	569.9	–15.8
Stock clerks, stockroom, warehouse, or yard	839.7	–14.9
	Low-defense 5	
All other clerical and administrative support workers	644.7	–18.1
Accountants and auditors	1,055.6	–17.3
Computer systems analysts	569.9	–14.4
Electrical and electronics engineers	603.7	–11.1
Stock clerks, stockroom, warehouse, or yard	839.7	–9.4
Typists and word processors	892.2	–8.7
Machinists	428.1	–8.1
Inspectors, testers, and graders, precision	630.8	–6.9
Electronics repairers, commercial and industrial equipment	79.3	–6.9
Aeronautical and astronautical engineers	85.4	–6.7
	High-defense 1	
Sewing machine operators, garment	519.5	–2.2
Farm workers	674.8	–1.6
Textile draw-out and winding machine operators and tenders	194.5	–0.9
Shoe and leather workers and repairers, precision	19.0	–0.6
Shoe sewing machine operators and tenders	13.3	–0.6
Head sawyers and sawing machine operators and tenders	80.3	–0.4
Farm operators and managers	160.0	–0.4
Machine feeders and offbearers	216.7	–0.3
Plastic molding machine operators and tenders	176.0	–0.3
Supervisors, farming, forestry, and farm-related occupations	76.8	–0.2

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

Table 13. **Occupations with largest absolute gain in employment due to alternative defense spending**

[Employment in thousands]

Occupation	Base 2000	Difference from Base 2000
	Low-defense 1	
Farm workers	674.8	3.6
Sewing machine operators, garment	519.5	3.5
Textile draw-out and winding machine operators and tenders	194.5	1.6
Helpers, construction trades	630.6	1.4
All other assemblers and fabricators	971.9	1.4
Shoe sewing machine operators	13.3	1.0
Shoe and leather workers and repairers, precision	19.0	0.9
Plastic molding machine operators and tenders	176.0	0.9
Machine feeders and offbearers	216.7	0.9
Farm operators and managers	160.0	0.8
	Low-defense 5	
Teachers, kindergarten and elementary	1,566.8	32.7
Teachers, secondary school	1,387.9	28.9
Salespersons, retail	4,393.8	28.0
College and university faculty	868.9	18.1
Registered nurses	2,164.2	15.6
Teacher aides and educational assistants	827.2	14.1
Cashiers	2,583.0	13.6
All other teachers and instructors	879.2	12.6
General office clerks	2,958.5	12.5
Secretaries, except legal and medical	3,216.3	12.2
	High-defense 1	
Salespersons, retail	4,393.8	22.2
Janitors and cleaners, including maids and housekeeping cleaners	3,194.4	13.8
All other sales and related workers	4,368.0	13.2
All other clerical and administrative support workers	644.7	13.2
Accountants and auditors	1,055.6	13.0
Cashiers	2,583.0	12.2
General managers and top executives	3,508.7	11.5
Secretaries, except legal and medical	3,216.3	10.4
Typists and word processors	892.2	10.2
General office clerks	2,958.5	9.9

NOTE: Base 2000 is the moderate-growth projection for 2000 originally published by BLS in November 1989.

Monitoring defense employment

In addition to estimating the employment implications of alternative projections of defense spending, the Bureau of Labor Statistics has several efforts under way to monitor the effects of current employment changes in defense spending. These initiatives draw upon a variety of Government programs providing employment and unemployment statistics.

The BLS Current Employment Statistics program, which produces monthly industry employment estimates, has developed a special series to measure employment in industries that rely on defense outlays for a majority of their shipments. This monthly series is available from 1982 forward.

A joint Department of Commerce and Department of Labor study, published in the August 1987 *Monthly Labor Review*, identified defense-dependent industries using an input-output model at the four-digit level of the Standard Industrial Classification. Those industries with at least 50 percent of output produced for defense purposes during 1985 were included in the defense-dependent series. Industries meeting this criterion were ordnance and accessories, radio and TV communication equipment, aircraft and parts, shipbuilding and repairing, guided missiles and space vehicles, and tanks and tank components.

Employment in these six industries cannot be viewed as an exact measure of the number of jobs generated by defense spending. For one thing, many jobs are in industries that do not meet the 50-percent criterion. By the same token, many jobs in defense industries stem from the production of civilian goods. With careful interpretation, however, the series can be used to approximate the effect of defense spending on payrolls, particularly over the longer term.

The series shows that employment in the six defense industries continued to decline even after the recession of 1981–82, touching a low point in April 1983. Job growth was vigorous during the next 3½ years, however, as employment expanded by 250,000, reaching a peak in October 1986. Employment then declined gradually and as of mid-1990, the number of jobs in these industries had fallen by almost 85,000.

The BLS Mass Layoff Statistics program is also a source of information on worker dislocation in defense industries. BLS collects quarterly reports on plant closings and layoffs involving at least 50 persons and lasting 30 days or longer. A review of reports from the 44 States participating in the survey during 1989 found that defense industries reported 77 layoffs involving 16,000 workers. In 28 layoffs, employers cited slack work as the reason for the action. Contract completion was cited in 17 layoffs, while shortage of materials and contract cancellation accounted for five each. While these data should only be used as a proxy for the level of defense layoffs, they illustrate the impact of procurement cutbacks.

In addition, BLS has asked cooperating State agencies to assign a special "reason for layoff" code for defense-related employment cutbacks in any industry. The first reports incorporating this information were received in May. BLS also has added special comment codes to the Current Employment Statistics program to identify employment changes that reflect cutbacks or increases in defense spending. These steps are expected to aid in the analysis of current defense-related employment and layoffs.

Data derived from the BLS program (ES–202), covering establishments included in the unemployment insurance system, are being analyzed to identify local areas with relatively high concentrations of defense employment. As such areas are identified, they may be more intensively tracked through the BLS local area unemployment statistics program.

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services; State and local education; and personnel supply services. The job losses in these categories are small in percentage terms but add up to almost 313,000 jobs, a not insignificant total. But the projected decline in defense-related employment does not produce absolute declines in these industries.

Turning to the largest absolute job gains, we note that increases in demand lead to increasing employment in the construction of commercial

buildings and office buildings, as well as real estate—an overall increase of 42,000 jobs. An upturn in demand for producers' durable equipment creates 8,000 jobs in the electronic computing equipment industry. Employment in the remaining industries rises as a result of increasing consumer demand.

Occupational perspective. Just as the industries with the largest percentage of job losses are readily predictable, so too are those occupations with the largest percentage of cuts. Of the top 10 losers, 8 occupations are heavily and directly involved with the design, production, maintenance, or use of military hardware: shipfitters; riggers; electronics repairers; aircraft engine specialists; aircraft assemblers; aeronautical and astronautical engineers; all other motor vehicle operators; and aircraft mechanics. The two remaining occupations, procurement clerks and budget analysts, are heavily represented in the Defense Department.

Occupations with the largest percentage of employment gains tend to be in industries serving burgeoning consumer demand and demand for construction. For the most part, these occupations are in relatively labor-intensive, low-productivity areas of the economy. Further, as with industry employment, relatively few people work in these occupations, although job increases are large from a percentage point of view.

Looking at those occupations with the largest absolute losses, we tend to see support workers such as sales persons, clerical staff, and general management—occupations employed across many industries and likely, as a result, to change in line with employment.

Finally, occupations with the largest absolute job gains are relatively widespread, with no occupation accounting for a very large increase. Most of the gainers are in occupations serving the increase in demand for consumer goods and investment demand.

Table 14. **The effects of deeper cuts in conventional defense spending, by industry, 1988–2000**

Industry	Millions of 1982 dollars
Total cuts	–5,400
Fabricated structural metal products	–100
Ordnance, except vehicles and missiles	–1,000
Miscellaneous fabricated metal products	–100
Engines and turbines	–400
Ship- and boatbuilding and repairing	–1,000
Miscellaneous transportation equipment	–400
Petroleum refining	–1,600
Noncomparable imports	–800
Total increases	+5,400
Electronic computing equipment	+800
Office and accounting machines	+100
Radio and TV communication equipment	+900
Electronic tubes	+40
Semiconductors and related devices	+60
Miscellaneous electronic components	+200
Aircraft	+400
Aircraft and missile engines and equipment	+400
Guided missiles and space vehicles	+1,400
Engineering and scientific instruments	+100
Measuring and controlling devices	+100
Optical and ophthalmic products	+100
Computer and data processing services	+400
Research, management, and consulting services	+400

Alternative spending cutbacks

As noted, it was assumed that cuts in defense spending would affect all types of defense purchases in the same proportions as in the *Outlook 2000* projections. The final step of this analysis examines alternative approaches to cuts among purchases of commodities with the concomitant effects on industry employment and occupational demand. Two variations of the low-defense 1 alternative were developed: cuts aimed more at conventional defense spending (alternative-distribution 1), and cuts aimed more at high-technology and research and development spending (alternative-distribution 2).

In both cases, modifications were made to the low-defense "bill-of-goods," that portion of GNP spent by the Defense Department and distributed by the commodities purchased. The redistributed GNP was then used to derive total industry and commodity output estimates, and both employment and occupational estimates were derived. The results appear in table 15 as percent changes from the low-defense 1 alternative. The effects of cuts in high-tech purchases are the opposite of those listed in table 15.

Forcing the cuts into more conventional areas such as ships and ordnance has a positive impact on employment in industries supplying strategic weapons and much of the electronics associated with such weapons. (See table 15.) Not surprisingly, highly skilled professional and technical occupations also benefit. (See table 16.)

Redirecting cuts into high-tech weaponry leads to some increases in the more traditional defense industries—ship- and boatbuilding and ordnance, along with the manufacturing sector industries which support these industries. This alternative has the further effect of raising demand for the less-skilled technical, construction, and manufacturing occupations related to these industries.

Table 15. **Industries with largest total employment percentage gain due to various defense cuts in spending**

[Employment in thousands]

Industry	Percent increase from low-defense 1	
	Number	Percent
	Conventional cuts	
Guided missiles and space vehicles	142.4	7.2
Radio and TV communication equipment	436.7	1.6
Engineering and scientific instruments	122.6	1.5
Electronic tubes	32.0	1.6
Miscellaneous electronic components	359.3	1.4
Aircraft and missile engines and equipment	370.3	1.3
Aircraft	356.0	1.1
Office and accounting machines	45.6	0.9
Optical and ophthalmic products	74.9	0.8
Semiconductors and related devices	289.8	0.7
	High-tech cuts	
Ship- and boatbuilding and repairing	155.9	20.7
Ordnance, except vehicles and missiles	55.4	15.0
Miscellaneous transportation equipment	50.1	5.4
Engines and turbines	76.9	2.5
Crude petroleum, natural gas, and gas liquids	180.9	0.9
Petroleum refining	105.8	0.7
Pipelines, except natural gas	18.9	0.5
Miscellaneous fabricated metal products	223.7	0.4
Fabricated structural metal products	412.9	0.3
Blast furnaces and basic steel products	244.9	0.2

Table 16. **Occupations with largest employment percentage gain, alternative scenarios regarding cuts in defense spending**

[Employment in thousands]

Occupation	Percent increase from low-defense 1	
	Number	Percent
	Conventional cuts	
Aeronautical and astronautical engineers	79.2	1.8
Aircraft assemblers, precision	28.1	1.6
Electronic semiconductor processors	33.8	1.1
Electromechanical equipment assemblers, precision	52.3	0.8
Electrical and electronic equipment assemblers, precision	89.3	0.8
Electrical and electronic assemblers	133.3	0.6
Electrical and electronics engineers	596.4	0.5
Industrial engineers, except safety engineers	152.3	0.5
Coil winders, tapers, and finishers	20.6	0.5
Electrical and electronic technicians	466.3	0.4
	High-tech cuts	
Shipfitters	10.4	16.7
Riggers	13.4	5.5
Painters, transportation equipment	32.8	2.0
Welders and cutters	283.0	1.0
Petroleum engineers	18.4	0.6
Grinders and polishers, hand	73.4	0.8
Boilermakers	24.6	0.7
Gas and petroleum plant and system occupations	22.4	0.5
Painting, coating, and decorating workers, hand	35.1	0.8
All other electrical and electronic equipment mechanics	54.4	0.8

IN SUMMARY, the Bureau has explored several alternatives for future defense spending, in aggregate economic terms and in terms of employment in specific industries and occupational groups. Although the effects tend to be relatively minor at the aggregate level, they may be significant in certain industries and occupations most closely tied to the Department of Defense. While those industries and occupations may suffer from significant defense spending cutbacks, other industries and occupations may improve as a result of offsetting economic factors.

Further efforts could fruitfully be aimed at the estimation of regional effects of defense spending cuts,[4] or by estimating the employment and occupational effects of more narrowly defined cuts.[5] At this point, both the extent and timing of any possible cuts in defense spending are unknown. When the first round of budget-making for the 1990's defense establishment is completed, more narrowly defined approaches might be feasible. □

Footnotes

[1] "Outlook 2000," *Monthly Labor Review*, November 1989, pp. 3–74. This series of five articles on the BLS projections to 2000 outlines the shape of the economy and detailed labor supply and demand.

[2] The estimate of defense-related employment in 1988 was derived by multiplying a 1988 employment-requirements matrix by a detailed vector of Defense Department commodity purchases. An employment-requirements matrix shows the direct and indirect employment in all industries generated by $1 of final production and is derived from a detailed total-requirements input-output matrix and similarly detailed estimates of total industry employment for the year in question.

[3] The initial calculations for each scenario assumed only the change noted in defense spending in order to determine the sensitivity of the aggregate economic model to these changes alone. The aggregate economic projections of the Bureau of Labor Statistics are performed in the context of Data Resources, Inc., Long Term Model of the U.S. Economy. For a full description of the model, refer to "The DRI Annual Model of the U.S. Economy," by Joyce Yanchar, in *Data Resources U.S. Long-Term Review*, Winter 1986–87, pp. 30–43.

[4] This type of regional analysis was presented in "The Peace Economy," *Business Week*, Dec., 11, 1989, pp. 50–55.

[5] For an example of these types of studies, which are just now beginning to appear, see *Budgetary and Military Effects of a Treaty Limiting Conventional Forces in Europe*, a Special Study of the Congressional Budget Office, January 1990.

An experimental price index for the computer industry

A pilot study begun in 1987 produced a new price index for computer industry products; chief among the study's findings was that resampling would have to be done over a much shorter time period than the 5 to 7 years now in force for industries covered by the Bureau's existing Producer Price Index

James Sinclair
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Recently, the Bureau of Labor Statistics' monthly periodical, *Producer Price Indexes*, began publication of experimental price indexes for the computer industry. Publication of this material was an outgrowth of a pilot study initiated in 1987. The goal of the study was to test a number of different quality adjustment methodologies for developing constant-quality price indexes for the computer industry in an operational environment. More specifically, the project sought to measure the cost improvements embodied in computers and computer peripheral equipment and to develop a methodology for excluding the cost of the improvements from reported prices.

Price indexes should measure only pure price changes and not include the cost of any embodied technological changes. The normal Producer Price Index (PPI) quality adjustment methodology, by itself, was not flexible enough to measure quality improvements in an industry with steadily declining prices. Thus, a new approach was required.

Once the results of the pilot study were evaluated and incorporated into an operational methodology, calculation of comprehensive computer product indexes could begin. This permitted the publication of the experimental index, with its base period beginning in October 1988, in the August issue of *Producer Price Indexes*. This article presents an overview of the experimental computer price index.[1] After discussing how quality adjustment is measured in the PPI program, the article focuses on the level of detail selected for publication purposes, sampling and weighting issues, and the quality adjustment methodology that was ultimately selected. Finally, the current status of the experimental index is examined, together with some economic and statistical issues surrounding it.

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Measurement of PPI quality adjustment

Theoretically, Laspeyres (fixed-input/output) price indexes measure pure price changes for a fixed production mix. In reality, however, many products seldom remain the same over time. Products are always being discontinued, modified, or replaced. The challenge of calculating continuous price indexes in the face of these product dynamics can be met by what we generally refer to as *quality adjustment.*

Quality adjustment in the PPI occurs in three stages. First, the physical changes in the product being priced must be identified. Second, a characterization must be made for each change as to whether it is an improvement or a deterioration, or whether no change in quality has arisen. Finally, each modification that affects cost or functionality must be evaluated in dollar terms.

Because the most appropriate adjustment procedure is critical, four different quality adjustment approaches were investigated during the pilot study. The composite quality adjustment methodology finally selected for the experimental

index blended three specific procedures: The standard PPI resource cost adjustment approach, the implicit regression adjustment approach, and the PPI "cell relative" approach for missing prices. A more detailed explanation of these procedures and how they are applied is given later in the article.

A priori arguments have been made that the PPI indexes have an upward bias due to the absence of accurate quality adjustment information in technologically sophisticated industries. To overcome any such bias, the standard resource cost adjustment approach used in the PPI was the first attempt to value modifications made on selected computer specifications. To implement this approach, a decision strategy for quality adjusting substitute products must include information from computer manufacturers regarding the resource cost estimate (the fixed cost of overhead, costs that vary with output, and any return to the investor—that is, profit) of any improvements or deteriorations. This estimate should reflect the differences in the amounts and kinds of labor and material inputs used in the production of the old and new product. The marginal change in cost is based on "the cost differences in inputs under the cost structure and technological regimen that existed at the time of introduction of the new variety."[2]

The basic underlying assumption of the standard PPI procedure for quality adjustment is that rising resource costs indicate an improvement in quality. Conversely, if resource costs decline, the product's attributes are assumed to be diminishing in quality. Further, if resource costs change for a new product, it must be determined whether the change is in any way a consequence of the product's ability to function differently.[3] As an example in the area of automobiles, the quality changes for which adjustments will be made include "those structural and engineering changes which affect safety, reliability, performance, durability, economy, carrying capacity, maneuverability, and/or comfort and convenience."[4] However, situations arise whereby the manufacturer cannot determine the resource cost of the improvements—for example, when there is a lack of communication of information between engineers and pricing departments, or when there are survey burden requirements. In these instances, the PPI resource cost quality adjustment approach assumes that the entire change between the old and new product is related to quality. The resultant index level then remains unchanged.

Operationally, this selected approach used in the PPI is referred to as a *link to show no change*. Here, the new product is substituted for the old one (after ascertaining that the old product is no longer being manufactured or shipped), and the index level remains the same. In a competitive environment with very sophisticated products, this procedure would introduce an upward bias into an existing index because it would fail to capture the improvement in quality embodied in the new product.

In capital-intensive industries, the majority of the quality improvements are associated with resource cost increases. For those areas in which resource costs and functionality decline, resource cost savings are reported to the Bureau, and prices are adjusted accordingly. However, the computer industry is one of a few exceptional cases. Marked by tremendous improvements in quality at lower costs, it required a better yardstick to value these improvements.

Publication structure

We focused our analysis on product types within the fairly ambiguous classes of machines labeled microcomputers, midsized computers, and large computers. The usual guide for BLS index structures is the Bureau of Census product classifications. Table 1 shows MA35R(87)–1[5] breakdowns for electronic computers, Standard Industrial Classification (SIC) code 3571. From the table, it is plain that dollar values in this industry are not appropriate definers for price index series. Rather, a stable product definer was needed that did not fluctuate with market conditions. For example, midlevel machines,

Table 1. **Value of shipments of electronic computers, SIC 3571, 1987**

[Value in thousands of dollars]

Product code	Product description	Value of shipments
35711	Computers, complete except parts (nonretail)	$23,261,842
	General-purpose computers	
	Digital:	
35711 01	Less than $500 (retail price)	275,532
35711 02	$500 to $1,000 (retail price)	354,833
35711 03	$1,000 to $2,500 (retail price)	2,123,875
35711 04	$2,500 to $5,000 (retail price)	5,019,345
35711 05	$5,000 to $15,000 (retail price)	1,473,348
35711 06	$15,000 to $50,000 (retail price)	3,360,006
35711 07	$50,000 to $250,000 (retail price)	2,770,430
35711 08	$250,000 to $1 million (retail price)	2,639,284
35711 09	Over $1 million (retail price)	1,973,604
35711 22	Analog	14,620
35711 25	Hybrid	
	Special-purpose computers	
35711 31	Digital	2,462,140
35711 32	Analog	704,825
35711 33	Hybrid	
35711 35	Computers kits to be assembled by purchaser	

often referred to as "minis," had declining prices and were crossing into the high-end "workstation" dollar categories. Based on the competitive conditions in the computer market, the composition of the products that fall into the various categories is always in flux. In addition, if a substitution were required due to product obsolescence, the substitute product's price would probably be different from the base-period product's price. If this were the case, the rule for properly classifying the new product into a specific dollar category would have to be very specific and consistent.

The quality adjustment methodology selected for the experimental index blended three procedures.

The question then arises as to what is a reasonable pricing structure for publication purposes. Both trade and popular press reports provide guidance in the microcomputer area. The personal computer classes, dominated by machines that work alike, or "clones," use the Microsoft/IBM operating system. This system software was originally designed for 16-bit processors from Intel, namely, the 8088 and the 8086. These machines, along with the MS/DOS operating systems, set the standards for hardware and software that still dominate the personal computer market today.

However, there was a significant market for other, more powerful machines. These were most often designed around a 32-bit Motorola 68000 family microprocessor and used a different operating system, usually a Unix derivative. Users of these machines often required multitasking or communication capabilities not possible with the aforementioned 16-bit hardware/software combination. Thus, the different user needs were answered with different hardware/software solutions.

Given the aforementioned considerations, the breakdown selected for the experimental computer indexes was by wordsize, specifically, 16-bit wordsize microcomputers, 32-bit wordsize microcomputers, and computers with a greater than 32-bit wordsize. The only categories we excluded were the rapidly growing laptop computers and the aging 8-bit wordsize computers. We avoided 8-bit wordsize microcomputers for both the pilot and experimental phases, as these mature products would not have provided a rigorous test for our new quality adjustment procedures and are a very small portion of the overall industry. On the other hand, an attempt to include laptops in our resampling efforts for the experimental index will take place for the new sample of products in October 1990. We further categorized processor type where applicable. The implications here are that some parameter estimates are significantly different between the Intel and Motorola classes of processors. Thus, separate modeling efforts would improve the estimated coefficients' quality. Publication and sampling strategies would naturally flow around all these divisions.

Selected methodology

In the absence of information from primary sources, it was our intention to determine cost estimates of product differences in a regression environment that could be made operational inside the PPI. We utilized regression coefficients derived from cross-section estimation equations for the valuation of technological improvements and deteriorations.

Regression analysis is a search for functional relationships among different variables. These relationships are expressed mathematically in the form:

$$Y = b_0 + b_1X_1 + b_2X_2 + ... + b_nX_n$$

The dependent variable Y is the price of a specific computer product. The estimated coefficients b_i represent the change in Y for each unit change in their respective independent variable. The X_i's are the various price-determining or functional characteristics. They may be continuous or discrete dummy variables (0 or 1). The regression coefficients are applied only when product substitution occurs and the manufacturer cannot quantify the improvements in terms of resource cost. For example, if product A is replaced by product B and the marginal change is an increase of two megabytes in main memory, an obvious improvement, the regression coefficient for that computer characteristic within a specific publication category may estimate the dollar value at $925.00. This implicit estimate of the embodied technological change is then deducted from the reported price, leaving a measure of pure price change for the good valued at its base-period capabilities.

The modeling efforts toward developing these implicit prices, just as in the pilot approach, were separated into two phases with respect to data collection: The prefieldwork phase and the postfieldwork phase. The prefieldwork phase provided the basis for sampling decisions, a publication structure, and familiarization with the product. Further, a general sense of how strongly performance characteristic levels influenced the price of a computer was investigated. The postfieldwork regression analysis pooled the secondary-source data base purchased from the GML Corporation[6] with our collected data. We used a dummy variable to differentiate the collected observations from the secondary-source data base.

The methodologies tested separately during the pilot study were ranked into a composite quality adjustment methodology for the published experimental index. Each quality adjustment methodology employs certain strengths. Ostensibly, the composite quality adjustment methodology gives the index maker a measure of freedom

among possible alternatives in allowing for modifications in existing specifications. When the PPI resource cost methodology declined in usefulness due to the lack of reliable estimates by the reporter, the regression adjustment estimates were employed. If the regression model did not specify the specific characteristic that changed in the product, we linked to show no change. This composite methodology is best explained by a decision tree:

(A) When a substitute product is available:

(1) Apply producer cost data gathered from the manufacturer;

(2) If producer cost information is not available, use the regression adjustments for valuing the improvement or deterioration in the product; and

(3) If a quality valuation is unavailable from the two previous methods, apply the PPI link-to-show-no-change procedure.

(B) When a substitute is not available, default to the cell-relative procedure.

The procedure described under (A)(3) was used when manufacturers' estimates were lacking and the new substitute item had a characteristic change not specified by the model. In these instances, we applied the PPI link-to-show-no-change procedure if cost adjustments were missed, or we directly compared the prices between the two products if the change had no effect on resource costs.

The decision rule indicated in (B) applies to products that have been dropped from production, are no longer shipped, and have no substitute. In prior years, the PPI program had two procedures for estimating missing prices when reporters were late or delinquent. One procedure simply held the missing price unchanged from its previously reported value, clearly entering a bias of unknown direction, and was dropped from the PPI. The other procedure used the remaining prices of similar products as a proxy for movement of the missing price. This procedure is referred to as the "default estimation method" or "cell-relative method" and was implemented as policy in January 1984. It was felt that the method would have the "least negative impact on the index" and that it should be used when the industry analyst had no further information as to how the price should move. For example, if there were four products in a cell (the most detailed aggregation of published BLS indexes), and one product was no longer manufactured and shipped, the remaining products in the cell would act as the proxy for price movement of the missing product. Other things being equal, the assumption is that substitute products move similarly.

Experimental index sample design

During the pilot phase of the project, we needed a sample of products that would provide a robust test of the various quality adjustment procedures under consideration. It was felt that the competitive nature pervading the microcomputer market would result in frequent model changes. This view was based on our expectation that high-performance systems would have longer development cycles, compared to those of "off-the-shelf" microcomputers, but would then also have a longer market life to recoup their greater development costs. Another rationale for focusing on microcomputers during the pilot phase was that larger computers have a much lower sales volume, potentially making observed transactions more difficult to price. However, for the experimental phase, almost all types of computers were included for measurement.

Attention should be focused on the reporting unit that will ultimately provide the detailed information on products and prices used for calculating indexes. Ideally, the manufacturer selected should have the records necessary to clarify any questions concerning the products included for index calculation. Under the normal sampling strategy used in the PPI program, every potential sampling unit must be given a chance of being selected. To accomplish this objective, a sampling frame must be established that identifies every potential *domestic* manufacturer and provides a measure of size for selecting samples. Because the pilot and experimental indexes were test cases, it was decided that only part of the PPI sampling strategy would be followed, thereby saving time and resources in the research. Normally, sample weights are developed by determining a unit's probability of being selected and a measure of its size (revenue). The measure of size we used was the selected company's value of shipments for the most recent fiscal or calendar year. The unit's probability of being selected, as such, was not used, because our original sample was judgmental in this regard. We therefore asked for four quotes on products from all companies selected that had revenues of less than $10 million, six quotes from companies that had revenues from $10 million to $100 million, and eight quotes from companies that had revenues of more than $100 million, for the latest time period. This distribution of quotes determined the weights for the products within the individual companies selected for

The computer industry required a better yardstick to measure improvements in quality and lower costs.

our experimental index. These weights are referred to as *item weights* and are given by:

$$I_i = 1/U_i \times VOS_i$$

where:

I_i = Item weight for reporting unit i;
U_i = Number of quotes attempted for reporting unit i; and
VOS_i = Dollar amount of reporting unit's shipments and receipts.

An issue that plagued the project from its inception: when is a computer a computer?

The sampling frame normally used for the PPI program is the Unemployment Insurance (UI) file that identifies domestic establishments that have three or more employees by specific industry, according to the Government's Standard Industrial Classification. The 1972 definition for computers when we began this project was described by SIC 3573, "Electronic Computing Equipment." Unfortunately for our purposes, this 1972 classification structure was all-encompassing in that not only were computers included, but so were storage devices, terminals, magnetic disks, and other peripheral equipment. Consequently, we had to refine the sampling frame to include only those companies dedicated to the manufacture of computers, as identified in the 1987 revised SIC 3571, "Electronic Computers."[7]

In addition to having the UI file combined under the 1972 definition, it was not current enough to select sampling units without augmentation and updating. The time lag in the UI file is approximately 2 years. Therefore, we felt that because the computer industry is replete with rapid exit and entry of firms, we would have to use a more current sampling frame. A GML data file was purchased that apparently had more current information on "microcomputer" companies. For companies that manufactured larger computers, we contracted with GML to provide company-name list prices of characteristics for these domestically manufactured products. We then cross-verified the UI file against the GML data and stratified by domestic manufactures. This gave us our target frame by which to select individual companies.

The normal PPI sampling strategy selects units by ascribing to them a probability proportional to their size. The unit of measure for selecting samples included the number of employees in each establishment. The larger the number of employees in a given firm, the greater was the probability of selecting that firm. Because our research was a test case, we decided to use judgment in the selection of companies for our sample. We knew that by injecting judgment into the selection process, we could not say how statistically representative our sample was of the true population of computer companies. However, we attempted to gain cooperation from as many companies as we could among those already in our PPI program, as well as those never previously contacted. We were pleased to gain the cooperation of 33 computer manufacturers for our experimental index.

The relative importance of the items selected (and their price changes) to one another is highly significant in determining an accurate price index. Not only must weights be developed in the sampling process that proportion items within companies, but they must also be determined for companies within cells. For example, in table 2, "3571–B21—80000 series microprocessor based" is considered a cell.

The cell weights are usually determined from Census Bureau information for individual categories. These weight determinations are needed if one wants to aggregate upward to a less detailed published category. For example, in table 2, "SIC 3571–General-purpose digital computers" is an aggregate of everything under this category. Unfortunately, the Census of Manufactures breakdowns were of little help to us, because they only identified digital, compact, and other computers. Also, the publication *Current Industrial Reports*[8] distinguished categories of computers by dollars, again something that was not very useful to us. As previously discussed, even though the dollar categories listed were by definition mutually exclusive, computers can cross these categories almost monthly because of price changes. Further, identical central processing units sold with different combinations of peripheral devices would be classified into different categories. Once we decided on the cell definitions we would publish, we took the overall dollar weight for SIC 3571 as defined in the 1987 *Current Industrial Reports* and apportioned this weight into our cell categories using a secondary source, namely, the International Data Corporation.[9] This company uses classifications for the industry that are labeled PC, midrange, and large computers.

Definitional and related issues

An issue that plagued the project from its inception was, When is a computer a computer? We asked this question of industry representatives, trade associations, and Government agencies. As anticipated, no uniform response was forthcoming. Some suggested that the proper level of aggregation would be "boards." Others felt that the "box" or processor was the appropriate measure. Still others suggested that the "system" was the key measure because computers are sold as such. (Systems may include a processor, display, keyboard, some storage, and an operating system.) We incorporated the ques-

Table 2. **Experimental price indexes and percent changes for the computer industry**

[October 1988 = 100]

Industry and product	Unadjusted Index			Unadjusted percent change, 12 months ending July 1990
	Code	April 1990	July 1990	
General-purpose digital computers	3571	80.4	79.5	–12.4
16-bit wordsize computers	3571–A	72.5	70.8	–19.5
8000 and 80000 series microprocessor based	3571–All	72.2	70.6	–19.7
Other 16-bit wordsize computers	3571–A12	97.6	94.4	–6.6
32-bit wordsize computers	3571–B	87.7	87.1	–7.7
80000 series microprocessor based	3571–B21	76.6	74.4	–18.2
68000 series microprocessor based	3571–B22	87.5	87.5	–7.6
Other 32-bit wordsize computers	3571–B23	94.8	94.7	–1.7
Greater than 32-bit wordsize computers	3571–C	84.8	84.5	–6.6

tion into a pretest interview with a number of manufacturers and asked them how they sold their computers to customers. The predominant form in which the computers were sold was as a system. There were exceptions, however, especially as the computer approached the traditional mainframe configuration. In these cases, we accepted the vernacular used by manufacturers in describing a computer. Usually, this meant that the computer consisted solely of a processor with no storage or operating system, items that were considered extras and purchased separately. As a result of the manufacturers' answers to the key question posed during the interview, the predominant form under which a computer was sold for the purposes of our experimental index included the processor, both main and auxiliary memory, and other peripherals.

The validity of an index is inextricably connected to the type of price the index is supposed to measure. For the PPI program, the preferred price is defined as "the net revenue accruing to a specified producing establishment from a specified kind of buyer for [a] specified product shipped under specified transaction terms on a specified day of the month."[10] Emphasis is placed on the prices charged for items shipped in the same month, rather than "orders" or "futures" prices. Further, a distinction must be made between "list" or "book" prices and net transaction prices. The Bureau has always asked for net transaction prices, because it is felt they are a more realistic indication of what is really occurring in the marketplace: "BLS emphasizes . . . the need for reports of realistic transaction prices, including all discounts, premiums, rebates, allowances, etc., rather than fictitious list or book prices. The use of list prices in the industrial price program has been the exception, not the rule."[11] More specifically, even before the transition to the current industry-focused methodology of the PPI, a BLS survey concluded that approximately 20 percent of the traditional commodity indexes were based on list prices. Since that time (1978), the percentage most probably has declined due to more accurate reporting and a more concerted effort by BLS data collectors to collect the price of the net shipment.

We adhered strictly to the above methodology during both the pilot and experimental phases of our project. Not only did we request that all applicable discounts be reported in each measurement period, but we asked to whom the computer was sold (that is, the type of buyer). Discounts took many forms, including cash rebates and discounts on cumulative volume, quantity, and trade. Normally in the PPI program, we would use a probability selection technique that would identify a specific discount. Here, we asked for the company's normal price adjustments. In a small number of instances during the pilot study, we took more than one discount for the same product to see whether price adjustments moved differently. It has been suggested that a net transaction price is nothing more than a list price less a standard discount, implying that discounts move similarly in both magnitude and direction. In the small number of cases we investigated in the pilot study, there were instances where various discounts exhibited different magnitudes and moved in different directions. Examples of this phenomenon were in the areas of "original equipment manufacturer" (OEM), "value-added dealer" (VAD), and "value-added reseller" (VAR).

Experimental computer price index

Table 2 is an excerpt from the July 1990 *Producer Price Indexes* monthly detailed report.[12]

The experimental indexes in this report are treated separately from the traditional PPI commodity grouping system. Even though industry codes are provided that detail a published category, the indexes are wherever made, commodity based (similar commodity groupings without regard to the particular industries for which they are published). At present, the experimental series are excluded from the stage-of-processing indexes.

The experimental series are issued quarterly, with a base period of October 1988 = 100, as shown in the table. In *Producer Price Indexes*, they appear in table 13, which also provides year-to-year and quarter-to-quarter percent changes for these indexes. The indexes are not seasonally adjusted.

We decided on quarterly indexes for a number of reasons. The primary reason was more practical than empirical in nature: because the computer industry is a new industry on which the Bureau would be collecting price and product information, care would have to be taken to ensure that the frequency of repricing (or burden level) would be minimal relative to normal monthly pricing. We decided to collect lagged monthly prices for internal use, but publish indexes only four times a year. For example, if the quarter ending in October is our pricing period, we also ask for August and September prices. Our pricing date is the same as in the PPI, the Tuesday of the week that includes the 13th day of the month. We price as of the first month of the calendar quarter.

Secondly, results from the pilot study suggested to us that the incidence of price changes for computers occurred more on a quarterly, rather than a monthly, basis. If, after a designated period of time, we find the opposite to be true, and a change to monthly pricing does not burden our respondents, we will implement such a change. As a complicating factor, however, many of the price changes occurred on or just before major computer hardware and software trade shows, the most prominent of which are the Computer Distribution Expo (COMDEX) and the Federal Office Systems Expo (FOSE). Whether a causal connection exists between the two phenomena or whether their mutual occurrence is just random can only be answered by future observations made over a longer period of time.

Obviously, other market forces have an impact on price changes, and these changes may or may not coincide with our repricing quarters of January, April, July, and October. For example, during the first part of 1988, there was a shortage of dynamic random-access memory (DRAM) chips in the marketplace that was reflected in our pilot indexes. Depending on a particular manufacturer's inventory of these chips, prices declined more slowly, remained the same under the pressure of competition, or actually increased for a short period of time. By late 1988 the supply stabilized itself, and the disruptions are not reflected in our experimental index.

Another pricing phenomenon emerged in our pilot project in the 16-bit and 32-bit wordsize computer categories, and we assume that it is mirrored in the experimental index. When new microprocessor technology entered the market—for example, an 80386 replacing an 80286 chip or a 68030 replacing a 68020 chip—the price of the older technologies did not *at first* decline. One might have thought at a cursory glance that the price would have declined through market clearing. However, quite a different thing occurred: the price of the older model actually stabilized when that model was sold alongside the new model. Because our experimental index is a Laspeyres index designed to measure pure price change from items selected during the base period (from a fixed market basket), the new technology would not enter into our calculation, unless the old model were no longer manufactured or shipped. We thus expected the price of the older model to come down immediately upon introduction of the new model, contrary to what actually happened. One explanation of this phenomenon is that, even though the newer technology cost less, was faster, and provided more functionality than the older chip, the latter was still meeting customers' needs. There appeared to be a demand for the older processor, and manufacturers were still serving the niche created by that demand.

A good indication of how the computer industry is constantly changing is provided by an examination of the types and frequency of changes in components that have occurred in the experimental index for the past seven quarters. Table 3 summarizes these changes.

Table 3. **Frequency of changes in computer components, October 1988–July 1990**

[In percent]

Category of components, quality adjusted	Frequency of change
Hard-disk storage	31.9
Random-access memory	18.8
Clock speed	14.6
Warranty	6.8
Floppy disk storage	4.9
Tape drive	4.8
Number of users	4.2
Keyboard	3.5
Operating system	3.5
Port	3.5
Terminal	3.5

In almost all instances, the regression adjustment methodology was used for the first three categories: storage capacity, main memory, and clock speed (measured in megahertz for microprocessor-based computers and in millions of instructions per second (MIPS) for larger computers). Even though an attempt was made to acquire the resource cost information from the respondent for these functional changes, in more than 90 percent of the cases observed such information was not available for the first three categories of components. This is, however, to be expected, because the more sophisticated the item's functional change is, the more difficult it is to measure with traditional cost estimates. In other nonperformance areas, producer cost information was available on changes in such items as keyboards, terminals, and warranties.

Of the 170 computer models from 33 computer manufacturers that were originally tracked, we lost 31 models (18 percent of our original sample) and 6 manufacturers between October 1988 and July 1990. Overall, 144 different modifications with associated quality adjustments were made to items in the categories listed in table 3 as of the July 1990 quarter. This relatively high figure is a reflection of the many and frequent improvements that occur in this rapidly changing industry and indicates the time horizon necessary for reselecting a new market basket of products.

The regression model for each publication category was able to specify the functional changes for three performance categories—auxiliary storage, main memory, and clock speed—and was used predominantly in quality adjustment. In a number of instances, the manufacturer could give us an estimate of the packaged items, such as terminals, keyboards, and operating software upgrades, and we accepted these values for the resource cost adjustment approach. The categories of number of users and ports were used more as a marketing tool and were usually very low-cost, sometimes free, items. The flexibility of the composite quality adjustment methodology allowed us to use both implicit estimates of functional changes from regressions and resource cost estimates from the manufacturer for other changes if available.

Does the index mirror the industry?

Caution should be exercised in drawing conclusions from table 2, because the table reflects only seven quarters worth of data and uses a classification structure that is currently different from Census Bureau categories. In classifying computers, we attempted to avoid adjectives, applications, and dollar categories. As mentioned earlier, we debated at considerable length the question of how actually to publish the many different types of products included in the computer industry.

Competition among 16-bit and 32-bit wordsize computers with 8000, 80000, and 68000 series microprocessors has been fierce for a number of years. Competition still appears to be the driving force behind the declining indexes. With more powerful, faster chips in plentiful supply and the next generation of chips on the horizon, prices are expected to decline. Even the 3571–B23 category of "Other 32-bit wordsize computers," which encompasses the traditional midrange computers, has shown a modest price decline since October 1988. This category also includes what some refer to as minicomputers and competes with the high-end 32-bit workstation market. Moreover, the category 3571–C, of "Greater than 32-bit wordsize computers," or what others refer to as mainframe computers, has undergone a marked decline in price from the base-period price. In fact, all the declines we evidenced in our experimental index seem to mirror trade press reports. Whether this phenomenon will prevail in the future remains to be seen. For example, recent trade press reports suggest that manufacturers of personal computers are implementing programs to stabilize prices. As one source put it, "The days of bargain-basement PC prices may be over as the industry takes steps to end the price wars that marked 1989."[13] Of course, only time can substantiate that statement. However, based on the limited evidence presented in table 2, competition will still prevail.

Conclusion

All the declines we evidenced in our index seemed to mirror trade press reports.

From the outset, the goal of the experimental project was to demonstrate a feasible and supportable method for producing timely, ongoing, and maintainable price indexes for computer industry products. The most dramatic finding from the collection and repricing phase of the project was that the time horizon for many of the products included in this industry is extremely short relative to that of other industries repriced in the PPI. As previously mentioned, the normal resampling of industries for the PPI ranges from 5 to 7 years, depending on the complexity of the approximately 500 industries included in the index program. If we used this same time period as a reference for repricing for a major portion of the computer industry, it would include approximately two-and-one-half generations of computers, based on our study results!

Obviously, then, measuring price changes in a high-tech industry such as computers for the PPI program requires different collection, repricing,

and quality adjustment procedures, as well as a different overall treatment of the data. The project went a long way toward dealing with these issues. Normal operational procedures have been modified, namely, by dedicating resources for resampling every 2 years, possibly by telephone, to expedite product selection. A data base for cross-sectional regression estimates must also be re-created for the same time period. This task will become easier as more data are entered into the modeling data base, ensuring the availability of timely, current data. All things considered, the expanding computer industry is far too important to be excluded from the PPI program. □

Footnotes

[1] For a more detailed explanation of the pilot indexes, see Brian C. Catron, "Price Measurement for Computer Hardware: A Demonstration of Quality Adjustment Techniques" (Bureau of Labor Statistics, Division of Industrial Prices and Price Indexes, Apr. 14, 1989, unpublished internal document).

[2] John F. Early and James H. Sinclair, "Quality Adjustment in the Producer Price Indexes," in Murray Foss, ed., *The U.S. National Income and Product Accounts,* vol. 47 (Washington, National Bureau of Economic Research, 1983), p. 109.

[3] Not all physical changes are treated as changes in quality. If a component does not perform its function better, it is not assumed to have undergone a change in quality. An example would be style changes in automobiles.

[4] See "Guidelines for Adjustment of New Automobile and Truck Prices for Changes in Quality of Product" (Bureau of Labor Statistics, 1980, rev., unpublished internal document). This document describes and defines the concepts and procedures used in adjusting quoted prices for quality change.

[5] *1987 Current Industrial Reports,* MA35R(87)–1 (U.S. Department of Commerce, Bureau of the Census, August 1988), p. 2.

[6] This company, located in Lexington, MA, provided a computer tape that identified a large number of manufacturers, prices, and products in the microcomputer industry that were used for modeling.

[7] See Office of Management and Budget, *Standard Industrial Classification Manual, 1987* (Washington, U.S. Government Printing Office), p. 215.

[8] "Computers and Office and Accounting Machines," *Current Industrial Reports,* MA35R(87)–1 (Bureau of the Census, August 1987).

[9] Peter L. Burris, ed., *The Grey Sheet, Computer Industry Report,* vol. 24, nos. 17–18 (International Data Corporation, 1989).

[10] See chapter on "Producer Prices," in *BLS Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988), p. 126.

[11] *BLS Handbook,* p. 126.

[12] Excerpt from *Producer Price Indexes, Data for July 1990* (Bureau of Labor Statistics, 1990), p. 199.

[13] See "Industry Leaders Put Brakes on PC Discounting," *PC World,* Mar. 5, 1990, p. 1.

A note on communications

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

South African trade unions: a historical account, 1970–90

The South African trade union movement is in a state of transition; as unions move closer into the political arena, speculations and uncertainties abound

Jerome T. Barrett
and
Anne Finbarr Mullins

The growth in size and sophistication of the trade union movement in South Africa over a relatively short period of time has been spectacular. It has resulted in changes in employment practices and has inspired the belief that unionism and wider political trends are indivisible. Unions have demonstrated forcefully that they will play a crucial role in the struggle for a new political structure.

The modern trade union movement in South Africa was formed in the 1970's. Prototype organizations, called advice centers, grew amid heightened black worker activism early in the decade. The centers evolved into trade unions, which led a series of strikes in 1973 in Durban. By 1976, there were 174 registered trade unions, mostly white, colored (mixed races), and Indian, with memberships totaling 670,000 and representing 12 percent of the work force; today, there are 2.5 million union members comprising about 35 percent of the work force.[1] In 1976, the government established an independent commission, headed by Professor Nic Wiehahn, to study burgeoning labor problems. The commission report resulted in 1979 amendments to the Labor Relations Act that established an Industrial Court and the concept of unfair labor practices, and granted black unions a degree of freedom to organize legally for the first time in decades.[2]

This article describes the recent history of unions in South Africa, their current status, and some questions about the trade union movement in the near future. Information is based on numerous interviews conducted in South Africa during January 1990, and on current literature.[3]

Political traditions

Three distinct political traditions appeared in the labor movement in the 1970's, with different perspectives on broader political issues. (See exhibit 1.)[4] First, shop floor unions, particularly those affiliated with the Federation of South African Trade Unions (FOSATU), developed a cautious policy towards political involvement. Their leaders believed it was important to avoid the path taken by the South African Congress of Trade Unions (SACTU), whose close identification with a radically political organization, the Congress Alliance, and its unsuccessful campaign in the 1950's resulted in the decline of the South African Trade Unions in the 1960's. (See exhibit 2.)[5] The Federation of South African Trade Unions emphasized, instead, the building of democratic shop floor structures around the principles of worker control, accountability, and mandatory representation. They saw this as the basis for developing working class leadership in factories.

A second political alternative, the national democratic tradition, re-emerged in unions such as the South African Allied Workers Union (SAAWU). These "community unions," following in the steps of the South African Trade

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Union, argued that labor had an obligation to address socio-economic issues because workers' struggles in the factories and townships were indivisible. Many of these unions affiliated with a political organization called the United Democratic Front (UDF) formed in 1983. They increasingly became involved in actions such as rent control, transportation, and local elections. Many of the unions were unable to survive intense state repression, arguably because of weakness on the shop floor and premature confrontations with the state and management.[6]

The third political tradition developed from the Africanist and black-consciousness movements. The Pan African Congress (PAC), which broke from the African National Congress in 1959 because of the latter's multi-racial definition of the nation, articulated the Africanist ideology, which emphasizes blackness as a common bond to the exclusion of other races. The American black power movement influenced the African black consciousness movement with its emphasis on racial categories. The demand of the trade unions for black leadership and its opposition to white leadership distinguishes the black consciousness tradition from other traditions. This tradition is clearly articulated in the constitution of the National Council of Trade Unions (NACTU). While the black consciousness movement and the Africanist perspective are closely allied, they are not synonymous; the differences appear to lie in tactics and strategies rather than ideology.

Exhibit 1. Types of unions that emerged in the 1970's

Democratic Shop Floor Structures: This tradition, fostered by the Federation of South African Trade Unions (FOSATU), took a cautious approach toward political involvement, stressing instead democratic shop floor structures as the basis for developing working class leadership in factories.

The National Democratic Tradition: This tradition which was promoted by "community unions" such as the South African Allied Workers Union, called on labor to take up socio-economic issues. Many of these unions became affiliated with the United Democratic Front in 1983 and were unable to survive state repression.

The Africanist and Black Consciousness Tradition: The Africanist ideology, articulated by the Pan African Congress, emphasizes blackness as a common bond to the exclusion of other races. The closely allied black consciousness movement emphasizes black leadership in the trade unions and opposition to white leadership.

Two labor federations

Four years of unity talks among the majority of independent trade unions in South Africa led to the formation of the Congress of South African Trade Unions (COSATU) in December 1985. The predecessor of the National Council of Trade Unions, however, withdrew from the talks over the issue of white leadership, creating a major stumbling block for total solidarity. Nonetheless, during the 1985–87 period, membership to the Congress of South African Trade Unions grew substantially through recruitment of previously unorganized workers, poaching on other unions, and mergers with nonaligned unions. When formed in 1985, the congress had a dues-paying membership of 450,000. By July 1987, membership had expanded by 58 percent to some 712,000. Under the banner "One union, one industry," the congress managed, albeit with some difficulty, to streamline its structures and establish 12 industrial-based unions.

The year 1987 was a watershed for South African industrial relations. The number of workdays lost to labor action soared, due largely to protracted strikes in the mining and public service sectors. The harsh realities of workers' struggles for an improved share of industries' rewards were painful, and relations between management and labor polarized increasingly.

Membership figures for the Congress of South African Trade Unions reached 1 million at the end of 1989. The massive growth from the 1987 figure was largely the result of mergers—the most recent being that between the 100,000-strong Garment Workers' Union and the Amalgamated Clothing and Textile Workers of South Africa to form the South African Clothing and Textile Workers Union (SACTWU). Events like these left little doubt that the congress had emerged as the dominant labor federation in the country.

Conversely, membership over the last 2 years dropped considerably for the National Council of Trade Unions; from a high of 144,418, it had declined by 130,000 members by August of 1988. The ex-General Secretary of the council, Piroshaw Camay, attributed the decline to "NACTU unions not servicing members effectively, not recruiting new members, and members voting with their feet."[7] He said that there is growing evidence that the unions in the

Congress of South African Trade Unions are winning over council unions, particularly in the food and metal sectors.

Government response to unions

As a direct response to growing union strength and the violent strikes of 1987, both management and the state embarked on a concerted attempt to contain the union movement and reassert managerial prerogatives. Conflict between the state and the Congress of South African Trade Unions reached a climax in 1987 as management of the mines restricted union activities and dismissed 50,000 striking miners.

The South African government played an increasingly repressive role as it tried to contain labor's growing involvement in political issues. The headquarters of the Congress of South African Trade Unions was blown up under mysterious circumstances, and many regional offices suffered arson attacks, which, according to union sources, were the government's acts of repression. This openly hostile attitude towards the Congress of South African Trade Unions culminated in extensive restrictions on the Congress and its allies in the United Democratic Front. While the National Council of Trade Unions was not restricted in the same way, it too was subjected to increasing police raids on union offices, police intervention in union meetings, videotaping of union proceedings, and attempts to intimidate members by massive police presence at union gatherings.

The Labor Relations Act (LRA) amendments, promulgated in September 1988 were seen by the labor movement as another insidious state attempt to curtail growing labor power by undermining the union's hard-won gains after the 1979 Wiehahn reforms. Instead of involving the union movement as a partner in the industrial relations system, the amendments have caused industrial protest and labor militancy which have drawn the Congress of South African Trade Unions and the National Council of Trade Unions closer together in joint support for scrapping the onerous elements of the Labor Relations Act.

Despite a vigorous and intense state offensive against it, the labor movement emerged resilient. Indeed, far from distancing itself from politics in response to the banning and repression of political organizations, the trade unions took on a leading role in internal resistance to *apartheid.* The implications of the state's recent removal of bans on the African National Congress, Pan African Congress, and South African Communist Party are unclear with regard to labor's role in the negotiating process and future political arrangements. The terrain has shifted more quickly than anyone in the labor movement or opposition groups anticipated.

Exhibit 2. Key organizations

AALC—African American Labor Center; the AFL–CIO arm for assisting an indigenous labor movement in Africa, including South Africa.

ANC—African National Congress; a political organization outlawed in South Africa until early 1990, with close relations with the South African Congress of Trade Unions.

COSATU—Congress of South African Trade Unions; the largest and most rapidly growing union federation in South Africa, compatible with the ANC.

NACTU—National Council of Trade Unions; a declining union federation with close relations with the Pan African Congress.

NUM—National Union of Mineworkers; one of three largest unions.

NUMSA—National Union of Metal Workers of South Africa; one of the largest unions.

PAC—Pan African Congress; political organization outlawed in South Africa until early 1990; a breakaway from the ANC.

SACCOLA—South African Employers' Consultative Committee on Labor Affairs; a loose federation of the major employer organizations in South Africa.

SACP—South African Communist Party; a political organization outlawed in South Africa until early 1990.

SACTU—South African Congress of Trade Unions; union federation outlawed in South Africa until early 1990.

SACTWU—South African Clothing and Textile Workers Union; one of three largest unions.

UDF—United Democratic Front; a political organization with trade union ties.

Worker unity

The formation of the Congress of South African Trade Unions in 1985 brought together unions

During the 1985–87 period, membership to the Congress of South African Trade Unions grew substantially.

from all three political traditions. Well organized industrial unions with their shop floor traditions, general unions with national democratic traditions, and the National Union of Mineworkers which had broken away from the black consciousness unions, blended together under the congress banner of "One Country, One Federation." But it has been difficult, and much has been written about the strategic and ideological differences between factions. The "populists," or "charterists," wanted the labor movement to become a political vehicle allied with the African National Congress. The "workerists," or "socialists," wanted to concentrate on the workplace and opposed surrendering union independence or abandoning working class politics in favor of broader political alliances. These polarities are very simplistic, however, and frequently fail to capture the complexities of the intense divisions and debates which have taken place covertly because of the country's political climate and have threatened unity in the Congress of South African Trade Unions.

At the second National Conference of the Congress of South African Trade Unions in 1987, the debate between "workerists" and "charterists" continued as intensely. Ironically, the state launched new attacks against the union movement shortly after the conference, thereby forcing labor to recognize the need to establish greater unity and support for *anti-apartheid* measures. While the relationship between the congress and the black consciousness movement remained contentious, the state's growing power under the Labor Relations Act in 1988 and 1989 caused the two federations—Congress of South African Trade Unions and National Council of Trade Unions—to move toward building a forum to promote unity.

In June 1988, the federations led a 3-day national protest—the largest of its kind—which brought out 3 million South African workers. The impending renewal of a state of emergency and restrictions on extra-parliamentary organizations resulted in a massive display of solidarity between the federations. Some observers assumed that cooperation heralded greater flexibility in their ideological viewpoints. But James Mndaweni, president of the National Council of Trade Unions scotched those hopes by stating that the two federations would remain poles apart as long as the congress upheld the Freedom Charter—a political statement by the African National Congress addressing political and economic reforms. Then, in March 1989, leaders of the National Council of Trade Unions withdrew during final preparations for a joint worker summit, explaining that because they were the only remaining Africanist organization which could operate lawfully, they were reluctant to subjugate their federation to the more powerful Congress of South African Trade Unions.

As a result, the question of formal unity between the federations remains difficult. The National Council of Trade Unions, however, has continued its involvement with the joint campaign of resistance against the Labor Relations Act, including overtime bans, protest marches, consumer boycotts, and joint negotiations with the South African Employers' Consultative Committee on Labor Affairs (SACCOLA), a loosely knit federation of nine major employer associations. In addition, the National Council of Trade Unions participated in a second workers' summit, held in August 1989, with over 800 representatives from both federations.

Nonetheless, the two federations apparently are unable to reconcile their ideological differences. In December 1989, the unexpected resignation of Piroshaw Camay, General Secretary of the National Council of Trade Unions, once more highlighted the political splits within the federations and raised questions regarding further unity steps. Camay, who advocated worker unity, believed that other council leaders were not serious about unity. Further, he said that decisions were being made in private political caucuses rather than in legitimate council forums. He also stated that the Congress of South African Trade Unions had been steadfast in building and implementing working class unity.

Camay also criticized his organization for failing to negotiate effective mergers. For example, the Metal Engineering Workers Union of South Africa, formed from the merger of several unions in 1989, did not include the powerful Steel, Engineering and Allied Workers Union (SEAWUSA). This deliberate exclusion resulted from the Africanist-black consciousness differences between the two and raises questions about the council's ability to survive. With the Africanists dominating the council and without Camay's strong leadership to mediate differences, will unions like the Food and Beverage Workers, who support unity talks, leave the council? Will they draw closer to the Congress of South African Trade Unions or become independent? Presently, there are no clear answers.

Foreign financing

An estimated 17 million dollars of foreign funding reaches the South African labor movement each year. The type of assistance clearly varies from affiliate to affiliate, but the numerically larger unions (the miners with 260,000 members, metal workers with 210,000 members, and clothing and textile workers with 185,000 members) have substantially more resources at their

disposal and are not dependent on outside financing for expansion and development. While smaller unions have great needs in education and infrastructure, particularly union administration, larger unions stress the importance of solidarity in local struggles and special projects and foster research into how key industries may be structured in a *postapartheid* economy.

The sources of economic aid exemplify the differences between the federations and between individual unions. The trade union movements in Western Europe, particularly those in Scandinavia and Germany, have historically been the preferred sources of funding for the Congress of South African Trade Unions. Leaders of the National Council of Trade Unions acknowledge that support from the American union movement has been invaluable in their federation's development.

The clash of divergent historic traditions of the trade union movements in South Africa and the United States are evident in their relationship. The anticommunist AFL–CIO and its regional affiliate, the African American Labor Center (AALC), contrasts with a South African trade union movement with deep historic alliances with the African National Congress and the Communist Party. In the past, this has resulted in an uneasiness among the leaders of organized labor in both countries. However, at the present time, there is a growing willingness to take corrective measures to improve their future relationships.

Leaders of the Congress of South African Trade Unions recognize the need for a positive relationship with the AFL–CIO. Many affiliates of the congress have good and longstanding links with their counterpart American unions and have stressed continued solidarity and assistance as vital to the South African labor movement.

Recent events in Eastern Europe have added another dimension to the issues of outside funding. Although support from East European countries has never been significant, all parties in South Africa anticipate that it will diminish. There is a growing concern that money from Western Europe will increasingly be channelled to Eastern Europe. While many observers are adopting a "wait-and-see" attitude, there are strong indications that during the 1990's, changes in Europe will force the South African labor movement to make a positive reassessment of its relationship with the U.S. labor movement.

Changes in strategy

Mobilization approach. The political divisions among South African unions are reflected in workplace strategies and tactics. During 1988–89, the mobilization approach within the congress, particularly as associated with the National Union of Mineworkers, was in retreat.[8] However, unions like the National Union of Metal Workers of South Africa and the South African Clothing and Textile Workers Union recognize mobilization as a core strategy for unions. They stress, however, the concrete gains and organizational strength rather than mobilization alone, and they appear to have gained support for their approach. During 1988, perhaps attributable to the state of emergency or more cautious approaches by unions, the number of workdays lost due to strikes dramatically declined to the lowest level since 1985. Clearly, more workers were reluctant to embark on actions which could have caused loss of pay and jobs.

Strikes. Worker support for "stay aways," (strikes) however, has been staggering. The 3-day "stay away" in June 1988 involved up to 3 million workers. The second highly successful "stay away," in September 1989, reflected the trend toward fewer strikes, but involved a larger number of workers nationwide than a strike might have involved. The "stay aways" were not simply a demonstration of strength, but were designed to facilitate changes in the Labor Relations Act.

Judicial system. Many labor disputes continue to be fought in courts. In 1987, 2,900 cases were heard in the Industrial Court, 3,838 were heard in 1988, and 4,492 were heard in 1989. The Industrial Court has become the subject of serious controversy as some unionists discourage its use because of amendments to the Labor Relations Act that limit the court's judicial independence. In fact, an increasing number of employers and trade unionists have negotiated agreements and procedures that bypass the provisions of the Labor Relations Act by establishing private dispute resolution procedures. Such agreements and procedures demonstrate the increasingly sophisticated response of the union movement against controls. They have also resulted in an expanded role for organizations such as the Independent Mediation Service of South Africa, which provides both mediation and arbitration services.

The labor arena nevertheless continues to provoke high levels of legal activity as employers initiate more and more actions against unions. For the unions, much will depend on the extent to which the Industrial Court remains a forum where significant labor rights can be guaranteed. The larger unions such as the National Union of Mineworkers and the National Union of Metal Workers of South Africa are

The sources of economic aid exemplify the differences between the federations and between individual unions.

attempting to move away from dependence on expensive labor lawyers in favor of training paralegal officers within union structures to fight cases in the Industrial Court.

What is next?

While a strategic compromise has been emerging within the Congress of South African Trade Unions and between the congress and the National Council of Trade Unions, differences still underlie the competing political cultures. These traditions will continue to shape debates.

Political divisions among South African unions are reflected in workplace strategies.

The South African trade union movement and the extraparliamentary groupings are in a state of transition, and political reform is moving at a heady pace. The outlook has improved with State President DeKlerk lifting restrictions on the Pan African Congress, the African National Congress, and the South African Communist Party (SACP) on February 2, 1990, followed by the release of Nelson Mandela. There are talks of negotiations and the prospect of a *postapartheid* society on the horizon. This period is being equated with the first few days after the 1979 Wiehahn report. There is a sense, however, that South Africa could be on the brink of something infinitely more significant.

Questions being asked are: What will be the relationship between the Congress of South African Trade Unions and the African National Congress? How will the return to South Africa of exiled leaders of the South African Congress of Trade Unions affect the Congress of South African Trade Unions? What role will the South African Congress of Trade Unions play in the Congress of South African Trade Unions? Now that the Pan African Congress and the African National Congress have legal political platforms, will the orientations of both the Congress of South African Trade Unions and the National Council of Trade Unions swing more to bread and butter issues? What will be the role of the trade union movement in *postapartheid* South Africa? As yet, there are no answers—only opinions and speculation.

The link between the African National Congress, the Congress of South African Trade Unions, and particularly the South African Congress of Trade Unions is clearly an issue that must be resolved now as a matter of some urgency. Some observers suggest that the present loose relationship between the Congress of South African Trade Unions and the African National Congress will not change, and that the congress will retain its independence. This view suggests that the return of exiled members of the South African Congress of Trade Unions will make little difference. There is a recognition of political status of their officials and a special empathy exists towards them; many are old and frail and a few will be absorbed into nominal positions under existing leadership. A more cynical scenario suggests the possibility of the South African Congress taking over the Congress of South African Trade Unions aided by forces inside—a move which would have serious implications for a future independent trade union movement and one which has the potential to destroy unity within the Congress of South African Trade Unions.

The link between the National Council of Trade Unions and the Pan African Congress appears to be strengthening as the Pan African Congress adopts a distant, far less accommodating stance toward the African National Congress and exhibits a critical attitude towards the concept of negotiation in favor of an "all-or-nothing" approach.

Finally, the relationship between the National Council of Trade Unions and the Congress of South African Trade Unions has shown recent signs of improvement. In June 1990, the two federations reached an agreement on changes needed in the Labor Relations Act amendment promulgated in 1989. And even more encouraging for peaceful labor-management relations in South Africa, the South African Employers' Consultative Committee on Labor Affairs joined the two federations in those recommended changes. To date, the Parliament has not acted on these recommendations.

In light of all these recent events and occurrences in South Africa, four major conclusions can be drawn:

1. Trade unions in South Africa have become a powerful force toward the abolition of *apartheid.*
2. The Congress of South African Trade Unions and its affiliates have emerged as the major force in the South African trade union movement.
3. Within the trade union movement, competition for leadership and direction dominates this major period of transition. It is likely that the three largest unions, the National Union of Mineworkers, the National Union of Metalworkers of South Africa, and the South African Clothing and Textile Workers Union will play major roles.
4. Although at present, the amount of outside funds does not constrain the growth and vigor of the South African trade union movement, this will change if Eastern Europe starts to get funds that otherwise would flow to South Africa. □

Footnotes

[1] Andrew Levy and Johan Piron, *Annual Report on Labor Relations in South Africa 1988–89* (Johannesburg, South Africa, Graylink House, 1989).

[2] Pat Stone, *Wage Bargaining in South Africa* (Johannesburg, South Africa, IR Data Publications, 1989).

[3] More than 50 trade union leaders from the two major federations were interviewed, as well as some independent unionists, a few academic experts, and some neutral labor relations experts.

[4] Alan Fine and Eddie Webster, "Transcending Traditions: Trade Unions and Political Unity," *South African Review* (Johannesburg, South Africa, Raven Press, 1989).

[5] Ross Martin, *Trade Unionism: Purposes and Forms* (New York, NY, Clarendon Oxford Press, 1989), pp. 139–40.

[6] Fine and Webster, "Transcending Traditions."

[7] *Weekly Mail*, Jan. 2, 1990, Johannesburg, South Africa.

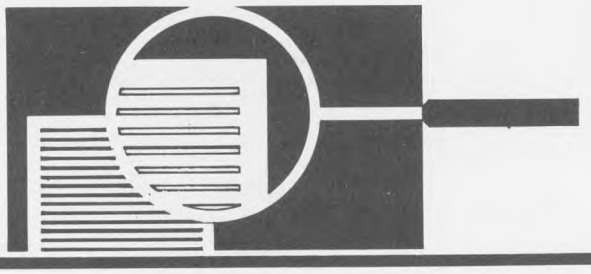
[8] The "Full Court Press" in basketball, which describes the act of contesting or challenging an opponent on numerous fronts, is a useful analogue for the mobilization strategy in South African labor relations.

Comparable worth policies

Compensation of employees according to comparable worth is one of the most sweeping changes ever proposed for the U.S. economy. Its advocates argue for nothing less than a complete overhauling of the manner in which pay is determined by firms and governments. Even if only some sectors of the economy institute comparable worth policies, these limited programs could have wide ranging effects on wages, employment, labor force participation, production, and income distribution. Comparable worth has a compelling sound of fairness, and therefore political acceptability, which even without an economywide Federal mandate, may lead to its widespread adoption through an accretion of court cases, State-level lobbying, and collective bargaining agreements. Consequently, a greater awareness of what comparable worth entails and of the arguments for and against it is needed if one is to make an educated assessment of the desirability of instituting comparable worth programs.

—Joyce P. Jacobsen
"The Economics of Comparable Worth: Theoretical Considerations," in M. Anne Hill and Mark R. Killingsworth, eds., *Comparable Worth: Analysis and Evidence* (Ithaca, NY, Cornell University, New York State School of Industrial and Labor Relations, 1989), p. 36.

Research summaries



Baseball labor relations: the lockout of 1990

Paul D. Staudohar

The 32-day lockout of baseball players from spring training camps by team owners in 1990 caused a renewed sense of frustration among fans. Once again, the great American pastime was shut down by a labor dispute.

The second longest work stoppage in baseball history was resolved without lasting damage to the regular season. However, the lockout raises some interesting questions. Could it have been avoided? Why is baseball so prone to work stoppages? Can anything be done to prevent interruption of the sport in the future?

Background

Much of the past conflict in baseball can be attributed to the need to eliminate the old system of paternalism and remove restrictions on player movement in the labor market. To initiate this change, the players hired Marvin Miller as executive director of their union in 1966. A former official of the United Steelworkers Union, Miller was an exceptionally able leader and negotiator. He won the confidence of the players, and welded the Major League Baseball Players Association into a cohesive unit. Agreements that Miller negotiated with the team owners in 1968 and 1970 set the stage for later breakthroughs that would result in undreamed of economic gains for the players.

The price paid for these gains has been work stoppages. In 1972, the players walked out of training camps 5 days before the start of the season. At the urging of President Richard M. Nixon, the negotiators met with a Federal mediator, and agreement was reached to increase pension and health insurance funds by $890,000. The strike caused the cancellation of 86 games of the regular season.

In 1976, the owners locked the players out of training camps for 17 days because no Basic Agreement had been signed. Complicating matters was the 1975 landmark ruling by arbitrator Peter Seitz in the *Messersmith* case, which for the first time granted free agency to players.[1] Reacting to pressures from some of the owners, Commissioner of Baseball Bowie Kuhn ordered the opening of training camps. A new Basic Agreement was reached in August, including a provision allowing players to become free agents after 6 years of major league experience.

In 1981, the key issue was compensation to teams that lost free agents to other teams. Agreement on other issues had been reached the previous year, when a strike had been averted by establishing a joint committee to study free agency compensation. When the committee was unable to resolve the issue, a 50-day strike resulted in the cancellation of 713 games during the 1981 season. Free agency compensation rules were established, but 6-year players continued to have relative freedom to change teams. Another strike occurred in 1985, this time for only 2 days, over many economic issues. An important outcome of this strike was that players would subsequently be required to wait 3 years (rather than the previous 2) to become eligible for salary arbitration.

These work stoppages indicate a continuing inability of the owners and players to reach agreement without having a test of economic strength. As a result of the confrontations, the players have achieved, among other things, a high level of mobility in the labor market, salary arbitration for veteran players, and a pension plan that is perhaps the most generous in American industry. Despite this wealth and countervailing power, however, the players' relationship with the owners remains adversarial. The old wounds have been slow to heal.

Influencing negotiations in 1990 were the grievance arbitration decisions on collusion. A feature of past Basic Agreements was a provision prohibiting collusion by either players or clubs. In 1985, the owners reduced their signing of free agent players dramatically, and continued to do so in 1986 and 1987. The chilling of the labor market led to grievances by the players' union for each of the 3 years, claiming that the owners had conspired to avoid signing free agents and thus held down their market value. Arbitrators Tom Roberts in the 1985 case and George Nicolau in the 1986 and 1987 cases found against the owners, and it is likely that as much as $100 million will eventually be paid in damages to the players found to have been the victims of collusion. It is not surprising that the owners were rankled by the collusion decisions. Moreover, the removal of collusion restraints led to a salary explosion, as teams bid astronomical sums for free agents. Prior to the 1990 season, nine players signed multiyear contracts for salaries of $3 million or more a year. The owners seemed to need protection from their own largesse.

There were other early signs that the 1990 negotiations could lead to trouble. About a year before talks opened, the owners began requiring players to include lockout clauses in individual salary contracts, prescribing that these players would not be paid in the event of a lockout. Also, both sides began to

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accumulate war chests. The owners set aside about $170 million and arranged a line of credit with Citibank for another $130 million. The players put away between $70 to $80 million from payments under royalty and licensing agreements. Another ominous sign was that, in late 1988, new national television contracts were negotiated that increased revenues to $1.5 billion over 4 years, providing about $16 million annually to each of the 26 major league clubs. As this represented a 102-percent increase over the old television agreements, there was substantially more money to fight over.

Bargaining issues, 1990

The principal issues on the bargaining table during the 1990 negotiations are summarized below. The three major positions of the owners were especially controversial because they proposed a radical restructuring of the Basic Agreement. Perhaps their most palatable demand from the players' standpoint was for revenue sharing. Because each side would gain from increases in revenue, there would be mutual incentive to expand the size of the pie. Revenue sharing would also promote financial stability on the downside. That is, should income decrease, say as a result of a serious economic recession, salaries would moderate along with revenues so that clubs would not be caught in a financial squeeze. A related advantage, more to the benefit of the owners than of the players, would be cost certainty, allowing for more accurate planning of budgets and league expansion.

***Owners' proposals*:**

- Players would be guaranteed 48 percent of revenue from ticket sales and national and local radio and television contracts, which would make up about 82 percent of owners' total revenue.

- A pay-for-performance system, in which players with zero to 6 years experience would be paid on the basis of seniority and performance based on statistical formulas. Each team would pay 1/26th of the total, and multiyear contracts would not be allowed.

- A salary cap limiting the total amount of salary any team could pay to players. Players with 6 years or more experience would still be free agents, but they could not be signed by a particular team if doing so would put that team over the salary limit.

***Players' proposals*:**

- Eligibility for salary arbitration restored to players with only 2 years of major league experience.

- A raise in minimum salary from the current $68,000 to $125,000.

- Continuation of the current formula fixing owners' contributions to the benefit plan (pensions and health insurance) at about one-third of television revenues from the All-Star game, league playoffs, and the World Series. This would work out to about $83 million a year for the owners' contribution.

- Triple damages for collusion, and language protecting the players' union from future collusion by the team owners.

- An increase in roster size to 25 players from the current 24.

Implications of the proposals. The owners' proposal on pay-for-performance was tantamount to establishment of a wage scale for players in the first 6 years. It would have had the effect of eliminating salary arbitration. Apart from the seniority factor, salaries would be determined by statistical formulas based on performance in the player's previous two seasons. Players would be separated into four categories for statistical purposes: (1) starting pitchers; (2) relief pitchers; (3) outfielders, third basemen, first basemen, and designated hitters; and (4) catchers, second basemen, and shortstops. While a creative idea, this proposal had virtually no chance of acceptance by the players. There are too many variables involved in performance. For example, pitchers in small ballparks like Boston's Fenway Park would be at a great disadvantage compared with those in larger parks like Busch Stadium in St. Louis. Also, no account was taken in the formulas of defensive performance or intangibles like character and sacrifice for the benefit of the team, nor was there a precise indication of how salaries would be computed.

The salary cap was proposed to protect teams in smaller markets, such as Milwaukee and Minnesota, from having their free agent players bought up by prosperous teams in New York and Los Angeles. Teams in large cities would be unable to control the market for star players because the salary cap would limit the number of highly paid players they could sign. Teams spend considerable amounts of money in developing young players. A salary cap would discourage free agency and enable a team to retain more of its quality players, thus yielding a greater return on investment.

As to the issues proposed by the players, the most controversial was the change in eligibility for salary arbitration. Initiated pursuant to the Basic Agreement in 1974, salary arbitration allows a player who wants to sign with his old club, but is unable to agree on salary, to present the dispute to an outside, neutral party. Both the player and the club make a final offer on salary and the arbitrator must then pick one offer or the other, with no compromising allowed. Over the years, salary arbitration has been a crucial factor in raising player salaries, perhaps as important as free agency. Even players who lose in arbitration almost invariably wind up getting a significant raise. For example, a typical player might have made $300,000 in the previous year. In arbitration, he asks for $700,000 and the club offers $600,000. Even if the arbitrator picks the club's offer, the player would still get a big raise.[2]

In 1985, the owners contended that their financial considerations necessitated an increase in the length of time required for eligibility for salary arbitration from 2 years to 3 years. The players' union agreed to this change, making players wait the extra year. But the owners' profits subsequently soared to high levels. With the recent increases in television coverage guaranteeing future revenues, the players wanted the eligibility requirement moved back to 2 years. This issue became a major stumbling block for the negotiators.

The negotiators

Historically, the attitudes and behavior of baseball negotiators have been of paramount importance in determining bargaining outcomes. The verbal exchanges between Marvin Miller and owners' negotiator Ray Grebey provide examples of how clashing personalities can impose barriers to agreement. Although some conflicts are inevitable, there is little doubt that the road to agreement can be relatively smooth or rocky, depending on how the negotiators conduct their business.

In 1990, the players were represented by Donald Fehr, executive director of the players' union. A law school graduate of the University of Missouri, Fehr had joined the law firm of Jolley, Moran, Walsh, Hager and Gordon in Kansas City, which represents the union. His work on the *Messersmith* case led to his appointment as general counsel for the union in 1976. In this capacity, he worked closely with Marvin Miller. Fehr appears to have the same astute but occasionally acerbic approach to negotiations as Miller. When Miller retired in 1983, Kenneth Moffett, formerly with the Federal Mediation and Conciliation Service, succeeded him. But, Moffett's tenure lasted only a few months and he was replaced by Fehr.

The six-member Player Relations Council represents the bargaining arm of the major league baseball team owners. In 1990, its members were: Allan "Bud" Selig (chairman) of the Milwaukee Brewers, Jerry Reinsdorf of the Chicago White Sox, Carl Pohlad of the Minnesota Twins, Fred Wilpon of the New York Mets, John McMullen of the Houston Astros, and Fred Kuhlmann of the St. Louis Cardinals. All the council members are owners of their clubs, except Kuhlmann, who is the president of the Cardinals. Chief negotiator for the owners was Charles O'Connor, who had succeeded Barry Rona as general counsel of the Player Relations Council in 1989. Although new to sports, O'Connor has an extensive background in labor relations.

Two other key participants in the 1990 talks should be mentioned. Fay Vincent, former deputy commissioner of baseball, became commissioner when A. Bartlett Giamatti, the former Yale University and National League President, died in office after a brief but distinguished service. Steven Greenberg, a lawyer and former players' agent, is baseball's current deputy commissioner.

The negotiations

The initial negotiating session was held on November 29, 1989, shortly before the Basic Agreement was scheduled to expire at the end of the year. Little progress was made in the early talks. This is typical of negotiations in professional sports. It seems that a strike deadline or start of the regular season must be impending before negotiators become serious about their task. By mid-February 1990, with spring training 2 weeks away, Commissioner Vincent began to sit in on negotiations. Realizing a threat to the opening of training camps, because of a possible lockout by the owners, Vincent made several proposals to get the talks moving.

It was not an easy decision for Vincent to become involved. As Commissioner of Baseball, he is hired and paid by the owners, but he is also responsible for acting in the "best interests" of the game. Failing to try to prevent a lockout or strike would not fulfill that responsibility. While the top management official usually stays in the background during labor-management talks and allows the negotiator to make the deal,[3] there was some precedent for involvement by the commissioner. As mentioned earlier, Commissioner Kuhn had ordered camps to open in 1976 (and was later criticized for not doing more to end the 1981 strike). Commissioner Peter Ueberroth's mediation was helpful in holding the 1985 strike to only 2 days.

Three of Commissioner Vincent's proposals became the focus of attention: (1) minimum salaries of $75,000, $125,000, and $200,000 for players in their first 3 years, with a 75-percent cap on increases in salary arbitration; (2) a 2-year study commission on revenue sharing, and reopener of the 4-year Basic Agreement after 2 years; and (3) no increase in the players' benefit plan. Vincent helped narrow the issues in dispute. Shortly after hearing his proposals, the owners dropped their demands for revenue sharing, pay-for-performance, and salary cap. Given the groundbreaking nature of these demands, especially in light of baseball's success under the old system, they would have eventually been discarded. Vincent's proposals accelerated this process while allowing the owners to save face.

A few days later, however, the owners made a proposal that enraged the players because it introduced controversial new items for consideration. This offer included prohibiting the use of free agency and multiyear contract comparisons in salary arbitration cases, and eliminating maximum salary cuts (20 percent for 1-year contracts and 30 percent for 2-year contracts) for players with 3 years to 6 years of service. Reacting to the players' outrage, Steven Greenberg telephoned Eugene Orza, associate general counsel for the players' union, to say that "Yesterday didn't happen," and the proposal disappeared.[4]

Meanwhile, on February 15, a lockout occurred when the owners refused to open training camps. Why did the owners resort to this tactic? Although lockouts account for only about 5 to 8 percent of all work stoppages, their frequency is rising. The owners used the lockout mainly as an offensive weapon, to pressure the players into an early settlement. Certain kinds of lockouts may not be legal, such as those calculated to "bust" a union. But, in 1965, the U.S. Supreme Court had held that a company did not violate the Taft–Hartley Act when, after reaching impasse in negotiations, it shut down its plant to put pressure on a union that was threatening to strike during the company's busiest season.[5] Although this case is the leading precedent on the subject of lockouts, its applicability to the baseball lockout was clouded by uncertainty over whether impasse had been reached and the fact that the players' union had not threatened to strike.

Were the owners to start the season after reaching impasse and without an agreement, they would have been able at some later time, perhaps at the end of the season, to impose employment terms unilaterally on the players. This is what occurred in professional football after the unsuccessful players' strike in 1987 over free agency: the football owners put their own free agency rules, known as Plan B, into effect. The baseball players' union would not want to

have the owners impose terms on them. Therefore, the players would almost certainly have had to strike to achieve an agreement before the 1990 season ended. Such a strike—say, in August—would hurt the owners because they derive most of their income from television contracts late in the season, based on revenues from the league playoffs and World Series. Thus, by locking out the players to precipitate an agreement, the owners were defending themselves against a strike later on.

Now that the principal bargaining demands of the owners were off the table, it seemed logical to assume that an agreement would quickly follow. The owners were enjoying unprecedented success with 5 consecutive years of record attendance and a generous new television deal. Player salaries were averaging $600,000. Why kill the golden goose? With the owners' retreat, however, the union realized that power had shifted dramatically in its favor. At this point, perhaps too greedily, the union made a stand on reducing eligibility for salary arbitration from 3 years to 2 years. Several days went by with considerable discussion but no progress on this issue.

Complicating the situation, as is often the case in sports, was the intraorganizational side of negotiations. This was more a problem for the owners than for the players. The players realize the importance of organizational solidarity and have learned to put aside their differences and stick together. Their union does an excellent job of communicating with the players, so they know what is happening at the bargaining table and why.[6]

The intraorganizational problems on the owners' side were threefold. One was the differing philosophies or approaches toward the union. On the Player Relations Council, for example, owners McMullen, Reinsdorf, Selig, and Pohlad were considered hard-liners, while Wilpon and Kuhlmann were viewed as moderates. Second, there were the differences between owners from large and small markets, which arise over issues like revenue sharing. The New York Yankees, for example, receive $50 million annually from their local television contract. Clubs in small markets like Kansas City and Milwaukee, however, receive only about one tenth as much for their local telecasts. Yankee owners would be reluctant to share their revenues with teams in smaller markets. Third, there was the problem of not knowing who is in charge of bargaining for management. Was it Charles O'Connor, the Player Relations Council, or the commissioner's office? Negotiation becomes more complex when there is no single source of authority to rely on.

Initially, there was little concern on either side over the lost spring training time. Virtually all players now attempt to keep in good physical shape yearround. They are not paid for time spent at training camps, except for expenses. From the clubs' standpoint, most lose money on their spring training operations anyway. But some preseason training is necessary to mold players into a team, and about 3 weeks before the scheduled start of the 1990 season, there was pressure for settlement from both sides. Therefore, on March 8, Commissioner Vincent offered to open the training camps if the players agreed not to strike later in the season. The union, as expected, rejected this idea because it would take away their bargaining leverage.

Settlement

Although salary arbitration became the focal point of the dispute, another remaining issue of importance was the benefit plan covering pensions and health insurance. After initially offering no change in the benefit plan, the owners had gradually increased their offer. It appeared that compromise would be achieved through tradeoffs between the arbitration and benefit plan issues. On arbitration, the union insisted on 2 years' eligibility while the owners stuck at 3 years. Commissioner Vincent proposed a compromise at 2 years and 140 days.

Getting the parties to accept a final compromise was largely the work of deputy commissioner Greenberg. Agreement was reached on arbitration by making 17 percent of the players with between 2 and 3 years of service eligible, assuming they were with the club for at least 86 games during the previous season. The 17 percent will represent about 15 players per year. The players accepted the owners' offer to increase the benefit fund to $55 million. In effect, the players got some of what they wanted on salary arbitration and the owners did not give up that much on the benefit fund increase. Key features of the 1990 Basic Agreement follow:

- *Salary arbitration*—Eligibility for the top 17 percent of players with 2 to 3 years of major league service.
- *Benefit fund*—Increased owners' contribution to $55 million annually.
- *Minimum salary*—Raised from $68,000 to $100,000.
- *Roster size*—Increased from 24 to 25 in 1991.
- *Collusion*—Language prohibiting collusion and providing for triple damages.
- *Reopener*—Either side may reopen the 4-year contract on major economic issues after 3 years.
- *Revenue sharing*—A six-member study commission will report on revenue sharing and baseball economics.

Because agreement was not reached until March 19, the requisite 3 weeks of spring training delayed the start of the season from April 2 to April 9. This would have cut the full season of 162 games to 158. However, Commissioner Vincent was able to work out an agreement with CBS, which holds television rights to the league playoffs and the World Series, to push back the start of postseason play so that the postponed games could be made up. Avoidance of a shortened season preserved the sanctity of individual and team performances, which is especially important to baseball purists.

Spring training generates about $300 million from the 18 teams that train in Florida and another $145 million from the 8 teams that train in Arizona.[7] Although all of this revenue was not lost, many businesses, nonprofit organizations, and cities dependent on spring baseball were harmed. ESPN, a cable television network, had to cancel several spring training games, but still had to pay for the broadcast rights because it lacked contractual protection against a lockout. There were only 3 weeks of spring training instead of the usual 6, and each team played 15 games rather than 30 games. Club and player losses

were minimal, although several prospective major leaguers did not get much chance to prove their worth before the season, and risk of injury to all players was greater. According to a poll taken by *The Sporting News*, 69 percent of the fans indicated that they would reduce their attendance and broadcast participation if the lockout delayed the regular season.[8] Past experience shows, however, that fan loyalty is not really affected by baseball work stoppages.

A key to future labor peace in baseball may be the adoption of revenue sharing. This practice would help the parties view each other less as adversaries and more as partners. Formation of a study commission, provided in the new Basic Agreement, will assure that revenue sharing will get careful consideration. It is not apparent what effect the 3-year reopener provision will have, if any. There would be just 1 more year remaining under the contract if it were reopened. Exercise of the reopener provision by either side would raise the specter of a work stoppage as early as 1993.

One of the positive outcomes of the negotiations is the relatively great degree of civility displayed between the negotiators. There were some caustic exchanges between the parties through the media, especially in the late stages of the talks, but the attitudes and behavior were generally positive and professional. Fehr, O'Connor, Vincent, and others deserve credit for eschewing the hostility of the past. Their experience during the negotiations should promote a smoother transition to a successor agreement.

ALTHOUGH BASEBALL is the pioneer in developing the sports labor model, it may be time to look to other sports for examples of labor peace. Basketball's system of salary caps and revenue sharing, negotiated in 1983, has been successful. Players are guaranteed 53 percent of gross revenues, and there have been no work stoppages. Nor have there been any in hockey. As in basketball, hockey owners and players view themselves as being in a joint venture. Cooperation, rather than confrontation, is used to resolve issues of mutual concern. There will always be debates over money issues in professional sports. Given the popularity of sports, however, the profits are ample for all to share. It is primarily a question of developing mechanisms for distributing the gains equitably among the participants. □

Footnotes

[1] This decision, involving pitchers Andy Messersmith of the Los Angeles Dodgers and Dave McNally of the Baltimore Orioles, enabled players who had played for their clubs for a year without a contract to sell their services to other clubs. For further discussion, see Paul D. Staudohar, *The Sports Industry and Collective Bargaining*, 2d. ed. (Ithaca, NY, Cornell University, New York State School of Industrial and Labor Relations, 1989), p. 35. Available from ILR Press, Ithaca, NY.

[2] In 1990, of the 24 players who arbitrated their salaries, the 14 players who won received increases averaging 141 percent, while the 10 players who lost received increases averaging 123 percent. See Richard Justice, "Root of the Lockout," *San Francisco Chronicle*, Feb. 27, 1990, p. D3.

[3] Paul D. Staudohar, "Baseball Impasse: Locking Out for No. 1," *The New York Times*, Mar. 11, 1990, p. 27.

[4] Murray Chass, "Arbitration Eligibility is Major Hangup," *The Sporting News*, Mar. 5, 1990, p. 13.

[5] *American Ship Building Co.* v. *National Labor Relations Board*, 380 U.S. 300 (1965).

[6] The use of replacement players was not a threat in baseball. This tactic had been used successfully by owners during the 1987 football strike to divide the players, as discussed in Paul D. Staudohar, "The football strike of 1987: the question of free agency," *Monthly Labor Review*, August 1988, pp. 26–31. Although the active major league roster has 24 players, the total roster is 40 players, which includes players under contract with a major league team but assigned to a minor league club. Because many of these players are or have been members of the players' union, it would be difficult to obtain highly skilled players to serve as replacements.

[7] Data from *Sports Illustrated*, Feb. 19, 1990, p. 7.

[8] "Voice of the Fan," *The Sporting News*, Mar. 19, 1990, p. 3.

What we do and don't know about training in the workplace

Growing concern over the education and training qualifications of our current and future work force to meet the challenges of increasingly complex jobs has generated a number of studies and commissions. Intensive investigation over many years has led to a body of knowledge about the value of education to the work force, but surprisingly little is known of the value of occupational training. This summary of a Bureau of Labor Statistics paper, prepared for a December 1990 Organization for Economic Cooperation and Development Conference, reviews what we do and do not know about the extent and cost of training in the United States.

Investments in skills

Human capital theory was the dominant paradigm in labor economics even before Gary Becker codified much of the theory in human capital. According to this theory, workers invest in schooling and job training to learn or improve skills.[1] They sacrifice current earnings by staying in school rather than working and by accepting lower initial earnings in jobs with large training components. Workers weigh the costs of foregone earnings and expenses against the higher wages received and choose to continue making these investments as long as they are profitable.

Like the worker, firms continue to invest in training employees as long as it is profitable. An employer may be willing to invest in training if the firm can benefit from the investment. Because workers are free to change employers, firms are more willing to pay for training that is specific to the firm rather than general training that may be highly portable.[2]

Surveys of training

Growing reliance on human capital theory and the paucity of training data led to several projects to measure the extent and cost of worker training. Most data on the extent of formal and informal

This summary is an excerpt of a paper prepared by a Bureau of Labor Statistics interoffice working group. The group consisted of Harley Frazis, Office of Research and Evaluation; Diane Herz and Susan Shank, Office of Employment and Unemployment Statistics; Deborah Klein, Office of the Commissioner; Larry Rosenblum, Office of Productivity and Technology; Neal Rosenthal, Office of Employment Projections; and William Wiatrowski, Office of Compensation and Working Conditions.

training come from household or employer based surveys. In the United States, household based surveys include the Current Population Survey (CPS), the National Longitudinal Survey (NLS), the Survey of Income and Program Participation (SIPP), and the University of Michigan's Time Use study. Employer based surveys include the Employment Opportunity Pilot Project (EOPP) and a BLS survey of occupational training in selected metalworking industries.

The word "training" encompasses many different activities. The training surveys that have been conducted ask different questions, and are often not comparable. Some of the surveys encompass all skill acquisition, whether by formal or informal means; others are limited to formal arrangements. One natural consequence of these differences in scope is the wide range of estimates of the incidence of training. For example, the Michigan study found 60 percent of workers received job training, while the Survey of Income and Program Participation estimated that about 20 percent did.[3]

A 1983 supplement to the CPS indicated that 55 percent of all workers required some skills or training to get their current job and 35 percent took some type of training to improve their skills while holding their current job. Half of all workers who indicated they required training to obtain their job received that training from employers.[4]

A 1974 BLS survey of occupational training in selected metalworking industries obtained information on enrollments and completions of training programs designed both to qualify workers for employment in 14 specific occupations and to upgrade the skills of workers already employed in those occupations. Only 15 percent of the establishments covered by the survey provided structured training in the selected occupations. Establishments provided training primarily because employers felt job skills could best be taught in their own training programs and because the educational or training background of their employees was inadequate.[5]

Other measures

Corporate studies have been conducted that focus on different measures of training. For example, in 1985, the Conference Board surveyed 218 companies to derive information on changes in training over time. The Board found that the proportion of workers receiving training had increased in all major job categories over the 1980–85 period.[6]

Data on training as a benefit to employees is available from the BLS Employee Benefits Survey. The survey found that the majority of workers in medium and large firms are eligible to receive job-related educational assistance.[7]

A different way to look at employer-supported training is to examine the provisions in major collective bargaining agreements. At first, training and educational opportunities were provided to displaced employees in order to facilitate their reentry into the labor force. Subsequently, such opportunities were made available to active employees to enhance their career development. Examples of such provisions are found in the agreements between General Motors and the Autoworkers, AT&T and the Electrical and Communication workers, and USX and the Steelworkers.

The cost of training

Several studies have attempted to measure both formal and informal training costs and have come up with a wide range of estimates. The results of these surveys have been viewed with some skepticism as they vary widely, reflecting differences in methodology, definition, sample size and selection, and response rates.[8] One commonly cited survey that focused on formal employer-sponsored training was conducted by the American Society for Training and Development. That survey estimated that employers spent approximately $30 billion in direct costs for formal training in 1984.[9] Annual surveys published in *Training* magazine have come up with similar figures.[10]

The total cost of training may be much higher than these studies indicate. Total training costs borne by employers include not only direct costs, but also the value of foregone production by workers participating in training. The American Society for Training and Development estimated that the annual costs of employer-provided informal training ranged from $90 to $180 billion annually.[11] Jacob Mincer estimated the total value of training to be equal to the increase in production due to training. His estimate of $296 billion in 1987 includes foregone compensation and increased productivity in excess of compensation.[12] Using data from the Time Use survey, he estimated that just the value of workers' time spent in training equaled $148 billion dollars in 1987.

The effects of training

How private-sector training affects employment, productivity, and wages has been the subject of a number of recent studies. One analysis utilized combined data on formal and informal training from the Employment Opportunity Pilot Project survey; the researchers found that a 10-percent increase in the amount of time devoted to training was associated with an average 3-percent increase in productivity and a 1.5-percent increase in wages.[13] Other researchers used the 1983 CPS and found that receiving formal company training was associated with wage gains of more than 20 percent.[14]

Data from the National Longitudinal Survey make possible comparisons of the effects of different types of training. Using the survey's young men's cohort, researchers Lee Lillard and Hong Tan found that company training had a greater impact on earnings than did training from any other source.[15] Of all the types of training, managerial training had the largest impact on earnings. The same researchers found that earnings gains tended to decay over a period of 7 to 15 years. Linda Lynch used data from the youth cohort and found that company training and apprenticeships had greater impacts on earnings than did off-the-job training, such as that provided by business colleges and technical institutes.[16]

What we know

A consensus has emerged on certain issues:

- The likelihood of training declines with age.
- The likelihood of training increases with education.
- Men are more likely to receive training than women and whites are more likely to receive training than blacks.

- The likelihood of training increases with firm size.
- Most training is informal.
- Training increases future earnings of workers, but which kinds of training do so and how well training pays is uncertain.

What we do not know

- We have no universal definition of training.
- Estimates of total amount of training received by workers are very rough and vary widely.
- It is unclear how to measure whether training is successful.
- Estimates of the cost of training are extremely weak.
- Changes in the extent of training over time are unknown.

What we would like to know

The basic questions we would like to answer are: How much employer-provided training is going on? How much are we spending on training? And, what are the effects of training on individuals, firms, and society?

To answer these questions would require the collection of information from employers on the extent of their training activities, and the content and cost of that training. Ideally, these answers would be tied to the characteristics of individual workers in order to measure the effect of training on earnings and unemployment. Information on firm or job tenure would also be useful and regular data collection to measure change would make analysis possible.

The problem faced in collecting meaningful training data is that both employers and employees have vital information. Employers are the best source of information on cost, hours, and content of formal training. Employees are the best source of similar information on informal training and of data on demographic characteristics.

With this in mind, some specific questions are:

- What kind of training is being offered?
- How many hours are devoted to training?
- What are the direct dollar expenditures by firms and individuals on training?
- How many hours of training per year is the average worker receiving? Does it vary by demographic or occupational group?
- Who pays for training?
- What is the benefit of training to employers and employees?
- Is the amount or content of training changing over time?

According to the BLS paper, the most pressing need is for a broad-based establishment survey of employer-provided training. This survey would focus on the type, extent, and cost of training. The survey would have to be large enough to provide data by both industry and size of establishment. This information would assist policymakers in understanding the transition from school to work, and provide information on work force quality.

The paper concludes that obtaining this type of information would not be easy. Careful attention would have to be given to the design of the survey instrument, and extensive testing and pilot work would be required. The authors envisage the use of both mail and telephone collection to maximize reliability and response rates.

A COPY OF THE FULL PAPER, "Education and Training of American Workers," is available from the Bureau of Labor Statistics, 441 G Street, N.W., Room 2831–A, Washington, DC 20212. □

Footnotes

[1] See Gary S. Becker, *Human Capital*, 2nd edition (Chicago, University of Chicago Press, 1975).

[2] Two articles that provide reviews of existing literature on the extent and cost of training, and that offer suggestions for training policy, are included in a collection of papers assembled by the Secretary of Labor's Commission on Workforce Quality and Labor Market Efficiency. See Charles Brown, University of Michigan, "Empirical Evidence on Private Training," and Stephen L. Mangum, Ohio State University, "Evidence on Private Sector Training," contained in *Investing in People: A Strategy to Address America's Workforce Crisis* (U.S Department of Labor, 1989), pp. 301–86.

[3] See *What's It Worth? Educational Background and Economic Status: Spring 1984*, Series P–70, No. 11 (Bureau of the Census, 1984), p. 16. See Frank Stafford and Greg J. Duncan, "The Use of Time and Technology by Household in the United States," *Research in Labor Economics*, Vol. 3, 1980, pp. 335–75.

[4] See *How Workers Get Their Training*, Bulletin 2226 (Bureau of Labor Statistics, 1985).

[5] See *Occupational Training in Selected Manufacturing Industries, 1974*, BLS Bulletin 1976 and ETA R&D Monograph 53 (Bureau of Labor Statistics and Employment and Training Administration, 1977).

[6] Seymour Lusterman, "Trends in Corporate Education and Training," Report No. 870 (New York, The Conference Board, 1985).

[7] See *Employee Benefits in Medium and Large Firms, 1989*, Bulletin 2363 (Bureau of Labor Statistics, 1990); see also, *Employee Benefits in State and Local Governments, 1987*, Bulletin 2309 (Bureau of Labor Statistics, 1988), pp. 76–77.

[8] See Brown, "Empirical Evidence on Private Training"; and Mangum, "Evidence on Private Sector Training."

[9] See Anthony P. Carnevale and Leila Garner, *The Learning Enterprise* (The American Society for Training and Development and the Employment and Training Administration, 1988), p. 17.

[10] Chris Lee, "Where the Training Dollars Go," *Training*, October 1987, pp. 51–65.

[11] See Carnevale and Garner, *The Learning Enterprise*, p.15.

[12] Jacob Mincer, "Job Training: Costs, Returns, and Wage Profiles," Working Paper No. 3208 (Washington, National Bureau of Economic Research, 1989).

[13] See John M. Barron, Dave A. Black, and Mark A. Lowenstein, "Job Matching and On-the-job Training," *Journal of Labor Economics*, January 1989, pp. 1–19.

[14] Lee Lillard and Hong Tan, *Private Sector Training: Who Gets It and What are Its Effects?* Rand Monograph R–3331–DOL/RC (Santa Monica, CA, Rand Corporation, March 1986).

[15] Lillard and Tan, p. 58.

First-time mother's return to the work force

The employment status prior to a woman's first pregnancy is probably the most influential factor in her decision to return to work after childbirth. The type of maternity leave arrangement also influences the decision. These conclusions are from a Bureau of the Census study of the results of retrospec-

tive answers of 9,000 women who participated in the 1984 and 1985 Survey of Income and Program Participation.

Patterns of work and leave were different for women who had their first births in the 1961–65 period and those who had their first births in the 1981–85 period. In the 1961–65 group, 60 percent had worked for 6 or more consecutive months before having their first child; in the 1981–85 group, 75 percent had done so.

Since the 1960's, the majority of employed pregnant women have been working full-time—between 80 and 90 percent worked 35 hours or more per week at the last job they had before their child's birth. Women also have been working longer into their pregnancies. Between 1981 and 1985, 30 percent of pregnant workers stayed on the job longer than 8 months into their pregnancies, compared with 10 percent of mothers-to-be in the 1961–65 period.

Along with their higher rates of employment for pregnant workers was an increase in the amount of maternity leave benefits available and being used. In the 1960's, 16 percent of mothers reported receiving maternity benefits, 14 percent reported receiving unpaid leave of absence, and 5 percent were terminated; the majority—60 percent—voluntarily quit their jobs. By the 1980's, the percentage of first-time mothers who reported receiving maternity benefits increased to 47 percent, and the percentage who voluntarily quit decreased to 28 percent. Since the early 1970's, about 20 percent have reported receiving unpaid leave of absence. The proportion terminated has remained at about 5 percent since the 1960's.

A trend of growing labor force attachment among mothers is also evident. Only a small percentage of first-time mothers in the 1970's were working by the third month after childbirth; by the 1980's, one-third of first-time mothers were working by the third month, and slightly more than one-half had returned to work within 1 year. In the 1960's, 16 percent of first-time mothers were working 1 year after childbirth; only one-third had entered or re-entered the labor force 5 years after childbirth.

Between 1981 and 1985, the labor force activities of first-time mothers varied widely by age. Twice as many 18- to 21-year-olds quit their jobs during pregnancy than did those 25 years and older (42 percent versus 21 percent). Only 20 percent of 18- to 19-year-olds received maternity benefits, as opposed to almost 60 percent of women 25 and older. Teenage mothers were more likely to have been terminated from work than were older mothers.

In the 1980's, no difference in race was noted regarding maternity benefits or terminations. However, in the 1960's, pregnant white women were more likely to quit their jobs and, consequently, less likely to receive maternity benefits than were pregnant black women, who typically kept their jobs. For most of the years studied, pregnant black women, generally were more likely to be involuntarily terminated from their jobs than were pregnant white women. No difference was noted in leave arrangements by marital status.

The full paper, "Maternity Leave Arrangements 1961–1985," by Martin O'Connell of the Fertility Statistics Branch, Bureau of the Census, was presented at the 1989 meetings of the American Statistical Association. □

—Laurie B. Lande
Office of Publications

Significant decisions in labor cases

Patronage practices

Supreme Court Justice William Brennan wrote in the 1976 case of *Elrod* v. *Burns* that "patronage . . . is a very effective impediment to the associational and speech freedoms which are essential to a meaningful system of democratic government."[1] As a result of this opinion, Justice Brennan ruled that a government could fire a worker on the basis of the worker's political party affiliation only if the worker held a policymaking job in which party membership enhanced government efficiency and effectiveness.[2] Thus, a recently elected county sheriff was not allowed to fire office workers simply because they did not support, or were unwilling to join, the Democratic Party. The Supreme Court followed its important first amendment[3] decision in *Elrod* 4 years later in the case of *Branti* v. *Finkel*,[4] when it held that political party support may be taken into account only if it is an "appropriate requirement for the effective performance of the public office involved."[5]

Until recently, the Supreme Court had not ruled on whether personnel decisions other than discharge could be based on a person's political beliefs, party affiliation, or party support. On June 21, 1990, the Court addressed this issue in *Rutan* v. *Republican Party*,[6] ruling that the Court's rationale in the *Elrod* and *Branti* cases is equally applicable to such personnel decisions.

The dispute in *Rutan* was triggered by Illinois Governor James Thompson's 1980 executive order prohibiting most of the State's agencies and organizations from hiring, promoting, or taking similar personnel action without first obtaining his approval. Five current or would-be State workers objected to this order and challenged it in Federal court. They claimed that the Governor's order impermissibly transformed all State jobs into patronage positions by allowing persons to be hired, promoted, transferred, or recalled only if they supported, or were supported by, the Republican Party.[7]

Justice Brennan, writing for a 5–4 majority of the Court, agreed with the workers. "The First Amendment," he wrote, "prevents the government, except in the most compelling circumstances, from wielding its power to interfere with its employees' freedom to believe and associate, or to not believe and not associate."[8] Although failing to hire an applicant, or failing to promote, transfer, or recall an employee, based on his or her political affiliation or support, might seem less harsh than firing an employee for the same reasons, he held that these actions nevertheless have adverse consequences for State employees and applicants and may "press [them] to conform their beliefs and associations to some state-selected orthodoxy."[9] Relying on the rationale of the *Elrod* and *Branti* decisions, Justice Brennan concluded that the State of Illinois' patronage practices were coercive and encroached upon first amendment freedoms because the practices were not "narrowly tailored to further vital government interests."[10]

Justice Antonin Scalia objected to Justice Brennan's opinion, arguing that the *Elrod* and *Branti* decisions had proved unworkable, were incorrectly decided, and should be overruled.[11] A government's employment practices, he said, should not be judged by the same constitutional standards that apply to its attempts to regulate the general public. Instead of requiring courts to determine whether government patronage practices are narrowly tailored to further vital interests—a constitutional standard he considered too restrictive and unmanageable—Justice Scalia would allow elected representatives to decide whether the coercive effects of patronage practices outweigh their advantages. In his opinion, elected policymakers, not judges, are better equipped to make this decision.

Pension plans

In 1986, the LTV Corporation and many of its subsidiaries sought protection from their creditors by filing petitions under Chapter 11 of the Federal bankruptcy laws.[12] A major reason for these actions was LTV's nearly $2.3 billion liability for three underfunded defined benefit pension plans sponsored by one of its subsidiaries, LTV Steel Company, the Nation's second largest steelmaker.[13] By filing bankruptcy petitions, LTV sought to restructure these, and other, obligations while continuing in business.

As part of its reorganization strategy, LTV notified the Pension Benefit Guaranty Corporation, a public corporation created by Congress to provide mandatory insurance coverage for private-sector defined benefit pension plans, of its difficulties.[14] The Pension Benefit Guaranty Corporation, whose insurance provided coverage for all but $200 million of LTV's $2.3 billion in unfunded liabilities, reviewed the situation and concluded that its ultimate liability as an insurer could increase by several hundred million dollars if it did not terminate LTV's plans quickly.[15] Thus, early in 1987, it terminated the three plans and assumed their assets and liabilities.[16]

Although most benefits payable under the plans were guaranteed by the Pension Benefit Guaranty Corporation, some were not.[17] To make up for the lost benefits, the steelworkers' union negotiated a new, much more limited, "follow-on" pension plan with LTV. Thus, although LTV would fund only the follow-on plan, its employees and

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"Significant Decisions in Labor Cases" is written by Craig Hukill, an attorney in the Office of the Solicitor, U.S. Department of Labor.

pensioners would be able to combine payments under this plan with payments from the Pension Benefit Guaranty Corporation and thereby receive nearly the same benefits they would have received under the terminated plans. In effect, the insurance program was being asked to finance a major portion of LTV's reorganization by assuming most of the steelmaker's enormous pension liabilities.

The Pension Benefit Guaranty Corporation, however, concluded that the new plan amounted to an abuse of the insurance system. As a result, it issued an order restoring the three previously terminated pension plans and requiring the company to administer and fund the plans again.[18] To support this action, the Pension Benefit Guaranty Corporation relied on section 4047 of the Employee Retirement Income Security Act, which allows it to restore a previously terminated plan in any case in which it determines such action to be appropriate and consistent with its statutory duties.[19] LTV refused to comply with the restoration order, forcing the public corporation to seek enforcement in Federal court.[20]

In the next-to-last week of its recently completed term, the Supreme Court ruled, in *Pension Benefit Guaranty Corp.* v. *LTV Corp.*,[21] that the Pension Benefit Guaranty Corporation exercised its broad authority properly under section 4047 when it restored the three plans. The Pension Benefit Guaranty Corporation's policy prohibiting abusive follow-on pension plans, the Court held, is rational and consistent with the broad purposes of the Employee Retirement Income Security Act. Further, because section 4047 does not clearly prohibit the Pension Benefit Guaranty Corporation from making restoration decisions based on the existence of follow-on plans, its judgment is entitled to deference.

Justice Harry Blackmun, who wrote the opinion for the *LTV* Court's 8–1 majority, found the Pension Benefit Guaranty Corporation's policy to be rational because it encourages employees to object strenuously to employer actions that are likely to result in pension plan terminations. Employee resistance, he wrote, can be an important check against plan terminations and may be encouraged. Justice Blackmun also indicated that if abusive follow-on plans are prohibited, fewer pension plans might be terminated. This, the Court agreed, might further two of the Employee Retirement Income Security Act's important goals: Encouraging voluntary private pension plans and maintaining low premiums.

Finally, the Court held that when the Pension Benefit Guaranty Corporation makes a decision to restore a previously terminated plan, it is not required to consider and discuss other labor and bankruptcy laws.[22] The "specific and unambiguous mandate" of section 4047, Justice Blackmun said, is for the Pension Benefit Guaranty Corporation to take actions that are "appropriate and consistent with . . . this title," which refers to Title IV of the Employee Retirement Income Security Act, not other laws.[23] In addition, requiring agencies to take into account considerations that are not pertinent to their statutory duties might cause many more agency decisions to be challenged and invalidated in the courts. "We are not entirely sure," Justice Blackmun wrote, "that [this] makes good sense as a general principle of administrative law."[24]

Whistleblowers

In *English* v. *General Electric Co.*,[25] the Supreme Court recently ruled that a nuclear energy industry employee who complained about safety and later lost her job may sue her employer under State law for intentional infliction of emotional distress. In reaching this conclusion, the Court held that the employee's State law claim is not preempted by Federal efforts to regulate nuclear safety and to protect nuclear safety whistleblowers.[26]

In 1984, Vera English, a laboratory technician employed at a General Electric Company nuclear fuels production facility, complained to her employer that fellow workers were failing to clean up radioactive spills. On one occasion in particular, she drew attention to a spill by marking it with red tape. Several days later, when the area had not been decontaminated, she protested to the company. Although the area was then cleaned, General Electric reassigned English to a new, temporary job and later laid her off.

English complained to the Department of Labor that the company's actions violated section 210(a) of the Energy Reorganization Act of 1974,[27] a Federal law that provides a remedy to workers who suffer employment discrimination in retaliation for making nuclear safety complaints.[28] This Federal complaint, however, was dismissed by the Secretary of Labor because it had not been filed on time.[29]

English also filed suit under State tort law, claiming that General Electric had taken its actions with the intent to inflict emotional distress.[30] Both the trial court and the Court of Appeals for the Fourth Circuit, though, ruled that the State law claim must be dismissed because it is preempted by the Federal Energy Reorganization Act.[31]

In a unanimous opinion written by Justice Blackmun, the Supreme Court held that English's State law claim is not preempted by Federal law. Justice Blackmun noted that although Congress, in general, preempted the nuclear safety field, evidence does not show that it intended for section 210 of the Energy Reorganization Act to preempt State laws that traditionally have afforded remedies to victims of outrageous employer conduct. Only if the State law directly and substantially affects decisions by nuclear facility operators concerned with radiological safety, he held, must the State claim be preempted. Because English's claim had no such effect, preemption based on the pervasive nature of Federal nuclear safety regulation does not come into play. Finally, Justice Blackmun concluded that a State law claim for intentional infliction of emotional distress does not conflict with any aspect of section 210 and so is not preempted on this basis either. □

Footnotes

[1] 427 U.S. 347, 369–70 (1976) (plurality).

[2] The government may encroach upon its employees' first amendment rights by conditioning job retention on the employees' political party support, Justice Brennan held, only if the government's interest is of vital importance and if the employment practice is the least restrictive means of furthering this interest. *Id.* at 363.

[3] The first amendment to the Constitution provides that "Congress shall make no law. . . abridging the freedom of speech." U.S. Const. amend. I. Although the terms of the first amendment apply literally only to laws enacted by

Congress, its guarantee of free speech is a "liberty" that States and State officials may not abridge under the amendment, which states that "[n]o State shall . . . deprive any person of life, liberty, or property without due process of law." U.S. Const. amend. XIV, § 1; see generally *Palko* v. *Connecticut*, 203 U.S. 319 (1937).

[4] 445 U.S. 507 (1980).

[5] *Id.* at 518 (1980). In this case, a newly appointed public defender tried to discharge assistant public defenders who were not backed by the Democratic Party. The Court ruled that political party support was not an appropriate requirement for the effective performance of the office of assistant public defender. *Id.* at 518.

[6] 110 S. Ct. 2729 (1990).

[7] Two former employees, a garage worker and a dietary manager in the State mental health department, claimed that they had not been recalled from a layoff because they had not supported the Republican Party. *Rutan* at 2733. An applicant for a prison guard position claimed that the State had refused to hire him because he was not supported by party officials. *Id.* Similar claims were made by a State rehabilitation counselor who had sought a promotion and by a State road equipment operator who had sought both a promotion and a transfer. *Id.*

The district court dismissed the case of these individuals without holding a trial, ruling that they had failed to allege facts that established a violation of the first amendment. 641 F. Supp. 249 (C.D. Ill. 1986). In the district court's opinion, States are allowed to take political factors into account when they make decisions to hire, rehire, transfer, or promote employees.

The court of appeals did not agree completely with the district court, holding that under *Elrod* and *Branti*, patronage practices violate the first amendment rights of lower level and mid-level State employees if the workers suffer the substantial equivalent of dismissal on account of their political beliefs or practices. 848 F.2d 1396 (7th Cir. 1988). Because the trial court had not heard evidence on this issue, the Seventh Circuit remanded the case to the district court to determine whether the State's denial of the employees' promotions, transfers, or recalls would have caused a reasonable person to resign, which the appellate court held would have been the substantial equivalent of dismissal.

[8] 110 S. Ct. at 2738.

[9] *Id.* at 2737.

[10] *Id.* at 2736. Justice Brennan suggested that the government's interest in efficiency could be protected adequately by using deficient work performance, and not patronage considerations, as the basis for hiring, promotion, transfer, and recall decisions.

[11] *Id.* at 2746 (Justice Scalia, dissenting).

[12] See *Pension Benefit Guar. Corp.* v. *LTV Corp.* (*In re Chateaugay Corp.*), 87 Bankr. 779 (S.D.N.Y. 1988). 11 U.S.C. § 1101 (1988) (Chapter 11 of the Federal bankruptcy laws).

[13] 87 Bankr. at 785. LTV Steel Company came into existence as a result of the merger of Jones & Laughlin Steel Company, Youngstown Sheet & Tube Company, and Republic Steel Corporation. *Id.* According to the district court that considered LTV's bankruptcy petition, LTV merged the three steel companies to make them more efficient by combining some operations and closing down other old and outdated ones. *Id.* at 786. This merger caused massive layoffs, and many workers retired early, which dramatically increased LTV's pension liabilities. The district court noted that by 1986, LTV Steel Company had more than 77,000 retirees and fewer than 25,000 active workers. *Id.*

[14] The Pension Benefit Guaranty Corporation was created when the Employee Retirement Income Security Act of 1974 was enacted. Pub. L. No. 93–406, § 4002, 88 Stat. 1004 (codified at 29 U.S.C. § 1302 (1988)). The Pension Benefit Guaranty Corporation's statutory purpose is to encourage the use of voluntary private pension plans, to maintain insurance premiums at levels appropriate to its mission, and to provide for the uninterrupted payment of pension benefits to participants of certain defined benefit pension plans that have been terminated. 29 U.S.C. § 1302(a) (1)-(a) (3) (1988).

A defined benefit pension plan is a plan under which retirees receive a fixed pension, often based on factors such as the length of their service. Actuaries take into account many complex considerations in determining the amount of contributions that are needed to fund these plans.

Defined contribution pension plans, which are not insured by the Pension Benefit Guaranty Corporation, are different from defined benefit pension plans. A defined contribution plan provides a retiree with a pension based solely on the amount of money that has been contributed to the retiree's account and the account's earnings and losses. See 29 U.S.C. §§ 1002(34)–(35) (1988).

[15] One important concern of the Pension Benefit Guaranty Corporation was related to the precarious condition of the steel industry in the United States. As more and more plants closed their doors as a result of a slowdown in the industry, LTV Steel Company's pension plans were expected to incur additional liabilities for shutdown benefits. By terminating LTV's pension plans before company plants closed, the Pension Benefit Guaranty Corporation could avoid assuming these additional liabilities.

[16] The Pension Benefit Guaranty Corporation can terminate a defined benefit pension plan if it decides that (1) the plan does not meet minimum funding standards; (2) the plan will be unable to pay benefits as they come due; (3) a certain distribution of plan assets has been made to an owner, and, as a result, the plan has nonforfeitable benefits that are not funded; or (4) its possible long-term losses from the plan will increase unreasonably if the plan is not terminated. 29 U.S.C. § 1342(a) (1988). The Pension Benefit Guaranty Corporation terminated the three LTV plans because it expected the plans to incur increased long-term losses.

[17] 87 Bankr. at 788.

[18] *Id.* at 792.

[19] 29 U.S.C. § 1347 (1988).

[20] 87 Bankr. at 792.

[21] 110 S. Ct. 2668 (1990).

[22] The Court of Appeals for the Second Circuit had ruled earlier in the case that the Pension Benefit Guaranty Corporation's action restoring the plans had been improper, in part because it had attached too little importance to labor and bankruptcy laws, while relying too heavily on the Employee Retirement Income Security Act. *Pension Benefit Guar. Corp.* v. *LTV Corp.*, 875 F.2d 1008 (2d Cir. 1989).

[23] 110 S. Ct. at 2675, citing 29 U.S.C. § 1347 (1988).

[24] 110 S. Ct. at 2676.

[25] 110 S. Ct. 2270 (1990).

[26] The doctrine of preemption has its roots in Article VI of the Constitution, which provides that "[t]his Constitution, and the Laws of the United States which shall be made in Pursuance thereof . . . shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws in any State to the Contrary notwithstanding." U.S. Const. art. VI, cl. 2. As the Court explained in *English*, preemption can take one of three forms. First, an act of Congress, by its terms, can explicitly preempt State law. Second, State law is preempted if it intrudes into an area in which Federal regulation is pervasive. Last, State law is preempted if it conflicts with Federal law. See 110 S. Ct. at 2275.

[27] 42 U.S.C. § 5851 (1988).

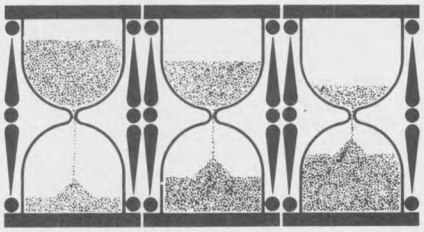
[28] Following receipt of a whistleblowing complaint under section 210 of the Energy Reorganization Act, the Secretary of Labor conducts an investigation and hearing and then issues a decision. 42 U.S.C. § 5851(b) (2) (A) (1988). If the complaint has merit, reinstatement, backpay, compensatory damages, and costs and expenses, including attorneys' and expert witness fees, may be awarded. 42 U.S.C. § 5851(b) (2) (B) (1988).

[29] *English* v. *General Electric Co.*, No. 85-ERA-2 (Dep't Labor Jan. 13, 1987). A complaint under section 210 of the Energy Reorganization Act must be made within 30 days of the alleged violation. 42 U.S.C. § 5851(b) (1) (1988). In English's case, the company reassigned her and told her that she would be laid off 90 days later if she did not successfully bid on a job that did not involve exposure to radioactive materials. English did not file her complaint until after the company's 90-day deadline expired.

[30] English claimed that General Electric had intentionally inflicted emotional distress not only by improperly reassigning her and laying her off, but also by removing her from the laboratory "as if she were a criminal," by requiring her to perform make-work, by ridiculing her as paranoid, by preventing her from working in controlled areas, by monitoring her activities throughout the workday, by isolating her from coworkers, and by conspiring to charge her fraudulently with violating safety and criminal laws. 110 S. Ct. at 2274. In addition to her State law claim for intentional infliction of emotional distress, English alleged under State law that she had been wrongly discharged. The district court ruled against her on this point, and she did not appeal. *Id.* at n.4.

[31] 683 F. Supp. 1006 (E.D.N.C. 1988), *aff'd*, 871 F.2d 22 (4th Cir. 1989).

Major agreements expiring next month



This list of selected collective bargaining agreements expiring in November is based on information collected by the Bureau's Office of Compensation and Working Conditions. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification. Labor organizations listed are affiliated with the AFL–CIO, except where noted as independent (Ind.).

Private industry

Food products

Pineapple companies, Hawaii; Longshoremen's and Warehousemen's, 3,750 workers

Printing and publishing

National Sample Card Manufacturers Association, Inc., New York, NY; Graphic Communications, 1,600 workers

Fabricated metal products

Day and Zimmerman, Inc., Lone Star Division, Texarkana, TX; Teamsters, Machinists, and others, 1,000 workers

Martin Marietta Corp., Aerospace Division, Interstate; Automobile Workers, 6,000 workers

Transportation equipment

General Dynamics Corp., Fort Worth Division, Fort Worth, TX; Machinists, 10,400 workers

Water transportation

Hampton Roads Maritime Association, Hampton Roads, VA; Longshoremen (ILA), 2,000 workers

New Orleans Steamship Association, New Orleans, LA; Longshoremen (ILA), 1,500 workers

New York Shipping Association, New York, NY, area; Longshoremen (ILA), 6,000 workers

Philadelphia Marine Trade Association, Philadelphia, PA; Longshoremen (ILA), 1,900 workers

South Atlantic Employers' Negotiating Committee, Interstate; Longshoremen (ILA), 3,000 workers

Southeast Florida Employers Association, Florida; Longshoremen (ILA), 1,500 workers

Steamship Trade Association of Baltimore, Baltimore, MD; Longshoremen (ILA), 2,300 workers

West Gulf Maritime Association, Interstate; Longshoremen (ILA), 4,000 workers

Air transportation

United Airlines (pilots), Interstate; Air Line Pilots Association, 7,000 workers

Communications

Carolina Telephone and Telegraph, Tarboro, NC; Communications Workers, 2,012 workers

Utilities

Private Sanitation Industry, New York, NY; Teamsters, 1,650 workers

Retail trade–food stores

Kings Markets, New Jersey; United Food and Commercial Workers, 1,800 workers

Finance, insurance, and real estate

Chicago fireproof buildings, Chicago, IL; Service Employees, 2,600 workers

Chicago walk-up apartments, Chicago, IL; Service Employees, 4,900 workers

Services

Associated Press, Interstate; Newspaper Guild, 1,400 workers

Major Honolulu hospitals (Big 5), Hawaii; American Nurses' Association (Ind.), 1,800 workers

New York City laundries, New York, NY, area; Clothing and Textile Workers, 6,000 workers

Santa Clara Valley Maintenance Contractors Association, California; Service Employees, 1,700 workers

Public activity

Education

Los Angeles Community College (clerical and technical), Los Angeles, CA; Teachers (AFT), 1,000 workers

General administration

Wayne County (multiunit), Detroit, MI; State, County and Municipal Employees, 1,200 workers

Health services

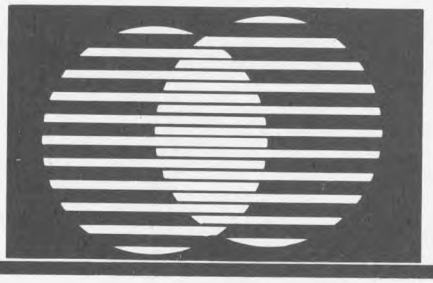
Cook County (registered nurses), Chicago, IL; American Nurses' Association (Ind.), 1,500 workers

Cook County Hospital, Chicago, IL; Service Employees, 1,600 workers

Other

Wayne County (road maintenance), Detroit, MI; State, County and Municipal Employees, 1,000 workers

Developments in industrial relations



Aerospace developments

Rockwell International Corp. and four United Automobile Workers locals negotiated new 3-year agreements, covering some 9,000 workers at various sites in California and Oklahoma. The contracts provide for wage increases and lump-sum payments: an immediate 4-percent general wage increase, a 3-percent general wage increase in July 1991, a lump-sum payment in December 1990 equal to 2 percent of an employee's gross earnings in the preceding 12 months, and a similar 6-percent lump-sum payment in August 1992. In addition, $1.57 in cost-of-living allowances paid under the previous agreements will be rolled into the base rate immediately after the initial wage increase.

Other terms include establishment of employee involvement programs that basically focus on production-oriented problems; continuation of the cost-of-living adjustment clause, which provides for quarterly adjustments equal to 1 cent an hour for each 0.3-point change in the Consumer Price Index for Urban Wage Earners and Clerical Workers; $3 increases in the monthly pension rate for future retirees in January of 1991 and 1992, bringing the rate to $26 and $29; a $200 increase in annual retirement benefits for current pensioners in each year of the contract; and an 85-percent (previously, 100-percent) reimbursement under the preferred provider health care plan.

Elsewhere, after almost 3 months of talks, negotiators for Bell Helicopters and two locals of the United Automobile Workers reached similar 3-year pacts, covering 3,550 workers in the Dallas-Fort Worth, TX, area. (Local 218 represents some 2,850 production and maintenance workers; Local 317 represents about 700 office and clerical workers.) The accords provide for wage increases and the consolidation of health care plans.

The president of Local 218 described the outcome as "a good contract even considering the state of the defense industry." Bell Helicopters, a major helicopter and tilt-rotor manufacturer, was affected by defense budget cuts, particularly in the V-22 Osprey tilt-rotor program. In addition, funding for Bell's OH-58D scout helicopter improvement program and the AH-1 cobra gunship program may be in jeopardy.

Wage terms of Local 218's contract include a 3-percent general wage increase in 1990, and a 2-percent increase in 1991. In addition, workers will receive a lump-sum payment in the first year equal to 3 percent of their annual gross earnings in the preceding year, and similar lump-sum payments of 2 percent in the second year and 4 percent in the third year. Over the term of the contract, the wage rate of employees at the top of the wage progression reportedly will increase from $16.14 to $18.38, and their lump-sum payment will yield $3,373. The time it takes to move from the lowest to the highest pay scales was reduced from 13–18 years to 6.5 years.

Also, medical insurance was combined into a single comprehensive plan that includes the establishment of substance abuse and mental health treatment programs and improved dental and vision care benefits. Employees who opt not to participate in the comprehensive plan will be allowed to join a health maintenance organization (HMO).

Other terms include a $2,000 increase in both life insurance benefits and accidental death and dismemberment benefits (to $19,000 – $21,000, depending on labor grade); newly established life insurance benefits for spouses ($5,000) and for children ($2,000 each); a $20 increase over the contract's term in weekly accident and sickness benefits (to $190 – $210, depending on labor grade); a $26 (previously, $23) monthly pension rate for each year of credited service for future retirees effective September 1, 1990, and $29 effective September 1, 1992; $300 annual pension increases on December 1 of 1990, 1991, and 1992 for current retirees; and, effective September 1, 1990, a $28.60 monthly supplemental medical insurance benefit for retirees, with a maximum deductible medicare reimbursement of $592.

Unlike Local 218's agreement, Local 317's contract calls for compensation increases that differ between salaried and hourly paid workers. Salaried employees will receive a 3-percent wage boost in the first year, a 2-percent increase in the second year, a lump-sum payment in the first year equal to 3 percent of an employee's annual gross earnings paid in the previous year, and similar payments of 2 percent in the second year and 3 percent in the third year. Hourly employees will receive lump-sum payments only, structured along the same lines as those for salaried employees, equal to 6 percent in the first year and 4 percent in the second and third years.

Maritime preserves health benefits

The American Maritime Association and the Seafarers International Union reached a 3-year agreement, covering some 9,000 unlicensed crew members (seamen) on tankers and dry cargo ships, that provides for wage increases and maintenance of health benefits. The American Maritime Association bargained for 26 deep-sea shipping companies, including Sea-Land Services, Puerto Rico Marine Management, Inc., and Maritime Overseas Corp.

The contract calls for a general wage increase of 5 percent retroactive to June 16, 1990, and similar 5-percent increases on June 16 of 1991 and 1992, with additional wage boosts if the Consumer Price Index for Urban Wage Earn-

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

ers and Clerical Workers rises more than 5 percent annually in either 1991 or 1992. (Rates under the prior contract reportedly were $2,175.79 a month for members of the engine department class 1, $1,924.41 for chief stewards, $1,924.40 for boatswains, $1,710.48 for chief cooks, and $1,136.32 for steward assistants.)

Other terms include maintaining the current level of health benefits without employee contributions, although the parties will meet each year to determine how the health plan will be "kept going"; a 10-percent increase in the differential for cleaning tanks or doing longshore type work; and the addition of a tenth holiday, Martin Luther King, Jr.'s birthday.

Unlike the previous contract, the new accord does not provide for any major cutbacks in manning levels aboard ship.

West Coast dockworkers pact

Negotiators for the Pacific Maritime Association and the International Longshoremen's and Warehousemen's Union signed a 3-year agreement, covering some 9,000 longshoremen and clerks at ports in California, Oregon, and Washington. The contract calls for wage increases, job protection, and maintenance of health and welfare benefits. The Pacific Maritime Association represented about 100 west coast waterfront employers.

The basic straight-time hourly longshore pay rate was increased by $2.15 over the term of the contract, bringing the rate up to $22.48. At the same time, the number of hours needed to qualify for the basic longshore rate was cut 20 percent. (Registered Longshoremen's and Warehousemen's members working at least 1,600 hours during 1989 earned an average of $60,000.) In addition, the level of health and welfare benefits was maintained, and in order to offset costs, the health care deductible was increased from $50 to $100 a year.

In the area of job preservation, the contract provides protection for Oregon- and Washington-based Longshoremen's and Warehousemen's members whose jobs are threatened by downturns in the logging industry. The Industry Travel program will be expanded to allow for the maximum use of the registered (permanent) longshore work force as the volume of work in Oregon and Washington log ports drops. (The program provides travel pay for employees who voluntarily travel or who are ordered by their employer to travel within a defined geographic area.) In addition, the contract calls for adequate funding of the Pay Guarantee Plan (which guarantees registered longshoremen up to 38 hours of pay a week) to provide a financial cushion for longshoremen adversely affected by declining logging work.

Other terms include the resolution of some longtime problems dealing with registration and dock preference; the establishment of a "one door" policy governing transfers from longshore positions to clerk positions; a $6 increase (to $39) in the monthly pension rate for future retirees for each year of credited service, bringing the maximum monthly pension benefit to $1,365; a $3 increase in the monthly pension rate for each year of credited service for current retirees and surviving spouses, increasing the maximum monthly benefit by $105; a change in pension rules permitting disabled longshoremen who retire between October 1 and December 1, 1990, to receive a full pension as though they had worked to age 65; work rule changes sought by employers to improve productivity; various improvements in the Pacific Coast Marine Safety Code; 3 weeks of vacation after 8 years of service (previously, 10 years); a letter of understanding concerning the Longshoremen's and Warehousemen's Union jurisdiction at near-dock intermodal yards opened by Pacific Maritime Association member companies; a 60-percent increase in the lifetime limit on major medical benefits; establishment of a preferred provider health care system for participants in the "choice port" insured welfare plan, as an alternative to health maintenance organizations (HMO's); an increase in funding for the Widows Independent Living Subsidy Program; an unspecified increase in life insurance benefits for current retirees; and establishment of a 401(k) plan.

Garment industry settlements

Three employer associations in New York (bargaining for a number of underwear manufacturing firms) and Local 62–32 of the Ladies' Garment Workers reached new 3-year collective bargaining agreements. The contracts cover some 3,000 workers, and are expected to set a pattern for an additional 10,000 employees in the industry. The employer associations involved in the bargaining talks were the Allied Underwear Association, the Associated Corset and Brassiere Manufacturers, and the Intimate Apparel Manufacturers Association.

Terms provide for an immediate 4-percent wage increase, with additional 4-percent raises on July 1, 1991, and July 5, 1992; an increase in employer contributions to the health plan, to 2.125 percent (previously, 1.875 percent) of payroll in July 1991 and 2.375 percent in July 1992; a third day of bereavement leave (previously, 2 days), with coverage broadened to include the death of grandparents, grandchildren, brothers, and sisters; and new supplementary disability benefits, up to a maximum of $170, payable once a year for the first week of an illness or disability, for employees with at least 1 year of service (State disability payments begin on the eighth day of disability).

Settlement at weapons plant and lab

A 3-year agreement between Martin Marietta Energy Systems, Inc. and the Atomic Trades and Labor Council covers about 2,500 production, maintenance, and service workers at the Oak Ridge nuclear weapons plant and an additional 900 such hourly workers at the Oak Ridge National Laboratory. This was the first time in the parties' bargaining history that negotiations did not require intervention by the Federal Mediation and Conciliation Service, the Federal agency that conducts mediation in most industries involved in interstate commerce. (Martin Marietta operates the Oak Ridge facilities for the U.S. Department of Energy, while the Council is an umbrella organization that bargains for 17 local unions representing workers at these two facilities.)

Terms of the agreement called for 4-percent wage increases on June 22 of 1990, 1991, and 1992 (top wage rates under the prior contract were $15.12 for craftworkers such as machinists and

electricians, $14.05 for chemical process operators, and $10.64 for laborers); enhanced health insurance and pension benefits; and, effective in 1991, the option to take off on Martin Luther King, Jr.'s birthday instead of a second day off around the July 4 holiday.

GTE Northwest job action ends

Ending an 18-day work stoppage, negotiators for GTE Northwest, Inc. and Local 89 of the Electrical Workers (IBEW) reached a 3-year agreement covering about 3,200 installation and repair workers, service and business representatives, operators, test technicians, and other telephone company personnel in Washington, Oregon, and northern California. The major issues in the dispute were wage increases and job reclassification. The company's final prestoppage offer included a 3-percent wage increase retroactive to June 3, 1990, 2.5-percent wage increases in June 1991 and May 1992, and a lump-sum payment equal to 1.2 percent of an employee's gross annual earnings paid upon ratification. In addition, the company proposed a number of job reclassifications that would have upgraded some jobs and downgraded others.

In negotiations conducted after the dispute began, the company made "significant" changes in their prestoppage offer, which were accepted by the union leadership and the rank and file. Wage terms of the ratified pact include a 3-percent wage increase retroactive to June 30, 1990, a 3-percent increase in June 1991, and 1.5-percent increases in December 1991 and June 1992. The contract also calls for reclassifying five job classifications, including the upgrading of about 200 employees in two job classifications and the downgrading of three other classifications in which the current 20 employees would be "grandfathered" at their existing levels.

Other terms of the accord include enhancements in sick leave that allow employees with at least 5 years of service to receive full pay for all sick leave used for the first two illness within a 90-day period and a 1-day waiting period before sick pay begins for all subsequent illness during the 90-day period (previously, full pay for sick leave was available only for the first illness during a 90-day period); the establishment of a child care referral program; new health care coverage for vision care, and alcohol and drug abuse treatment for an employee and his or her dependents; and a flexible reimbursement plan for dependent care expenses.

Jobs guaranteed at Cummins

Enhanced job security was achieved by the independent Office Committee Union in a 3-year agreement for 1,235 office, clerical, and skilled trades workers employed by Cummins Engine Co. in Columbus, Seymour, and Madison, IN. Cummins is a major U.S. manufacturer of heavy-duty truck engines.

Under terms of the new agreement, employees are guaranteed not to be permanently laid off during the first 2 years (the contract defines a permanent layoff as one that exceeds 10 consecutive work days). In the third year, job guarantees are linked to production levels, with the company having the option to reduce the workweek to 35 hours before conducting layoffs. In addition, there is a newly established employee option to take a voluntary leave of absence (up to 10 weeks) in lieu of a temporary layoff.

Other terms include a wage freeze over the contract's term; a $500 lump-sum ratification bonus; the continuation of the quarterly cost-of-living adjustment clause, which provides for 1 cent per hour for each 0.4-percent increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers; a $1 increase (to $26) in the monthly pension rate for each year of credited service for the first 15 years of service and a $2 increase (to $27) per month of credited service for all years over 15; a requirement that all employees belong to the current preferred provider health care program, with an option to use a nonpreferred provider doctor (currently about 30 percent of the work force belongs to a traditional medical plan or a health maintenance organization); an additional paid holiday (December 23) in 1991 only; and an employee option to take 1 week of vacation a day at a time.

UPI agreement

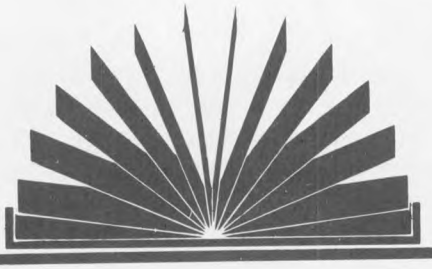
United Press International (UPI) and the Wire Service Guild signed a 30-month contract, covering some 530 editorial and commercial workers in 100 domestic bureaus nationwide. The new contract replaces one that expired last July. According to the union's chief bargainer, the agreement "provides employees with the job guarantees needed to continue their careers while providing UPI with further assistance in its turnaround efforts." The financially ailing news service has been in bankruptcy proceedings for the last 8 years.

Terms of the agreement provide for a wage freeze in the first year and 3-percent general wage increases in July of 1990 and 1991. These increases will bring the top minimum rates for news employees, photographers, and artists to $710.70 per week by the end of the contract, while telephoto engineers and radio engineers progress to $636.54, and photo printers and color technicians advance to $599.41. The contract also restores minimum daily and weekly mileage reimbursements at $6 and 30, a lower level than before. The mileage reimbursements were $8 and $40 under the prior contract before they were unilaterally eliminated. The mileage rate is also cut, from 36 cents to 26 cents.

Other terms include UPI paying 50 percent of any increases in health insurance premiums (previously, fully paid by employees), the preservation of talent pay differentials and "over-minimum" raises, an option for employees to use payroll deductions to pay union dues, establishment of a new long-term disability plan, and the union's dropping unfair labor practice charges against UPI for the company's alleged unilateral changes in mileage reimbursement and severance pay last October.

"Stepbacks" in the new agreement that are anticipated to provide cost savings to UPI include the loss of two paid holidays (from 12 to 10); longer length of service requirements to earn the fourth and fifth weeks of vacations (from 6 and 19 years to 8 and 20 years); a 40-hour workweek (previously, a 37.5-hour workweek was standard in all except the smaller news bureaus); a cut in the maximum weeks of severance pay (from 75 to 52); and a reduction in paid sick leave (from an unlimited number of days to 10 days a year for short-term illness and 26 weeks for illness exceeding 10 days). □

Book reviews



Issues in grievance arbitration

Grievance Arbitration: Issues on the Merits in Discipline, Discharge, and Contract Interpretation. By Arnold M. Zack. Lexington, MA, Lexington Books, 1989. 320 pp. $44.95.

Grievance procedures with arbitration are now routinely included in almost all private sector labor-management agreements and in most public sector agreements. Workers and unions see these procedures as basic contract guarantees of due process and "justice on the job" through neutral third-party "just cause" judgments on discipline and discharge cases. Management views these procedures essentially as a safety valve appeals system to prevent a buildup of grievances among workers, which could erupt into work stoppages or slowdowns.

Decisions in grievance arbitration cases can build up a kind of case law which connects with the labor-management contract, past practice, and public law in a web of rules which govern day-in, day-out labor-management relations in unionized operations.

When you find a book on grievance arbitration by Arnold Zack, a leading arbitration expert, with a foreword by John Dunlop, the Nation's leading industrial relations guru, and a prologue by the president of the American Arbitration Association, Robert Coulson, you should learn a lot about grievance arbitration.

Zack has been an active arbitrator and mediator for the past 30 years. He has made many arbitration decisions and awards. He is on the faculty of the Harvard Trade Union Program and has written eight books on labor relations. As author and educator, he has shaped the development of grievance arbitration in public sector as well as private sector employment.

In his handbook, Zack explains how to understand and win cases in labor arbitration. It is for practitioners, workaday union and management officials, and arbitrators, not for scholars or nonparticipant observers.

How will arbitrators respond to the various issues presented to them? What evidence is relevant and persuasive? What is the best way to present particular issues? What kind of questions are in the arbitrator's mind? Each chapter contains several single-issue grievance cases which Zack uses to illustrate possible answers to these questions.

Zack addresses management rights in chapter 1, union activities in chapter 2, and discipline and discharge in chapter 3. Additional chapters cover wages and classifications, leaves and other benefits, hours and schedules, holidays and vacations, layoffs, seniority, and promotions.

Finally, in the last chapter of his book, Zack says, "Arbitration is the last step of a complicated and sometimes arduous and exhausting grievance procedure, usually consisting of three or four steps. Arbitration is the failure of the grievance process, not its goal." The three or four steps get four pages of discussion. Ten pages are given to the kinds of grievances that are subject to arbitration, selection of the arbitrator, the role of the arbitrator, specificity of the grievance, rules of evidence, hearing procedures, and the making of the arbitrator's decision. This basic material might logically have come at the beginning of the book rather than at the end.

Don't expect to find grievance arbitration set in the broader context of collective bargaining and industrial relations. There is no reporting of statistics on grievances and grievance arbitration, no statistical analysis of the causes or results of grievance arbitration, no discussion of the costs and delays and excessive legalism of much grievance arbitration, no discussion of the potential for "expedited" low-cost arbitration, "grievance mediation," and alternative dispute resolution procedures. There is very little discussion of interaction and possible conflicts of workers' remedies under grievance arbitration and under Federal laws on labor relations, equal employment opportunity, safety and health, and pension protection.

Zack does include in his chapter on union activities a discussion of the union's duty of fair representation. But there is more to say on the relation of workers' rights under labor-management contracts and under Federal and State laws.

What about costs and delays? These affect workers' and unions' perception that the system works fairly. The average per diem fee for arbitrators in 1988 was $400, but the use of lawyers and transcripts and post-hearing lawyers' briefs can raise total arbitration costs for one case to levels which empty the treasuries of small unions.

And what about the causes and results of grievances? There are studies explaining grievance rates and the percentage of grievances going to arbitration. These studies include observations on increased grievance filing and increased use of arbitration as a result of technological change and high-conflict, low-trust labor-management relations. And there is evidence that some workers who have filed grievances and won them suffer retaliation on the job.

Workers and unions and managers all have an interest in the best possible functioning of grievance systems. To the extent a grievance system works well—with due process and both the perception and the reality of "justice on the job"—it will create a better labor-management relations environment, and it will reduce the demands made on the system. Zack's handbook will help unions and managers and arbitrators make

the system work better. But there's room for more work on this subject.

—Markley Roberts
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Pensions for a mobile work force

Private Pensions and Employee Mobility. By Izzet Sahin. New York, NY, Greenwood Press, Inc., 1989. 116 pp.

In *Private Pensions and Employee Mobility*, Izzet Sahin presents a mathematical study of the effect of changing jobs on pension benefits. A worker who changes jobs during a career will usually receive a smaller pension than a worker who remains at one firm during a career, all other things being equal. Inflation can erode pension benefits for workers who terminate their jobs before retirement. In addition, workers may lose some or all of their benefits if they are not vested in a plan. Sahin creates a model to measure lost pension benefits for various types of pensions and levels of mobility.

Because studying the effects of mobility requires measurement over time, the model makes assumptions about economic conditions. Inflation is assumed to stay constant at 5 percent, real growth in wages (above inflation) at 2 percent, and real rate of return on investment at 2½ percent. Sahin arrives at these figures by taking long-term averages of economic data.

Using his model, Sahin demonstrates how changing jobs can reduce pension benefits even if a worker is fully vested in a pension upon termination of employment. Because pension benefits are commonly based on earnings, inflation will lower the value of the pension. A worker who leaves a firm in 1965 and retires in 1990 will receive pension benefits based on a salary that does not reflect current living standards.

Sahin uses his economic assumptions to compare different types of pension benefit formulas. The calculations show, for example, that plans that base benefits on the earnings of the final years of a career provide a greater incentive for workers to stay at a firm than plans that base the pension on average career earnings. Consider a simplified example to demonstrate Sahin's point: Two workers join a firm, and each earns $1,000 during the first year, $2,000 the second year, $3,000 during the third, and so on. One worker leaves the firm after 10 years, and another stays 40 years; both receive a pension that is equal to the average salary in the last 3 years worked. The worker who left after 10 years will receive $9,000 a year. The worker who stayed will receive $39,000 a year, or $30,000 more. If the pensions were equal to the average earnings for the career, the first worker would earn $5,500, and the second, $20,500, or only $15,000 more. The difference is less in the career average plan because the salaries for the first years are reflected in the pension benefits of both workers. If wages are rising over time, as Sahin assumes, then plans based on final average earnings provide relatively greater benefits to workers with low mobility.

By gathering data from several large industries, Sahin calculates the average mobility of workers. These data are used to make explicit calculations of the effects of mobility on pensions. The book provides a variety of tables on various scenarios. For example, an employee enters a firm at age 30, works for 10 years, and must make a decision about taking a new job with the same salary and pension plan as her current job. Her chances of changing jobs in the future are equal to the average mobility rate, as calculated by Sahin. She currently receives a pension that provides 1 percent of the average salary of the final 3 years worked times the number of years of employment. The model shows that she will need a salary increase of 11.58 percent to be indifferent about the change in employment. If she invests this salary increase at the assumed rate of return, she will make up the loss in pension benefits.

Sahin uses the model to show how the three vesting options of the Employee Retirement Income Security Act (ERISA) affect the mobility of workers. Vesting is the nonforfeitable right to future pension benefits. The first option, cliff vesting, requires no vesting until 10 years, and full vesting thereafter. The second option, graded vesting, requires 25-percent vesting after 5 years, with an increase of 5 percentage points a year until 10 years, and then an increase of 10 percentage points a year until full vesting at 15 years. The third option, the rule of 45, requires 50 percent vesting when service plus age equals 45, then increases by 10 percentage points in each of the next 5 years. (The Tax Reform Act of 1986 reduced the years of service requirements for vesting that may be imposed.)

Sahin considers the benefits of these three options for workers with average mobility. Under his model, graded vesting is the most advantageous for a worker starting employment at age 20. At this age, graded vesting provides for partial vesting in the least amount of time. The rule of 45 is the least advantageous at this age because many workers will leave before any vested percentage is earned. For workers starting careers at age 29.58 or older, the rule of 45 is the most advantageous. Cliff vesting is never the most advantageous for an employee because of the likelihood of termination of employment in the first 10 years, with no vested benefit.

Sahin's model shows that most forms of private pensions tend to discourage mobility. By assuming the economic conditions and levels of mobility, Sahin is able to provide calculations to support his argument. His model allows him to explore a wide variety of issues in the field of pensions, from plan types to vesting rules. *Private Pensions and Employee Mobility* provides a framework for analyzing decisions on policy affecting this timely issue.

—Jason L. Ford
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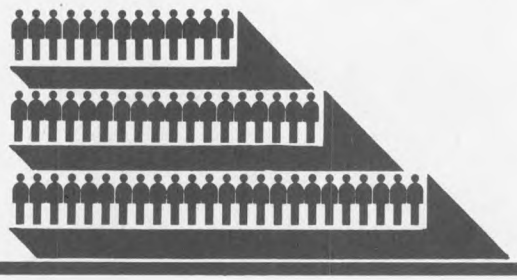
Current labor statistics



Notes on Current Labor Statistics

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

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted data appear in tables 1–3, 4–10, 13–15, 17–18, 44, and 48. Seasonally adjusted labor force data in tables 1 and 4–10 were revised in the February 1990 issue of the *Review* and reflect the experience through 1989. Seasonally adjusted establishment survey data shown in tables 13–15 and 17–18 were revised in the October 1990 *Review* and reflect the experience through May 1990. A brief explanation of the seasonal adjustment methodology appears in "Notes on the data."

Revisions in the productivity data in table 44 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month-to-month and quarter-to-quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All-Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the "real" earnings shown in table 15—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current-dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1982 = 100, the hourly rate expressed in 1982 dollars is $2 ($3/150 x 100 = $2). The $2 (or any other resulting values) are described as "real," "constant," or "1982" dollars.

Additional information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule appearing on the back cover of this issue. More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in *Employment and Earnings*, a monthly publication of the Bureau. More data from the household survey are published in the data books—*Revised Seasonally Adjusted Labor Force Statistics*, Bulletin 2306, and *Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2307. More data from the establishment survey appear in two data books—*Employment, Hours, and Earnings, United States*, and *Employment, Hours, and Earnings, States and Areas*, and the supplements to these data books. More detailed information on employee compensation and collective bargaining settlements is published in the monthly periodical, *Current Wage Developments*. More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report*, and *Producer Price Indexes*. Detailed data on all of the series in this section are provided in the *Handbook of Labor Statistics*, which is published biennially by the Bureau. BLS bulletins are issued covering productivity, injury and illness, and other data in this section. Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

n.e.c. = not elsewhere classified.

n.e.s. = not elsewhere specified.

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

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

Comparative Indicators

(Tables 1–3)

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

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-to-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonfarm payroll data. The Employment Cost Index (compensation), by major sector and by bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

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

hour of all persons) are provided for major sectors.

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

Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), as well as the additional bulletins, articles, and other publications noted in the separate sections of the *Review*'s "Current Labor Statistics Notes." Users may also wish to consult *Major Programs of the Bureau of Labor Statistics,* Report 774 (Bureau of Labor Statistics, 1990).

Employment and Unemployment Data

(Tables 1; 4–21)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 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 civilian unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **labor force** consists of all employed or unemployed civilians plus members of the Armed Forces stationed in the United States. Persons **not in the labor force** are those not classified as employed or unemployed; this group includes persons who are retired, those engaged in their own 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 intercensal years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on the various data series appears in the Explanatory Notes of *Employment and Earnings.*

Labor force data in tables 1 and 4–10 are seasonally adjusted based on the experience through December 1989. Since January 1980, national labor force data have been seasonally adjusted with a procedure called X–11 ARIMA which was developed at Statistics Canada as an extension of the standard X–11 method previously used by BLS. A detailed description of the procedure appears in the *X–11 ARIMA Seasonal Adjustment Method*, by Estela Bee Dagum (Statistics Canada, Catalogue No. 12–564E, January 1983).

At the end of each calendar year, seasonally adjusted data for the previous 5 years are revised, and projected seasonal adjustment factors are calculated for use during the January–June period. In July, new seasonal adjustment factors, which incorporate the experience through June, are produced for the July–December period but no revisions are made in the historical data.

Additional sources of information

For detailed explanations of the data, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), and for additional data, *Handbook of Labor Statistics,* Bulletin 2340 (Bureau of Labor Statistics, 1989). Historical unadjusted data from 1948 to 1987 are available in *Labor Force Statistics Derived from the Current Population Survey*, Bulletin 2307 (Bureau of Labor Statistics, 1988). Historical seasonally adjusted data appear in *Labor Force Statistics Derived from the Current Population Survey: A Databook*, Vol. II, Bulletin 2096 (Bureau of Labor Statistics, 1982), and *Revised Seasonally Adjusted Labor Force Statistics, 1978–87*, Bulletin 2306 (Bureau of Labor Statistics, 1988).

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

Establishment survey data

Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by more than 340,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

An **establishment** is an economic unit which produces goods or services (such as

a factory or store) at a single location and is engaged in one type of economic activity.

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

Production workers in manufacturing include working supervisors and nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12–17 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI–W).

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

The Diffusion Index represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Data are centered within the span. Table 18 provides an index on private nonfarm employment based on 356 industries, and a manufacturing index based on 139 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

Notes on the data

Establishment survey data are annually adjusted to comprehensive counts of employment (called "benchmarks"). The latest adjustment, which incorporated March 1989 benchmarks, was made with the release of August 1990 data, published in the October 1990 issue of the *Review*. Coincident with the benchmark adjustments, seasonally adjusted data were revised to reflect the experience through May 1990, and industries are coded in accordance with the 1987 *Standard Industrial Classification (SIC) Manual*. Unadjusted data from April 1989 forward and seasonally adjusted data from January 1986 forward are subject to revision in future benchmarks.

The BLS also uses the X–11 ARIMA methodology to seasonally adjust establishment survey data. Beginning in June 1989, projected seasonal adjustment factors are calculated and published twice a year. The change makes the procedure used for the establishment survey data more parallel to that used in adjusting the household survey data. Revisions of historical data will continue to be made once a year coincident with the benchmark revisions.

In the establishment survey, estimates for the 2 most recent months are based on incomplete returns and are published as preliminary in the tables (13 to 18 in the *Review*). When all returns have been received, the estimates are revised and published as "final" (prior to any benchmark revisions) in the third month of their appearance. Thus, December data are published as preliminary in January and February and as final in March. For the same reasons, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, fourth-quarter data are published as preliminary in January and February and as final in March.

Additional sources of information

Detailed national data from the establishment survey are published monthly in the BLS periodical, *Employment and Earnings*. Historically comparable unadjusted and seasonally adjusted data will be published in *Employment, Hours, and Earnings, United States, 1909–90*, Bulletin 2370 (Bureau of Labor Statistics, 1990) and its annual supplement. For a detailed discussion of the methodology of the survey, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). For additional data, see *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989).

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

Unemployment data by State

Description of the series

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

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

Notes on the data

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

Additional sources of information

Information on the concepts, definitions, and technical procedures used to develop labor force data for States and sub-State areas as well as additional data on sub-States are provided in the monthly Bureau of Labor Statistics periodical, *Employment and Earnings*, and the annual report, *Geographic Profile of Employment and Unemployment* (Bureau of Labor Statistics). See also *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

Compensation and Wage Data

(Tables 1–3; 22–30)

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

Employment Cost Index

Description of the series

The **Employment Cost Index** (ECI) is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor. The index is not seasonally adjusted.

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

The Employment Cost Index probability sample consists of about 4,200 private nonfarm establishments providing about 22,000 occupational observations and 800 State and local government establishments providing 4,200 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

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

Definitions

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

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

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

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

Notes on the data

The Employment Cost Index for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series of changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981=100) of the quarterly rates of change are presented in the March issue of the BLS periodical, *Current Wage Developments.*

Additional sources of information

For a more detailed discussion of the Employment Cost Index, see the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988); *Employment Cost Indexes and Levels, 1975–88*, Bulletin 2319 (Bureau of Labor Statistics, 1988); and the following *Monthly Labor Review* articles: "Estimation procedures for the Employment Cost Index," May 1982; and "Introducing new weights for the Employment Cost Index," June 1985.

Data on the ECI are also available in BLS quarterly press releases issued in the month following the reference months of March, June, September, and December; and from the *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989).

Collective bargaining settlements

Description of the series

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

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

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

Definitions

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

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

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

the contract term take account of the compounding of successive changes.

Notes on the data

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

Additional sources of information

For a more detailed discussion on the series, see the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). Comprehensive data are published in press releases issued quarterly (in January, April, July, and October) for private industry, and semiannually (in February and August) for State and local government. Historical data and additional detailed tabulations for the prior calendar year appear in the April issue of the BLS periodical, *Current Wage Developments*.

Work stoppages

Description of the series

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

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

Definitions

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

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

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

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

Notes on the data

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

Additional sources of information

Data for each calendar year are reported in a BLS press release issued in the first quarter of the following year. Monthly and historical data appear in the BLS periodical, *Current Wage Developments*. Historical data appear in the *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989).

Other compensation data

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

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

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

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

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

Price Data

(Tables 2; 31–43)

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

Consumer Price Indexes

Description of the series

The **Consumer Price Index** (CPI) is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI–W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all-urban consumer index (CPI–U), introduced in 1978, is representative of the 1982–84 buying habits of about 80 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI–W. In addition to wage earners and clerical workers, the CPI–U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods

and services that people buy for day-to-day living. The quantity and quality of these items are kept essentially unchanged between major revisions so that only price changes will be measured. All taxes directly associated with the purchase and use of items are included in the index.

Data collected from more than 21,000 retail establishments and 60,000 housing units in 91 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 27 major urban centers are presented in table 32. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are measured for the CPI–U. A rental equivalence method replaced the asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI–W. The central purpose of the change was to separate shelter costs from the investment component of homeownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes. An updated CPI–U and CPI–W were introduced with release of the January 1987 data.

Additional sources of information

For a discussion of the general method for computing the CPI, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). The recent change in the measurement of homeownership costs is discussed in Robert Gillingham and Walter Lane, "Changing the treatment of shelter costs for homeowners in the CPI," *Monthly Labor Review*, July 1982, pp. 9–14. An overview of the recently introduced revised CPI, reflecting 1982–84 expenditure patterns, is contained in *The Consumer Price Index: 1987 Revision*, Report 736 (Bureau of Labor Statistics, 1987).

Additional detailed CPI data and regular analyses of consumer price changes are provided in the *CPI Detailed Report*, a monthly publication of the Bureau. Historical data for the overall CPI and for selected groupings may be found in the *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989).

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received by domestic producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,100 commodities and about 75,000 quotations per month, selected to represent the movement of prices of all commodities produced in the manufacturing; agriculture, forestry, and fishing; mining; and gas and electricity and public utilities sectors. The stage of processing structure of Producer Price Indexes organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition. The industry and product structure of PPI organizes data in accordance with the Standard Industrial Classification (SIC) and the product code extension of the SIC developed by the U.S. Bureau of the Census.

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

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

Notes on the data

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

The Bureau has completed the first major stage of its comprehensive overhaul of the theory, methods, and procedures used to construct the Producer Price Indexes. Changes include the replacement of judgement sampling with probability sampling techniques; expansion to systematic coverage of the net output of virtually all industries in the mining and manufacturing sectors; a shift from a commodity to an industry orientation; the exclusion of imports from, and the inclusion of exports in, the survey universe; and the respecification of commodities priced to conform to Bureau of the Census definitions. These and other changes have been phased in gradually since 1978. The result is a system of indexes that is easier to use in conjunction with data on wages, productivity, and employment and other series that are organized in terms of the Standard Industrial Classification and the census product class designations.

Additional sources of information

For a discussion of the methodology for computing Producer Price Indexes, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

Additional detailed data and analyses of price changes are provided monthly in *Producer Price Indexes*. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989).

International Price Indexes

Description of the series

The BLS **International Price Program** produces quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts: it includes corporations, businesses, and individuals but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents. With publication of an all-import index in February 1983 and an all-export index in February 1984, all U.S. merchandise imports and exports now are represented in these indexes. The reference period for the indexes is 1985=100, unless otherwise indicated.

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

To the extent possible, the data gathered refer to prices at the U.S. border for exports

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

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

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each weight category and are then aggregated to the SITC level. The values assigned to each weight category are based on trade value figures compiled by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1985.

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

For the export price indexes, the preferred pricing basis is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation. An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f. (cost, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges. For a given product, only one price basis series is used in the construction of an index.

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

Additional sources of information

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

Additional detailed data and analyses of international price developments are presented in the Bureau's quarterly publication, *U.S. Import and Export Price Indexes* and in occasional *Monthly Labor Review* articles prepared by BLS analysts. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989). For further information on the foreign currency indexes, see "BLS publishes average exchange rate and foreign currency price indexes," *Monthly Labor Review*, December 1987, pp. 47–49.

Productivity Data

(Tables 2; 44–47)

Business sector and major sectors

Description of the series

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

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

Definitions

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

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

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

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

Unit profits include corporate profits with inventory valuation and capital consumption adjustments per unit of output.

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

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

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

Notes on the data

The output measure for the business sector is equal to constant-dollar gross national product but excludes the rental value of owner-occupied dwellings, the rest-of-world sector, the output of non-profit institutions, the output of paid employees of private households, general government, and the statistical discrepancy. Output of the **nonfarm business sector** is equal to business sector output less farming. The measures are derived from data supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of manufacturing output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are developed from data of the Bureau of Labor Statistics and the Bureau of Economic Analysis.

The productivity and associated cost measures in tables 44–47 describe the relationship between output in real terms and the labor time and capital services involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input. Although these measures relate output to hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; capital investment; level of output; utilization of capacity, energy, and materials; the organization of production; managerial skill; and the characteristics and efforts of the work force.

Additional sources of information

Descriptions of methodology underlying the measurement of output per hour and multifactor productivity are found in the BLS *Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). Historical data are provided in *Handbook of Labor Statistics*, Bulletin 2340 (Bureau of Labor Statistics, 1989).

Industry productivity measures

Description of the series

The BLS industry productivity data supplement the measures for the business economy and major sectors with annual measures of labor productivity for selected industries at the 3- and 4-digit levels of the Standard Industrial Classification system. The industry measures differ in methodology and data sources from the productivity measures for the major sectors because the industry measures are developed independently of the National Income and Product Accounts framework used for the major sector measures.

Definitions

Output per employee hour is derived by dividing an index of industry output by an index of aggregate hours of all employees. Output indexes are based on quantifiable units of products or services, or both, combined with fixed-period weights. Whenever possible, physical quantities are used as the unit of measurement for output. If quantity data are not available for a given industry, data on the constant-dollar value of production are used.

The labor input series consist of the hours of all employees (production and nonproduction workers), the hours of all persons (paid employees, partners, proprietors, and unpaid family workers), or the number of employees, depending upon the industry.

Notes on the data

The industry measures are compiled from data produced by the Bureau of Labor Statistics, the Departments of Commerce, Interior, and Agriculture, the Federal Reserve Board, regulatory agencies, trade associations, and other sources.

For most industries, the productivity indexes refer to the output per hour of all employees. For some transportation industries, only indexes of output per employee are prepared. For some trade and service industries, indexes of output per hour of all persons (including self-employed) are constructed.

Additional sources of information

For a listing of available industry productivity indexes and their components, see *Productivity Measures for Selected Industries and Government Services*, Bulletin 2322 (Bureau of Labor Statistics, 1989). For additional information about the methodology for computing the industry productivity measures, see the BLS *Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), chapter 11.

International Comparisons

(Tables 48–50)

Labor force and unemployment

Description of the series

Tables 48 and 49 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and several European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

Definitions

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

Notes on the data

The adjusted statistics have been adapted to the age at which compulsory schooling ends in each country, rather than to the U.S. standard of 16 years of age and over. Therefore, the adjusted statistics relate to the population age 16 and over in France, Sweden, and from 1973 onward, the United Kingdom; 15 and over in Canada, Australia, Japan, Germany, the Netherlands, and prior to 1973, the United Kingdom; and 14 and over in Italy. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

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

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

There are breaks in the data series for Germany (1983), Italy (1986), the Netherlands (1983), and Sweden (1987). For both Germany and the Netherlands, the breaks

reflect the replacement of labor force survey results tabulated by the national statistical offices with those tabulated by the European Community Statistical Office (EUROSTAT). The Dutch figures for 1983 onward also reflect the replacement of man-year employment data with data from the Dutch Survey of Employed Persons. The impact of the changes was to lower the adjusted unemployment rate by 0.3 percentage point for Germany and by about 2 percentage points for the Netherlands.

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

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

Additional sources of information

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

Manufacturing productivity and labor costs

Description of the series

Table 50 presents comparative measures of manufacturing labor productivity, hourly compensation costs, and unit labor costs for the United States, Canada, Japan, and nine European countries. These measures are limited to trend comparisons—that is, intercountry series of changes over time—rather than level comparisons because reliable international comparisons of the levels of manufacturing output are unavailable.

Definitions

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

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

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

Notes on the data

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

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

Additional sources of information

For additional information, see the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), and periodic *Monthly Labor Review* articles. Historical data are provided in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). The statistics are issued twice per year—in a news release (generally in June) and in a *Monthly Labor Review* article.

Occupational Injury and Illness Data

(Table 51)

Description of the series

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

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

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

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

Definitions

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

treatment (other than first aid).

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

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

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

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

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

Lost workdays—restricted work activity are the number of workdays (consecutive or not) on which, because of injury or illness: (1) the employee was assigned to another job on a temporary basis; or (2) the employee worked at a permanent job less than full time; or (3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

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

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

Notes on the data

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

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

Comparable data for individual States are available from the BLS Office of Safety, Health, and Working Conditions.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration, respectively. Data from these organizations are included in BLS and State publications. Federal employee experience is compiled and published by the Occupational Safety and Health Administration. Data on State and local government employees are collected by about half of the States and territories; these data are not compiled nationally.

Additional sources of information

The Supplementary Data System provides detailed information describing various factors associated with work-related injuries and illnesses. These data are obtained from information reported by *employers* to State workers' compensation agencies. The Work Injury Report program examines selected types of accidents through an employee survey which focuses on the circumstances surrounding the injury. These data are not included in the *Handbook of Labor Statistics* but are available from the BLS Office of Safety, Health, and Working Conditions.

The definitions of occupational injuries and illnesses and lost workdays are from *Recordkeeping Requirements under the Occupational Safety and Health Act of 1970.* For additional data, see *Occupational Injuries and Illnesses in the United States, by Industry,* annual Bureau of Labor Statistics bulletin; *BLS Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988); *Handbook of Labor Statistics,* Bulletin 2340 (Bureau of Labor Statistics, 1989), pp. 411–14; annual reports in the *Monthly Labor Review;* and annual U.S. Department of Labor press releases. □

1. Labor market indicators

Selected indicators	1988	1989	1988		1989				1990	
			III	IV	I	II	III	IV	I	II
Employment data										
Employment status of the civilian noninstitutionalized population (household survey):[1]										
Labor force participation rate	65.9	66.5	66.0	66.1	66.3	66.5	66.5	66.5	66.5	66.5
Employment-population ratio	62.3	63.0	62.3	62.6	62.9	63.0	63.0	63.0	63.0	63.0
Unemployment rate	5.5	5.3	5.5	5.3	5.2	5.3	5.3	5.3	5.2	5.3
Men	5.5	5.2	5.5	5.3	5.2	5.1	5.2	5.3	5.2	5.4
16 to 24 years	11.4	11.4	11.5	11.1	11.2	11.1	11.4	11.8	11.0	11.4
25 years and over	4.2	3.9	4.2	4.1	3.9	3.9	3.9	4.0	4.1	4.1
Women	5.6	5.4	5.5	5.3	5.2	5.4	5.4	5.4	5.3	5.2
16 to 24 years	10.6	10.4	10.5	10.3	10.2	10.4	10.5	10.4	10.2	10.2
25 years and over	4.3	4.2	4.3	4.1	4.1	4.2	4.2	4.3	4.2	4.1
Unemployment rate, 15 weeks and over	1.3	1.1	1.3	1.2	1.1	1.1	1.1	1.1	1.1	1.1
Employment, nonfarm (payroll data), in thousands:[1]										
Total	105,536	108,413	105,938	106,766	107,630	108,162	108,662	109,203	109,911	110,541
Private sector	88,150	90,644	88,531	89,215	90,006	90,443	90,829	91,299	91,845	92,108
Goods-producing	25,173	25,326	25,220	25,295	25,362	25,353	25,329	25,260	25,262	25,178
Manufacturing	19,350	19,426	19,366	19,455	19,514	19,474	19,413	19,308	19,211	19,168
Service-producing	80,363	83,087	80,719	81,471	82,267	82,809	83,333	83,942	84,649	85,363
Average hours:										
Private sector	34.7	34.6	34.7	34.7	34.6	34.6	34.6	34.5	34.5	34.6
Manufacturing	41.1	41.0	41.1	41.1	41.1	41.0	41.0	40.7	40.8	40.9
Overtime	3.9	3.8	3.9	3.9	3.9	3.8	3.8	3.7	3.6	3.7
Employment Cost Index										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers)	4.9	5.0	1.4	1.0	1.2	1.1	1.6	1.0	1.7	1.1
Private industry workers	4.8	4.8	.9	1.0	1.2	1.2	1.2	1.1	1.6	1.3
Goods-producing[2]	4.4	4.3	.6	.8	1.0	1.1	1.1	1.0	1.8	1.3
Service-producing[2]	5.1	5.1	1.2	1.1	1.5	1.2	1.3	1.0	1.5	1.3
State and local government workers	5.6	6.2	2.8	1.1	1.2	.6	3.3	1.0	1.4	.7
Workers by bargaining status (private industry):										
Union	3.9	3.7	.7	.5	.8	1.0	.9	.9	1.5	.8
Nonunion	5.1	5.1	1.0	1.1	1.4	1.2	1.4	1.0	1.7	1.3

[1] Quarterly data seasonally adjusted.
[2] Goods-producing industries include mining, construction, and manufacturing. Service-producing industries include all other private sector industries.

2. Annual and quarterly percent changes in compensation, prices, and productivity

Selected measures	1988	1989	1988		1989				1990	
			III	IV	I	II	III	IV	I	II
Compensation data [1, 2]										
Employment Cost Index--compensation (wages, salaries, benefits):										
Civilian nonfarm	4.9	5.0	1.4	1.0	1.2	1.1	1.6	1.0	1.7	1.1
Private nonfarm	4.8	4.8	.9	1.0	1.2	1.2	1.2	1.1	1.6	1.3
Employment Cost Index--wages and salaries										
Civilian nonfarm	4.3	4.4	1.4	.9	1.1	.8	1.6	.8	1.2	1.1
Private nonfarm	4.1	4.1	.9	1.0	1.0	1.0	1.2	.8	1.2	1.3
Price data[1]										
Consumer Price Index (All urban consumers): All items	4.4	4.6	1.5	.6	1.5	1.5	.7	.9	2.1	.9
Producer Price Index:										
Finished goods	4.0	4.9	.8	1.3	1.9	2.0	-.6	1.6	1.6	.6
Finished consumer goods	4.0	5.3	1.0	1.1	2.2	2.3	-.8	1.5	1.8	.7
Capital equipment	3.6	3.8	.4	1.8	.9	1.1	.1	1.6	.9	.3
Intermediate materials, supplies, components	5.6	2.3	1.2	.6	1.9	1.1	-.3	-.4	.4	.4
Crude materials	3.1	7.1	-1.2	.6	6.1	.9	-1.7	1.9	1.3	-4.4
Productivity data[3]										
Output per hour of all persons:										
Business sector	2.0	-.2	2.5	-1.2	.5	.0	-1.5	-2.0	-1.5	1.9
Nonfarm business sector	2.2	-.3	2.8	.5	-1.7	-.5	-.8	-2.2	-1.9	1.6
Nonfinancial corporations [4]	1.1	-1.3	-.7	-.9	-2.5	-1.4	.8	-4.2	-2.2	1.7

[1] Annual changes are December-to-December change. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted and the price data are not compounded.
[2] Excludes Federal and private household workers.
[3] Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.
[4] Output per hour of all employees.
- Data not available.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ended--					
	1989				1990		1989				1990	
	I	II	III	IV	I	II	I	II	III	IV	I	II
Average hourly compensation:[1]												
All persons, business sector	2.0	2.4	1.3	2.6	3.8	6.1	4.1	3.4	2.4	2.1	2.5	3.4
All persons, nonfarm business sector	2.0	1.5	1.8	2.7	3.2	5.8	4.1	3.2	2.4	2.0	2.3	3.4
Employment Cost Index--compensation:												
Civilian nonfarm [2]	1.2	1.1	1.6	1.0	1.7	1.1	4.8	4.8	5.1	5.0	5.5	5.4
Private nonfarm	1.2	1.2	1.2	1.1	1.6	1.3	4.6	4.5	4.8	4.8	5.2	5.2
Union	.8	1.0	.9	.9	1.5	.8	3.0	3.1	3.3	3.7	4.3	4.1
Nonunion	1.4	1.2	1.4	1.0	1.7	1.3	5.1	4.9	5.3	5.1	5.4	5.5
State and local governments	1.2	.6	3.3	1.0	1.4	.7	5.5	5.8	6.4	6.2	6.4	6.5
Employment Cost Index--wages and salaries:												
Civilian nonfarm[2]	1.1	.8	1.6	.8	1.2	1.1	4.4	4.3	4.5	4.4	4.4	4.7
Private nonfarm	1.0	1.0	1.2	.8	1.2	1.3	4.2	4.1	4.3	4.1	4.2	4.5
Union	.7	.8	.6	1.0	1.0	.7	2.5	2.6	2.4	3.1	3.4	3.3
Nonunion	1.3	1.0	1.3	.8	1.3	1.4	4.8	4.6	4.9	4.5	4.4	4.8
State and local governments	.8	.5	3.1	.8	1.2	.6	4.7	5.0	5.5	5.3	5.6	5.7
Total effective wage adjustments[3]	.5	1.0	1.0	.7	.6	1.1	2.7	2.8	3.0	3.2	3.2	3.3
From current settlements	.1	.3	.4	.4	.2	.3	.8	.7	.9	1.2	1.3	1.2
From prior settlements	.3	.5	.4	.2	.3	.6	1.3	1.3	1.3	1.3	1.2	1.4
From cost-of-living provision	.1	.2	.2	.1	.1	.3	.6	.8	.8	.7	.7	.7
Negotiated wage adjustments from settlements:[3]												
First-year adjustments	3.2	3.9	3.6	4.9	3.7	4.7	2.7	3.2	3.5	4.0	4.0	4.2
Annual rate over life of contract	3.1	3.3	3.0	4.0	3.3	4.2	2.5	2.9	3.0	3.4	3.4	3.6
Negotiated wage and benefit adjustments from settlements:[4]												
First-year adjustment	3.2	5.1	3.9	5.3	4.6	5.8	3.3	3.8	4.0	4.5	4.6	4.8
Annual rate over life of contract	3.1	3.4	2.7	4.3	3.6	4.8	2.6	3.0	2.8	3.4	3.5	3.7

[1] Seasonally adjusted.
[2] Excludes Federal and household workers.
[3] Limited to major collective bargaining units of 1,000 workers or more. The most recent data are preliminary.
[4] Limited to major collective bargaining units of 5,000 workers or more. The most recent data are preliminary.

4. Employment status of the total population, by sex, monthly data seasonally adjusted

(Numbers in thousands)

Employment status	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
TOTAL															
Noninstitutional population [1, 2]	186,322	188,081	188,286	188,428	188,580	188,721	188,865	188,990	189,090	189,198	189,326	189,467	189,607	189,763	189,901
Labor force [2]	123,378	125,557	125,758	125,725	125,857	126,192	126,246	126,094	126,308	126,498	126,543	126,643	126,466	126,394	126,300
Participation rate [3]	66.2	66.8	66.8	66.7	66.7	66.9	66.8	66.7	66.8	66.9	66.8	66.8	66.7	66.6	66.5
Total employed [2]	116,677	119,030	119,238	119,121	119,294	119,540	119,588	119,560	119,713	120,003	119,773	119,989	120,019	119,580	119,298
Employment-population ratio [4]	62.6	63.3	63.3	63.2	63.3	63.3	63.3	63.3	63.3	63.4	63.3	63.3	63.3	63.0	62.8
Resident Armed Forces [1]	1,709	1,688	1,688	1,702	1,709	1,704	1,700	1,697	1,678	1,669	1,657	1,639	1,630	1,627	1,640
Civilian employed	114,968	117,342	117,550	117,419	117,585	117,836	117,888	117,863	118,035	118,334	118,116	118,350	118,389	117,953	117,658
Agriculture	3,169	3,199	3,275	3,219	3,197	3,160	3,197	3,134	3,079	3,200	3,133	3,305	3,348	3,085	3,137
Nonagricultural industries	111,800	114,142	114,275	114,200	114,388	114,676	114,691	114,728	114,957	115,133	114,983	115,045	115,041	114,867	114,521
Unemployed	6,701	6,528	6,520	6,604	6,563	6,652	6,658	6,535	6,594	6,495	6,770	6,653	6,447	6,814	7,003
Unemployment rate [5]	5.4	5.2	5.2	5.3	5.2	5.3	5.3	5.2	5.2	5.1	5.3	5.3	5.1	5.4	5.5
Not in labor force	62,944	62,523	62,528	62,703	62,723	62,529	62,619	62,896	62,782	62,700	62,783	62,824	63,141	63,369	63,601
Men, 16 years and over															
Noninstitutional population [1, 2]	89,404	90,283	90,384	90,456	90,535	90,606	90,678	90,772	90,822	90,874	90,942	91,014	91,087	91,168	91,240
Labor force [2]	68,474	69,360	69,404	69,360	69,599	69,635	69,725	69,539	69,639	69,712	69,779	69,737	69,599	69,544	69,459
Participation rate [3]	76.6	76.8	76.8	76.7	76.9	76.9	76.9	76.6	76.7	76.7	76.7	76.6	76.4	76.3	76.1
Total employed [2]	64,820	65,835	65,919	65,681	66,046	66,011	66,143	65,943	66,108	66,208	66,043	66,058	66,000	65,740	65,596
Employment-population ratio [4]	72.5	72.9	72.9	72.6	73.0	72.9	72.9	72.6	72.8	72.9	72.6	72.6	72.5	72.1	71.9
Resident Armed Forces [1]	1,547	1,520	1,519	1,531	1,533	1,529	1,525	1,523	1,506	1,497	1,499	1,472	1,465	1,462	1,475
Civilian employed	63,273	64,315	64,400	64,150	64,513	64,482	64,618	64,420	64,602	64,711	64,544	64,586	64,535	64,278	64,121
Unemployed	3,655	3,525	3,485	3,679	3,553	3,624	3,582	3,597	3,530	3,505	3,735	3,679	3,599	3,804	3,863
Unemployment rate [5]	5.3	5.1	5.0	5.3	5.1	5.2	5.1	5.2	5.1	5.0	5.4	5.3	5.2	5.5	5.6
Women, 16 years and over															
Noninstitutional population [1, 2]	96,918	97,798	97,902	97,972	98,045	98,115	98,187	98,218	98,268	98,324	98,383	98,453	98,520	98,595	98,661
Labor force [2]	54,904	56,198	56,354	56,365	56,258	56,557	56,521	56,555	56,669	56,785	56,764	56,906	56,867	56,849	56,842
Participation rate [3]	56.6	57.5	57.6	57.5	57.4	57.6	57.6	57.6	57.7	57.8	57.7	57.8	57.7	57.7	57.6
Total employed [2]	51,858	53,195	53,319	53,440	53,248	53,529	53,445	53,617	53,605	53,795	53,729	53,931	54,019	53,839	53,702
Employment-population ratio [4]	53.5	54.4	54.5	54.5	54.3	54.6	54.4	54.6	54.5	54.7	54.6	54.8	54.8	54.6	54.4
Resident Armed Forces [1]	162	168	169	171	176	175	175	174	172	172	158	167	165	165	165
Civilian employed	51,696	53,027	53,150	53,269	53,072	53,354	53,270	53,443	53,433	53,623	53,571	53,764	53,854	53,674	53,537
Unemployed	3,046	3,003	3,035	2,925	3,010	3,028	3,076	2,938	3,064	2,990	3,034	2,975	2,848	3,010	3,140
Unemployment rate [5]	5.5	5.3	5.4	5.2	5.4	5.4	5.4	5.2	5.4	5.3	5.3	5.2	5.0	5.3	5.5

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

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

(Numbers in thousands)

Employment status	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
TOTAL															
Civilian noninstitutional population[1]	184,613	186,393	186,598	186,726	186,871	187,017	187,165	187,293	187,412	187,529	187,669	187,828	187,977	188,136	188,261
Civilian labor force	121,669	123,869	124,070	124,023	124,148	124,488	124,546	124,397	124,630	124,829	124,886	125,004	124,836	124,767	124,660
Participation rate	65.9	66.5	66.5	66.4	66.4	66.6	66.5	66.4	66.5	66.6	66.5	66.6	66.4	66.3	66.2
Employed	114,968	117,342	117,550	117,419	117,585	117,836	117,888	117,863	118,035	118,334	118,116	118,350	118,389	117,953	117,658
Employment-population ratio[2]	62.3	63.0	63.0	62.9	62.9	63.0	63.0	62.9	63.0	63.1	62.9	63.0	63.0	62.7	62.5
Unemployed	6,701	6,528	6,520	6,604	6,563	6,652	6,658	6,535	6,594	6,495	6,770	6,653	6,447	6,814	7,003
Unemployment rate	5.5	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.2	5.4	5.3	5.2	5.5	5.6
Not in labor force	62,944	62,523	62,528	62,703	62,723	62,529	62,619	62,896	62,782	62,700	62,783	62,824	63,141	63,369	63,601
Men, 20 years and over															
Civilian noninstitutional population[1]	80,553	81,619	81,754	81,790	81,905	81,968	82,055	82,168	82,248	82,378	82,487	82,581	82,676	82,790	82,862
Civilian labor force	62,768	63,704	63,717	63,771	63,918	63,967	64,071	63,958	64,101	64,183	64,251	64,312	64,364	64,344	64,362
Participation rate	77.9	78.1	77.9	78.0	78.0	78.0	78.1	77.8	77.9	77.9	77.9	77.9	77.9	77.7	77.7
Employed	59,781	60,837	60,861	60,729	61,026	61,033	61,154	60,976	61,172	61,270	61,138	61,265	61,345	61,196	61,143
Employment-population ratio[2]	74.2	74.5	74.4	74.2	74.5	74.5	74.5	74.2	74.4	74.4	74.1	74.2	74.2	73.9	73.8
Agriculture	2,271	2,307	2,340	2,330	2,304	2,292	2,293	2,269	2,254	2,268	2,258	2,388	2,400	2,262	2,246
Nonagricultural industries	57,510	58,530	58,521	58,399	58,722	58,741	58,861	58,706	58,918	59,002	58,879	58,877	58,945	58,934	58,897
Unemployed	2,987	2,867	2,856	3,042	2,892	2,934	2,917	2,983	2,929	2,913	3,113	3,047	3,019	3,148	3,219
Unemployment rate	4.8	4.5	4.5	4.8	4.5	4.6	4.6	4.7	4.6	4.5	4.8	4.7	4.7	4.9	5.0
Women, 20 years ond over															
Civilian noninstitutional population[1]	89,532	90,550	90,684	90,771	90,860	90,952	91,042	91,091	91,157	91,237	91,330	91,414	91,495	91,581	91,688
Civilian labor force	50,870	52,212	52,352	52,358	52,281	52,541	52,586	52,686	52,814	52,800	52,954	53,146	53,174	53,211	53,315
Participation rate	56.8	57.7	57.7	57.7	57.5	57.8	57.8	57.8	57.9	57.9	58.0	58.1	58.1	58.1	58.1
Employed	48,383	49,745	49,875	49,984	49,796	50,043	50,048	50,255	50,287	50,344	50,427	50,709	50,776	50,719	50,699
Employment-population ratio[2]	54.0	54.9	55.0	55.1	54.8	55.0	55.0	55.2	55.2	55.2	55.2	55.5	55.5	55.4	55.3
Agriculture	625	642	642	660	641	624	618	594	582	648	669	680	700	585	639
Nonagricultural industries	47,757	49,103	49,233	49,324	49,155	49,419	49,430	49,661	49,704	49,696	49,758	50,029	50,077	50,135	50,060
Unemployed	2,487	2,467	2,477	2,374	2,485	2,498	2,538	2,431	2,527	2,456	2,526	2,438	2,398	2,492	2,616
Unemployment rate	4.9	4.7	4.7	4.5	4.8	4.8	4.8	4.6	4.8	4.7	4.8	4.6	4.5	4.7	4.9
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	14,527	14,223	14,160	14,166	14,107	14,097	14,067	14,034	14,008	13,914	13,852	13,832	13,806	13,764	13,711
Civilian labor force	8,031	7,954	8,001	7,894	7,949	7,980	7,889	7,752	7,715	7,846	7,681	7,545	7,298	7,212	6,983
Participation rate	55.3	55.9	56.5	55.7	56.3	56.6	56.1	55.2	55.1	56.4	55.4	54.6	52.9	52.4	50.9
Employed	6,805	6,759	6,814	6,706	6,763	6,760	6,686	6,631	6,577	6,720	6,551	6,376	6,268	6,038	5,815
Employment-population ratio[2]	46.8	47.5	48.1	47.3	47.9	48.0	47.5	47.3	47.0	48.3	47.3	46.1	45.4	43.9	42.4
Agriculture	273	250	293	229	252	244	286	270	243	285	206	237	249	239	251
Nonagricultural industries	6,532	6,510	6,521	6,477	6,511	6,516	6,400	6,361	6,334	6,435	6,345	6,139	6,019	5,799	5,564
Unemployed	1,226	1,194	1,187	1,188	1,186	1,220	1,203	1,121	1,138	1,126	1,130	1,169	1,030	1,174	1,168
Unemployment rate	15.3	15.0	14.8	15.0	14.9	15.3	15.2	14.5	14.8	14.4	14.7	15.5	14.1	16.3	16.7
White															
Civilian noninstitutional population[1]	158,194	159,338	159,470	159,549	159,644	159,736	159,832	159,938	160,007	160,076	160,170	160,271	160,365	160,468	160,550
Civilian labor force	104,756	106,355	106,485	106,393	106,618	106,834	106,896	106,884	107,080	107,061	107,133	107,353	107,273	107,230	107,135
Participation rate	66.2	66.7	66.8	66.7	66.8	66.9	66.9	66.8	66.9	66.9	66.9	67.0	66.9	66.8	66.7
Employed	99,812	101,584	101,684	101,579	101,862	101,991	102,032	102,074	102,117	102,206	102,027	102,362	102,461	102,260	101,968
Employment-population ratio[2]	63.1	63.8	63.8	63.7	63.8	63.8	63.8	63.8	63.8	63.8	63.7	63.9	63.9	63.7	63.5
Unemployed	4,944	4,770	4,801	4,814	4,756	4,843	4,864	4,811	4,962	4,856	5,106	4,991	4,812	4,970	5,167
Unemployment rate	4.7	4.5	4.5	4.5	4.5	4.5	4.6	4.5	4.6	4.5	4.8	4.6	4.5	4.6	4.8
Black															
Civilian noninstitutional population[1]	20,692	21,021	21,060	21,085	21,108	21,136	21,164	21,163	21,188	21,211	21,228	21,261	21,289	21,318	21,337
Civilian labor force	13,205	13,497	13,476	13,518	13,507	13,576	13,522	13,510	13,437	13,581	13,570	13,587	13,472	13,379	13,366
Participation rate	63.8	64.2	64.0	64.1	64.0	64.2	63.9	63.8	63.4	64.0	63.9	63.9	63.3	62.8	62.6
Employed	11,658	11,953	11,961	11,938	11,923	11,954	11,920	11,978	12,030	12,148	12,161	12,179	12,064	11,870	11,791
Employment-population ratio[2]	56.3	56.9	56.8	56.6	56.5	56.6	56.3	56.6	56.8	57.3	57.3	57.3	56.7	55.7	55.3
Unemployed	1,547	1,544	1,515	1,580	1,584	1,622	1,602	1,532	1,407	1,433	1,409	1,408	1,407	1,510	1,575
Unemployment rate	11.7	11.4	11.2	11.7	11.7	11.9	11.8	11.3	10.5	10.6	10.4	10.4	10.4	11.3	11.8

See footnotes at end of table.

5. Continued— Employment status of the civilian population, by sex, age, race and Hispanic origin, monthly data seasonally adjusted

(Numbers in thousands)

Employment status	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Hispanic origin															
Civilian noninstitutional population[1]	13,325	13,791	13,853	13,894	13,936	13,977	14,019	14,080	14,119	14,159	14,198	14,238	14,277	14,317	14,356
Civilian labor force	8,982	9,323	9,361	9,342	9,339	9,424	9,495	9,440	9,400	9,565	9,618	9,669	9,651	9,665	9,707
Participation rate	67.4	67.6	67.6	67.2	67.0	67.4	67.7	67.0	66.6	67.6	67.7	67.9	67.6	67.5	67.6
Employed	8,250	8,573	8,541	8,564	8,595	8,672	8,691	8,769	8,666	8,831	8,850	8,927	8,967	8,899	8,951
Employment-population ratio[2]	61.9	62.2	61.7	61.6	61.7	62.0	62.0	62.3	61.4	62.4	62.3	62.7	62.8	62.2	62.3
Unemployed	732	750	820	778	744	752	804	671	734	734	768	742	684	767	757
Unemployment rate	8.2	8.0	8.8	8.3	8.0	8.0	8.5	7.1	7.8	7.7	8.0	7.7	7.1	7.9	7.8

[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.

6. Selected employment indicators, monthly data seasonally adjusted

(In thousands)

Selected categories	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
CHARACTERISTIC															
Civilian employed, 16 years and over	114,968	117,342	117,550	117,419	117,585	117,836	117,888	117,863	118,035	118,334	118,116	118,350	118,389	117,953	117,658
Men	63,273	64,315	64,400	64,150	64,513	64,482	64,618	64,420	64,602	64,711	64,544	64,586	64,535	64,278	64,121
Women	51,696	53,027	53,150	53,269	53,072	53,354	53,270	53,443	53,433	53,623	53,571	53,764	53,854	53,674	53,537
Married men, spouse present	40,472	40,760	40,723	40,649	40,839	40,886	41,041	40,982	41,347	40,989	40,730	40,881	40,554	40,545	40,604
Married women, spouse present	28,756	29,404	29,259	29,506	29,544	29,767	29,695	29,897	29,704	29,618	29,742	30,046	29,856	29,909	29,949
Women who maintain families	6,211	6,338	6,371	6,429	6,354	6,351	6,349	6,215	6,378	6,291	6,325	6,400	6,467	6,380	6,365
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,621	1,665	1,723	1,680	1,678	1,687	1,677	1,634	1,578	1,620	1,621	1,728	1,685	1,628	1,666
Self-employed workers	1,398	1,403	1,410	1,424	1,406	1,373	1,369	1,354	1,375	1,457	1,429	1,502	1,507	1,377	1,357
Unpaid family workers	150	131	133	132	124	122	125	107	118	115	112	101	106	96	93
Nonagricultural industries:															
Wage and salary workers	103,021	105,259	105,317	105,476	105,504	105,960	105,643	105,747	106,117	106,029	105,938	106,176	105,985	105,885	105,691
Government	17,114	17,469	17,559	17,613	17,595	17,681	17,728	17,626	17,607	17,724	17,816	18,113	17,863	17,788	17,842
Private industries	85,907	87,790	87,758	87,863	87,909	88,279	87,915	88,121	88,510	88,306	88,122	88,063	88,121	88,097	87,849
Private households	1,153	1,101	1,147	1,065	987	1,051	1,077	1,035	1,021	1,003	957	941	1,056	989	1,033
Other	84,754	86,689	86,611	86,798	86,922	87,228	86,838	87,086	87,489	87,302	87,165	87,122	87,065	87,108	86,816
Self-employed workers	8,519	8,605	8,621	8,581	8,610	8,528	8,653	8,733	8,628	8,852	8,716	8,783	8,759	8,709	8,629
Unpaid family workers	260	279	272	279	280	264	251	256	313	261	258	254	226	269	229
PERSONS AT WORK PART TIME[1]															
All industries:															
Part time for economic reasons	5,206	4,894	4,802	4,864	4,767	4,803	4,802	4,983	4,887	5,004	4,871	4,831	5,013	4,870	5,036
Slack work	2,350	2,303	2,281	2,321	2,314	2,297	2,277	2,402	2,307	2,476	2,407	2,439	2,499	2,565	2,424
Could only find part-time work	2,487	2,233	2,142	2,161	2,082	2,162	2,106	2,255	2,211	2,127	2,138	2,052	2,224	2,070	2,123
Voluntary part time	14,963	15,393	15,550	15,506	15,368	15,254	15,388	14,931	15,381	15,464	15,193	15,592	15,125	15,311	15,377
Nonagricultural industries:															
Part time for economic reasons	4,965	4,657	4,567	4,605	4,526	4,552	4,554	4,729	4,703	4,747	4,630	4,666	4,734	4,710	4,780
Slack work	2,199	2,143	2,129	2,165	2,166	2,132	2,111	2,240	2,183	2,293	2,218	2,317	2,284	2,408	2,242
Could only find part-time work	2,408	2,166	2,076	2,095	2,021	2,097	2,051	2,172	2,173	2,050	2,096	2,004	2,141	2,048	2,069
Voluntary part time	14,509	14,963	15,071	15,076	14,936	14,805	14,983	14,515	14,924	14,975	14,804	15,064	14,627	14,922	14,899

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

7. Selected unemployment indicators, monthly data seasonally adjusted

(Unemployment rates)

Selected categories	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
CHARACTERISTIC															
Total, all civilian workers	5.5	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.2	5.4	5.3	5.2	5.5	5.6
Both sexes, 16 to 19 years	15.3	15.0	14.8	15.0	14.9	15.3	15.2	14.5	14.8	14.4	14.7	15.5	14.1	16.3	16.7
Men, 20 years and over	4.8	4.5	4.5	4.8	4.5	4.6	4.6	4.7	4.6	4.5	4.8	4.7	4.7	4.9	5.0
Women, 20 years and over	4.9	4.7	4.7	4.5	4.8	4.8	4.8	4.6	4.8	4.7	4.8	4.6	4.5	4.7	4.9
White, total	4.7	4.5	4.5	4.5	4.5	4.5	4.6	4.5	4.6	4.5	4.8	4.6	4.5	4.6	4.8
Both sexes, 16 to 19 years	13.1	12.7	12.7	12.2	12.4	12.9	13.0	12.7	13.0	12.9	13.1	13.7	12.2	13.7	14.5
Men, 16 to 19 years	13.9	13.7	13.1	13.3	13.8	14.3	14.0	12.9	12.7	13.0	13.8	14.2	12.9	15.1	15.7
Women, 16 to 19 years	12.3	11.5	12.3	11.1	10.9	11.3	11.9	12.4	13.2	12.7	12.4	13.1	11.4	12.3	13.2
Men, 20 years and over	4.1	3.9	3.9	4.2	3.9	3.9	3.9	4.0	4.1	4.0	4.3	4.2	4.1	4.1	4.3
Women, 20 years and over	4.1	4.0	4.1	3.8	4.0	4.0	4.1	4.0	4.1	3.9	4.1	3.9	3.9	4.0	4.2
Black, total	11.7	11.4	11.2	11.7	11.7	11.9	11.8	11.3	10.5	10.6	10.4	10.4	10.4	11.3	11.8
Both sexes, 16 to 19 years	32.4	32.4	31.9	36.3	33.4	32.5	30.7	26.7	28.0	28.2	25.8	29.4	31.4	31.8	36.7
Men, 16 to 19 years	32.7	31.9	30.3	33.8	32.0	32.3	30.1	29.2	28.5	30.0	27.2	31.1	37.4	32.3	38.4
Women, 16 to 19 years	32.0	33.0	33.6	38.8	34.9	32.7	31.4	24.0	27.5	26.2	24.3	27.6	25.3	31.2	35.0
Men, 20 years and over	10.1	10.0	9.9	10.1	10.3	10.6	10.8	11.2	9.2	9.6	9.4	9.1	9.4	10.7	10.6
Women, 20 years and over	10.4	9.8	9.6	9.7	9.9	10.2	10.0	9.2	9.4	9.0	9.2	9.1	8.9	9.4	9.9
Hispanic origin, total	8.2	8.0	8.8	8.3	8.0	8.0	8.5	7.1	7.8	7.7	8.0	7.7	7.1	7.9	7.8
Married men, spouse present	3.3	3.0	3.1	3.3	3.0	3.1	3.0	3.4	3.0	3.2	3.3	3.3	3.2	3.3	3.5
Married women, spouse present	3.9	3.7	3.9	3.8	3.9	3.8	3.9	3.7	3.8	3.6	3.5	3.5	3.7	3.5	3.9
Women who maintain families	8.1	8.1	8.0	7.7	7.8	8.2	8.1	7.5	7.5	8.4	7.5	7.4	8.0	8.5	8.5
Full-time workers	5.2	4.9	4.9	5.0	4.9	5.0	5.0	5.0	4.9	4.9	5.1	4.9	4.8	5.0	5.2
Part-time workers	7.6	7.3	7.1	7.3	7.1	7.4	7.5	7.0	7.4	7.2	7.1	7.4	7.6	8.1	7.9
Unemployed 15 weeks and over	1.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3
Labor force time lost[1]	6.3	5.9	6.0	6.0	5.9	5.9	6.0	6.0	5.9	5.9	6.2	6.0	5.9	6.0	6.3
INDUSTRY															
Nonagricultural private wage and salary workers	5.5	5.3	5.4	5.4	5.3	5.4	5.4	5.5	5.5	5.5	5.7	5.5	5.3	5.5	5.7
Mining	7.9	5.8	6.4	8.4	4.8	6.2	4.4	6.8	4.8	5.9	4.6	3.3	3.6	4.4	4.9
Construction	10.6	10.0	10.2	10.1	9.3	9.8	9.8	9.3	8.9	10.0	10.6	11.5	9.7	10.2	11.1
Manufacturing	5.3	5.1	5.2	5.2	5.4	5.4	5.6	5.9	5.9	5.5	5.9	5.4	4.9	5.7	5.8
Durable goods	5.0	4.8	4.9	4.9	5.2	5.4	5.4	5.8	5.5	5.3	5.7	5.5	4.9	5.6	5.9
Nondurable goods	5.7	5.5	5.7	5.5	5.6	5.3	5.9	5.9	6.4	5.9	6.3	5.2	5.0	5.7	5.6
Transportation and public utilities	3.9	3.9	3.7	4.5	3.9	3.6	3.4	4.3	4.0	3.4	4.3	3.2	3.0	3.7	4.1
Wholesale and retail trade	6.2	6.0	6.0	5.9	5.9	6.4	6.3	6.2	6.0	6.2	6.2	6.3	6.2	6.0	6.2
Finance and service industries	4.5	4.4	4.4	4.5	4.3	4.3	4.2	4.3	4.4	4.5	4.5	4.4	4.5	4.5	4.7
Government workers	2.8	2.7	2.7	2.8	2.7	2.7	2.6	2.4	2.5	2.3	2.1	2.5	2.9	2.8	2.8
Agricultural wage and salary workers	10.6	9.6	9.0	7.8	9.8	12.1	9.7	9.2	9.3	10.1	11.0	7.9	10.0	10.6	9.7

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

8. Unemployment rates by sex and age, monthly data seasonally adjusted

(Civilian workers)

Sex and age	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Total, 16 years and over	5.5	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.2	5.4	5.3	5.2	5.5	5.6
16 to 24 years	11.0	10.9	11.0	11.1	11.1	11.3	11.2	10.6	10.7	10.5	11.2	11.0	10.3	11.0	11.5
16 to 19 years	15.3	15.0	14.8	15.0	14.9	15.3	15.2	14.5	14.8	14.4	14.7	15.5	14.1	16.3	16.7
16 to 17 years	17.4	17.2	17.5	17.2	16.9	17.4	18.1	14.8	16.8	16.9	17.4	20.0	16.1	17.4	19.2
18 to 19 years	13.8	13.6	12.8	14.2	13.5	13.8	13.4	14.2	13.0	12.9	13.0	12.8	13.4	15.2	15.0
20 to 24 years	8.7	8.6	8.8	8.8	8.9	9.0	8.9	8.5	8.4	8.3	9.3	8.5	8.2	8.3	8.8
25 years and over	4.3	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.2	4.1	4.2	4.1	4.1	4.3	4.4
25 to 54 years	4.5	4.2	4.1	4.3	4.2	4.2	4.3	4.3	4.3	4.3	4.4	4.3	4.4	4.5	4.6
55 years and over	3.1	3.1	3.1	3.0	3.0	3.2	3.2	3.4	3.4	3.3	3.3	3.0	2.8	3.2	3.5
Men, 16 years and over	5.5	5.2	5.1	5.4	5.2	5.3	5.3	5.3	5.2	5.1	5.5	5.4	5.3	5.6	5.7
16 to 24 years	11.4	11.4	11.5	11.9	11.7	12.0	11.8	11.2	10.9	10.9	11.8	11.2	11.1	11.6	11.6
16 to 19 years	16.0	15.9	15.1	15.7	15.9	16.7	16.1	15.1	14.9	14.7	15.4	16.0	15.4	17.5	17.8
16 to 17 years	18.2	18.6	17.7	19.5	18.5	19.0	19.6	14.2	16.5	16.9	18.1	20.6	16.4	18.4	21.5
18 to 19 years	14.6	14.2	13.1	13.7	14.2	15.1	13.8	15.6	13.7	13.6	13.8	13.4	14.8	16.3	15.5
20 to 24 years	8.9	8.8	9.4	9.8	9.3	9.4	9.5	8.9	8.6	8.8	9.8	8.6	8.9	8.5	8.5
25 years and over	4.2	3.9	3.8	4.1	3.9	4.0	3.9	4.2	4.1	4.0	4.2	4.1	4.1	4.4	4.6
25 to 54 years	4.4	4.1	3.8	4.1	4.0	4.1	4.0	4.3	4.2	4.2	4.4	4.3	4.3	4.5	4.6
55 years and over	3.3	3.2	3.3	3.5	3.2	3.5	3.6	3.6	3.5	3.4	3.5	3.4	3.1	3.6	3.8
Women, 16 years and over	5.6	5.4	5.4	5.2	5.4	5.4	5.5	5.2	5.4	5.3	5.4	5.2	5.0	5.3	5.5
16 to 24 years	10.6	10.4	10.4	10.2	10.4	10.4	10.4	10.1	10.4	10.0	10.5	10.7	9.3	10.4	11.4
16 to 19 years	14.4	14.0	14.6	14.4	13.8	13.8	14.3	13.7	14.6	14.0	13.9	14.9	12.8	14.9	15.6
16 to 17 years	16.6	15.7	17.2	14.7	15.0	15.7	16.5	15.5	17.3	16.9	16.7	19.4	15.9	16.4	16.6
18 to 19 years	12.9	13.0	12.5	14.6	12.8	12.3	13.0	12.6	12.3	12.0	12.1	12.2	11.9	13.9	14.4
20 to 24 years	8.5	8.3	8.1	7.7	8.5	8.5	8.2	8.0	8.1	7.7	8.7	8.4	7.5	8.0	9.3
25 years and over	4.3	4.2	4.2	4.1	4.2	4.2	4.3	4.1	4.3	4.2	4.2	4.1	4.1	4.2	4.3
25 to 54 years	4.6	4.4	4.5	4.4	4.4	4.4	4.6	4.3	4.5	4.4	4.4	4.4	4.4	4.4	4.5
55 years and over	2.8	2.8	2.8	2.4	2.8	2.9	2.7	3.3	3.3	3.3	2.9	2.5	2.4	2.6	3.1

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

(Numbers in thousands)

Reason for unemployment	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Job losers	3,092	2,983	2,964	2,932	2,979	3,092	3,097	3,183	3,103	3,038	3,147	3,171	3,151	3,088	3,367
On layoff	851	850	865	852	780	969	957	1,033	964	941	999	979	918	960	973
Other job losers	2,241	2,133	2,099	2,080	2,199	2,123	2,140	2,150	2,139	2,097	2,148	2,192	2,233	2,128	2,394
Job leavers	983	1,024	1,031	1,034	994	1,049	1,055	1,016	1,006	1,014	1,179	1,014	995	1,027	984
Reentrants	1,809	1,843	1,772	1,920	1,890	1,845	1,853	1,730	1,805	1,859	1,780	1,820	1,789	1,960	1,879
New entrants	816	677	643	648	685	695	686	640	680	644	617	683	534	687	677
PERCENT OF UNEMPLOYED															
Job losers	46.1	45.7	46.2	44.9	45.5	46.3	46.3	48.5	47.1	46.3	46.8	47.4	48.7	45.7	48.7
On layoff	12.7	13.0	13.5	13.0	11.9	14.5	14.3	15.7	14.6	14.4	14.9	14.6	14.2	14.2	14.1
Other job losers	33.4	32.7	32.7	31.8	33.6	31.8	32.0	32.7	32.4	32.0	31.9	32.8	34.5	31.5	34.7
Job leavers	14.7	15.7	16.1	15.8	15.2	15.7	15.8	15.5	15.3	15.5	17.5	15.2	15.4	15.2	14.3
Reentrants	27.0	28.2	27.6	29.4	28.9	27.6	27.7	26.3	27.4	28.4	26.5	27.2	27.7	29.0	27.2
New entrants	12.2	10.4	10.0	9.9	10.5	10.4	10.3	9.7	10.3	9.8	9.2	10.2	8.3	10.2	9.8
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	2.5	2.4	2.4	2.4	2.4	2.5	2.5	2.6	2.5	2.4	2.5	2.5	2.5	2.5	2.7
Job leavers	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.9	.8	.8	.8	.8
Reentrants	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.4	1.5	1.4	1.6	1.5
New entrants	.7	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.5	.4	.6	.5

10. Duration of unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Weeks of unemployment	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Less than 5 weeks	3,084	3,174	3,125	3,169	3,166	3,258	3,302	3,119	3,159	3,194	3,204	3,026	3,046	3,120	3,325
5 to 14 weeks	2,007	1,978	2,002	2,030	1,995	1,991	2,013	2,012	2,079	2,044	2,175	2,236	2,049	2,159	2,048
15 weeks and over	1,610	1,375	1,338	1,359	1,378	1,422	1,362	1,430	1,369	1,333	1,386	1,374	1,406	1,513	1,609
15 to 26 weeks	801	730	759	769	743	765	730	777	731	702	697	764	763	809	845
27 weeks and over	809	646	579	590	635	657	632	653	638	631	688	610	643	704	764
Mean duration in weeks	13.5	11.9	11.4	11.5	11.7	11.6	11.5	12.1	11.7	12.0	12.1	11.6	12.0	12.0	12.3
Median duration in weeks	5.9	4.8	5.0	5.0	5.0	4.8	4.8	5.1	5.4	5.1	5.0	5.4	5.1	5.2	5.2

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

State	July 1989	July 1990[p]	State	July 1989	July 1990[p]
Alabama	7.6	7.3	Montana	5.2	5.1
Alaska	4.9	5.3	Nebraska	3.1	2.2
Arizona	5.9	6.0	Nevada	5.1	4.5
Arkansas	7.4	7.2	New Hampshire	3.6	5.7
California	5.8	5.7	New Jersey	4.5	5.1
Colorado	5.0	4.8	New Mexico	6.7	6.5
Connecticut	3.7	5.1	New York	4.6	5.2
Delaware	4.5	4.6	North Carolina	3.3	4.5
District of Columbia	5.2	6.9	North Dakota	3.7	3.9
Florida	6.0	6.1	Ohio	5.0	5.1
Georgia	5.5	5.8	Oklahoma	5.3	4.8
Hawaii	2.2	2.8	Oregon	5.6	5.7
Idaho	4.5	5.5	Pennsylvania	4.7	5.2
Illinois	5.4	6.3	Rhode Island	4.0	7.1
Indiana	4.0	5.1	South Carolina	4.8	5.3
Iowa	4.0	3.9	South Dakota	4.0	3.9
Kansas	3.6	3.8	Tennessee	5.1	5.0
Kentucky	5.9	5.0	Texas	7.2	6.3
Louisiana	8.6	6.2	Utah	4.5	4.4
Maine	3.7	4.2	Vermont	3.6	4.5
Maryland	3.6	4.5	Virginia	3.3	3.8
Massachusetts	4.6	6.5	Washington	6.2	5.0
Michigan	7.3	7.7	West Virginia	7.5	7.2
Minnesota	4.1	4.6	Wisconsin	3.9	3.5
Mississippi	8.1	8.0	Wyoming	6.3	3.6
Missouri	5.2	5.8			

[p] = preliminary
NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.

12. Employment of workers on nonfarm payrolls by State, data not seasonally adjusted

(In thousands)

State	July 1989	June 1990	July 1990[p]	State	July 1989	June 1990	July 1990[p]
Alabama	1,585.8	1,605.5	1,605.8	Nebraska	702.7	731.9	718.9
Alaska	249.0	245.0	251.5	Nevada	587.9	624.0	627.7
Arizona	1,413.3	1,480.5	1,470.3	New Hampshire	519.8	520.1	501.3
Arkansas	890.1	924.9	912.9	New Jersey	3,741.8	3,779.2	3,753.9
California	12,455.0	12,869.7	12,773.0	New Mexico	555.9	571.1	566.7
Colorado	1,469.5	1,512.9	1,502.1	New York	8,281.7	8,401.7	8,292.9
Connecticut	1,678.2	1,687.6	1,668.8	North Carolina	3,037.2	3,128.8	3,066.1
Delaware	344.1	353.6	349.1	North Dakota	261.5	269.3	265.7
District of Columbia	692.3	691.9	697.4	Ohio	4,815.3	4,977.7	4,932.6
Florida	5,195.9	5,497.9	5,429.8	Oklahoma	1,150.9	1,172.3	1,159.7
Georgia	2,950.3	3,021.6	3,006.2	Oregon	1,209.1	1,261.5	1,245.6
Hawaii	506.7	520.7	518.1	Pennsylvania	5,114.7	5,160.9	5,131.5
Idaho	369.8	389.2	385.4	Rhode Island	457.9	461.2	448.4
Illinois	5,186.6	5,249.4	5,221.0	South Carolina	1,499.5	1,565.3	1,546.2
Indiana	2,449.2	2,532.3	2,520.4	South Dakota	276.6	287.5	280.7
Iowa	1,198.2	1,236.3	1,219.9	Tennessee	2,158.4	2,184.9	2,169.1
Kansas	1,060.1	1,096.2	1,080.5	Texas	6,805.8	6,956.2	6,935.4
Kentucky	1,437.0	1,477.8	1,472.8	Utah	686.7	731.0	718.7
Louisiana	1,509.2	1,530.4	1,524.4	Vermont	260.2	259.1	253.0
Maine	550.2	544.3	533.8	Virginia	2,875.7	2,960.3	2,934.5
Maryland	2,162.2	2,191.7	2,184.3	Washington	2,053.7	2,163.9	2,136.5
Massachusetts	3,114.9	3,092.6	3,021.8	West Virginia	604.9	629.7	631.2
Michigan	3,881.6	3,947.1	3,883.3	Wisconsin	2,240.3	2,302.6	2,284.6
Minnesota	2,099.8	2,165.6	2,134.9	Wyoming	198.7	205.2	200.1
Mississippi	918.0	935.2	925.1	Puerto Rico	858.2	877.3	874.9
Missouri	2,314.6	2,344.3	2,325.6	Virgin Islands	43.8	41.6	41.5
Montana	292.1	301.4	296.5				

[p] = preliminary
NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.

13. Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

(In thousands)

Industry	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
TOTAL	105,536	108,413	108,628	108,868	108,980	109,245	109,383	109,654	109,958	110,122	110,177	110,617	110,829	110,740	110,665
PRIVATE SECTOR	88,150	90,644	90,797	90,985	91,096	91,344	91,456	91,656	91,917	91,963	91,922	92,120	92,282	92,291	92,279
GOODS-PRODUCING	25,173	25,326	25,356	25,304	25,283	25,260	25,218	25,188	25,339	25,259	25,180	25,191	25,162	25,100	25,008
Mining	713	700	706	709	710	716	718	723	727	729	734	738	744	743	736
Construction	5,110	5,200	5,220	5,225	5,239	5,258	5,216	5,294	5,368	5,313	5,256	5,286	5,270	5,231	5,191
General building contractors	1,353	1,338	1,345	1,343	1,338	1,339	1,335	1,361	1,368	1,351	1,338	1,334	1,334	1,319	1,304
Manufacturing	19,350	19,426	19,430	19,370	19,334	19,306	19,284	19,171	19,244	19,217	19,190	19,167	19,148	19,126	19,081
Production workers	13,221	13,257	13,263	13,204	13,171	13,144	13,124	13,009	13,084	13,061	13,046	13,023	13,007	13,006	12,963
Durable goods	11,381	11,422	11,416	11,369	11,337	11,314	11,296	11,192	11,278	11,261	11,229	11,217	11,201	11,175	11,126
Production workers	7,596	7,615	7,615	7,567	7,541	7,519	7,506	7,400	7,488	7,479	7,461	7,450	7,439	7,433	7,388
Lumber and wood products	769	758	753	750	753	752	753	753	751	751	750	748	743	740	738
Furniture and fixtures	528	526	525	524	521	521	519	519	518	518	516	516	515	512	513
Stone, clay, and glass products	569	569	568	563	566	567	566	567	568	565	560	559	556	552	551
Primary metal industries	771	772	772	767	764	760	759	754	756	754	755	755	756	758	756
Blast furnaces and basic steel products	279	278	278	276	274	272	273	272	272	270	271	271	270	270	272
Fabricated metal products	1,432	1,446	1,442	1,438	1,433	1,429	1,426	1,412	1,418	1,418	1,419	1,417	1,415	1,418	1,417
Industrial machinery and equipment	2,092	2,132	2,135	2,132	2,125	2,129	2,130	2,132	2,126	2,119	2,112	2,112	2,108	2,103	2,098
Electronic and other electrical equipment	1,766	1,753	1,750	1,743	1,737	1,732	1,722	1,722	1,720	1,718	1,713	1,711	1,703	1,693	1,679
Transportation equipment	2,038	2,054	2,056	2,041	2,031	2,023	2,024	1,933	2,023	2,022	2,014	2,010	2,021	2,016	2,000
Motor vehicles and equipment	857	857	864	843	833	826	828	736	828	825	820	817	826	825	813
Instruments and related products	1,033	1,026	1,027	1,023	1,021	1,018	1,011	1,011	1,009	1,008	1,005	1,002	1,000	997	992
Miscellaneous manufacturing industries	384	386	388	388	386	383	386	389	389	388	385	387	384	386	382
Nondurable goods	7,969	8,004	8,014	8,001	7,997	7,992	7,988	7,979	7,966	7,956	7,961	7,950	7,947	7,951	7,955
Production workers	5,625	5,642	5,648	5,637	5,630	5,625	5,618	5,609	5,596	5,582	5,585	5,573	5,568	5,573	5,575
Food and kindred products	1,631	1,645	1,649	1,653	1,651	1,651	1,650	1,651	1,650	1,648	1,651	1,650	1,643	1,647	1,650
Tobacco products	55	49	49	48	48	48	47	47	47	46	46	46	47	46	48
Textile mill products	729	724	724	720	721	718	716	715	711	709	708	703	702	703	703
Apparel and other textile products	1,088	1,074	1,075	1,070	1,066	1,064	1,061	1,053	1,045	1,037	1,036	1,031	1,029	1,027	1,026
Paper and allied products	690	697	700	697	697	697	698	697	699	698	699	698	699	701	702
Printing and publishing	1,548	1,564	1,566	1,566	1,567	1,571	1,573	1,576	1,576	1,578	1,579	1,581	1,582	1,581	1,583
Chemicals and allied products	1,059	1,074	1,076	1,075	1,076	1,077	1,081	1,081	1,083	1,083	1,084	1,085	1,086	1,085	1,084
Petroleum and coal products	160	157	157	157	158	158	157	158	159	159	159	159	160	160	161
Rubber and misc. plastics products	868	884	883	880	878	875	873	869	865	867	869	868	871	874	874
Leather and leather products	143	136	135	135	135	133	132	132	131	131	130	129	128	127	124
SERVICE-PRODUCING	80,363	83,087	83,272	83,564	83,697	83,965	84,165	84,466	84,619	84,863	84,997	85,426	85,667	85,640	85,657
Transportation and public utilities	5,527	5,648	5,561	5,656	5,671	5,693	5,776	5,790	5,804	5,808	5,809	5,833	5,846	5,840	5,849
Transportation	3,312	3,450	3,467	3,483	3,500	3,523	3,548	3,568	3,583	3,589	3,588	3,613	3,627	3,625	3,630
Communications and public utilities	2,215	2,199	2,094	2,173	2,171	2,170	2,228	2,222	2,221	2,219	2,221	2,220	2,219	2,215	2,219
Wholesale trade	6,055	6,271	6,294	6,303	6,313	6,335	6,344	6,356	6,357	6,361	6,363	6,369	6,383	6,377	6,383
Retail trade	19,077	19,580	19,620	19,634	19,665	19,714	19,710	19,807	19,758	19,764	19,778	19,795	19,822	19,847	19,831
General merchandise stores	2,473	2,535	2,537	2,534	2,527	2,542	2,519	2,529	2,505	2,495	2,493	2,487	2,496	2,496	2,490
Food stores	3,079	3,190	3,205	3,211	3,230	3,240	3,247	3,263	3,268	3,272	3,287	3,295	3,302	3,304	3,296
Automotive dealers and service stations	2,075	2,109	2,106	2,109	2,115	2,116	2,113	2,117	2,118	2,120	2,118	2,121	2,120	2,129	2,133
Eating and drinking places	6,286	6,449	6,464	6,476	6,491	6,511	6,523	6,538	6,556	6,563	6,573	6,583	6,598	6,618	6,613
Finance, insurance, and real estate	6,649	6,724	6,740	6,753	6,756	6,774	6,785	6,794	6,817	6,821	6,823	6,838	6,844	6,843	6,852
Finance	3,283	3,307	3,312	3,317	3,320	3,327	3,329	3,327	3,340	3,333	3,336	3,338	3,344	3,337	3,342
Insurance	2,079	2,103	2,109	2,111	2,109	2,114	2,119	2,124	2,128	2,135	2,135	2,139	2,143	2,148	2,155
Real estate	1,287	1,314	1,319	1,325	1,327	1,333	1,337	1,343	1,349	1,353	1,352	1,361	1,357	1,358	1,355
Services	25,669	27,096	27,226	27,335	27,408	27,548	27,623	27,721	27,842	27,950	27,969	28,094	28,225	28,284	28,356
Business services	4,669	4,931	4,950	4,980	4,970	4,990	4,986	4,993	5,010	5,021	5,026	5,048	5,060	5,052	5,052
Health services	7,121	7,551	7,605	7,648	7,690	7,743	7,789	7,837	7,889	7,936	7,984	8,040	8,096	8,133	8,177
Government	17,386	17,769	17,831	17,883	17,884	17,901	17,927	17,998	18,041	18,159	18,255	18,497	18,547	18,449	18,386
Federal	2,971	2,988	2,996	2,992	2,986	2,982	2,977	3,000	3,005	3,089	3,151	3,346	3,338	3,161	3,038
State	4,076	4,175	4,191	4,215	4,202	4,212	4,206	4,225	4,239	4,249	4,252	4,262	4,296	4,310	4,332
Local	10,339	10,606	10,644	10,676	10,696	10,707	10,744	10,773	10,797	10,821	10,852	10,889	10,913	10,978	11,016

[p] = preliminary
NOTE: See notes on the data for a description of the most recent benchmark revision.

14. Average weekly hours of production or nonsupervisory workers on private nonfarm payrolls by industry, monthly data seasonally adjusted

Industry	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
PRIVATE SECTOR	34.7	34.6	34.5	34.6	34.6	34.5	34.4	34.4	34.6	34.6	34.5	34.5	34.7	34.5	34.5
MINING	42.3	43.0	43.4	43.7	43.6	43.7	43.0	43.6	43.7	43.5	43.4	43.6	44.4	43.7	43.9
MANUFACTURING	41.1	41.0	41.0	40.9	40.8	40.7	40.6	40.7	40.8	40.8	40.7	40.9	41.0	40.9	41.0
Overtime hours	3.9	3.8	3.8	3.8	3.7	3.7	3.7	3.6	3.6	3.7	3.5	3.8	3.8	3.8	3.9
Durable goods	41.8	41.6	41.6	41.5	41.3	41.2	41.2	41.3	41.3	41.4	41.2	41.5	41.6	41.6	41.6
Overtime hours	4.1	3.9	3.9	3.8	3.7	3.7	3.7	3.6	3.6	3.8	3.5	3.9	3.9	3.9	4.0
Lumber and wood products	40.1	40.1	40.1	40.1	40.3	40.2	40.0	40.4	40.1	40.4	40.2	40.4	40.3	40.2	40.4
Furniture and fixtures	39.4	39.5	39.5	39.5	39.2	39.4	39.1	39.6	39.3	39.2	39.0	39.2	39.3	39.5	39.2
Stone, clay, and glass products	42.3	42.3	42.5	42.2	42.4	42.4	41.6	42.3	42.2	42.0	42.0	42.1	42.3	41.8	42.3
Primary metal industries	43.5	43.0	42.8	42.6	42.5	42.5	42.5	42.6	42.5	42.7	41.8	43.0	43.0	43.1	42.9
Blast furnaces and basic steel products	44.0	43.4	43.3	43.1	42.8	43.0	42.9	43.1	42.9	43.0	42.9	43.5	43.3	44.1	43.6
Fabricated metal products	41.9	41.6	41.5	41.5	41.4	41.3	41.2	41.1	41.4	41.5	41.2	41.7	41.6	41.8	41.6
Industrial machinery and equipment	42.7	42.4	42.3	42.2	42.1	42.2	42.1	42.1	42.1	42.0	41.8	42.1	42.0	42.1	42.0
Electronic and other electrical equipment	41.0	40.8	41.0	41.0	41.0	40.8	40.5	40.9	41.1	41.0	40.9	40.9	41.0	40.8	40.8
Transportation equipment	42.7	42.4	42.5	42.7	41.3	41.0	41.7	41.5	41.6	42.0	41.9	42.5	42.6	42.8	43.1
Motor vehicles and equipment	43.5	43.1	42.8	43.0	42.7	42.3	42.2	41.0	41.5	42.3	41.8	43.4	43.7	43.6	44.1
Instruments and related products	41.4	41.1	41.0	40.9	41.0	41.0	41.0	40.9	41.0	41.1	41.2	41.1	41.2	41.3	41.2
Miscellaneous manufacturing	39.2	39.4	39.4	39.2	39.3	39.7	39.3	39.5	39.5	39.4	39.2	39.4	39.4	39.4	39.4
Nondurable goods	40.2	40.2	40.2	40.2	40.1	40.1	40.0	40.0	40.0	40.0	40.0	40.1	40.3	40.1	40.2
Overtime hours	3.6	3.6	3.6	3.7	3.6	3.6	3.6	3.5	3.5	3.6	3.4	3.6	3.6	3.6	3.7
Food and kindred products	40.3	40.7	40.7	40.9	40.8	40.8	40.7	40.6	40.6	40.7	40.6	40.8	40.9	40.6	41.1
Textile mill products	41.0	40.9	41.0	40.6	40.6	40.4	40.2	40.3	40.2	40.0	40.0	40.2	40.4	40.1	40.0
Apparel and other textile products	37.0	36.9	36.9	36.8	36.9	36.8	36.4	36.6	36.6	36.3	36.4	36.6	36.7	36.6	36.6
Paper and allied products	43.3	43.3	43.5	43.2	43.3	43.4	43.2	43.2	43.1	43.2	43.3	43.3	43.5	43.5	43.7
Printing and publishing	38.0	37.9	37.8	38.0	37.8	37.9	37.7	37.9	37.9	38.0	37.8	37.9	38.0	37.9	38.1
Chemicals and allied products	42.2	42.4	42.4	42.5	42.5	42.4	42.6	42.7	42.4	42.5	42.6	42.6	42.6	42.3	42.5
Rubber and miscellaneous plastics products	41.7	41.4	41.2	41.1	41.1	41.1	40.9	40.8	41.2	41.4	40.9	41.4	41.6	41.5	41.1
Leather and leather products	37.5	37.9	38.1	38.2	37.7	37.6	37.4	37.4	37.7	37.7	37.5	37.4	37.5	37.3	37.6
TRANSPORTATION AND PUBLIC UTILITIES	38.8	38.9	38.6	38.8	38.8	38.6	38.6	38.3	38.7	39.0	39.0	39.1	39.2	39.0	39.1
WHOLESALE TRADE	38.1	38.0	38.0	38.1	38.1	38.1	38.1	38.0	38.0	38.1	38.1	38.0	38.1	38.1	38.0
RETAIL TRADE	29.1	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.9	29.0	29.0	29.0	29.0	28.9	28.7
SERVICES	32.6	32.6	32.5	32.6	32.7	32.6	32.6	32.5	32.6	32.5	32.6	32.5	32.6	32.6	32.6

– Data not available.
[p] = preliminary
NOTE: See "Notes on the data" for a description of the most recent benchmark adjustment.

15. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls by industry, seasonally adjusted

Industry	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
PRIVATE SECTOR (in current dollars)	$9.28	$9.66	$9.70	$9.73	$9.78	$9.78	$9.83	$9.82	$9.88	$9.93	$9.96	$9.98	$10.03	$10.07	$10.09
Mining	12.80	13.25	13.30	13.31	13.32	13.32	13.40	13.33	13.33	13.51	13.59	13.58	13.73	13.75	13.69
Construction	13.08	13.52	13.55	13.56	13.61	13.66	13.76	13.55	13.63	13.66	13.62	13.71	13.73	13.76	13.78
Manufacturing	10.19	10.49	10.53	10.55	10.57	10.58	10.62	10.57	10.67	10.73	10.75	10.81	10.86	10.89	10.92
Excluding overtime	9.73	10.02	10.07	10.09	10.10	10.12	10.17	10.13	10.22	10.28	10.34	10.35	10.38	10.40	10.41
Transportation and public utilities	12.26	12.61	12.65	12.68	12.71	12.65	12.73	12.78	12.83	12.87	12.96	12.88	12.92	12.99	12.99
Wholesale trade	9.98	10.39	10.42	10.48	10.54	10.55	10.60	10.57	10.62	10.67	10.74	10.74	10.80	10.85	10.81
Retail trade	6.31	6.53	6.56	6.57	6.60	6.61	6.64	6.68	6.69	6.73	6.74	6.76	6.78	6.79	6.82
Finance, insurance, and real estate	9.06	9.54	9.56	9.65	9.72	9.66	9.75	9.73	9.77	9.82	9.88	9.87	9.98	10.08	10.03
Services	8.88	9.39	9.44	9.49	9.55	9.55	9.61	9.63	9.67	9.72	9.79	9.80	9.85	9.91	9.91
PRIVATE SECTOR (in constant (1982) dollars)	7.69	7.64	7.64	7.64	7.65	7.62	7.63	7.54	7.55	7.56	7.57	7.58	7.58	7.58	–

– Data not available.
[p] = preliminary

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

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

Industry	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
PRIVATE SECTOR	$9.28	$9.66	$9.61	$9.77	$9.81	$9.81	$9.84	$9.87	$9.91	$9.93	$9.97	$9.97	$9.98	$10.00	$9.99
MINING	12.80	13.25	13.22	13.29	13.23	13.27	13.46	13.46	13.46	13.57	13.66	13.56	13.66	13.65	13.59
CONSTRUCTION	13.08	13.52	13.51	13.65	13.71	13.69	13.84	13.59	13.59	13.63	13.58	13.68	13.63	13.70	13.74
MANUFACTURING	10.19	10.49	10.46	10.56	10.54	10.59	10.68	10.60	10.68	10.75	10.75	10.81	10.85	10.88	10.84
Durable goods	10.71	11.01	10.99	11.11	11.07	11.11	11.19	11.06	11.18	11.25	11.22	11.33	11.37	11.38	11.38
Lumber and wood products	8.59	8.84	8.90	8.95	8.96	8.96	9.01	9.00	8.95	9.05	9.09	9.11	9.09	9.17	9.16
Furniture and fixtures	7.95	8.26	8.30	8.40	8.41	8.41	8.43	8.45	8.42	8.43	8.42	8.47	8.52	8.52	8.58
Stone, clay, and glass products	10.56	10.83	10.85	10.87	10.90	10.95	10.96	10.96	10.93	11.03	11.18	11.15	11.17	11.20	11.19
Primary metal industries	12.16	12.42	12.42	12.54	12.50	12.57	12.59	12.56	12.66	12.71	12.86	12.82	12.90	13.03	12.91
Blast furnaces and basic steel products	13.98	14.25	14.29	14.40	14.42	14.50	14.43	14.47	14.62	14.56	14.84	14.71	14.74	14.92	14.76
Fabricated metal products	10.29	10.57	10.54	10.68	10.61	10.65	10.72	10.60	10.70	10.75	10.65	10.79	10.85	10.86	10.87
Industrial machinery and equipment	11.08	11.40	11.37	11.46	11.48	11.53	11.62	11.55	11.60	11.64	11.55	11.70	11.75	11.78	11.82
Electronic and other electrical equipment	9.79	10.05	10.06	10.13	10.08	10.11	10.14	10.13	10.16	10.17	10.17	10.22	10.27	10.34	10.34
Transportation equipment	13.29	13.68	13.67	13.86	13.82	13.83	13.91	13.55	13.88	14.02	13.89	14.14	14.20	14.04	14.15
Motor vehicles and equipment	13.99	14.25	14.16	14.45	14.42	14.43	14.46	13.72	14.30	14.59	14.41	14.75	14.85	14.56	14.68
Instruments and related products	10.60	10.83	10.90	10.94	10.97	10.99	11.10	11.09	11.13	11.19	11.20	11.23	11.27	11.36	11.32
Miscellaneous manufacturing	8.00	8.29	8.20	8.36	8.36	8.47	8.57	8.57	8.56	8.59	8.56	8.59	8.61	8.61	8.64
Nondurable goods	9.45	9.75	9.73	9.81	9.81	9.87	9.96	9.97	9.97	10.04	10.10	10.10	10.12	10.19	10.12
Food and kindred products	9.12	9.38	9.32	9.37	9.33	9.43	9.56	9.53	9.54	9.61	9.61	9.63	9.67	9.67	9.51
Tobacco products	14.67	15.36	15.72	14.71	14.91	15.01	15.33	15.49	15.73	16.46	17.09	17.17	17.24	17.48	16.10
Textile mill products	7.38	7.67	7.68	7.74	7.76	7.80	7.85	7.90	7.90	7.94	7.91	7.98	8.02	8.01	8.05
Apparel and other textile products	6.12	6.35	6.33	6.41	6.39	6.43	6.45	6.40	6.45	6.53	6.56	6.60	6.61	6.57	6.63
Paper and allied products	11.69	11.96	11.95	12.04	12.01	12.10	12.13	12.11	12.11	12.11	12.25	12.25	12.23	12.35	12.30
Printing and publishing	10.53	10.88	10.91	11.07	11.06	11.07	11.09	11.12	11.13	11.17	11.12	11.17	11.16	11.26	11.30
Chemicals and allied products	12.71	13.09	13.10	13.20	13.27	13.28	13.32	13.34	13.27	13.34	13.53	13.46	13.51	13.59	13.56
Petroleum and coal products	14.97	15.41	15.20	15.41	15.60	15.62	15.75	15.87	15.90	16.11	16.31	16.13	16.23	16.23	15.77
Rubber and miscellaneous plastics products	9.19	9.47	9.47	9.50	9.50	9.54	9.64	9.65	9.64	9.68	9.66	9.75	9.77	9.87	9.84
Leather and leather products	6.28	6.60	6.55	6.65	6.65	6.68	6.74	6.82	6.84	6.87	6.94	6.92	6.91	6.79	6.89
TRANSPORTATION AND PUBLIC UTILITIES	12.26	12.61	12.61	12.73	12.74	12.71	12.76	12.79	12.87	12.83	12.96	12.82	12.86	12.96	12.95
WHOLESALE TRADE	9.98	10.39	10.36	10.48	10.51	10.56	10.63	10.61	10.66	10.66	10.78	10.73	10.76	10.83	10.75
RETAIL TRADE	6.31	6.53	6.49	6.59	6.61	6.63	6.65	6.73	6.72	6.74	6.75	6.75	6.75	6.74	6.75
FINANCE, INSURANCE, AND REAL ESTATE	9.06	9.54	9.47	9.60	9.70	9.67	9.73	9.80	9.87	9.84	9.97	9.90	9.90	10.00	9.93
SERVICES	8.88	9.39	9.30	9.49	9.58	9.61	9.68	9.72	9.75	9.76	9.82	9.77	9.75	9.78	9.76

[p] = preliminary
NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

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

Industry	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
PRIVATE SECTOR															
Current dollars	$322.02	$334.24	$335.39	$339.02	$341.39	$338.45	$340.46	$336.57	$338.92	$340.60	$342.97	$342.97	$347.30	$349.00	$347.65
Seasonally adjusted	–	–	334.65	336.66	338.39	337.41	338.15	337.81	341.85	343.58	343.62	344.31	348.04	347.42	348.11
Constant (1982) dollars	266.79	264.22	263.88	265.69	266.29	263.59	264.74	259.10	259.91	259.60	261.01	260.62	262.31	262.80	–
MINING	541.44	569.75	575.07	584.76	583.44	581.23	588.20	586.86	582.82	583.51	588.75	585.79	606.50	595.14	597.96
CONSTRUCTION	495.73	512.41	525.54	526.89	537.43	520.22	512.08	510.98	506.91	516.58	506.53	522.58	532.93	524.71	535.86
MANUFACTURING															
Current dollars	418.81	430.09	427.81	435.07	431.09	435.25	441.08	430.36	431.47	437.53	427.85	442.13	445.94	440.64	443.36
Constant (1982) dollars	346.98	339.99	336.59	340.96	336.26	338.98	342.99	331.30	330.88	333.48	325.61	335.97	336.81	331.81	–
Durable goods	447.68	458.02	453.89	463.29	458.30	461.07	468.86	455.67	458.38	465.75	452.17	470.20	474.13	466.58	469.99
Lumber and wood products	344.46	354.48	359.56	361.58	363.78	359.30	362.20	359.10	351.74	363.81	364.51	369.87	370.87	366.80	371.90
Furniture and fixtures	313.23	326.27	329.51	336.84	334.72	334.72	338.89	332.09	326.70	328.77	319.96	328.64	333.98	330.58	338.05
Stone, clay, and glass products	446.69	458.11	465.47	464.15	468.70	466.47	453.74	453.74	448.13	457.75	467.32	472.76	476.96	471.52	477.81
Primary metal industries	528.96	534.06	526.61	536.71	530.00	536.74	541.37	536.31	535.52	542.72	534.98	551.26	557.28	557.68	548.68
Blast furnaces and basic steel products	615.12	618.45	614.47	620.64	612.85	623.50	623.38	625.10	624.27	624.62	635.15	641.36	645.61	657.97	639.11
Fabricated metal products	431.15	439.71	434.25	445.36	440.32	445.17	450.24	435.66	439.77	446.13	426.00	448.86	453.53	445.26	448.93
Industrial machinery and equipment	473.12	483.36	475.27	484.76	482.16	488.87	499.66	487.41	487.20	490.04	468.93	491.40	494.68	491.23	490.53
Electronic and other electrical equipment	401.39	410.04	410.45	417.36	414.29	416.53	420.81	415.33	415.54	416.97	402.73	414.93	421.07	415.67	419.80
Transportation equipment	567.48	580.03	571.41	593.21	570.77	571.18	591.18	560.97	574.63	593.05	566.71	605.19	607.76	588.28	598.55
Motor vehicles and equipment	608.57	614.18	589.06	627.13	620.06	619.05	620.33	559.78	589.16	622.99	589.37	647.53	653.40	615.89	628.30
Instruments and related products	438.84	445.11	443.63	447.45	449.77	454.99	463.98	454.69	456.33	461.03	451.36	458.18	464.32	462.35	461.86
Miscellaneous manufacturing	313.60	326.63	321.44	328.55	331.89	340.49	342.80	336.80	335.55	338.45	326.99	337.59	340.10	333.21	338.69
Nondurable goods	379.89	391.95	392.12	397.31	395.34	398.75	402.38	396.81	394.81	399.59	395.92	404.00	407.84	405.56	407.84
Food and kindred products	367.54	381.77	383.98	388.86	383.46	388.52	394.83	384.06	379.69	385.36	382.48	391.94	395.50	393.57	395.62
Tobacco products	583.87	591.36	586.36	592.81	600.87	585.39	584.07	582.42	593.02	638.65	651.13	673.06	680.98	672.98	611.80
Textile mill products	302.58	313.70	317.18	317.34	317.38	318.24	317.93	316.79	314.42	316.01	308.49	320.00	325.61	317.20	324.42
Apparel and other textile products	226.44	234.32	234.21	236.53	237.07	238.55	236.72	232.32	234.78	236.39	230.91	240.90	243.91	238.49	243.32
Paper and allied products	506.18	517.87	516.24	526.15	521.23	528.77	532.51	525.57	518.31	519.52	520.63	529.20	530.78	533.52	533.82
Printing and publishing	400.14	412.35	413.49	425.09	419.17	422.87	424.75	418.11	419.60	425.58	415.89	419.99	419.62	423.38	431.66
Chemicals and allied products	536.36	555.02	551.51	561.00	562.65	567.06	575.42	569.62	561.32	566.95	576.38	570.70	575.53	570.78	572.23
Petroleum and coal products	664.67	682.66	665.76	684.20	705.12	699.78	715.05	698.28	699.60	712.06	725.80	712.95	759.56	717.37	689.15
Rubber and miscellaneous plastics products	383.22	392.06	388.27	392.35	392.35	394.00	399.10	393.72	394.28	399.78	387.37	403.65	407.41	403.68	402.46
Leather and leather products	235.50	250.14	251.52	254.03	252.04	250.50	254.77	253.70	255.13	256.25	252.62	259.50	263.96	253.27	261.13
TRANSPORTATION AND PUBLIC UTILITIES	475.69	490.53	490.53	495.20	496.86	491.88	493.81	483.46	494.21	496.52	504.14	498.70	506.68	510.62	510.23
WHOLESALE TRADE	380.24	394.82	393.68	399.29	401.48	402.34	406.07	401.06	402.95	404.01	410.72	407.74	411.03	414.79	408.50
RETAIL TRADE	183.62	188.72	192.10	190.45	191.03	189.62	194.85	189.11	190.18	192.09	195.75	194.40	197.78	200.18	198.45
FINANCE, INSURANCE, AND REAL ESTATE	325.25	341.53	339.03	341.76	350.17	344.25	346.39	348.88	352.36	350.30	359.92	351.45	354.42	362.00	354.50
SERVICES	289.49	306.11	305.04	308.43	314.22	312.33	314.60	314.93	315.90	316.22	320.13	315.57	318.83	322.74	321.10

– Data not available.
[p] = preliminary
NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

18. Diffusion indexes of employment change, seasonally adjusted

(In percent)

Time span and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Private nonfarm payrolls, 356 industries											
Over 1-month span:												
1989	64.5	58.7	58.0	57.0	55.6	57.3	55.8	57.7	50.0	55.2	59.6	56.6
1990	55.6	58.6	53.7	49.9	55.8	49.9	50.4	46.9	–	–	–	–
Over 3-month span:												
1989	65.3	64.2	60.0	60.1	59.7	58.3	59.7	54.5	55.2	55.8	57.7	60.3
1990	58.4	56.7	54.8	53.1	53.7	54.6	51.3	–	–	–	–	–
Over 6-month span:												
1989	67.6	65.4	65.0	61.0	61.2	58.7	57.0	58.1	56.2	58.3	57.4	58.4
1990	57.3	56.5	55.5	54.4	50.8	–	–	–	–	–	–	–
Over 12-month span:												
1989	67.1	67.7	65.3	64.6	64.9	61.2	60.0	59.8	58.6	57.3	56.7	56.0
1990	54.1	54.2	–	–	–	–	–	–	–	–	–	–
	Manufacturing payrolls, 139 industries											
Over 1-month span:												
1989	60.4	48.6	50.4	47.1	45.3	45.7	45.0	45.7	34.2	48.6	43.5	48.2
1990	42.4	45.7	45.3	46.8	45.7	40.3	46.8	41.4	–	–	–	–
Over 3-month span:												
1989	54.0	54.7	45.3	43.9	43.2	42.8	41.7	33.1	36.3	34.9	41.7	39.2
1990	40.3	37.1	44.2	41.4	40.6	42.8	40.6	–	–	–	–	–
Over 6-month span:												
1989	56.5	49.6	49.3	43.5	42.1	37.1	36.7	34.9	34.2	35.3	33.1	36.0
1990	37.1	35.6	36.3	41.0	37.4	–	–	–	–	–	–	–
Over 12-month span:												
1989	53.6	55.0	49.3	45.3	43.9	39.9	37.1	35.6	33.8	32.4	30.9	31.7
1990	30.2	32.0	–	–	–	–	–	–	–	–	–	–

– Data not available.

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing employment. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

19. Annual data: Employment status of the noninstitutional population

(Numbers in thousands)

Employment status	1981	1982	1983	1984	1985	1986	1987	1988	1989
Noninstitutional population	171,775	173,939	175,891	178,080	179,912	182,293	184,490	186,322	188,081
Labor force:									
Total (number)	110,315	111,872	113,226	115,241	117,167	119,540	121,602	123,378	125,557
Percent of population	64.2	64.3	64.4	64.7	65.1	65.6	65.9	66.2	66.8
Employed:									
Total (number)	102,042	101,194	102,510	106,702	108,856	111,303	114,177	116,677	119,030
Percent of population	59.4	58.2	58.3	59.9	60.5	61.1	61.9	62.6	63.3
Resident Armed Forces	1,645	1,668	1,676	1,697	1,706	1,706	1,737	1,709	1,688
Civilian									
Total	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968	117,342
Agriculture	3,368	3,401	3,383	3,321	3,179	3,163	3,208	3,169	3,199
Nonagricultural industries	97,030	96,125	97,450	101,685	103,971	106,434	109,232	111,800	114,142
Unemployed:									
Total (number)	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701	6,528
Percent of labor force	7.5	9.5	9.5	7.4	7.1	6.9	6.1	5.4	5.2
Not in labor force (number)	61,460	62,067	62,665	62,839	62,744	62,752	62,888	62,944	62,523

20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total employment	91,156	89,566	90,200	94,496	97,519	99,525	102,200	105,536	108,413
Private sector	75,126	73,729	74,330	78,472	81,125	82,832	85,190	88,150	90,644
Goods-producing	25,497	23,813	23,334	24,727	24,859	24,558	24,708	25,173	25,326
Mining	1,139	1,128	952	966	927	777	717	713	700
Construction	4,188	3,905	3,948	4,383	4,673	4,816	4,967	5,110	5,200
Manufacturing	20,170	18,781	18,434	19,378	19,260	18,965	19,024	19,350	19,426
Service-producing	65,659	65,753	66,866	69,769	72,660	74,967	77,492	80,363	83,087
Transportation and public utilities	5,165	5,082	4,954	5,159	5,238	5,255	5,372	5,527	5,648
Wholesale trade	5,376	5,296	5,286	5,574	5,736	5,774	5,865	6,055	6,271
Retail trade	15,172	15,161	15,595	16,526	17,336	17,909	18,462	19,077	19,580
Finance, insurance, and real estate	5,298	5,341	5,468	5,689	5,955	6,283	6,547	6,649	6,724
Services	18,619	19,036	19,694	20,797	21,999	23,053	24,235	25,669	27,096
Government	16,031	15,837	15,869	16,024	16,394	16,693	17,010	17,386	17,769
Federal	2,772	2,739	2,774	2,807	2,875	2,899	2,943	2,971	2,988
State	3,640	3,640	3,662	3,734	3,832	3,893	3,967	4,076	4,175
Local	9,619	9,458	9,434	9,482	9,687	9,901	10,100	10,339	10,606

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

21. Annual data: Average hours and earnings of production or nonsupervisory workers on nonfarm payrolls, by industry

Industry	1981	1982	1983	1984	1985	1986	1987	1988	1989
Private sector:									
Average weekly hours	35.2	34.8	35.0	35.2	34.9	34.8	34.8	34.7	34.6
Average hourly earnings (in dollars)	7.25	7.68	8.02	8.32	8.57	8.76	8.98	9.28	9.66
Average weekly earnings (in dollars)	255.20	267.26	280.70	292.86	299.09	304.85	312.50	322.02	334.24
Mining:									
Average weekly hours	43.7	42.7	42.5	43.3	43.4	42.2	42.4	42.3	43.0
Average hourly earnings (in dollars)	10.04	10.77	11.28	11.63	11.98	12.46	12.54	12.80	13.25
Average weekly earnings (in dollars)	438.75	459.88	479.40	503.58	519.93	525.81	531.70	541.44	569.75
Construction:									
Average weekly hours	36.9	36.7	37.1	37.8	37.7	37.4	37.8	37.9	37.9
Average hourly earnings (in dollars)	10.82	11.63	11.94	12.13	12.32	12.48	12.71	13.08	13.52
Average weekly earnings (in dollars)	399.26	426.82	442.97	458.51	464.46	466.75	480.44	495.73	512.41
Manufacturing:									
Average weekly hours	39.8	38.9	40.1	40.7	40.5	40.7	41.0	41.1	41.0
Average hourly earnings (in dollars)	7.99	8.49	8.83	9.19	9.54	9.73	9.91	10.19	10.49
Average weekly earnings (in dollars)	318.00	330.26	354.08	374.03	386.37	396.01	406.31	418.81	430.09
Transportation and public utilities:									
Average weekly hours	39.4	39.0	39.0	39.4	39.5	39.2	39.2	38.8	38.9
Average hourly earnings (in dollars)	9.70	10.32	10.79	11.12	11.40	11.70	12.03	12.26	12.61
Average weekly earnings (in dollars)	382.18	402.48	420.81	438.13	450.30	458.64	471.58	475.69	490.53
Wholesale trade:									
Average weekly hours	38.5	38.3	38.5	38.5	38.4	38.3	38.1	38.1	38.0
Average hourly earnings (in dollars)	7.55	8.08	8.54	8.88	9.15	9.34	9.59	9.98	10.39
Average weekly earnings (in dollars)	290.75	309.23	328.25	341.78	351.08	357.57	365.30	380.24	394.82
Retail trade:									
Average weekly hours	30.1	29.9	29.8	29.8	29.4	29.2	29.2	29.1	28.9
Average hourly earnings (in dollars)	5.25	5.48	5.74	5.85	5.94	6.03	6.12	6.31	6.53
Average weekly earnings (in dollars)	157.99	163.83	171.13	174.47	174.81	175.80	178.80	183.62	188.72
Finance, insurance, and real estate:									
Average weekly hours	36.3	36.2	36.2	36.5	36.4	36.4	36.3	35.9	35.8
Average hourly earnings (in dollars)	6.31	6.78	7.29	7.63	7.94	8.36	8.73	9.06	9.54
Average weekly earnings (in dollars)	228.73	245.68	263.68	278.04	289.20	304.49	316.37	325.25	341.53
Services:									
Average weekly hours	32.6	32.6	32.7	32.6	32.5	32.5	32.5	32.6	32.6
Average hourly earnings (in dollars)	6.41	6.92	7.31	7.59	7.90	8.18	8.49	8.88	9.39
Average weekly earnings (in dollars)	209.16	225.87	239.04	247.25	256.49	265.93	276.03	289.49	306.11

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

(June 1989=100)

Series	1988			1989				1990		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1990	
Civilian workers [2]	95.4	96.7	97.7	98.9	100.0	101.6	102.6	104.3	105.4	1.1	5.4
Workers, by occupational group:											
White-collar workers	95.0	96.4	97.6	99.0	100.0	102.0	102.9	104.6	105.8	1.1	5.8
Professional specialty and technical	–	–	–	–	100.0	102.6	103.7	105.5	106.3	.8	6.3
Executive, administrative, and managerial	–	–	–	–	100.0	101.2	101.9	104.0	105.4	1.3	5.4
Administrative support, including clerical	–	–	–	–	100.0	101.4	102.5	104.4	105.4	1.0	5.4
Blue-collar workers	96.4	97.1	97.8	98.8	100.0	101.1	102.0	103.6	104.8	1.2	4.8
Service occupations	95.4	97.4	98.2	99.2	100.0	101.7	102.8	104.2	105.1	.9	5.1
Workers, by industry division:											
Goods-producing	96.5	97.1	97.9	98.9	100.0	101.1	102.1	103.9	105.2	1.3	5.2
Manufacturing	96.2	96.9	97.6	98.9	100.0	101.1	102.0	104.0	105.3	1.3	5.3
Service-producing	94.9	96.5	97.6	99.0	100.0	102.0	102.9	104.4	105.5	1.1	5.5
Services	94.3	96.7	97.9	99.2	100.0	102.7	103.7	105.5	106.6	1.0	6.6
Health services	94.2	95.8	97.0	98.9	100.0	102.2	103.9	105.9	107.1	1.1	7.1
Hospitals	93.9	95.6	96.9	98.7	100.0	102.3	103.7	105.6	106.7	1.0	6.7
Educational services	–	–	–	99.5	100.0	104.1	104.8	106.0	106.6	.6	6.6
Public administration [3]	95.8	97.5	97.8	99.2	100.0	102.5	103.2	105.1	105.5	.4	5.5
Nonmanufacturing	95.2	96.6	97.7	99.0	100.0	101.9	102.8	104.3	105.5	1.2	5.5
Private industry workers	95.7	96.6	97.6	98.8	100.0	101.2	102.3	103.9	105.2	1.3	5.2
Excluding sales occupations	95.9	96.9	97.7	99.0	100.0	101.2	102.1	103.9	105.1	1.2	5.1
Workers, by occupational group:											
White-collar workers	95.1	96.2	97.3	98.9	100.0	101.4	102.4	104.1	105.5	1.3	5.5
Excluding sales occupations	95.5	96.7	97.5	99.0	100.0	101.3	102.2	104.2	105.4	1.2	5.4
Professional specialty and technical occupations	95.4	96.9	97.5	99.0	100.0	101.8	102.9	104.9	105.8	.9	5.8
Executive, administrative, and managerial occupations	95.7	96.6	97.8	99.1	100.0	100.9	101.5	103.7	105.3	1.5	5.3
Sales occupations	93.6	94.1	96.3	98.3	100.0	101.9	103.3	103.6	105.6	1.9	5.6
Administrative support occupations, including clerical	95.3	96.6	97.3	98.9	100.0	101.2	102.3	104.2	105.3	1.1	5.3
Blue-collar workers	96.4	97.1	97.9	98.8	100.0	101.1	101.9	103.5	104.7	1.2	4.7
Precision production, craft, and repair occupations	96.8	97.3	98.0	98.7	100.0	101.2	102.0	103.4	104.7	1.3	4.7
Machine operators, assemblers, and inspectors	95.8	96.5	97.6	98.9	100.0	100.9	101.8	103.7	105.0	1.3	5.0
Transportation and material moving occupations	97.0	97.9	98.2	99.0	100.0	101.2	101.4	103.1	104.3	1.2	4.3
Handlers, equipment cleaners, helpers, and laborers	96.2	97.0	97.7	98.8	100.0	101.3	102.2	103.6	104.7	1.1	4.7
Service occupations	95.6	97.1	98.2	99.2	100.0	101.1	102.5	103.9	104.9	1.0	4.9
Production and nonsupervisory occupations[4]	95.5	96.6	97.5	98.8	100.0	101.4	102.4	103.8	105.1	1.3	5.1
Workers, by industry division:											
Goods-producing	96.5	97.1	97.9	98.9	100.0	101.1	102.1	103.9	105.2	1.3	5.2
Excluding sales occupations	96.5	97.1	97.9	98.9	100.0	101.1	102.2	103.9	105.1	1.2	5.1
White-collar occupations	96.4	97.2	97.8	99.0	100.0	101.2	101.9	104.1	105.3	1.2	5.3
Excluding sales occupations	96.4	97.1	97.7	99.0	100.0	101.2	102.0	103.9	105.2	1.3	5.2
Blue-collar occupations	96.6	97.1	98.0	98.9	100.0	101.1	102.3	103.9	105.1	1.2	5.1
Service occupations	95.7	96.2	97.0	98.9	100.0	100.9	102.2	104.0	104.4	.4	4.4
Construction	96.4	97.2	98.0	99.0	100.0	101.2	102.4	103.1	104.3	1.2	4.3
Manufacturing	96.2	96.9	97.6	98.9	100.0	101.1	102.0	104.0	105.3	1.3	5.3
White-collar occupations	96.4	97.1	97.7	99.0	100.0	101.1	101.9	104.1	105.3	1.2	5.3
Excluding sales occupations	96.3	97.1	97.7	99.0	100.0	101.1	101.9	104.0	105.1	1.1	5.1
Blue-collar occupations	96.1	96.7	97.6	98.8	100.0	101.1	102.1	104.0	105.2	1.2	5.2
Service occupations	95.9	96.4	97.3	98.8	100.0	100.8	102.1	104.1	104.5	.4	4.5
Durables	96.5	97.0	97.7	99.0	100.0	101.1	102.2	104.0	105.1	1.1	5.1
Nondurables	95.6	96.5	97.5	98.8	100.0	101.2	101.9	104.1	105.5	1.3	5.5
Service-producing	95.1	96.2	97.3	98.8	100.0	101.3	102.3	103.8	105.2	1.3	5.2
Excluding sales occupations	95.4	96.7	97.5	98.9	100.0	101.2	102.1	103.9	105.1	1.2	5.1
White-collar occupations	94.7	95.9	97.2	98.8	100.0	101.4	102.6	104.2	105.5	1.2	5.5
Excluding sales occupations	95.1	96.6	97.5	99.0	100.0	101.4	102.3	104.4	105.6	1.1	5.6
Blue-collar occupations	96.2	97.1	97.5	98.7	100.0	101.1	101.1	102.6	103.9	1.3	3.9
Service occupations	95.6	97.1	98.4	99.3	100.0	101.1	102.5	103.9	105.0	1.1	5.0
Transportation and public utilities	96.8	97.5	97.5	98.7	100.0	100.7	101.2	103.0	103.3	.3	3.3
Transportation	96.9	97.6	97.3	98.8	100.0	100.5	100.8	102.8	103.0	.2	3.0
Public utilities	96.7	97.3	97.7	98.8	100.0	101.0	101.7	103.2	103.8	.6	3.8
Communications	96.9	97.5	97.5	98.5	100.0	101.0	101.6	103.1	103.1	.0	3.1
Electric, gas, and sanitary services	96.7	97.1	98.0	99.2	100.0	101.0	101.7	103.2	104.6	1.4	4.6
Wholesale and retail trade	95.8	96.8	97.6	98.9	100.0	101.6	102.6	103.5	105.0	1.4	5.0
Excluding sales occupations	96.2	97.3	98.2	99.2	100.0	101.3	102.0	103.0	104.5	1.5	4.5
Wholesale trade	94.7	95.6	96.1	98.5	100.0	102.6	104.5	104.8	105.4	.6	5.4
Excluding sales occupations	96.2	97.2	97.7	98.9	100.0	101.8	102.6	103.7	105.0	1.3	5.0
Retail trade	96.3	97.3	98.4	99.1	100.0	101.1	101.6	103.0	104.8	1.7	4.8
Food stores	96.8	97.1	98.2	99.8	100.0	100.8	101.7	103.2	104.6	1.4	4.6
General merchandise stores	97.2	98.5	99.6	100.5	100.0	100.4	101.5	102.6	105.7	3.0	5.7

See footnotes at end of table.

22. Continued—Employment Cost Index, compensation,[1] by occupation and industry group

(June 1989=100)

Series	1988			1989				1990		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1990	
Finance, insurance, and real estate	92.8	92.9	96.2	98.3	100.0	100.4	101.4	102.6	104.4	1.8	4.4
Excluding sales occupations	94.6	95.4	97.1	98.5	100.0	100.1	101.0	103.5	104.7	1.2	4.7
Banking, savings and loan, and other credit agencies	96.0	97.0	97.8	98.8	100.0	100.6	100.7	102.1	104.1	2.0	4.1
Insurance	95.0	95.8	97.0	98.3	100.0	99.9	101.0	103.2	105.2	1.9	5.2
Services	94.5	96.4	97.5	99.0	100.0	101.8	102.9	105.0	106.5	1.4	6.5
Business services	94.9	96.2	97.2	98.1	100.0	100.7	101.3	103.6	105.3	1.6	5.3
Health services	94.1	95.6	97.0	98.9	100.0	101.9	103.7	105.8	107.1	1.2	7.1
Hospitals	93.6	95.2	96.6	98.8	100.0	101.9	103.5	105.4	106.6	1.1	6.6
Educational services	–	–	98.3	99.1	100.0	103.9	104.2	105.4	105.9	.5	5.9
Colleges and universities	–	–	98.2	99.0	100.0	103.3	103.8	105.2	105.7	.5	5.7
Nonmanufacturing	95.4	96.5	97.5	98.8	100.0	101.3	102.3	103.8	105.1	1.3	5.1
White-collar occupations	94.8	95.9	97.2	98.8	100.0	101.4	102.6	104.1	105.5	1.3	5.5
Excluding sales occupations	95.3	96.6	97.5	99.0	100.0	101.4	102.3	104.3	105.6	1.2	5.6
Blue-collar occupations	96.8	97.6	98.1	98.8	100.0	101.1	101.7	102.9	104.1	1.2	4.1
Service occupations	95.6	97.1	98.3	99.2	100.0	101.0	102.4	103.9	105.0	1.1	5.0
State and local government workers	94.5	97.1	98.2	99.4	100.0	103.3	104.3	105.8	106.5	.7	6.5
Workers, by occupational group:											
White-collar workers	94.3	97.0	98.3	99.5	100.0	103.6	104.6	106.1	106.7	.6	6.7
Professional specialty and technical	–	–	–	–	100.0	103.8	104.7	106.4	107.0	.6	7.0
Executive, administrative, and managerial	–	–	–	–	100.0	103.1	104.1	105.7	106.4	.7	6.4
Administrative support, including clerical	–	–	–	–	100.0	102.9	103.9	105.4	106.0	.6	6.0
Blue-collar workers	95.4	97.0	97.5	99.3	100.0	102.1	103.7	105.5	106.3	.8	6.3
Workers, by industry division:											
Services	94.0	97.0	98.5	99.5	100.0	103.8	104.7	106.1	106.8	.7	6.8
Services excluding schools[5]	94.8	96.5	97.8	99.1	100.0	102.5	103.2	105.4	106.4	.9	6.4
Health services	94.4	96.5	97.3	98.8	100.0	103.1	104.2	106.2	106.9	.7	6.9
Hospitals	94.8	97.0	97.6	98.6	100.0	103.2	104.5	106.0	107.0	.9	7.0
Educational services	–	–	–	99.5	100.0	104.1	104.9	106.2	106.8	.6	6.8
Schools	93.7	97.2	98.7	99.6	100.0	104.4	105.3	106.4	106.9	.5	6.9
Elementary and secondary	93.8	97.4	99.1	99.6	100.0	104.6	105.5	106.5	107.1	.6	7.1
Colleges and universities	–	–	–	99.6	100.0	103.4	104.7	106.1	106.3	.2	6.3
Public administration[3]	95.8	97.5	97.8	99.2	100.0	102.5	103.2	105.1	105.5	.4	5.5

[1] Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

[2] Consist of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[3] Consist of legislative, judicial, administrative, and regulatory activities.

[4] This series has the same industry and occupational coverage as the Hourly Earnings Index, which was discontinued in January 1989.

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

– Data not available.

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

(June 1989=100)

Series	1988			1989				1990		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1990	
Civilian workers [1]	95.9	97.2	98.1	99.2	100.0	101.6	102.4	103.6	104.7	1.1	4.7
Workers, by occupational group:											
White-collar workers	95.5	96.9	98.0	99.2	100.0	101.9	102.8	104.1	105.2	1.1	5.2
Professional specialty and technical	–	–	–	–	100.0	102.5	103.3	104.8	105.5	.7	5.5
Executive, administrative, and managerial	–	–	–	–	100.0	101.1	101.8	103.6	105.0	1.4	5.0
Administrative support, including clerical	–	–	–	–	100.0	101.4	102.4	103.7	104.7	1.0	4.7
Blue-collar workers	96.8	97.4	98.1	99.0	100.0	101.0	101.7	102.8	103.9	1.1	3.9
Service occupations	96.2	97.9	98.7	99.4	100.0	101.4	102.5	103.4	104.2	.8	4.2
Workers, by industry division:											
Goods-producing	96.9	97.4	98.1	99.0	100.0	100.9	101.9	103.1	104.2	1.1	4.2
Manufacturing	96.8	97.3	98.1	99.0	100.0	100.9	101.9	103.3	104.5	1.2	4.5
Service-producing	95.4	97.0	98.0	99.2	100.0	101.8	102.7	103.8	104.9	1.1	4.9
Services	94.9	97.2	98.3	99.4	100.0	102.5	103.3	104.8	105.9	1.0	5.9
Health services	94.4	96.1	97.4	99.0	100.0	102.0	103.5	105.3	106.2	.9	6.2
Hospitals	94.3	96.0	97.3	98.9	100.0	102.2	103.5	105.0	106.0	1.0	6.0
Educational services	–	–	–	99.5	100.0	103.8	104.4	105.4	105.8	.4	5.8
Public administration [2]	96.4	98.1	98.4	99.4	100.0	102.1	102.8	104.3	104.6	.3	4.6
Nonmanufacturing	95.6	97.1	98.0	99.2	100.0	101.8	102.6	103.7	104.8	1.1	4.8
Private industry workers	96.1	97.0	98.0	99.0	100.0	101.2	102.0	103.2	104.5	1.3	4.5
Excluding sales occupations	96.3	97.3	98.0	99.1	100.0	101.1	101.9	103.2	104.4	1.2	4.4
Workers, by occupational group:											
White-collar workers	95.6	96.7	97.8	99.0	100.0	101.4	102.4	103.6	104.9	1.3	4.9
Excluding sales occupations	95.9	97.1	98.0	99.2	100.0	101.2	102.1	103.7	104.8	1.1	4.8
Professional specialty and technical occupations	95.9	97.4	97.9	99.3	100.0	101.6	102.5	104.1	104.8	.7	4.8
Executive, administrative, and managerial occupations	95.9	96.7	98.0	99.3	100.0	100.8	101.5	103.3	104.9	1.5	4.9
Sales occupations	94.3	94.8	96.9	98.6	100.0	102.1	103.7	103.3	105.3	1.9	5.3
Administrative support occupations, including clerical	95.8	97.2	97.8	99.1	100.0	101.1	102.2	103.6	104.7	1.1	4.7
Blue-collar workers	96.8	97.4	98.2	99.0	100.0	101.0	101.6	102.7	103.8	1.1	3.8
Precision production, craft, and repair occupations	96.8	97.2	97.9	98.8	100.0	101.0	101.6	102.5	103.6	1.1	3.6
Machine operators, assemblers, and inspectors	96.5	97.1	98.1	99.0	100.0	100.6	101.6	103.0	104.2	1.2	4.2
Transportation and material moving occupations	97.4	98.4	98.6	99.3	100.0	101.2	101.2	102.0	103.1	1.1	3.1
Handlers, equipment cleaners, helpers, and laborers	96.9	97.6	98.3	99.1	100.0	101.1	102.0	103.0	104.4	1.4	4.4
Service occupations	96.4	97.7	98.7	99.4	100.0	100.9	102.3	103.1	104.2	1.1	4.2
Production and nonsupervisory occupations [3]	96.0	97.0	97.9	99.0	100.0	101.3	102.2	103.2	104.3	1.1	4.3
Workers, by industry division:											
Goods-producing	96.9	97.5	98.2	99.1	100.0	101.0	102.0	103.1	104.2	1.1	4.2
Excluding sales occupations	96.9	97.4	98.2	99.1	100.0	101.0	102.0	103.0	104.2	1.2	4.2
White-collar occupations	96.9	97.6	98.3	99.2	100.0	101.0	101.9	103.5	104.6	1.1	4.6
Excluding sales occupations	96.9	97.6	98.2	99.2	100.0	101.0	102.0	103.3	104.4	1.1	4.4
Blue-collar occupations	96.9	97.3	98.1	99.0	100.0	101.0	101.9	102.9	104.1	1.2	4.1
Service occupations	96.8	96.9	97.8	99.0	100.0	100.7	101.9	102.7	103.0	.3	3.0
Construction	97.0	97.7	98.3	99.1	100.0	101.1	101.7	102.0	102.9	.9	2.9
Manufacturing	96.8	97.3	98.1	99.0	100.0	100.9	101.9	103.3	104.5	1.2	4.5
White-collar occupations	96.9	97.5	98.2	99.2	100.0	100.9	101.8	103.7	104.7	1.0	4.7
Excluding sales occupations	96.8	97.4	98.0	99.1	100.0	100.9	101.9	103.4	104.4	1.0	4.4
Blue-collar occupations	96.8	97.2	98.1	98.9	100.0	100.9	102.0	103.1	104.4	1.3	4.4
Service occupations	97.0	97.2	98.1	98.9	100.0	100.7	102.0	102.9	103.2	.3	3.2
Durables	96.9	97.4	98.0	99.0	100.0	100.7	101.9	103.2	104.3	1.1	4.3
Nondurables	96.5	97.2	98.2	99.0	100.0	101.1	101.8	103.6	104.8	1.2	4.8
Service-producing	95.5	96.7	97.8	99.1	100.0	101.4	102.2	103.3	104.6	1.3	4.6
Excluding sales occupations	95.8	97.1	98.0	99.2	100.0	101.2	101.8	103.4	104.5	1.1	4.5
White-collar occupations	95.1	96.3	97.5	99.0	100.0	101.5	102.5	103.6	105.0	1.4	5.0
Excluding sales occupations	95.5	96.9	97.9	99.2	100.0	101.3	102.1	103.8	105.0	1.2	5.0
Blue-collar occupations	96.7	97.5	98.0	99.0	100.0	100.9	100.9	102.1	103.3	1.2	3.3
Service occupations	96.3	97.7	98.8	99.4	100.0	100.8	102.3	103.2	104.3	1.1	4.3
Transportation and public utilities	97.9	98.7	98.6	99.5	100.0	100.7	101.2	102.6	103.2	.6	3.2
Transportation	98.2	99.0	98.7	99.4	100.0	100.6	100.7	102.3	102.3	.0	2.3
Public utilities	97.6	98.3	98.7	99.5	100.0	101.1	101.8	103.0	104.1	1.1	4.1
Communications	98.1	98.9	99.0	99.9	100.0	101.1	101.8	103.1	104.1	1.0	4.1
Electric, gas, and sanitary services	96.9	97.3	98.2	99.0	100.0	101.0	101.7	103.0	104.2	1.2	4.1

See footnotes at end of table.

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

(June 1989=100)

Series	1988			1989				1990		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1990	
Wholesale and retail trade	96.2	97.2	97.9	99.1	100.0	101.6	102.7	103.3	104.6	1.3	4.6
Excluding sales occupations	96.6	97.5	98.4	99.4	100.0	101.1	101.9	102.6	104.2	1.6	4.2
Wholesale trade	95.1	96.1	96.4	99.0	100.0	102.8	105.2	104.6	105.2	.6	5.2
Excluding sales occupations	96.7	97.7	98.3	99.2	100.0	101.7	102.5	103.2	104.7	1.5	4.7
Retail trade	96.6	97.7	98.5	99.1	100.0	101.0	101.6	102.7	104.4	1.7	4.4
Food stores	97.8	98.2	99.0	100.0	100.0	100.4	101.7	102.8	104.3	1.5	4.3
General merchandise stores	95.6	97.0	98.2	99.2	100.0	100.3	101.4	102.4	105.2	2.7	5.2
Finance, insurance, and real estate	92.9	92.9	96.3	98.3	100.0	100.6	101.3	101.8	103.5	1.7	3.5
Excluding sales occupations	94.5	95.3	97.1	98.4	100.0	100.2	100.9	103.0	103.9	.9	3.9
Banking, savings and loan, and other credit agencies	96.0	97.0	97.8	98.8	100.0	101.1	100.9	101.6	103.6	2.0	3.6
Insurance	95.4	96.2	97.4	98.5	100.0	99.6	100.8	102.3	104.1	1.8	4.1
Services	94.9	96.9	97.8	99.1	100.0	101.6	102.5	104.2	105.7	1.4	5.7
Business services	95.1	96.5	97.4	98.4	100.0	100.9	101.2	103.0	105.1	2.0	5.1
Health services	94.4	96.0	97.3	99.1	100.0	101.9	103.5	105.3	106.3	.9	6.3
Hospitals	94.0	95.6	96.9	98.9	100.0	101.9	103.3	105.0	106.0	1.0	6.0
Educational services	–	–	98.8	99.1	100.0	103.7	103.9	104.7	105.0	.3	5.0
Colleges and universities	–	–	98.7	99.1	100.0	103.3	103.7	104.4	104.8	.4	4.8
Nonmanufacturing	95.8	96.9	97.8	99.1	100.0	101.4	102.2	103.2	104.5	1.3	4.5
White-collar occupations	95.2	96.4	97.6	99.1	100.0	101.5	102.5	103.6	105.0	1.4	5.0
Excluding sales occupations	95.6	97.0	97.9	99.2	100.0	101.3	102.0	103.8	105.0	1.2	5.0
Blue-collar occupations	96.9	97.7	98.1	99.0	100.0	101.0	101.3	102.2	103.2	1.0	3.2
Service occupations	96.3	97.7	98.8	99.4	100.0	100.8	102.3	103.2	104.3	1.1	4.3
State and local government workers	95.2	97.7	98.7	99.5	100.0	103.1	103.9	105.1	105.7	.6	5.7
Workers, by occupational group:											
White-collar workers	95.0	97.6	98.8	99.6	100.0	103.4	104.2	105.5	106.0	.5	6.0
Professional specialty and technical	–	–	–	–	100.0	103.7	104.4	105.8	106.3	.5	6.3
Executive, administrative, and managerial	–	–	–	–	100.0	102.8	103.7	104.9	105.7	.8	5.7
Administrative support, including clerical	–	–	–	–	100.0	102.4	103.0	104.4	104.8	.4	4.8
Blue-collar workers	96.1	97.8	98.2	99.5	100.0	101.9	103.3	104.3	105.3	1.0	5.3
Workers, by industry division:											
Services	94.9	97.7	98.9	99.6	100.0	103.6	104.3	105.5	106.0	.5	6.0
Services excluding schools[4]	95.5	97.3	98.2	99.1	100.0	102.5	103.0	105.4	106.4	.9	6.4
Health services	94.4	96.7	97.7	98.9	100.0	102.7	103.7	105.5	106.1	.6	6.1
Hospitals	94.8	97.0	97.9	98.7	100.0	102.9	103.8	105.0	105.9	.9	5.9
Educational services	–	–	–	99.6	100.0	103.8	104.5	105.5	106.0	.5	6.0
Schools	94.6	97.7	99.1	99.7	100.0	104.0	104.7	105.5	105.9	.4	5.9
Elementary and secondary	94.5	97.8	99.3	99.7	100.0	104.2	104.9	105.5	105.9	.4	5.9
Colleges and universities	–	–	–	99.6	100.0	102.9	104.1	105.6	105.9	.3	5.9
Public administration [2]	96.4	98.1	98.4	99.4	100.0	102.1	102.8	104.3	104.6	.3	4.6

[1] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.
[2] Consists of legislative, judicial, administrative, and regulatory activities.
[3] This series has the same industry and occupational coverage as the Hourly Earnings Index, which was discontinued in January 1989.
[4] Includes, for example, library, social and health services.
– Data not available.

24. Employment Cost Index, benefits, private industry workers by occupation and industry group

(June 1989 = 100)

Series	1988			1989				1990		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1990	
Private industry workers	94.7	95.7	96.7	98.4	100.0	101.4	102.6	105.5	106.9	1.3	6.9
Workers, by occupational group:											
White-collar workers	94.0	95.0	96.2	98.3	100.0	101.4	102.6	105.6	107.1	1.4	7.1
Blue-collar workers	95.7	96.5	97.4	98.6	100.0	101.4	102.6	105.2	106.6	1.3	6.6
Workers, by industry group:											
Goods-producing	95.7	96.5	97.3	98.7	100.0	101.5	102.6	105.7	107.2	1.4	7.2
Service-producing	93.8	94.9	96.1	98.2	100.0	101.4	102.6	105.3	106.6	1.2	6.6
Manufacturing	94.9	95.8	96.6	98.8	100.0	101.6	102.3	105.5	106.9	1.3	6.9
Nonmanufacturing	94.5	95.5	96.8	98.2	100.0	101.4	102.8	105.4	106.9	1.4	6.9

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

(June 1989=100)

Series	1988			1989				1990		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1990	
COMPENSATION											
Workers, by bargaining status[1]											
Union	97.0	97.7	98.2	99.0	100.0	100.9	101.8	103.3	104.1	0.8	4.1
Goods-producing	97.1	97.7	98.4	98.9	100.0	100.9	101.9	103.3	104.5	1.2	4.5
Service-producing	96.9	97.6	97.9	99.1	100.0	100.8	101.7	103.2	103.6	.4	3.6
Manufacturing	96.4	97.0	97.8	99.0	100.0	100.8	102.0	103.6	104.7	1.1	4.7
Nonmanufacturing	97.5	98.3	98.5	98.9	100.0	100.8	101.6	103.0	103.7	.7	3.7
Nonunion	95.3	96.3	97.4	98.8	100.0	101.4	102.4	104.1	105.5	1.3	5.5
Goods-producing	96.2	96.9	97.7	98.9	100.0	101.3	102.3	104.2	105.5	1.2	5.5
Service-producing	94.7	95.9	97.2	98.7	100.0	101.5	102.4	103.9	105.5	1.5	5.5
Manufacturing	96.1	96.8	97.6	98.8	100.0	101.2	102.1	104.2	105.5	1.2	5.5
Nonmanufacturing	94.9	96.0	97.3	98.8	100.0	101.4	102.4	104.0	105.4	1.3	5.4
Workers, by region [1]											
Northeast	93.8	95.0	96.7	98.7	100.0	101.8	102.9	104.4	105.3	.9	5.3
South	96.7	97.4	98.1	99.0	100.0	101.2	102.2	104.0	105.7	1.6	5.7
Midwest (formerly North Central)	96.2	97.0	97.9	98.9	100.0	101.0	101.9	103.5	104.8	1.3	4.8
West	96.3	97.0	97.7	98.8	100.0	101.0	101.8	103.3	104.5	1.2	4.5
Workers, by area size [1]											
Metropolitan areas	95.3	96.3	97.4	98.8	100.0	101.4	102.2	103.9	105.1	1.2	5.1
Other areas	98.0	98.5	98.9	99.4	100.0	100.8	102.0	103.6	105.2	1.5	5.2
WAGES AND SALARIES											
Workers, by bargaining status [1]											
Union	97.5	98.2	98.5	99.2	100.0	100.6	101.6	102.6	103.3	.7	3.3
Goods-producing	97.2	97.8	98.4	99.0	100.0	100.6	101.6	102.3	103.5	1.2	3.5
Service-producing	97.8	98.8	98.8	99.6	100.0	100.7	101.7	102.9	103.1	.2	3.1
Manufacturing	97.0	97.5	98.3	99.0	100.0	100.5	101.7	102.6	103.8	1.2	3.8
Nonmanufacturing	97.9	98.8	98.8	99.4	100.0	100.7	101.5	102.5	103.0	.5	3.0
Nonunion	95.6	96.6	97.7	99.0	100.0	101.3	102.1	103.4	104.8	1.4	4.8
Goods-producing	96.8	97.3	98.1	99.1	100.0	101.1	102.1	103.5	104.5	1.0	4.5
Service-producing	95.1	96.3	97.6	98.9	100.0	101.4	102.2	103.4	104.9	1.5	4.9
Manufacturing	96.7	97.2	98.0	98.9	100.0	101.0	102.0	103.6	104.8	1.2	4.8
Nonmanufacturing	95.3	96.4	97.7	99.0	100.0	101.4	102.3	103.3	104.8	1.5	4.8
Workers, by region [1]											
Northeast	94.0	95.1	96.9	98.7	100.0	101.8	102.9	104.0	104.8	.8	4.8
South	97.2	97.9	98.4	99.2	100.0	101.2	102.1	103.5	105.2	1.6	5.2
Midwest (formerly North Central)	96.5	97.4	98.2	99.1	100.0	100.8	101.6	102.6	103.7	1.1	3.7
West	96.7	97.7	98.2	99.1	100.0	100.8	101.4	102.5	104.0	1.5	4.0
Workers, by area size[1]											
Metropolitan areas	95.7	96.7	97.8	99.0	100.0	101.3	102.1	103.3	104.4	1.1	4.4
Other areas	98.4	98.7	98.9	99.6	100.0	100.7	101.9	103.0	104.6	1.6	4.6

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the *Monthly Labor Review* Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

26. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, private industry collective bargaining situations covering 1,000 workers or more (in percent)

Measure	Annual average		Quarterly average							
	1988	1989	1988		1989				1990	
			III	IV	I	II	III	IV	I[p]	II[p]
Specified adjustments:										
Total compensation [1] adjustments, [2] settlements covering 5,000 workers or more:										
First year of contract	3.1	4.5	3.4	3.5	3.2	5.1	3.9	5.3	4.6	5.8
Annual rate over life of contract	2.5	3.4	3.2	2.1	3.1	3.4	2.7	4.3	3.6	4.8
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract	2.5	4.0	2.7	2.6	3.2	3.9	3.6	4.9	3.7	4.7
Annual rate over life of contract	2.4	3.4	2.8	2.2	3.1	3.3	3.0	4.0	3.3	4.2
Effective adjustments:										
Total effective wage adjustment [3]	2.6	3.2	.8	.5	.5	1.0	1.0	.7	.6	1.1
From settlements reached in period	.7	1.2	.2	.1	.1	.3	.4	.4	.2	.3
Deferred from settlements reached in earlier periods	1.3	1.3	.4	.2	.3	.5	.4	.2	.3	.6
From cost-of-living-adjustments clauses	.6	.7	.2	.2	.1	.2	.2	.1	.1	.3

[1] Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.
[2] Adjustments are the net result of increases, decreases, and no changes in compensation or wages.
[3] Because of rounding, total may not equal sum of parts.
[p] = preliminary.

27. Average specified compensation and wage adjustments, major collective bargaining settlements in private industry situations covering 1,000 workers or more during 4-quarter periods (in percent)

Measure	Average for four quarters ending--							
	1988		1989				1990	
	III	IV	I	II	III	IV	I[p]	II[p]
Specified total compensation adjustments, settlements covering 5,000 workers or more, all industries:								
First year of contract	3.1	3.1	3.3	3.8	4.0	4.5	4.6	4.8
Annual rate over life of contract	2.5	2.5	2.6	3.0	2.8	3.4	3.5	3.7
Specified wage adjustments, settlements covering 1,000 workers or more:								
All industries:								
First year of contract	2.5	2.5	2.7	3.2	3.5	4.0	4.0	4.2
Contracts with COLA clauses	2.4	2.4	2.4	2.2	2.6	3.9	3.8	3.9
Contracts without COLA clauses	2.6	2.7	2.9	3.4	3.6	4.0	4.1	4.3
Annual rate over life of contract	2.2	2.4	2.5	2.9	3.0	3.4	3.4	3.6
Contracts with COLA clauses	1.5	1.8	1.8	1.8	2.0	2.8	2.7	2.7
Contracts without COLA clauses	2.8	2.8	2.9	3.2	3.2	3.5	3.6	3.8
Manufacturing:								
First year of contract	2.6	2.2	2.2	2.6	2.6	3.9	3.9	4.4
Contracts with COLA clauses	2.4	2.1	2.1	2.1	2.1	5.4	4.8	4.9
Contracts without COLA clauses	3.0	2.5	2.5	3.1	2.8	3.1	3.5	4.2
Annual rate over life of contract	1.9	2.1	2.2	2.4	2.5	3.2	3.2	3.4
Contracts with COLA clauses	1.4	1.8	1.8	1.7	1.7	3.5	3.1	3.1
Contracts without COLA clauses	3.1	2.6	2.8	3.1	2.9	3.0	3.3	3.5
Nonmanufacturing:								
First year of contract	2.4	2.8	3.0	3.5	3.8	4.0	4.1	4.1
Contracts with COLA clauses	2.4	2.9	2.9	3.0	3.0	3.2	3.2	3.3
Contracts without COLA clauses	2.5	2.7	3.0	3.5	3.9	4.2	4.3	4.3
Annual rate over life of contract	2.4	2.5	2.7	3.2	3.1	3.4	3.4	3.6
Contracts with COLA clauses	1.8	1.7	1.7	2.5	2.1	2.4	2.4	2.4
Contracts without COLA clauses	2.7	2.8	3.0	3.3	3.3	3.7	3.7	3.9
Construction:								
First year of contract	2.1	2.2	2.4	2.4	2.6	2.8	2.9	3.5
Contracts with COLA clauses	([1])	([1])	([1])	([2])	([2])	([2])	([2])	([2])
Contracts without COLA clauses	2.1	2.2	2.4	([2])	([2])	([2])	([2])	([2])
Annual rate over life of contract	2.4	2.6	2.7	2.9	2.9	3.0	3.1	3.9
Contracts with COLA clauses	([1])	([1])	([1])	([2])	([2])	([2])	([2])	([2])
Contracts without COLA clauses	2.4	2.6	2.7	([2])	([2])	([2])	([2])	([2])

[1] None of the settlements included COLA provisions.
[2] Data do not meet publication standards.
[p] = preliminary.

28. Average effective wage adjustments, private industry collective bargaining situations covering 1,000 workers or more during 4-quarter periods (in percent)

Effective wage adjustment	Average for four quarters ending--						
	1988	1989				1990	
	IV	I	II	III	IV	I[p]	II[p]
For all workers:[1]							
Total	2.6	2.7	2.8	3.0	3.2	3.2	3.3
From settlements reached in period	.7	.8	.7	.9	1.2	1.3	1.2
Deferred from settlements reached in earlier period	1.3	1.3	1.3	1.3	1.3	1.2	1.4
From cost-of-living-adjustments clauses	.6	.6	.8	.8	.7	.7	.7
For workers receiving changes:							
Total	3.3	3.5	3.8	4.0	4.0	4.0	4.1
From settlements reached in period	3.1	3.2	3.5	3.7	4.2	4.1	4.1
Deferred from settlements reached in earlier period	3.0	3.2	3.2	3.4	3.4	3.4	3.3
From cost-of-living-adjustments clauses	2.7	2.9	3.2	3.8	3.3	3.3	3.4

[1] Because of rounding, total may not equal sum of parts.
[p] = preliminary.

29. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, State and local government collective bargaining situations covering 1,000 workers or more (in percent)

Measure	Annual average		
	1988	1989	First 6 months 1990
Specified adjustments:			
Total compensation [1] adjustments, [2] settlements covering 5,000 workers or more:			
First year of contract	5.4	5.1	5.5
Annual rate over life of contract	5.3	4.9	5.4
Wage adjustments, settlements covering 1,000 workers or more:			
First year of contract	5.1	5.1	5.1
Annual rate over life of contract	5.3	5.1	5.1
Effective adjustments:			
Total effective wage adjustment [3]	4.7	5.1	1.7
From settlements reached in period	2.3	2.5	.4
Deferred from settlements reached in earlier periods	2.4	2.6	1.2
From cost-of-living-adjustment clauses	([4])	([4])	([4])

[1] Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.
[2] Adjustments are the net result of increases, decreases, and no changes in compensation or wages.
[3] Because of rounding, total may not equal sum of parts.
[4] Less than 0.05 percent.

30. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.[p]	Mar.[p]	Apr.[p]	May[p]	June[p]	July[p]	Aug.[p]
Number of stoppages:															
Beginning in period	40	51	6	6	5	5	1	3	3	5	5	4	5	1	5
In effect during period	43	52	13	12	13	14	9	9	7	8	12	11	9	8	9
Workers involved:															
Beginning in period (in thousands)	118.3	452.1	203.0	14.5	68.9	8.0	5.0	4.5	18.0	39.6	33.1	6.2	13.7	6.4	33.5
In effect during period (in thousands)	121.9	454.1	239.8	108.7	171.1	169.1	104.1	20.3	31.4	51.1	70.3	31.5	34.8	36.8	38.2
Days idle:															
Number (in thousands)	4,364.3	16,996.3	3,761.4	1,922.3	3,220.9	2,343.7	376.0	311.9	280.7	720.2	812.7	535.3	527.3	564.3	752.5
Percent of estimated working time[1]	.02	.07	.15	.09	.14	.11	.02	.01	.01	.03	.03	.02	.02	.03	.03

[1] Agricultural and government employees are included in the total employed and total working time: private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in "'Total economy' measure of strike idleness," *Monthly Labor Review,* October 1968, pp. 54-56.
– Data not available.
[p] = preliminary.

31. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84=100, unless otherwise indicated)

Series	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:															
All items	118.3	124.0	124.6	125.0	125.6	125.9	126.1	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6
All items (1967=100)	354.3	371.3	373.1	374.6	376.2	377.0	377.6	381.5	383.3	385.5	386.2	386.9	389.1	390.7	394.1
Food and beverages	118.2	124.9	125.6	125.9	126.3	126.7	127.2	130.0	130.9	131.2	131.0	131.1	131.7	132.4	132.7
Food	118.2	125.1	125.8	126.1	126.5	126.9	127.4	130.4	131.3	131.5	131.3	131.3	132.0	132.7	132.9
Food at home	116.6	124.2	124.9	125.0	125.4	125.8	126.5	131.0	132.1	131.9	131.1	130.9	131.7	132.5	132.7
Cereals and bakery products	122.1	132.4	134.1	134.6	135.0	135.3	136.1	136.9	137.4	137.6	138.9	139.3	140.1	140.5	141.4
Meats, poultry, fish, and eggs	114.3	121.3	122.3	122.9	122.4	122.8	123.8	126.8	126.7	127.9	128.2	127.8	129.9	130.4	131.1
Dairy products	108.4	115.6	114.5	116.1	118.2	120.2	122.9	125.8	126.9	126.8	125.2	124.7	124.9	125.7	127.3
Fruits and vegetables	128.1	138.0	138.8	136.6	137.1	137.8	136.7	153.7	157.9	153.9	149.0	147.4	147.1	149.4	146.1
Other foods at home	113.1	119.1	119.7	119.7	120.3	119.9	120.1	121.3	121.9	122.2	122.2	122.6	123.1	123.5	124.3
Sugar and sweets	114.0	119.4	120.6	120.8	121.3	120.7	121.1	122.5	122.9	123.0	123.6	124.4	124.5	124.9	125.6
Fats and oils	113.1	121.2	121.7	121.3	121.6	121.0	121.6	123.5	123.4	124.2	124.3	125.0	125.5	126.6	127.4
Nonalcoholic beverages	107.5	111.3	111.2	111.0	111.8	111.2	111.0	112.4	113.3	113.1	112.4	112.7	113.3	114.0	114.3
Other prepared foods	118.0	125.5	126.7	126.7	127.2	127.3	127.6	128.3	128.9	129.6	129.9	130.4	130.9	130.9	132.0
Food away from home	121.8	127.4	128.1	128.8	129.1	129.5	129.8	130.3	131.0	131.8	132.5	133.0	133.4	133.9	134.3
Alcoholic beverages	118.6	123.5	124.5	124.8	125.2	125.5	125.6	126.2	126.9	127.8	128.2	128.9	129.3	129.9	130.2
Housing	118.5	123.0	124.2	124.3	124.4	124.5	124.9	125.9	126.1	126.8	126.8	127.1	128.3	129.2	130.2
Shelter	127.1	132.8	134.1	134.1	134.8	135.2	135.6	136.3	136.6	137.8	138.0	138.3	139.5	141.1	142.4
Renters' costs (12/82=100)	133.6	138.9	141.5	139.4	140.0	140.1	140.1	142.0	143.5	144.8	144.7	144.4	145.3	148.7	150.7
Rent, residential	127.8	132.8	133.5	133.9	134.7	135.2	135.5	135.8	136.0	136.5	137.0	137.3	137.9	138.7	139.4
Other renters' costs	134.8	140.7	148.8	139.1	139.2	138.0	137.2	143.6	149.3	152.7	150.7	148.5	150.1	161.4	167.4
Homeowners' costs (12/82=100)	131.1	137.3	138.1	138.9	139.7	140.3	140.9	141.1	141.0	142.2	142.5	143.1	144.4	145.4	146.5
Owners' equivalent rent (12/82=100)	131.1	137.4	138.2	139.0	139.9	140.5	141.0	141.2	141.1	142.4	142.7	143.2	144.6	145.7	146.7
Household insurance (12/82=100)	129.0	132.6	133.3	133.6	133.7	133.8	134.0	134.1	134.5	134.8	134.4	134.9	135.2	135.3	135.6
Maintenance and repairs	114.7	118.0	118.5	118.6	118.6	119.3	119.5	120.4	120.8	121.2	121.2	122.2	121.8	122.1	121.2
Maintenance and repair services	117.9	120.6	121.3	120.9	121.0	121.7	122.2	123.7	124.6	124.8	125.6	126.2	125.4	125.6	124.1
Maintenance and repair commodities	110.4	114.6	114.8	115.6	115.5	116.2	115.8	116.0	115.9	116.4	115.4	116.7	117.0	117.4	117.5
Fuel and other utilities	104.4	107.8	109.7	109.7	108.0	107.5	108.4	110.8	110.2	109.9	109.4	109.9	112.2	111.3	112.7
Fuels	98.0	100.9	103.7	103.5	101.0	99.9	101.2	104.5	103.1	102.3	101.2	101.9	105.4	104.5	105.6
Fuel oil, coal, and bottled gas	78.1	81.7	78.9	79.3	82.0	83.9	88.7	113.1	95.4	91.5	89.6	88.0	84.9	82.7	91.8
Gas (piped) and electricity	104.6	107.5	111.3	111.0	107.6	106.1	107.0	107.5	108.3	107.9	106.8	107.8	112.4	111.7	111.6
Other utilities and public services	122.9	127.1	127.8	128.1	127.6	127.9	128.2	129.3	130.0	130.7	130.9	131.2	131.8	130.8	132.8
Household furnishings and operations	109.4	111.2	111.4	111.7	111.9	111.9	111.7	112.1	112.8	112.8	112.8	113.2	113.1	113.6	113.3
Housefurnishings	105.1	105.5	105.2	105.7	106.1	106.0	105.5	106.1	106.9	106.9	106.6	106.7	106.3	106.8	106.5
Housekeeping supplies	114.7	120.9	122.3	122.3	122.5	122.5	123.6	123.2	123.5	123.4	123.9	125.0	125.8	125.9	125.6
Housekeeping services	114.3	117.3	117.5	117.5	117.4	117.6	117.6	117.9	118.4	118.7	119.1	119.5	119.8	120.5	120.4
Apparel and upkeep	115.4	118.6	115.0	120.0	122.7	122.1	119.2	116.7	120.4	125.4	126.7	125.5	123.3	120.8	122.2
Apparel commodities	113.7	116.7	112.8	118.2	121.1	120.4	117.1	114.3	118.3	123.7	125.0	123.6	121.1	118.4	119.9
Men's and boys' apparel	113.4	117.0	114.7	117.7	120.3	121.1	118.8	116.3	117.0	119.3	121.0	121.9	119.9	118.6	119.3
Women's and girls' apparel	114.9	116.4	109.5	119.0	123.1	121.3	116.4	112.0	117.7	126.8	127.9	124.7	120.9	116.1	118.9
Infants' and toddlers' apparel	116.4	119.1	116.7	118.0	118.3	117.2	115.3	112.7	124.3	127.6	130.0	127.2	127.8	127.7	126.5
Footwear	109.9	114.4	112.6	114.1	117.6	116.6	114.7	113.1	114.5	116.9	118.6	118.5	117.3	116.1	116.3
Other apparel commodities	116.0	122.1	124.1	124.5	123.0	123.5	122.8	125.1	130.6	132.7	132.8	132.1	131.4	131.1	131.3
Apparel services	123.7	129.4	129.5	129.7	129.8	130.8	131.3	132.4	132.9	133.8	134.8	136.2	136.4	136.8	138.2
Transportation	108.7	114.1	114.3	113.7	114.5	115.0	115.2	117.2	117.1	116.8	117.3	117.7	118.2	118.4	120.6
Private transportation	107.6	112.9	113.1	112.4	113.3	113.7	113.9	115.9	115.6	115.1	115.5	115.9	116.4	116.6	119.0
New vehicles	116.5	119.2	117.7	117.1	118.5	120.6	121.9	122.4	122.2	121.6	121.1	121.0	120.6	120.2	119.9
New cars	116.9	119.2	117.7	117.0	118.6	120.5	121.8	122.3	121.9	121.3	120.7	120.7	120.3	119.8	119.5
Used cars	118.0	120.4	120.3	119.8	119.7	120.1	119.7	118.9	117.4	116.6	116.2	116.9	117.6	118.2	118.3
Motor fuel	80.9	88.5	91.0	88.8	88.9	87.2	85.8	91.4	90.6	89.3	91.2	92.5	94.6	94.3	103.2
Gasoline	80.8	88.5	91.1	88.8	88.8	87.0	85.5	90.6	90.2	89.1	91.0	92.4	94.6	94.4	103.1
Maintenance and repair	119.7	124.9	125.4	126.2	126.7	126.7	126.9	127.3	127.6	128.8	129.4	129.4	129.6	130.2	130.4
Other private transportation	127.9	135.8	135.7	135.7	137.1	138.2	139.0	140.3	140.8	140.7	140.8	140.8	141.0	142.1	142.4
Other private transportation commodities	98.9	101.5	102.0	102.0	101.9	102.1	102.3	101.9	102.1	102.0	101.9	101.8	101.8	101.7	102.2
Other private transportation services	133.9	143.2	142.9	142.9	144.8	146.0	146.9	148.7	149.3	149.2	149.4	149.3	149.7	151.0	151.3
Public transportation	123.3	129.5	130.1	130.1	130.6	131.3	131.7	134.2	136.7	139.1	140.3	140.9	141.5	141.6	141.9
Medical care	138.6	149.3	150.7	151.7	152.7	153.9	154.4	155.9	157.5	158.7	159.8	160.8	161.9	163.5	165.0
Medical care commodities	139.9	150.8	152.1	153.3	154.1	155.3	156.0	156.9	158.6	159.9	161.3	162.2	163.3	164.1	164.8
Medical care services	138.3	148.9	150.4	151.3	152.3	153.6	154.1	155.7	157.2	158.5	159.4	160.5	161.5	163.4	165.0
Professional services	137.5	146.4	147.5	148.0	148.6	149.3	149.9	151.1	152.3	153.2	154.1	155.1	155.8	157.0	157.8
Hospital and related services	143.9	160.5	162.7	164.3	166.0	167.9	167.9	169.9	171.6	173.0	173.7	174.3	175.4	178.1	180.9
Entertainment	120.3	126.5	127.3	127.8	128.4	128.6	129.1	129.9	130.4	130.9	131.4	131.7	131.9	132.7	133.0
Entertainment commodities	115.0	119.8	120.0	120.5	121.2	121.3	121.6	122.3	122.5	123.1	123.5	123.7	123.5	124.4	124.8
Entertainment services	127.7	135.4	136.7	137.2	137.8	138.2	138.8	139.8	140.5	141.0	141.6	142.0	142.6	143.3	143.6
Other goods and services	137.0	147.7	148.7	151.2	151.8	151.9	152.9	154.0	154.7	155.2	155.8	156.6	157.8	159.2	160.4
Tobacco products	145.8	164.4	168.8	168.2	168.8	168.6	171.9	174.1	175.0	175.1	175.6	176.7	180.9	185.7	185.8
Personal care	119.4	125.0	125.6	125.9	126.4	127.0	127.1	127.6	128.4	129.0	130.3	130.2	131.0	130.6	130.6
Toilet goods and personal care appliances	118.1	123.2	123.8	124.0	124.4	125.1	124.7	125.1	126.0	126.9	128.3	128.3	129.2	128.4	128.1
Personal care services	120.7	126.8	127.3	127.7	128.5	129.0	129.7	130.3	130.9	131.2	132.3	132.1	132.8	132.9	133.3
Personal and educational expenses	147.9	158.1	158.1	162.9	163.5	163.5	164.0	165.1	165.6	166.3	166.6	167.7	168.0	168.9	171.2
School books and supplies	148.1	158.0	156.6	163.0	163.6	163.9	164.0	167.9	169.7	169.9	169.9	169.9	169.8	170.3	170.5
Personal and educational services	148.0	158.3	158.4	163.1	163.7	163.7	164.2	165.1	165.6	166.3	166.6	167.7	168.1	169.0	171.5

31. Continued— Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84=100, unless otherwise indicated)

Series	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
All items	118.3	124.0	124.6	125.0	125.6	125.9	126.1	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6
Commodities	111.5	116.7	116.7	117.3	118.1	118.3	118.2	119.9	120.6	121.1	121.4	121.4	121.6	121.6	122.8
Food and beverages	118.2	124.9	125.6	125.9	126.3	126.7	127.2	130.0	130.9	131.2	131.0	131.1	131.7	132.4	132.7
Commodities less food and beverages	107.3	111.6	111.1	111.9	113.0	113.0	112.6	113.7	114.2	114.9	115.4	115.5	115.4	115.0	116.8
Nondurables less food and beverages	105.2	111.2	110.9	112.4	113.6	113.1	112.0	113.7	114.5	116.1	117.1	117.1	117.1	116.4	119.5
Apparel commodities	113.7	116.7	112.8	118.2	121.1	120.4	117.1	114.3	118.3	123.7	125.0	123.6	121.1	118.4	119.9
Nondurables less food, beverages, and apparel	103.2	111.0	112.5	112.0	112.4	111.9	112.0	116.0	115.3	114.8	115.7	116.5	117.7	118.1	122.1
Durables	110.4	112.2	111.4	111.3	112.1	113.0	113.5	113.8	113.7	113.4	113.1	113.2	112.9	113.0	112.9
Services	125.7	131.9	133.1	133.4	133.7	134.1	134.6	135.4	136.0	136.9	137.1	137.6	138.8	139.9	140.9
Rent of shelter (12/82=100)	132.0	138.0	139.3	139.3	140.1	140.5	140.9	141.6	142.0	143.3	143.5	143.7	145.0	146.7	148.1
Household services less rent of' shelter (12/82=100)	115.3	118.7	120.7	120.7	119.0	118.5	119.0	119.6	120.3	120.5	120.1	120.8	123.1	122.6	123.2
Transportation services	128.0	135.6	135.7	135.9	137.1	138.0	138.6	140.2	141.1	141.9	142.4	142.5	142.9	143.8	144.0
Medical care services	138.3	148.9	150.4	151.3	152.3	153.6	154.1	155.7	157.2	158.5	159.4	160.5	161.5	163.4	165.0
Other services	132.6	140.9	141.5	143.8	144.3	144.6	145.1	146.1	146.6	147.2	147.8	148.5	148.9	149.6	151.0
Special indexes:															
All items less food	118.3	123.7	124.3	124.8	125.4	125.6	125.8	126.7	127.3	128.1	128.4	128.7	129.4	130.0	131.3
All items less shelter	115.9	121.6	122.0	122.6	123.1	123.3	123.5	125.0	125.7	126.2	126.5	126.7	127.3	127.5	128.6
All items less homeowners' costs (12/82=100)	119.5	125.3	125.9	126.3	126.8	127.0	127.1	128.7	129.5	130.1	130.4	130.6	131.2	131.6	132.8
All items less medical care	117.0	122.4	123.0	123.4	124.0	124.2	124.4	125.7	126.2	126.9	127.1	127.3	128.0	128.5	129.6
Commodities less food	107.7	112.0	111.6	112.4	113.4	113.4	113.0	114.1	114.6	115.4	115.9	115.9	115.8	115.5	117.2
Nondurables less food	105.8	111.7	111.5	112.9	114.1	113.6	112.6	114.2	115.0	116.5	117.4	117.5	117.6	117.0	119.9
Nondurables less food and apparel	104.0	111.3	112.8	112.4	112.8	112.4	112.5	116.1	115.5	115.2	116.0	116.8	118.0	118.3	121.9
Nondurables	111.8	118.2	118.4	119.3	120.1	120.0	119.8	122.0	122.9	123.8	124.2	124.2	124.6	124.6	126.3
Services less rent of' shelter (12/82=100)	128.3	135.1	136.3	137.0	137.0	137.2	137.8	138.9	139.8	140.3	140.6	141.2	142.5	143.0	143.8
Services less medical care	124.3	130.1	131.3	131.6	131.8	132.1	132.6	133.4	133.9	134.7	134.9	135.3	136.5	137.5	138.5
Energy	89.3	94.3	97.0	95.9	94.6	93.2	93.2	97.6	96.4	95.5	95.7	96.7	99.5	98.9	103.6
All items less energy	122.3	128.1	128.5	129.1	129.9	130.4	130.6	131.5	132.3	133.3	133.5	133.7	134.2	134.8	135.6
All items less food and energy	123.4	129.0	129.3	130.0	130.9	131.3	131.5	132.0	132.8	133.9	134.2	134.4	134.8	135.5	136.4
Commodities less food and energy	115.8	119.6	118.8	120.1	121.2	121.6	121.2	121.0	122.2	123.4	123.7	123.6	123.2	122.9	123.2
Energy commodities	80.8	87.9	89.8	88.0	88.3	87.0	86.4	94.2	91.3	89.8	91.2	92.2	93.7	93.2	102.1
Services less energy	127.9	134.4	135.4	135.8	136.5	137.0	137.5	138.4	138.9	140.0	140.3	140.7	141.6	142.8	144.0
Purchasing power of the consumer dollar:															
1982-84=$1.00	84.6	80.7	80.3	80.0	79.6	79.5	79.3	78.5	78.2	77.7	77.6	77.4	77.0	76.7	76.0
1967=$1.00	28.2	26.9	26.8	26.7	26.6	26.5	26.5	26.2	26.1	25.9	25.9	25.8	25.7	25.6	25.4
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:															
All items	117.0	122.6	123.2	123.6	124.2	124.4	124.6	125.9	126.4	127.1	127.3	127.5	128.3	128.7	129.9
All items (1967=100)	348.4	365.2	367.0	368.3	369.8	370.6	371.1	375.0	376.6	378.5	379.2	379.9	382.1	383.4	386.9
Food and beverages	117.9	124.6	125.3	125.6	126.0	126.4	126.9	129.7	130.6	130.9	130.7	130.7	131.5	132.1	132.4
Food	117.9	124.8	125.5	125.8	126.2	126.6	127.1	130.1	131.1	131.2	130.9	131.0	131.8	132.4	132.7
Food at home	116.2	123.9	124.6	124.6	125.0	125.5	126.2	130.5	131.6	131.5	130.6	130.4	131.4	132.2	132.4
Cereals and bakery products	122.2	132.4	134.1	134.6	135.1	135.3	136.0	136.8	137.4	137.6	138.8	139.2	140.0	140.4	141.3
Meats, poultry, fish, and eggs	114.1	121.2	122.1	122.7	122.2	122.9	123.8	126.7	126.6	127.8	128.1	127.8	130.0	130.5	131.2
Dairy products	108.1	115.4	114.2	115.9	118.0	120.0	122.8	125.7	126.9	126.8	125.1	124.6	124.8	125.5	127.3
Fruits and vegetables	127.6	137.6	138.6	136.1	136.5	137.0	135.8	152.9	157.7	153.3	147.9	146.4	146.6	148.9	145.6
Other foods at home	113.0	119.0	119.6	119.6	120.2	119.8	120.1	121.3	121.8	122.2	122.1	122.6	123.1	123.5	124.2
Sugar and sweets	113.9	119.5	120.6	120.9	121.4	120.7	121.1	122.5	123.0	123.1	123.7	124.4	124.6	124.9	125.7
Fats and oils	113.0	121.1	121.6	121.2	121.5	120.9	121.5	123.4	123.2	124.0	124.1	124.9	125.4	126.4	127.3
Nonalcoholic beverages	107.7	111.4	111.1	111.0	112.0	111.3	111.2	112.7	113.6	113.4	112.7	112.9	113.6	114.2	114.6
Other prepared foods	117.8	125.3	126.5	126.6	127.0	127.1	127.4	128.2	128.7	129.5	129.7	130.2	130.8	130.7	131.8
Food away from home	121.6	127.3	128.0	128.6	129.0	129.4	129.7	130.2	130.9	131.7	132.3	132.8	133.2	133.7	134.1
Alcoholic beverages	118.3	123.1	124.0	124.4	124.7	125.1	125.2	125.9	126.7	127.4	128.0	128.7	129.1	129.5	129.8
Housing	116.8	121.2	122.4	122.5	122.5	122.7	123.1	123.9	124.1	124.7	124.7	125.1	126.2	127.0	127.9
Shelter	124.3	129.8	131.0	131.1	131.8	132.3	132.6	133.2	133.4	134.5	134.7	135.0	136.1	137.5	138.7
Renters' costs (12/84=100)	119.2	123.9	125.9	124.6	125.1	125.3	125.4	126.6	127.5	128.4	128.4	128.4	129.2	131.4	132.7
Rent, residential	127.5	132.3	133.0	133.4	134.2	134.6	135.0	135.3	135.4	136.0	136.4	136.8	137.4	138.2	138.8
Other renters' costs	135.2	141.5	152.0	140.9	140.4	139.1	137.6	144.1	149.8	153.2	150.9	148.8	150.7	161.9	167.9
Homeowners' costs (12/84=100)	119.5	125.1	125.8	126.6	127.3	127.8	128.3	128.5	128.5	129.6	129.9	130.3	131.5	132.4	133.5
Owners' equivalent rent (12/84=100)	119.5	125.2	125.9	126.7	127.4	128.0	128.5	128.6	128.6	129.7	130.0	130.4	131.6	132.6	133.7
Household insurance (12/84=100)	118.2	121.4	122.0	122.4	122.5	122.5	122.7	122.8	123.1	123.3	123.0	123.6	123.8	123.9	124.1
Maintenance and repairs	114.0	117.6	117.9	118.0	118.1	118.9	119.0	120.0	120.7	120.8	120.6	121.7	121.8	122.1	121.3
Maintenance and repair services	117.7	120.4	121.3	120.7	120.9	121.7	122.4	124.1	125.0	125.1	125.9	126.9	126.4	126.6	125.2
Maintenance and repair commodities	108.3	112.6	112.5	113.3	113.4	114.0	113.6	113.8	114.3	114.3	113.0	114.3	114.9	115.3	115.3
Fuel and other utilities	104.1	107.5	109.5	109.5	107.6	107.2	108.0	110.2	109.8	109.6	109.0	109.5	112.0	111.1	112.4
Fuels	97.7	100.6	103.5	103.3	100.6	99.5	100.7	103.8	102.5	101.8	100.6	101.2	105.0	104.2	105.1
Fuel oil, coal, and bottled gas	77.9	81.4	78.8	79.2	81.8	83.6	88.1	112.7	95.2	91.3	89.4	87.9	84.9	82.7	91.6
Gas (piped) and electricity	104.4	107.3	111.0	110.7	107.2	105.8	106.7	107.2	107.9	107.5	106.4	107.2	112.1	111.4	111.3
Other utilities and public services	122.9	127.4	128.0	128.3	127.8	128.2	128.4	129.6	130.4	131.0	131.4	131.7	132.3	131.2	133.3
Household furnishings and operations	108.9	110.6	110.8	111.0	111.2	111.2	111.1	111.5	112.1	112.1	112.2	112.4	112.3	112.7	112.5
Housefurnishings	104.5	104.8	104.6	105.0	105.3	105.2	104.7	105.3	106.1	105.9	105.8	105.8	105.3	105.8	105.6
Housekeeping supplies	115.1	121.2	122.6	122.6	122.7	122.7	123.8	123.5	123.8	123.9	124.4	125.3	126.1	126.2	125.8
Housekeeping services	115.0	117.4	117.6	117.6	117.5	117.7	117.8	118.1	118.7	119.0	119.3	119.7	119.9	120.4	120.4

31. Continued— Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84=100, unless otherwise indicated)

Series	Annual average		1989					1990							
	1988	1989	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Apparel and upkeep	114.9	117.9	114.5	119.3	122.0	121.4	118.5	116.1	119.3	124.4	125.8	124.7	122.4	119.8	121.3
Apparel commodities	113.4	116.1	112.4	117.6	120.5	119.8	116.6	114.0	117.3	122.8	124.2	122.9	120.4	117.6	119.0
Men's and boys' apparel	112.8	116.1	113.9	116.9	119.6	120.2	118.0	115.8	116.2	118.3	120.0	120.7	118.9	117.4	118.0
Women's and girls' apparel	114.5	115.5	108.9	118.1	122.0	120.5	115.5	111.3	116.4	125.7	126.9	123.8	119.8	115.0	118.1
Infants' and toddlers' apparel	118.6	122.5	120.4	122.0	122.2	121.0	119.3	116.8	127.1	129.9	132.2	129.6	130.2	129.8	129.2
Footwear	110.4	114.7	113.1	114.5	118.0	117.0	115.4	113.8	115.0	117.4	119.2	119.3	118.3	116.9	116.8
Other apparel commodities	114.9	120.5	122.4	122.5	121.9	122.4	121.5	123.2	127.0	130.5	130.7	130.3	128.8	128.2	128.1
Apparel services	123.0	128.6	128.7	128.8	129.0	130.0	130.6	131.7	132.2	133.2	134.2	135.5	135.6	135.9	137.6
Transportation	108.3	113.9	114.2	113.5	114.3	114.6	114.8	116.8	116.6	116.2	116.6	117.1	117.7	117.8	120.3
Private transportation	107.5	113.0	113.3	112.6	113.3	113.7	113.8	115.8	115.5	114.9	115.4	115.8	116.4	116.5	119.1
New vehicles	116.2	119.0	117.6	117.1	118.4	120.5	122.0	122.4	122.3	121.7	121.2	121.1	120.7	120.3	120.0
New cars	116.6	119.1	117.6	116.9	118.4	120.2	121.7	122.2	121.8	121.2	120.6	120.5	120.2	119.7	119.3
Used cars	117.9	120.3	120.1	119.6	119.5	119.9	119.5	118.7	117.2	116.4	116.0	116.6	117.3	118.0	118.0
Motor fuel	80.9	88.6	91.0	89.0	89.1	87.3	85.9	91.7	90.7	89.4	91.3	92.6	94.7	94.4	103.4
Gasoline	80.8	88.6	91.2	89.0	89.0	87.2	85.6	91.0	90.4	89.2	91.2	92.5	94.8	94.5	103.3
Maintenance and repair	119.8	124.9	125.4	126.2	126.7	126.8	126.9	127.3	127.9	129.0	129.6	129.7	129.9	130.3	130.7
Other private transportation	125.8	133.7	133.7	133.6	134.9	136.0	136.8	138.1	138.5	138.3	138.4	138.3	138.6	139.5	139.7
Other private transportation commodities	98.6	101.1	101.6	101.6	101.5	101.7	101.9	101.4	101.7	101.5	101.4	101.3	101.3	101.3	101.7
Other private transportation services	131.7	141.0	140.8	140.6	142.5	143.8	144.7	146.5	146.9	146.8	146.9	146.8	147.2	148.4	148.5
Public transportation	122.5	128.2	129.1	129.1	129.4	129.7	130.1	132.9	135.4	137.4	138.4	138.9	139.6	139.7	140.0
Medical care	139.0	149.6	151.1	152.1	153.0	154.2	154.7	156.1	157.6	158.8	159.8	160.8	161.8	163.3	164.7
Medical care commodities	139.0	149.7	150.9	152.2	153.1	154.2	154.8	155.7	157.4	158.6	160.0	161.0	162.1	162.9	163.7
Medical care services	139.0	149.6	151.1	152.1	153.0	154.2	154.7	156.2	157.7	158.8	159.7	160.7	161.7	163.4	165.0
Professional services	137.7	146.7	147.8	148.4	149.0	149.6	150.2	151.5	152.6	153.5	154.3	155.3	156.1	157.2	158.1
Hospital and related services	143.3	159.4	161.6	163.3	164.7	166.5	166.8	168.4	170.1	171.3	172.1	172.7	173.8	176.3	178.8
Entertainment	119.7	125.8	126.5	127.0	127.7	127.9	128.4	129.1	129.5	130.0	130.6	130.8	131.0	131.7	132.1
Entertainment commodities	115.1	119.9	120.1	120.6	121.3	121.4	121.7	122.3	122.4	123.0	123.4	123.6	123.4	124.2	124.7
Entertainment services	127.2	135.1	136.4	137.1	137.6	138.0	138.7	139.6	140.4	140.9	141.6	141.9	142.5	143.1	143.4
Other goods and services	136.5	147.4	148.8	150.8	151.4	151.5	152.7	153.9	154.6	155.1	155.7	156.3	157.8	159.4	160.5
Tobacco products	146.0	164.2	168.5	168.0	168.6	168.5	171.8	173.8	174.8	174.8	175.3	176.4	180.6	185.4	185.5
Personal care	119.3	124.8	125.4	125.7	126.3	126.8	126.9	127.3	128.1	128.7	130.0	129.9	130.7	130.3	130.5
Toilet goods and personal care appliances	118.0	123.3	123.8	124.1	124.6	125.1	124.7	124.9	126.0	126.8	128.2	128.1	129.1	128.2	128.2
Personal care services	120.5	126.6	127.1	127.5	128.2	128.7	129.4	130.1	130.5	130.8	132.1	131.9	132.6	132.8	133.2
Personal and educational expenses	147.4	157.3	157.3	161.8	162.5	162.5	163.1	164.2	164.8	165.6	166.0	166.5	166.9	167.7	169.9
School books and supplies	147.1	156.9	155.6	161.7	162.8	162.8	162.9	166.9	168.5	168.7	168.6	168.6	168.6	169.2	169.6
Personal and educational services	147.7	157.7	157.8	162.1	162.7	162.8	163.4	164.3	164.8	165.7	166.1	166.7	167.1	167.9	170.3
All items	117.0	122.6	123.2	123.6	124.2	124.4	124.6	125.9	126.4	127.1	127.3	127.5	128.3	128.7	129.9
Commodities	111.0	116.3	116.4	116.9	117.7	117.8	117.8	119.5	120.1	120.5	120.8	120.9	121.2	121.3	122.6
Food and beverages	117.9	124.6	125.3	125.6	126.0	126.4	126.9	129.7	130.6	130.9	130.7	130.7	131.5	132.1	132.4
Commodities less food and beverages	106.8	111.2	110.9	111.6	112.5	112.5	112.1	113.3	113.6	114.2	114.8	114.9	114.9	114.6	116.5
Nondurables less food and beverages	104.6	110.9	110.8	112.0	113.2	112.6	111.6	113.4	114.0	115.4	116.5	116.6	116.8	116.2	119.6
Apparel commodities	113.4	116.1	112.4	117.6	120.5	119.8	116.6	114.0	117.3	122.8	124.2	122.9	120.4	117.6	119.0
Nondurables less food, beverages, and apparel	102.9	110.9	112.6	112.0	112.3	111.7	111.7	115.7	115.0	114.5	115.5	116.3	117.8	118.2	122.6
Durables	108.9	110.8	110.1	110.0	110.6	111.6	112.0	112.2	112.0	111.6	111.4	111.4	111.2	111.4	111.3
Services	124.7	130.8	132.0	132.3	132.6	132.9	133.4	134.2	134.8	135.6	135.8	136.2	137.4	138.3	139.3
Rent of shelter (12/84=100)	119.4	124.8	125.9	126.0	126.7	127.1	127.5	128.0	128.2	129.3	129.5	129.8	130.8	132.2	133.4
Household services less rent of shelter (12/84=100)	105.9	109.1	111.0	111.0	109.3	108.8	109.3	110.0	110.6	110.7	110.3	110.9	113.3	112.7	113.3
Transportation services	127.1	134.8	134.9	135.0	136.3	137.1	137.8	139.4	140.2	140.7	141.1	141.2	141.5	142.4	142.5
Medical care services	139.0	149.6	151.1	152.1	153.0	154.2	154.7	156.2	157.7	158.8	159.7	160.7	161.7	163.4	165.0
Other services	131.4	139.6	140.1	142.3	142.9	143.2	143.8	144.7	145.3	145.9	146.6	147.1	147.5	148.1	149.4
Special indexes:															
All items less food	116.7	122.0	122.6	123.1	123.6	123.8	124.0	124.9	125.3	126.1	126.4	126.7	127.4	127.8	129.2
All items less shelter	115.2	120.9	121.3	121.8	122.3	122.5	122.6	124.2	124.8	125.3	125.5	125.8	126.4	126.5	127.7
All items less homeowners' costs (12/84=100)	110.4	115.7	116.3	116.6	117.1	117.3	117.4	118.8	119.4	119.9	120.2	120.3	121.0	121.3	122.4
All items less medical care	115.8	121.2	121.8	122.2	122.7	122.9	123.1	124.4	124.9	125.5	125.7	125.9	126.6	127.0	128.2
Commodities less food	107.2	111.6	111.4	112.0	112.9	112.9	112.6	113.7	114.0	114.6	115.2	115.3	115.4	115.1	117.0
Nondurables less food	105.3	111.3	111.4	112.5	113.6	113.1	112.2	113.9	114.5	115.8	116.9	117.1	117.3	116.8	119.9
Nondurables less food and apparel	103.7	111.2	112.8	112.3	112.7	112.1	112.2	115.8	115.3	114.9	115.8	116.7	118.0	118.3	122.3
Nondurables	111.5	118.0	118.3	119.1	119.8	119.7	119.5	121.8	122.6	123.4	123.8	123.9	124.4	124.4	126.3
Services less rent of shelter (12/84=100)	115.6	121.7	122.7	123.3	123.2	123.4	123.9	124.9	125.7	126.1	126.3	126.8	128.0	128.4	129.1
Services less medical care	123.3	129.0	130.1	130.4	130.6	130.9	131.4	132.2	132.7	133.4	133.6	133.9	135.1	136.0	136.9
Energy	88.6	93.9	96.6	95.5	94.2	92.8	92.7	97.1	96.0	94.9	95.4	96.3	99.2	98.7	103.7
All items less energy	121.0	126.7	127.1	127.7	128.5	128.9	129.1	130.1	130.8	131.6	131.9	132.0	132.5	133.1	133.8
All items less food and energy	121.9	127.3	127.6	128.3	129.1	129.6	129.7	130.1	130.8	131.8	132.2	132.3	132.7	133.3	134.1
Commodities less food and energy	114.7	118.6	117.9	119.0	120.1	120.5	120.2	119.9	120.8	122.0	122.3	122.2	121.9	121.7	122.0
Energy commodities	80.9	88.2	90.2	88.4	88.7	87.2	86.4	93.9	91.4	89.8	91.4	92.5	94.1	93.6	102.6
Services less energy	127.0	133.4	134.4	134.8	135.5	136.0	136.4	137.3	137.8	138.8	139.1	139.4	140.3	141.3	142.5
Purchasing power of the consumer dollar:															
1982-84=$1.00	85.5	81.6	81.2	80.9	80.5	80.4	80.3	79.4	79.1	78.7	78.5	78.4	78.0	77.7	77.0
1967=$1.00	28.7	27.4	27.2	27.2	27.0	27.0	26.9	26.7	26.6	26.4	26.4	26.3	26.2	26.1	25.8

32. Consumer Price Index: U.S. city average and available local area data: all items

(1982-84=100, unless otherwise indicated)

Area[1]	Pricing schedule[2]	All Urban Consumers							Urban Wage Earners						
		1989		1990					1989		1990				
		Aug.	Sept.	Apr.	May	June	July	Aug.	Aug.	Sept.	Apr.	May	June	July	Aug.
U.S. city average	M	124.6	125.0	128.9	129.2	129.9	130.4	131.6	123.2	123.6	127.3	127.5	128.3	128.7	129.9
Region and area size[3]															
Northeast urban	M	129.1	130.0	134.5	134.7	134.9	136.0	137.4	128.0	128.8	133.1	133.3	133.6	134.6	135.8
Size A - More than 1,200,000	M	129.5	130.6	135.4	135.4	135.4	136.7	138.0	127.5	128.7	133.1	133.1	133.3	134.3	135.5
Size B - 500,000 to 1,200,000	M	129.1	128.9	133.5	133.6	134.4	135.2	137.2	127.9	127.6	132.0	132.1	132.9	133.8	135.6
Size C - 50,000 to 500,000	M	127.8	128.1	132.0	132.5	133.4	133.9	134.6	130.2	130.8	134.4	134.9	135.7	136.1	136.8
North Central urban	M	122.0	122.5	125.8	126.0	126.9	126.9	128.4	120.0	120.4	123.7	123.9	124.8	124.7	126.3
Size A - More than 1,200,000	M	123.5	124.1	127.3	127.4	128.6	128.6	129.9	120.7	121.2	124.4	124.4	125.6	125.6	127.0
Size B - 360,000 to 1,200,000	M	120.9	121.0	124.8	125.3	125.6	125.8	127.6	118.6	118.6	122.3	122.8	123.1	123.2	125.2
Size C - 50,000 to 360,000	M	122.1	122.2	125.6	125.9	126.5	126.2	127.8	120.8	120.9	124.4	124.6	125.2	124.8	126.5
Size D - Nonmetropolitan (less than 50,0000	M	117.1	117.8	121.1	121.4	122.3	122.6	124.1	116.9	117.7	120.8	121.1	122.0	122.2	123.9
South urban	M	122.1	122.5	126.1	126.5	127.3	127.8	128.7	121.6	121.9	125.3	125.6	126.4	126.9	127.8
Size A - More than 1,200,000	M	122.8	123.5	126.8	127.1	127.8	128.6	129.0	122.0	122.5	125.6	125.9	126.7	127.3	127.8
Size B - 450,000 to 1,200,000	M	123.4	123.9	127.4	128.0	128.2	128.6	129.8	121.2	121.7	124.8	125.4	125.7	126.1	127.3
Size C - 50,000 to 450,000	M	121.0	120.9	124.6	124.5	125.3	126.0	127.6	121.6	121.5	125.0	124.9	125.7	126.3	128.0
Size D - Nonmetropolitan (less than 50,000)	M	120.0	120.2	125.3	125.8	128.2	128.0	128.5	121.1	121.0	126.0	126.4	128.5	128.4	129.0
West urban	M	125.3	125.6	129.6	130.0	130.8	131.3	132.2	123.9	124.2	128.0	128.3	129.1	129.6	130.4
Size A - More than 1,250,000	M	127.1	127.5	131.5	132.0	132.6	133.1	133.9	124.3	124.6	128.4	128.8	129.4	129.9	130.7
Size C - 50,000 to 330,000	M	122.6	122.8	126.2	126.4	127.7	128.8	130.0	121.9	122.1	125.5	125.7	126.8	127.8	129.1
Size classes:															
A (12/86=100)	M	113.2	113.8	117.4	117.5	118.1	118.7	119.6	113.1	113.7	117.1	117.2	117.8	118.3	119.3
B	M	124.0	124.2	128.1	128.5	129.0	129.6	130.8	122.6	122.8	126.4	126.8	127.4	127.8	129.2
C	M	122.9	122.9	126.5	126.7	127.5	128.0	129.4	123.1	123.3	126.7	126.9	127.7	128.0	129.5
D	M	120.5	120.8	125.0	125.6	127.0	127.2	128.2	120.9	121.2	125.2	125.6	126.9	127.1	128.2
Selected local areas															
Chicago, IL-Northwestern IN	M	126.4	127.1	130.4	130.4	131.7	132.0	133.2	122.5	123.1	126.5	126.5	127.9	128.0	129.3
Los Angeles-Long Beach, Anaheim, CA	M	128.9	130.1	134.2	134.6	135.0	135.6	136.3	125.5	126.5	130.2	130.7	131.1	131.6	132.3
New York, NY-Northeastern NJ	M	130.9	132.2	137.3	137.2	137.1	138.4	140.0	128.9	130.3	135.0	134.9	135.0	136.0	137.4
Philadelphia, PA-NJ	M	129.1	130.2	134.3	134.6	135.1	136.3	137.3	129.3	130.4	134.4	134.9	135.5	136.6	137.5
San Francisco-Oakland, CA	M	128.1	126.8	130.7	130.8	131.6	132.3	133.1	127.0	126.1	129.8	129.9	130.7	131.3	132.0
Baltimore, MD	M	–	125.9	–	129.0	–	130.2	–	–	125.4	–	128.3	–	129.5	–
Boston, MA	1	–	132.2	–	137.0	–	138.0	–	–	132.6	–	137.3	–	137.9	–
Cleveland, OH	1	–	123.7	–	128.1	–	128.8	–	–	118.2	–	122.1	–	122.7	–
Miami, FL	1	–	122.9	–	126.4	–	128.7	–	–	121.4	–	124.6	–	126.7	–
St. Louis, MO-IL	1	–	123.9	–	126.7	–	128.0	–	–	123.5	–	126.0	–	127.3	–
Washington, DC-MD-VA	1	–	130.1	–	134.0	–	135.7	–	–	129.5	–	132.8	–	134.6	–
Dallas-Ft. Worth, TX	1	120.0	–	122.9	–	123.8	–	126.0	119.8	–	122.2	–	123.2	–	125.4
Detroit, MI	2	122.2	–	126.9	–	127.7	–	129.4	119.2	–	123.9	–	124.7	–	126.5
Houston, TX	2	114.4	–	118.3	–	119.7	–	121.5	114.9	–	118.6	–	120.0	–	121.9
Pittsburgh, PA	2	120.8	–	124.9	–	125.0	–	127.1	116.0	–	120.1	–	120.3	–	122.0

[1] Area is the Consolidated Metropolitan Statistical Area (CMSA), exclusive of farms and military. Area definitions are those established by the Office of Management and Budget in 1983, except for Boston-Lawrence-Salem, MA-NH Area (excludes Monroe County); and Milwaukee, WI Area (includes only the Milwaukee MSA). Definitions do not include revisions made since 1983.

[2] Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:.
M - Every month.
1 - January, March, May, July, September, and November.
2 - February, April, June, August, October, and December.

[3] Regions are defined as the four Census regions.
– Data not available.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Because each local index is a small subset of the national index, it has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error than the national index. As a result, local area indexes show greater volatility than the national index, although their long-term trends are quite similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in escalator clauses.

33. Annual data: Consumer Price Index, U.S. city average, all items and major groups

(1982-84=100)

Series	1981	1982	1983	1984	1985	1986	1987	1988	1989
Consumer Price Index for All Urban Consumers:									
All items:									
Index	90.9	96.5	99.6	103.9	107.6	109.6	113.6	118.3	124.0
Percent change	10.3	6.2	3.2	4.3	3.6	1.9	3.6	4.1	4.8
Food and beverages:									
Index	93.5	97.3	99.5	103.2	105.6	109.1	113.5	118.2	124.9
Percent change	7.8	4.1	2.3	3.7	2.3	3.3	4.0	4.1	5.7
Housing:									
Index	90.4	96.9	99.5	103.6	107.7	110.9	114.2	118.5	123.0
Percent change	11.5	7.2	2.7	4.1	4.0	3.0	3.0	3.8	3.8
Apparel and upkeep:									
Index	95.3	97.8	100.2	102.1	105.0	105.9	110.6	115.4	118.6
Percent change	4.8	2.6	2.5	1.9	2.8	.9	4.4	4.3	2.8
Transportation:									
Index	93.2	97.0	99.3	103.7	106.4	102.3	105.4	108.7	114.1
Percent change	12.2	4.1	2.4	4.4	2.6	-3.9	3.0	3.1	5.0
Medical care:									
Index	82.9	92.5	100.6	106.8	113.5	122.0	130.1	138.6	149.3
Percent change	10.7	11.6	8.8	6.2	6.3	7.5	6.6	6.5	7.7
Entertainment:									
Index	90.1	96.0	100.1	103.8	107.9	111.6	115.3	120.3	126.5
Percent change	7.8	6.5	4.3	3.7	3.9	3.4	3.3	4.3	5.2
Other goods and services:									
Index	82.6	91.1	101.1	107.9	114.5	121.4	128.5	137.0	147.7
Percent change	9.8	10.3	11.0	6.7	6.1	6.0	5.8	6.6	7.8
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	91.4	96.9	99.8	103.3	106.9	108.6	112.5	117.0	122.6
Percent change	10.3	6.0	3.0	3.5	3.5	1.6	3.6	4.0	4.8

34. Producer Price Indexes, by stage of processing

(1982=100)

Grouping	Annual average		1989				1990							
	1988	1989	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Finished goods	108.0	113.6	113.6	114.9	114.9	115.4	117.6	117.4	117.2	117.2	117.7	117.9	118.0	119.2
Finished consumer goods	106.2	112.1	112.2	113.3	113.2	113.9	116.7	116.4	115.9	115.8	116.5	116.7	116.9	118.4
Finished consumer foods	112.6	118.7	118.5	119.5	120.1	121.1	123.9	124.6	124.4	123.2	124.8	124.5	124.9	125.0
Finished consumer goods excluding foods	103.1	108.9	109.1	110.3	109.9	110.4	113.2	112.4	111.8	112.2	112.5	112.8	112.9	115.1
Nondurable goods less food	97.3	103.8	104.5	104.8	104.3	105.0	109.2	107.9	107.1	107.7	108.1	108.2	108.5	111.5
Durable goods	113.8	117.6	116.7	120.0	119.6	119.7	119.1	119.4	119.2	119.3	119.2	120.2	120.1	120.0
Capital equipment	114.3	118.8	118.9	120.5	120.8	120.8	121.2	121.6	121.9	122.2	122.1	122.3	122.5	122.9
Intermediate materials, supplies, and components	107.1	112.0	112.4	112.3	112.0	111.9	113.4	112.5	112.4	112.8	112.9	112.9	113.0	114.4
Materials and components for manufacturing	113.2	118.1	117.7	117.9	117.7	117.4	117.6	117.5	117.9	118.2	118.4	118.4	118.4	118.7
Materials for food manufacturing	106.0	112.7	113.7	113.1	115.4	115.5	115.5	114.9	115.8	117.2	120.5	120.9	120.9	120.5
Materials for nondurable manufacturing	112.9	118.5	116.9	117.0	116.7	116.6	116.7	117.1	117.0	117.0	117.0	117.2	116.9	116.7
Materials for durable manufacturing	118.7	123.6	122.6	123.1	121.9	120.3	120.1	119.0	120.0	120.8	120.7	120.0	120.3	121.6
Components for manufacturing	112.3	116.4	117.0	117.2	117.3	117.4	118.1	118.2	118.5	118.7	118.6	118.7	118.8	118.9
Materials and components for construction	116.1	121.3	121.9	122.3	122.1	121.7	121.8	121.9	122.5	123.0	123.2	122.8	122.9	122.9
Processed fuels and lubricants	71.2	76.4	78.7	77.8	76.3	77.3	84.2	79.4	77.8	78.0	77.7	78.4	78.3	85.7
Containers	120.1	125.4	126.1	126.3	126.8	126.7	127.3	127.4	127.4	127.8	127.7	127.7	127.4	127.6
Supplies	113.7	118.1	118.5	118.3	118.3	118.3	118.8	118.5	118.7	118.9	119.4	119.2	119.5	119.3
Crude materials for further processing	96.0	103.1	102.3	102.1	102.6	104.2	106.5	106.8	105.6	103.0	104.2	101.0	101.2	110.2
Foodstuffs and feedstuffs	106.1	111.2	108.9	107.9	109.9	112.6	113.5	113.9	115.3	115.1	116.7	115.2	115.4	113.5
Crude nonfood materials	85.5	93.4	93.6	94.0	93.5	94.3	97.5	97.6	94.9	91.0	92.0	87.9	88.0	103.2
Special groupings:														
Finished goods, excluding foods	106.5	111.8	112.0	113.3	113.1	113.5	115.5	115.1	114.8	115.2	115.3	115.6	115.8	117.3
Finished energy goods	59.8	65.7	65.9	65.8	64.6	64.8	72.7	69.2	67.0	68.0	68.0	67.6	67.8	74.4
Finished goods less energy	115.8	121.2	121.3	122.7	123.0	123.5	124.6	125.1	125.2	125.0	125.6	125.9	126.1	126.2
Finished consumer goods less energy	116.3	122.1	122.1	123.6	123.8	124.5	125.9	126.5	126.5	126.1	126.9	127.3	127.4	127.5
Finished goods less food and energy	117.0	122.1	122.3	123.9	124.0	124.4	124.8	125.2	125.4	125.6	125.8	126.3	126.5	126.6
Finished consumer goods less food and energy	118.5	124.0	124.2	126.0	125.9	126.5	127.0	127.4	127.5	127.7	128.0	128.8	128.8	128.9
Consumer nondurable goods less food and energy	122.0	128.8	129.7	130.4	130.5	131.6	132.7	133.2	133.5	133.8	134.4	135.0	135.2	135.3
Intermediate materials less foods and feeds	106.9	111.9	112.3	112.4	111.9	111.9	113.4	112.5	112.5	112.8	112.8	112.8	112.8	114.4
Intermediate foods and feeds	109.5	113.8	113.7	112.3	113.2	113.0	113.2	111.0	111.4	112.5	116.0	115.5	116.1	115.0
Intermediate energy goods	70.9	76.1	78.3	77.5	76.0	76.9	83.7	79.0	77.4	77.7	77.4	78.1	78.0	85.3
Intermediate goods less energy	114.6	119.5	119.5	119.6	119.5	119.2	119.5	119.4	119.7	120.1	120.3	120.2	120.3	120.4
Intermediate materials less foods and energy	115.2	120.2	120.1	120.3	120.0	119.7	120.0	120.0	120.3	120.6	120.6	120.5	120.5	120.8
Crude energy materials	67.7	75.9	76.1	76.6	76.9	78.5	82.3	82.6	78.6	73.1	74.1	69.5	69.4	87.1
Crude materials less energy	112.6	117.7	115.9	115.1	115.8	117.1	117.8	117.9	119.7	120.5	121.8	120.4	120.7	119.9
Crude nonfood materials less energy	133.0	137.9	137.7	137.6	134.3	132.0	132.1	131.3	134.2	137.8	138.3	137.1	137.7	139.9

35. Producer Price indexes, by durability of product

(1982=100)

Grouping	Annual average		1989				1990							
	1988	1989	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Total durable goods	114.7	119.0	119.2	120.2	119.9	119.7	120.0	120.0	120.4	120.9	120.8	120.9	121.0	121.5
Total nondurable goods	101.1	107.1	107.2	107.2	107.2	107.9	110.7	109.9	109.3	108.9	109.6	109.1	109.2	112.3
Total manufactures	109.1	114.3	114.5	115.2	115.1	115.2	116.6	116.0	116.1	116.6	117.0	117.0	116.9	118.2
Durable	114.1	118.3	118.6	119.6	119.5	119.3	119.6	119.6	120.0	120.3	120.3	120.4	120.5	120.8
Nondurable	104.1	110.2	110.4	110.7	110.7	111.0	113.3	112.1	112.2	112.8	113.6	113.4	113.1	115.3
Total raw or slightly processed goods	95.9	101.3	101.2	100.4	100.2	101.8	105.5	105.6	103.8	101.2	101.7	100.6	101.4	106.6
Durable	148.0	151.6	148.0	146.5	141.2	138.0	138.7	136.0	140.7	146.0	146.6	144.7	145.1	150.7
Nondurable	93.4	98.9	99.0	98.3	98.3	100.1	103.9	104.1	102.0	99.1	99.5	98.5	99.3	104.5

36. Producer price indexes for the net output of major industry groups

(December 1984=100, unless otherwise indicated)

Industry	SIC	Annual average		1989				1990							
		1988	1989	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Total mining industries		70.6	76.4	76.5	76.1	76.3	77.6	81.0	81.1	78.1	74.8	74.6	72.3	73.7	80.5
Metal mining	10	100.7	100.3	101.0	101.0	96.2	93.6	89.2	86.1	90.9	92.6	91.1	92.2	93.9	96.1
Anthracite mining (12/85=100)	11	100.2	102.7	102.7	102.9	103.0	103.2	105.0	105.0	105.0	104.4	103.4	103.5	103.6	104.2
Bituminous coal and lignite mining (12/85=100)	12	94.6	94.3	94.7	95.1	96.1	95.6	95.6	95.2	95.4	96.0	97.2	97.0	96.6	96.4
Oil and gas extraction (12/85=100)	13	68.5	75.7	75.8	75.2	75.5	77.3	82.0	82.3	77.9	73.1	72.8	69.4	71.5	80.9
Mining and quarrying of nonmetallic minerals, except fuels	14	108.0	111.2	111.0	111.3	111.3	111.2	111.7	112.3	113.2	113.4	113.7	113.7	113.6	114.0
Total manufacturing industries		104.4	109.6	109.9	110.8	110.8	111.0	112.7	112.2	112.3	112.6	113.1	113.1	113.0	114.6
Food and kindred products	20	107.1	112.2	112.4	112.3	113.2	113.7	114.4	114.6	115.2	115.4	117.1	117.2	117.3	117.3
Tobacco manufactures	21	141.8	161.4	164.5	165.7	165.7	173.8	175.8	176.1	176.1	176.1	180.1	185.9	186.0	186.0
Textile mill products	22	106.8	109.3	109.7	110.0	110.1	110.0	111.0	111.3	111.5	111.7	111.9	111.8	111.6	111.8
Apparel and other finished products made from fabrics and similar materials	23	107.2	110.2	110.9	111.1	111.3	111.6	112.3	112.3	112.5	112.7	112.5	112.7	113.1	113.5
Lumber and wood products, except furniture	24	109.2	115.3	116.8	118.1	117.3	116.1	116.3	116.9	117.6	119.2	118.8	117.7	117.9	117.1
Furniture and fixtures	25	111.4	115.6	116.6	117.0	117.0	117.2	117.7	118.0	118.1	118.5	119.0	119.2	119.2	119.3
Paper and allied products	26	113.7	120.8	121.1	121.7	121.7	121.6	121.6	121.6	121.5	121.9	121.7	121.7	121.7	121.8
Printing, publishing, and allied industries	27	118.2	124.7	125.8	126.0	126.3	126.4	128.2	128.7	129.1	129.4	129.5	130.0	130.2	130.8
Chemicals and allied products	28	113.0	119.6	118.7	118.7	118.7	118.6	119.0	119.5	119.8	120.0	120.3	120.3	120.2	120.5
Petroleum refining and related products	29	67.7	75.7	75.6	77.4	75.9	76.0	87.4	80.3	78.5	79.9	80.2	78.7	77.0	90.3
Rubber and miscellaneous plastic products	30	106.7	110.2	110.4	110.3	110.3	110.5	110.9	110.7	111.0	111.0	111.3	111.3	111.1	110.9
Leather and leather products	31	113.4	118.0	119.4	119.5	119.4	120.2	121.1	121.8	122.5	122.3	122.8	122.6	122.8	123.0
Stone, clay, glass, and concrete products	32	105.8	107.9	108.3	108.3	108.5	108.6	109.3	109.5	109.7	109.9	110.2	110.3	110.3	110.3
Primary metal industries	33	113.0	118.8	118.6	118.8	118.0	116.6	116.1	115.2	116.3	116.6	116.7	116.2	116.5	117.3
Fabricated metal products, except machinery and transportation equipment	34	107.4	112.6	113.3	113.6	113.8	113.9	114.3	114.5	114.6	114.7	115.0	115.1	115.1	115.3
Machinery, except electrical	35	106.4	110.7	111.5	111.8	112.1	112.2	112.8	113.0	113.3	113.5	113.7	113.9	113.8	114.1
Electrical and electronic machinery, equipment, and supplies	36	104.6	107.1	107.7	107.8	107.8	107.8	108.4	108.4	108.5	108.6	108.7	108.7	108.9	108.9
Transportation equipment	37	107.8	112.1	110.7	115.0	114.6	114.6	114.2	114.5	114.4	114.5	114.2	115.0	114.9	115.0
Measuring and controlling instruments; photographic, medical, optical goods; watches, clocks	38	107.0	110.8	111.5	111.9	112.1	112.4	113.3	113.6	114.0	114.3	114.4	114.5	114.7	114.8
Miscellaneous manufacturing industries (12/85=100)	39	107.5	111.8	112.5	112.7	112.8	113.1	113.7	114.3	114.5	114.5	114.6	114.8	115.0	115.3
Service industries:															
Pipelines, except natural gas (12/86=100)	46	94.8	94.4	94.4	94.4	94.4	94.4	95.5	95.5	95.5	95.5	95.5	95.8	95.8	96.2

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

(1982=100)

Index	1981	1982	1983	1984	1985	1986	1987	1988	1989
Finished goods:									
Total	96.1	100.0	101.6	103.7	104.7	103.2	105.4	108.0	113.6
Consumer goods	96.6	100.0	101.3	103.3	103.8	101.4	103.6	106.2	112.1
Capital equipment	94.6	100.0	102.8	105.2	107.5	109.7	111.7	114.3	118.8
Intermediate materials, supplies, and components:									
Total	98.6	100.0	100.6	103.1	102.7	99.1	101.5	107.1	112.0
Materials and components for manufacturing	98.7	100.0	101.2	104.1	103.3	102.2	105.3	113.2	118.1
Materials and components for construction	97.9	100.0	102.8	105.6	107.3	108.1	109.8	116.1	121.3
Processed fuels and lubricants	100.6	100.0	95.4	95.7	92.8	72.7	73.3	71.2	76.4
Containers	96.7	100.0	100.4	105.9	109.0	110.3	114.5	120.1	125.4
Supplies	96.9	100.0	101.8	104.1	104.4	105.6	107.7	113.7	118.1
Crude materials for further processing:									
Total	103.0	100.0	101.3	103.5	95.8	87.7	93.7	96.0	103.1
Foodstuffs and feedstuffs	103.9	100.0	101.8	104.7	94.8	93.2	96.2	106.1	111.2
Nonfood materials except fuel	101.8	100.0	100.7	102.2	96.9	81.6	87.9	85.5	93.4
Fuel	84.8	100.0	105.1	105.1	102.7	92.2	84.1	82.1	85.3

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

(1985=100, unless otherwise indicated)

Category	1974 SITC	1987	1988				1989				1990	
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
ALL COMMODITIES		104.9	106.5	109.5	111.9	111.6	113.3	113.2	112.4	112.4	112.9	113.3
Food	0	94.6	95.2	103.4	118.7	114.2	117.6	115.5	110.4	108.2	107.4	108.8
Meat and meat preparations	01	116.8	122.8	131.0	137.0	130.3	132.9	128.2	119.4	117.0	125.9	123.3
Fish and crustaceans	03	138.5	140.9	145.0	175.9	174.0	169.1	158.9	137.1	132.3	131.5	127.4
Grain and grain preparations	04	77.4	79.8	87.2	108.5	102.0	108.4	106.4	101.5	101.0	98.4	101.8
Vegetables and fruit	05	100.5	97.5	104.3	109.9	110.3	108.8	113.6	113.9	110.3	114.5	115.6
Animal feeds, excluding unmilled cereals	08	145.2	134.6	158.1	161.0	157.0	154.1	144.0	139.5	129.0	121.7	118.4
Miscellaneous food products	09	100.3	102.3	102.8	105.2	104.9	107.0	108.0	107.7	108.5	109.6	110.1
Beverages and tobacco	1	107.0	109.6	110.6	112.0	111.7	117.2	117.6	120.4	120.1	122.3	124.5
Tobacco and tobacco products	12	107.0	109.8	110.7	112.1	111.8	117.6	117.9	120.8	120.4	122.6	124.9
Crude materials	2	125.2	130.0	139.9	140.8	135.8	142.6	143.0	139.1	136.6	136.8	137.2
Raw hides and skins	21	157.1	171.4	166.8	156.7	136.8	146.7	149.9	156.3	158.0	161.8	160.9
Oilseeds	22	109.6	115.6	143.0	154.7	135.7	139.3	129.8	111.5	109.5	109.5	110.4
Crude rubber	23	105.3	104.5	106.1	109.1	109.9	111.1	114.6	117.7	117.3	115.0	115.5
Wood	24	146.0	150.2	149.6	150.0	148.6	157.3	170.7	177.6	176.9	180.6	178.9
Pulp and waste paper	25	160.4	171.2	179.5	181.7	182.1	192.9	193.5	193.3	193.9	186.7	174.0
Textile fibers	26	111.6	107.5	109.9	100.8	103.6	106.7	115.5	117.4	116.4	117.1	124.4
Crude minerals	27	91.6	92.8	94.2	94.8	94.8	98.8	99.2	99.3	97.7	98.7	99.7
Metal ores and metal scrap	28	125.9	131.8	146.0	145.0	150.4	163.5	157.2	150.5	138.5	138.5	142.7
Fuels and related products	3	82.5	79.3	82.1	79.5	79.4	81.7	86.0	87.9	91.1	90.8	88.8
Coal and coke	32	89.8	90.6	92.0	92.9	93.4	93.7	94.3	95.6	96.3	96.2	97.3
Crude petroleum and petroleum products	33	100.0	90.8	97.2	89.2	88.4	94.5	105.4	108.7	116.5	113.6	106.9
Fats and oils	4	81.6	92.7	97.3	101.5	91.5	90.3	87.3	83.8	86.7	89.1	94.6
Animal oils and fats	41	88.7	101.3	101.6	104.3	95.7	91.8	89.6	84.6	88.0	84.4	84.0
Fixed vegetable oils and fats	42	75.4	85.7	93.7	99.1	87.1	88.2	84.4	81.6	84.5	91.8	101.7
Chemicals and related products	5	112.9	117.9	121.6	124.9	125.5	125.5	121.9	117.7	115.2	115.4	115.9
Organic chemicals	51	123.5	135.1	144.6	153.3	150.8	149.6	145.0	134.0	127.8	123.0	120.9
Dyeing, tanning, and coloring materials	53	108.5	109.1	110.1	111.5	113.0	115.5	116.5	118.3	117.3	118.8	119.7
Medicinal and pharmaceutical products (12/85=100)	54	105.4	109.3	106.3	105.9	107.5	109.0	108.9	109.3	108.5	109.6	109.9
Essential oils, polish, and cleaning preparations	55	108.4	111.2	113.6	120.2	122.4	125.3	124.7	122.4	122.9	125.0	126.1
Fertilizers, manufactured	56	106.5	110.6	109.8	116.4	119.9	119.4	108.0	108.9	94.8	94.7	102.8
Artificial resins, plastics and cellulose	57	124.8	129.4	137.5	138.2	132.5	125.8	118.6	111.6	111.5	117.1	115.8
Chemical materials and products, n.e.s.	58	98.2	100.3	101.7	104.1	105.4	108.4	109.4	109.5	110.2	112.8	113.8
Intermediate manufactured products	6	111.2	114.4	117.7	119.6	120.6	122.6	123.1	122.8	122.5	122.8	122.9
Leather and furskins	61	118.0	125.7	125.1	128.6	125.0	118.3	120.7	121.7	124.8	124.5	125.6
Rubber manufactures	62	104.1	105.2	108.8	109.4	110.4	113.0	112.9	113.4	114.0	114.3	114.5
Paper and paperboard products	64	122.4	126.2	129.0	130.2	131.1	132.5	133.7	132.9	130.9	130.8	130.0
Textiles	65	105.2	106.5	107.9	108.6	111.6	113.9	115.4	115.8	117.0	119.0	118.4
Non-metallic mineral manufactures (9/85=100)	66	111.3	113.4	114.1	115.6	116.8	120.4	122.4	123.9	124.8	127.7	127.5
Iron and steel	67	102.9	106.1	110.8	111.4	112.1	116.0	117.2	116.7	116.4	116.2	117.4
Nonferrous metals	68	124.4	134.0	143.5	149.1	150.0	151.7	145.8	140.4	135.9	131.2	132.5
Metal manufactures, n.e.s.	69	103.4	104.5	107.6	109.9	110.9	112.6	113.9	114.4	115.3	116.7	116.8
Machinery and transport equipment, excluding military and commercial aircraft	7	102.4	103.2	104.0	104.8	105.8	106.7	107.2	107.9	108.6	109.5	110.0
Power generating machinery and equipment	71	105.2	107.0	108.4	108.5	109.3	111.8	112.8	114.5	114.7	116.3	117.3
Machinery specialized for particular industries	72	100.9	102.1	103.6	104.7	106.0	107.3	108.8	109.9	111.4	113.1	113.2
Metalworking machinery	73	108.2	109.3	110.8	111.0	114.4	115.7	117.3	117.7	118.6	119.6	120.6
General industrial machines and parts, n.e.s.	74	105.4	106.7	108.1	109.3	110.3	112.7	113.3	114.2	115.3	117.2	118.1
Office machines and automatic data processing equipment	75	95.5	95.8	95.7	96.8	96.4	95.8	94.8	94.8	94.8	94.7	94.6
Telecommunications, sound recording and reproducing equipment	76	101.9	102.8	104.6	104.1	105.1	106.7	107.5	108.7	109.5	109.2	110.2
Electrical machinery and equipment	77	101.8	103.1	103.4	105.3	105.7	106.1	106.5	106.9	106.9	107.8	107.4
Road vehicles and parts	78	104.6	104.5	104.9	105.4	106.8	107.2	107.8	108.8	110.0	110.4	110.8
Other transport equipment, excluding military and commercial aviation	79	106.6	107.4	109.6	109.7	111.9	113.5	114.7	114.8	116.0	117.9	121.2
Miscellaneous manufactured articles	8	105.6	106.9	108.1	108.9	110.5	111.4	112.8	113.6	114.9	115.4	116.4
Furniture and parts	82	110.0	111.2	111.4	111.7	114.2	114.3	117.3	117.3	119.0	120.5	121.8
Professional, scientific, and controlling instruments and apparatus	87	107.1	110.0	111.1	112.5	113.9	115.5	118.2	119.5	121.3	122.7	124.8
Photographic apparatus and supplies, optical goods, watches, and clocks	88	97.9	97.6	100.1	99.4	99.9	98.5	99.2	99.4	101.0	98.2	97.6
Miscellaneous manufactured articles, n.e.s.	89	105.8	105.4	106.5	106.5	108.7	110.2	110.1	110.4	111.4	112.1	112.6

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

(1985=100, unless otherwise indicated)

Category	1974 SITC	1988			1989				1990	
		June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
ALL COMMODITIES		116.8	115.3	117.6	119.7	119.8	118.4	119.9	121.0	119.0
ALL COMMODITIES, EXCLUDING FUELS		126.7	126.1	129.1	129.6	128.5	127.6	128.5	129.7	129.1
Food and live animals	0	114.0	112.7	114.3	114.1	111.3	106.1	108.2	111.6	111.7
Meat and meat preparations	01	107.0	111.2	108.7	111.2	109.7	124.1	134.1	130.4	136.8
Dairy products and eggs	02	125.0	122.2	125.8	124.0	120.2	120.3	123.2	129.2	133.0
Fish and crustaceans	03	129.3	125.9	126.7	127.0	122.7	121.6	122.1	125.9	125.9
Bakery goods, pasta products, grain, and grain preparations	04	139.8	136.9	142.2	140.4	140.2	141.6	142.9	148.5	147.4
Fruits and vegetables	05	120.3	123.7	127.7	123.4	123.2	119.1	128.2	131.3	126.2
Sugar, sugar preparations, and honey	06	110.0	112.1	110.8	109.8	111.8	114.4	117.0	116.2	116.7
Coffee, tea, cocoa	07	93.3	87.4	90.6	91.2	85.3	62.5	57.3	65.2	66.2
Beverages and tobacco	1	116.2	115.3	116.2	117.0	117.2	120.7	122.4	124.7	127.7
Beverages	11	120.0	118.9	119.9	120.7	120.7	122.9	124.1	126.9	129.6
Crude materials	2	137.8	135.4	143.2	146.2	144.3	137.2	136.1	133.1	132.0
Crude rubber (including synthetic and reclaimed)	23	151.1	133.3	121.5	123.0	103.4	98.3	98.5	101.0	104.0
Cork and wood	24	111.4	109.7	107.8	112.1	112.4	113.5	111.6	114.0	114.9
Pulp and waste paper	25	160.5	169.6	174.7	184.7	190.0	190.1	189.6	186.9	183.7
Textile fibers	26	145.5	141.9	145.6	151.5	145.4	141.7	140.2	133.9	126.3
Crude fertilizers and crude minerals	27	101.0	97.2	100.2	103.3	104.7	101.2	98.0	96.8	97.5
Metalliferous ores and metal scrap	28	167.6	172.2	205.4	204.3	212.3	183.4	176.6	168.1	160.7
Crude animal and vegetable materials, n.e.s.	29	148.2	122.0	139.5	138.5	110.3	108.6	127.7	111.9	117.6
Fuels and related products	3	63.4	57.7	56.4	66.8	73.3	68.8	74.0	74.9	65.0
Crude petroleum and petroleum products	33	63.6	57.7	56.1	67.3	74.4	69.5	74.8	75.3	65.3
Fats and oils	4	111.2	114.0	112.3	112.5	117.4	106.7	100.7	98.3	95.8
Fixed vegetable oils and fats (9/87=100)	42	116.1	119.2	117.4	117.3	122.6	110.7	104.2	101.5	98.5
Chemicals and related products	5	116.4	119.2	122.2	123.6	120.4	117.7	118.9	118.9	117.8
Organic chemicals	51	107.3	111.3	115.1	117.6	114.0	110.3	112.7	114.2	113.5
Inorganic chemicals	52	92.3	93.0	96.1	93.1	86.6	85.7	86.0	84.4	84.2
Medicinal and pharmaceutical products	54	140.3	145.4	146.4	154.9	153.5	149.2	149.7	152.3	151.9
Essential oils and perfumes	55	126.2	127.5	130.5	130.3	130.2	127.2	135.3	131.3	132.1
Manufactured fertilizers	56	136.3	136.5	139.9	143.5	142.1	132.4	130.5	129.3	128.6
Artificial resins and plastics and cellulose	58	124.3	127.6	129.5	129.5	129.8	130.8	130.6	129.4	129.0
Chemical materials and products, n.e.s.	59	148.5	153.4	156.5	154.8	151.6	150.2	150.9	150.2	142.1
Intermediate manufactured products	6	132.2	132.3	135.0	137.3	136.1	135.3	134.0	133.8	134.9
Leather and furskins	61	137.0	136.6	134.9	134.6	133.8	133.9	133.4	141.1	142.6
Rubber manufactures, n.e.s.	62	107.7	109.1	111.1	111.7	112.2	113.7	114.0	115.1	115.6
Cork and wood manufactures	63	138.2	136.1	134.1	136.9	139.8	140.8	140.5	141.6	144.4
Paper and paperboard products	64	118.3	119.5	119.9	120.6	120.8	119.7	118.8	117.5	120.9
Textiles	65	120.6	119.1	120.5	120.5	122.1	121.7	122.8	124.8	126.3
Nonmetallic mineral manufactures, n.e.s.	66	142.5	139.7	141.9	147.5	149.5	151.7	153.1	157.6	159.7
Iron and steel	67	127.2	129.9	130.7	132.6	133.6	133.7	130.9	128.7	125.7
Nonferrous metals	68	159.7	158.9	169.1	172.8	158.6	150.7	144.1	137.8	143.5
Metal manufactures	69	126.9	127.5	130.7	132.4	132.6	133.2	133.8	135.6	134.4
Machinery and transport equipment	7	127.3	126.7	129.9	130.1	129.2	129.0	130.2	131.2	130.0
Machinery (including SITC 71-77)	7hyb	126.4	125.9	128.7	129.2	128.4	127.8	128.1	129.8	129.2
Machinery specialized for particular industries	72	149.8	143.7	150.8	149.1	145.7	145.7	148.2	157.4	159.1
Metalworking machinery	73	142.4	139.7	144.1	142.9	139.5	143.9	144.2	148.0	149.9
General industrial machinery and parts, n.e.s.	74	143.7	139.6	144.2	144.7	143.0	143.7	145.5	151.1	153.1
Office machines and automatic data processing equipment	75	119.5	118.7	118.7	119.6	119.3	117.2	117.9	117.0	115.6
Telecommunications, sound recording and reproducing apparatus	76	113.8	113.9	115.5	115.7	115.7	115.0	113.9	112.9	111.2
Electrical machinery and equipment	77	124.2	125.9	129.3	130.5	129.6	128.7	129.0	129.8	127.7
Road vehicles and parts	78	127.6	127.1	130.8	130.5	129.6	129.5	131.9	131.3	129.4
Miscellaneous manufactured articles	8	125.7	124.2	126.6	126.6	126.6	127.2	128.7	131.7	131.9
Plumbing, heating, and lighting fixtures	81	126.9	124.5	127.2	130.0	131.5	133.0	136.6	141.9	140.8
Furniture and parts	82	129.6	128.0	129.1	127.2	127.9	128.8	130.9	135.7	137.6
Travel goods, handbags, and similar goods (6/85=100)	83	107.3	111.3	115.1	117.6	114.0	110.3	112.7	114.2	113.5
Clothing	84	114.9	116.7	117.2	118.5	119.9	120.8	121.7	121.7	122.7
Footwear	85	129.6	128.0	129.1	127.2	127.9	128.8	130.9	135.7	137.6
Professional, scientific, and controlling instruments and apparatus	87	142.5	135.8	141.9	141.1	136.5	136.3	137.1	143.3	144.7
Photographic apparatus and supplies, optical goods, watches, and clocks	88	129.3	125.4	130.6	130.2	127.9	126.3	128.7	131.4	131.9
Miscellaneous manufactured articles, n.e.s.	89	132.1	128.2	131.4	131.7	131.4	131.9	133.8	139.2	137.2

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

(1985 = 100 unless otherwise indicated)

Category	1988			1989				1990	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
Foods, feeds, and beverages	110.1	124.5	117.4	120.8	117.2	110.3	108.2	107.3	108.8
Industrial supplies and materials	118.3	118.7	118.6	120.7	120.9	119.5	118.7	118.7	118.2
Capital goods	104.3	104.9	105.7	106.7	107.4	108.2	108.8	109.9	110.5
Automotive	104.8	106.5	107.7	108.1	108.6	109.4	110.7	111.2	111.6
Consumer goods	110.6	111.3	112.9	115.3	115.6	116.5	117.1	118.9	119.6
Consumer nondurables, manufactured, except rugs	108.7	109.3	110.0	111.4	111.5	111.7	112.7	114.2	115.0
Consumer durables, manufactured	110.4	110.7	112.6	115.4	115.4	116.5	116.8	118.6	119.3
Agricultural (9/88=100)	110.9	120.6	114.0	117.7	116.1	111.2	109.8	109.5	111.4
All exports, excluding agricultural (9/88=100)	109.7	110.8	111.6	112.9	113.1	113.0	113.1	113.7	113.8

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

(1985=100)

Category	1988			1989				1990	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
All imports, excluding petroleum (6/88=100)	126.2	125.4	128.3	129.0	128.0	127.1	128.0	129.2	128.5
Foods, feeds, and beverages	113.7	112.7	114.2	113.8	111.7	107.1	109.0	112.0	112.6
Industrial supplies and materials	97.8	95.2	96.4	102.1	104.2	100.6	102.7	102.6	97.6
Petroleum and petroleum products, excluding natural gas	63.5	57.5	56.2	67.2	74.1	69.1	74.6	75.2	65.4
Industrial supplies and materials, excluding petroleum	126.4	126.4	129.6	131.2	129.4	126.9	126.2	125.5	124.3
Capital goods, except automotive	131.0	129.0	132.3	132.4	131.0	130.6	131.5	134.4	134.1
Automotive vehicles, parts and engines	125.8	126.0	129.2	129.1	128.2	128.2	130.0	129.9	128.1
Consumer goods except automotive	126.3	125.0	127.4	128.7	129.1	129.5	130.8	133.0	133.1
Nondurables, manufactured	124.2	123.8	125.4	126.5	127.5	128.5	129.9	132.7	133.5
Durables, manufactured	125.5	124.5	127.4	127.9	127.9	127.8	128.6	130.4	129.5

42. U.S. export price indexes by Standard Industrial Classification [1]

(1985=100)

Industry group	1988			1989				1990	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
Manufacturing:									
Food and kindred products	125.1	128.9	123.5	124.5	122.7	119.5	117.2	118.7	117.7
Lumber and wood products, except furniture	145.4	146.1	144.0	151.7	164.4	171.2	170.7	173.5	172.3
Furniture and fixtures	112.9	112.9	115.3	115.2	116.0	116.5	118.1	119.6	120.4
Paper and allied products	129.8	133.1	135.6	139.9	141.4	141.6	140.4	137.7	133.6
Chemicals and allied products	122.3	125.4	125.5	125.9	122.5	118.5	115.9	116.6	117.3
Petroleum and coal products	77.8	73.7	75.4	79.8	86.9	88.7	94.4	90.4	85.5
Primary metal products	133.8	133.5	133.6	130.8	125.7	122.5	122.9	122.5	119.1
Machinery, except electrical	101.3	102.2	102.8	103.4	103.7	104.4	105.2	106.3	106.6
Electrical machinery	103.7	104.9	105.4	106.3	106.8	107.5	107.7	108.3	108.4
Transportation equipment	109.1	109.4	110.9	111.8	112.7	113.4	114.5	115.1	116.5
Scientific instruments; optical goods; clocks	110.8	112.0	113.4	114.5	116.7	117.7	119.7	120.0	121.3

[1] SIC-based classification.

43. U.S. import price indexes by Standard Industrial Classification [1]

(1985=100)

Industry group	1988			1989				1990	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
Manufacturing:									
Food and kindred products	114.4	115.0	115.4	114.9	114.0	114.8	115.9	118.7	120.9
Textile mill products	128.9	127.0	127.8	139.0	139.8	137.5	138.8	141.1	141.2
Apparel and related products	115.8	117.0	117.5	118.9	120.3	121.2	122.1	122.3	123.5
Lumber and wood products, except furniture	120.3	118.6	117.0	120.5	122.2	123.3	122.1	124.0	125.8
Furniture and fixtures	124.0	124.8	128.0	126.3	126.1	128.7	128.6	130.9	131.9
Paper and allied products	121.3	123.8	125.2	127.4	128.2	127.3	126.6	125.1	127.4
Chemicals and allied products	121.3	123.5	130.6	130.7	130.0	123.9	123.7	123.6	121.1
Petroleum refining and allied products	119.2	110.8	111.6	121.3	139.1	128.0	134.9	139.0	128.5
Rubber and miscellaneous plastics products	119.0	117.7	122.6	122.3	123.1	124.2	125.2	125.4	124.8
Leather and leather products	124.6	123.7	124.0	122.8	123.5	124.6	126.0	130.3	131.8
Stone, clay, glass, and concrete products	141.5	140.5	144.3	145.1	144.8	147.4	148.0	152.4	152.3
Primary metal products	137.0	136.2	140.2	140.6	135.2	132.0	129.6	127.2	126.0
Fabricated metal products	133.3	133.0	136.3	138.9	140.3	141.3	142.0	144.4	144.1
Machinery, except electrical	138.2	135.0	138.4	138.6	136.7	135.8	137.8	141.8	142.5
Electrical machinery and supplies	116.1	116.7	119.0	119.7	119.4	118.9	118.5	118.8	117.2
Transportation equipment	129.5	129.3	132.8	132.6	131.9	132.0	134.1	134.2	132.5
Scientific instruments; optical goods; clocks	137.0	132.2	137.7	136.7	133.8	132.8	134.2	137.8	138.1
Miscellaneous manufactured commodities	133.1	130.6	132.2	136.6	137.7	138.4	139.8	143.5	143.2

[1] SIC - based classification.

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

(1977=100)

Item	Quarterly Indexes										
	1987	1988				1989				1990	
	IV	I	II	III	IV	I	II	III	IV	I	II
Business:											
Output per hour of all persons	112.0	113.1	112.8	113.5	113.1	113.3	113.3	112.8	112.3	111.9	112.3
Compensation per hour	125.6	126.9	128.6	130.3	131.5	132.2	133.0	133.4	134.3	135.5	137.5
Real compensation per hour	105.0	105.3	105.5	105.6	105.5	104.6	103.7	103.3	103.0	101.9	102.5
Unit labor costs	112.1	112.2	114.0	114.8	116.3	116.7	117.4	118.2	119.6	121.1	122.4
Unit nonlabor payments	123.2	124.5	125.0	127.4	128.8	130.8	133.2	133.8	134.4	135.5	137.0
Implicit price deflator	115.7	116.2	117.5	118.9	120.3	121.2	122.5	123.3	124.3	125.8	127.1
Nonfarm business:											
Output per hour of all persons	110.9	112.1	111.9	112.7	112.8	112.4	112.2	112.0	111.4	110.8	111.2
Compensation per hour	124.9	126.2	127.7	129.4	130.8	131.4	131.9	132.5	133.4	134.4	136.3
Real compensation per hour	104.4	104.7	104.8	104.9	104.9	104.0	102.9	102.6	102.3	101.1	101.6
Unit labor costs	112.6	112.6	114.1	114.8	115.9	116.9	117.5	118.3	119.8	121.3	122.6
Unit nonlabor payments	124.1	125.4	125.8	127.4	130.6	130.9	133.9	134.7	135.3	135.7	137.5
Implicit price deflator	116.2	116.6	117.8	118.8	120.5	121.4	122.7	123.5	124.7	125.8	127.3
Nonfinancial corporations:											
Output per hour of all employees	112.9	113.8	113.7	113.5	113.2	112.5	112.1	112.3	111.1	110.5	111.0
Compensation per hour	122.6	123.8	125.3	126.8	127.9	128.9	129.4	130.0	130.7	131.4	133.3
Real compensation per hour	102.5	102.7	102.8	102.8	102.6	102.0	100.9	100.7	100.2	98.8	99.3
Total unit costs	106.8	107.1	108.2	109.7	110.9	112.7	114.1	115.0	117.0	118.1	119.2
Unit labor costs	108.6	108.8	110.2	111.8	113.0	114.6	115.4	115.7	117.6	118.9	120.1
Unit nonlabor costs	102.2	102.6	102.9	104.2	105.6	108.0	110.6	113.3	115.2	116.2	116.8
Unit profits	174.0	176.6	178.1	171.4	179.1	162.3	162.9	159.3	147.2	147.6	152.9
Unit nonlabor payments	116.1	116.9	117.5	117.2	119.8	118.5	120.7	122.2	121.4	122.3	123.8
Implicit price deflator	111.0	111.4	112.6	113.5	115.2	115.9	117.1	117.8	118.9	120.0	121.3
Manufacturing:											
Output per hour of all persons	126.1	126.7	127.5	128.8	129.2	130.1	130.9	130.5	131.3	133.0	134.3
Compensation per hour	120.4	122.4	123.1	124.3	125.7	126.5	126.6	127.6	128.4	129.2	131.2
Real compensation per hour	100.7	101.5	100.9	100.7	100.8	100.2	98.7	98.8	98.5	97.2	97.8
Unit labor costs	95.5	96.6	96.5	96.5	97.3	97.3	96.7	97.8	97.8	97.1	97.7

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

(1977=100)

Item	1960	1970	1973	1978	1980	1981	1982	1983	1984	1985	1986	1987
Private business:												
Productivity:												
Output per hour of all persons	67.3	88.4	95.9	100.8	99.2	100.6	100.3	103.0	105.6	107.9	110.3	111.2
Output per unit of capital services	103.7	102.7	105.6	101.9	94.1	92.3	86.6	88.3	92.7	92.9	93.0	93.7
Multifactor productivity	78.5	93.1	99.2	101.2	97.4	97.6	95.2	97.6	100.9	102.4	103.9	104.7
Output	55.3	80.2	93.0	105.8	106.6	108.9	105.4	109.9	119.2	124.3	128.7	133.4
Inputs:												
Hours of all persons	82.2	90.8	96.9	105.0	107.5	108.2	105.2	106.7	112.9	115.2	116.7	120.0
Capital services	53.3	78.1	88.0	103.8	113.3	117.9	121.8	124.4	128.6	133.8	138.5	142.4
Combined units of labor and capital input	70.5	86.1	93.7	104.6	109.4	111.5	110.7	112.6	118.1	121.4	123.9	127.4
Capital per hour of all persons	64.9	86.1	90.8	98.9	105.4	108.9	115.8	116.6	113.9	116.1	118.7	118.6
Private nonfarm business:												
Productivity:												
Output per hour of all persons	70.7	89.2	96.4	100.8	98.7	99.6	99.1	102.5	104.7	106.2	108.3	109.1
Output per unit of capital services	104.9	103.5	106.3	101.9	93.3	91.0	85.1	87.3	91.3	91.0	90.8	91.5
Multifactor productivity	81.2	93.8	99.7	101.2	96.9	96.7	94.1	97.0	99.9	100.7	102.0	102.7
Output	54.4	79.9	92.9	106.0	106.6	108.4	104.8	110.1	119.3	124.0	128.3	133.2
Inputs:												
Hours of all persons	77.0	89.6	96.3	105.1	108.0	108.8	105.7	107.4	114.0	116.8	118.5	122.0
Capital services	51.9	77.2	87.3	104.0	114.2	119.1	123.3	126.1	130.6	136.3	141.3	145.5
Combined units of labor and capital input	67.1	85.2	93.2	104.7	110.0	112.2	111.4	113.5	119.4	123.1	125.8	129.6
Capital per hour of all persons	67.4	86.2	90.7	99.0	105.7	109.4	116.6	117.4	114.6	116.7	119.3	119.2
Manufacturing:												
Productivity:												
Output per hour of all persons	62.2	80.8	93.4	101.5	101.4	103.6	105.9	112.0	118.1	123.6	127.7	131.9
Output per unit of capital services	103.0	99.1	112.0	102.0	91.0	89.0	81.6	86.7	95.5	97.3	98.4	102.0
Multifactor productivity	72.0	85.3	98.0	101.6	98.6	99.7	99.2	105.0	112.1	116.4	119.5	123.6
Output	52.5	78.6	96.3	106.0	103.2	104.8	98.4	104.7	117.5	122.0	124.7	130.1
Inputs:												
Hours of all persons	84.4	97.3	103.1	104.4	101.7	101.1	92.9	93.5	99.5	98.7	97.7	98.6
Capital services	51.0	79.3	86.0	103.9	113.4	117.8	120.5	120.8	123.0	125.4	126.8	127.6
Combined units of labor and capital inputs	72.9	92.1	98.3	104.2	104.6	105.1	99.2	99.7	104.8	104.8	104.4	105.3
Capital per hour of all persons	60.4	81.5	83.4	99.5	111.5	116.5	129.8	129.3	123.7	127.1	129.8	129.4

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

(1977=100)

Item	1960	1970	1973	1978	1980	1982	1983	1984	1985	1986	1987	1988	1989
Business:													
Output per hour of all persons	66.0	87.4	95.0	100.7	99.2	100.0	102.4	105.0	107.1	109.5	110.7	113.0	112.8
Compensation per hour	21.2	36.9	45.4	70.1	85.1	100.0	103.8	108.1	112.8	118.6	123.1	129.1	133.1
Real compensation per hour	69.2	91.9	98.7	103.8	99.7	100.0	100.6	100.4	101.2	104.4	104.6	105.3	103.5
Unit labor costs	32.2	42.3	47.8	69.7	85.8	100.0	101.4	103.0	105.4	108.4	111.2	114.3	118.0
Unit nonlabor payments	34.0	43.6	53.3	78.3	86.9	100.0	107.3	114.8	118.1	119.0	122.5	126.5	133.1
Implicit price deflator	32.8	42.7	49.6	72.5	86.2	100.0	103.3	106.8	109.5	111.8	114.8	118.2	122.8
Nonfarm business:													
Output per hour of all persons	70.1	89.2	96.6	101.8	99.9	100.0	103.0	105.1	106.5	108.6	109.8	112.3	111.9
Compensation per hour	22.3	37.3	45.7	70.2	85.1	100.0	104.0	108.1	112.5	118.2	122.5	128.3	132.1
Real compensation per hour	72.8	92.7	99.3	104.0	99.6	100.0	100.7	100.4	100.9	104.1	104.1	104.7	102.8
Unit labor costs	31.8	41.8	47.3	69.0	85.2	100.0	101.0	102.8	105.6	108.8	111.6	114.3	118.1
Unit nonlabor payments	34.0	44.1	51.0	77.6	86.8	100.0	108.8	114.9	119.0	120.0	123.6	127.4	133.7
Implicit price deflator	32.5	42.5	48.4	71.7	85.7	100.0	103.5	106.6	109.8	112.3	115.3	118.4	123.0
Nonfinancial corporations:													
Output per hour of all employees	71.8	90.0	96.6	100.4	99.0	100.0	102.7	105.2	106.9	109.4	112.1	113.4	111.9
Compensation per hour	23.4	38.1	46.1	70.4	85.2	100.0	103.2	107.1	111.3	116.7	120.5	125.8	129.6
Real compensation per hour	76.4	94.6	100.1	104.2	99.8	100.0	100.0	99.4	99.9	102.8	102.4	102.6	100.9
Total unit costs	31.0	40.7	45.6	67.3	83.7	100.0	100.0	100.8	102.9	105.7	106.2	109.0	114.7
Unit labor costs	32.7	42.3	47.7	70.1	86.1	100.0	100.4	101.8	104.2	106.7	107.5	111.0	115.8
Unit nonlabor costs	26.6	36.4	40.1	59.9	77.5	100.0	98.8	98.4	99.6	103.0	102.7	103.8	111.8
Unit profits	76.2	66.6	83.6	129.9	108.5	100.0	141.4	174.0	169.5	156.8	171.1	176.3	157.9
Unit nonlabor payments	36.2	42.3	48.5	73.5	83.5	100.0	107.0	113.0	113.1	113.4	115.9	117.8	120.7
Implicit price deflator	33.8	42.3	48.0	71.2	85.2	100.0	102.6	105.4	107.1	108.9	110.2	113.2	117.4
Manufacturing:													
Output per hour of all persons	58.9	75.2	86.9	95.3	95.3	100.0	105.2	110.8	115.9	120.2	124.7	127.6	130.1
Compensation per hour	22.5	35.9	43.0	68.2	83.7	100.0	102.5	106.0	111.1	116.1	119.0	123.4	126.7
Real compensation per hour	73.2	89.3	93.5	101.0	98.0	100.0	99.3	98.4	99.6	102.3	101.1	100.6	98.6
Unit labor costs	39.5	47.7	49.5	71.6	87.8	100.0	97.5	95.6	95.9	96.6	95.5	96.7	97.4
Unit nonlabor payments	52.8	56.4	62.2	89.6	85.9	100.0	112.9	121.8	114.6	118.9	121.5	–	–
Implicit price deflator	42.6	49.8	52.5	75.9	87.3	100.0	101.1	101.8	100.4	101.9	101.7	–	–

– Data not available.

47. Annual productivity indexes for selected industries

(1977=100)

Industry	SIC	1970	1975	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Iron mining, crude ore	1011	99.9	112.7	122.7	124.7	132.8	100.9	139.0	173.3	187.9	200.3	254.5	258.8
Iron mining, usable ore	1011	111.1	117.8	122.8	123.2	130.6	98.2	138.6	171.7	187.9	197.8	250.4	248.2
Copper mining, crude ore	1021	84.8	87.2	109.1	99.5	102.0	106.4	129.9	140.3	164.2	195.4	197.0	206.9
Copper mining, recoverable metal	1021	85.5	77.2	98.2	91.6	97.7	116.2	130.9	155.4	193.1	228.9	211.2	229.9
Coal mining	111,121	141.5	105.3	99.4	112.5	122.3	119.4	136.5	151.7	154.3	167.7	181.3	200.7
Bituminous coal and lignite mining	121	142.3	105.2	99.6	112.6	122.7	120.0	136.9	152.3	154.6	168.2	182.4	201.9
Nonmetallic minerals, except fuels	14	89.7	90.6	102.7	96.5	94.7	89.3	98.2	105.5	107.5	108.4	115.3	114.0
Crushed and broken stone	142	83.1	91.4	106.9	101.3	96.7	94.1	103.9	105.8	104.5	104.9	121.3	120.1
Red meat products	2011,13	77.3	84.4	101.7	107.0	107.9	112.3	115.9	117.0	119.5	117.3	115.3	–
Meatpacking plants	2011	78.7	88.6	104.6	108.9	113.9	119.5	123.4	125.6	130.1	126.2	126.2	125.7
Sausages and other prepared meats	2013	72.8	74.8	95.0	102.3	95.0	96.5	100.0	99.5	98.8	98.7	94.5	–
Poultry dressing and processing	2016,17	78.3	87.9	106.1	105.7	116.4	125.6	131.7	130.3	133.2	127.3	135.4	–
Fluid milk	2026	73.7	95.5	115.6	123.9	128.0	135.3	143.1	149.5	155.0	162.4	168.0	176.1
Preserved fruits and vegetables	203	79.7	93.7	98.9	100.8	99.2	107.9	110.8	112.4	113.4	118.3	116.4	–
Grain mill products	204	79.7	87.1	101.0	105.3	110.9	121.0	125.5	132.8	140.9	142.1	149.6	–
Flour and other grain mill products	2041	76.6	85.8	97.3	94.8	96.7	104.1	110.4	114.9	122.9	126.6	129.9	132.3
Rice milling	2044	82.0	90.4	96.3	111.8	117.9	104.5	103.3	93.2	103.2	112.6	120.6	113.7
Bakery products	205	87.5	93.4	95.0	93.7	96.2	103.3	106.9	106.8	108.5	114.4	113.3	–
Sugar	2061,62,63	85.9	94.0	103.1	100.1	98.8	90.4	98.6	99.7	105.5	110.1	125.5	126.3
Raw and refined cane sugar	2061,62	86.1	90.8	101.5	99.3	98.8	87.6	100.0	94.7	108.7	109.6	117.1	118.9
Beet sugar	2063	92.9	98.1	104.6	102.1	98.7	94.8	94.5	108.8	100.7	111.8	139.2	138.2
Malt beverages	2082	56.7	86.1	109.9	116.0	118.3	122.6	131.3	137.9	130.3	152.3	165.7	163.6
Bottled and canned soft drinks	2086	70.0	89.5	103.4	106.9	110.6	114.1	121.5	131.0	136.7	146.6	158.1	166.7
Total tobacco products	2111,21,31	86.8	93.9	102.1	102.1	100.5	100.7	105.1	110.3	113.4	117.2	124.2	120.3
Cigarettes, chewing and smoking tobacco	2111,31	85.3	93.3	102.4	101.8	99.6	99.5	104.1	107.2	111.7	115.5	123.1	119.9
Cigars	2121	88.4	93.7	101.4	106.4	107.3	111.4	112.3	141.4	129.3	133.1	139.1	129.3
Cotton and synthetic broad woven fabrics	2211,21	–	86.7	100.7	105.0	107.4	112.5	121.6	119.8	123.7	132.8	132.1	131.4
Hosiery	2251,52	65.5	94.3	107.9	107.4	122.0	114.2	118.0	119.9	118.5	121.0	118.3	126.9
Nonwool yarn mills	2281	84.3	101.2	103.8	99.7	103.1	118.2	128.5	129.6	134.5	141.1	162.6	161.1
Men's and boys' suits and coats	2311	75.1	95.2	96.9	97.3	98.8	95.2	90.2	96.9	106.3	107.5	105.8	109.9
Sawmills and planing mills, general	2421	90.0	98.8	106.3	104.2	107.9	117.1	126.8	132.3	139.2	155.1	151.1	148.7
Millwork	2431	95.9	100.2	92.2	93.6	96.4	86.1	87.9	88.7	85.7	90.0	94.1	–
Veneer and plywood	2435,36	83.2	97.8	94.5	102.8	106.9	114.4	121.1	120.0	125.1	128.8	132.1	–
Household furniture	251	82.2	97.5	101.5	99.9	103.0	104.7	110.1	112.2	112.5	118.5	118.3	124.5
Wood household furniture	2511,7	83.5	98.0	101.6	97.2	97.3	98.2	103.8	105.5	104.4	111.9	110.5	–
Upholstered household furniture	2512	84.4	97.2	105.1	102.3	110.5	115.9	121.6	122.7	124.6	127.1	125.2	–
Mattresses and bedsprings	2515	67.7	96.9	102.8	112.1	114.0	104.3	108.6	109.5	108.8	117.9	130.9	123.7
Office furniture	252	78.2	85.5	107.2	112.1	108.8	107.4	112.0	117.8	116.7	117.8	118.7	113.9
Paper, paperboard, and pulp mills	2611,21,31,61	77.5	86.7	105.4	105.2	104.4	111.3	119.5	121.0	123.1	133.5	138.0	142.8
Paper and plastic bags	2643	75.8	99.8	98.0	94.6	92.3	95.3	102.9	105.6	107.1	112.3	110.5	–
Folding paperboard boxes	2651	77.4	98.5	104.6	101.6	104.5	104.2	104.5	102.4	99.6	101.4	98.1	98.7
Corrugated and solid fiber boxes	2653	73.1	96.2	106.9	111.0	109.8	111.9	114.0	118.9	122.5	126.7	123.3	124.3
Industrial inorganic chemicals	281	–	86.5	112.2	94.3	91.4	86.3	94.0	104.5	101.4	105.4	107.5	–
Industrial inorganic chemicals, not elsewhere classified	2819 pt.	–	84.0	114.6	90.3	89.3	80.8	85.8	95.0	91.5	90.6	92.0	–
Synthetic fibers	2823,24	53.8	84.5	115.0	115.7	120.9	103.6	126.2	125.3	135.8	146.2	156.4	156.6
Pharmaceutical preparations	2834	74.8	92.5	105.3	106.0	104.2	107.0	114.3	116.4	118.1	121.8	120.9	116.8
Cosmetics and other toiletries	2844	65.9	94.0	94.0	83.6	76.1	84.0	86.2	85.2	87.3	94.3	96.2	–
Paints and allied products	2851	74.9	94.2	104.8	100.8	99.8	106.5	113.8	121.5	125.6	127.7	135.3	138.2
Industrial organic chemicals, not elsewhere classified	2869	65.5	85.3	113.4	98.9	103.9	87.2	105.3	113.9	112.5	119.6	132.1	–
Agricultural chemicals	287	–	86.7	102.0	97.2	97.7	94.5	106.2	119.8	115.6	110.0	129.4	–
Petroleum refining	2911	73.8	88.7	94.9	94.2	83.7	79.4	81.8	92.5	102.6	113.8	120.1	125.7
Tires and inner tubes	3011	87.6	91.8	107.3	102.4	118.1	128.2	136.1	146.8	146.7	151.4	162.2	169.7
Miscellaneous plastic products	3079	–	86.2	94.8	95.7	98.5	110.1	107.2	110.5	113.0	114.1	125.4	–
Footwear	314	100.3	101.3	100.2	99.1	95.6	106.4	103.9	105.7	107.3	109.3	107.7	109.4
Glass containers	3221	87.2	98.5	102.4	105.2	110.1	105.8	108.5	128.0	127.0	138.9	153.6	153.3
Hydraulic cement	3241	84.8	84.7	96.0	87.0	91.1	94.0	108.4	125.3	128.3	135.5	143.8	147.6
Structural clay products	325	78.2	91.0	95.9	97.6	100.7	102.6	105.4	111.3	112.8	115.6	119.9	–
Clay construction products	3251,53,59	77.4	89.1	91.6	94.0	97.3	103.3	101.1	110.4	112.6	114.5	120.0	120.6
Brick and structural clay tile	3251	81.1	93.1	85.4	84.9	84.3	88.6	85.5	93.3	100.4	98.7	104.9	104.9
Clay refractories	3255	82.1	95.5	110.2	109.6	111.1	100.0	121.6	115.1	114.1	122.9	121.9	–
Concrete products	3271,72	82.3	91.9	92.7	90.4	88.5	91.0	97.6	99.2	100.5	105.9	102.1	–
Ready-mixed concrete	3273	91.1	97.5	99.9	93.1	95.4	90.6	93.7	96.3	97.4	100.1	104.5	–
Steel	331	87.6	93.3	106.9	102.9	112.0	90.9	116.8	131.3	139.5	141.8	152.3	168.3
Gray iron foundries	3321	79.8	97.0	96.8	90.8	92.7	93.7	98.3	106.8	104.2	107.4	108.8	112.1
Steel foundries	3324,25	90.6	107.5	100.6	99.8	91.6	89.0	89.9	98.8	95.6	100.3	95.0	–
Steel foundries, not elsewhere classified	3325	–	107.7	100.4	99.8	90.0	88.4	90.2	103.5	101.0	104.3	104.3	111.0
Primary copper, lead, and zinc	3331,32,33	78.1	85.3	106.5	103.7	118.6	128.0	141.2	148.0	181.5	210.8	259.8	–
Primary copper	3331	79.8	83.0	113.3	105.3	124.4	128.5	138.3	151.9	189.8	229.2	296.9	338.0
Primary aluminum	3334	92.5	96.2	99.7	100.0	103.8	103.0	111.5	125.4	125.4	134.0	133.3	134.9
Copper rolling and drawing	3351	76.8	76.8	98.1	94.1	97.9	106.0	121.1	128.1	122.0	130.4	135.5	135.7
Aluminum rolling and drawing	3353,54,55	66.0	87.5	100.3	100.0	96.8	99.2	110.4	116.2	115.6	125.0	128.4	128.4
Metal cans	3411	78.8	87.0	103.6	102.6	108.1	118.5	120.5	123.0	125.6	126.0	132.6	143.2
Hand and edge tools	3423	91.0	93.9	103.9	98.4	95.2	92.8	88.8	89.5	90.1	89.2	93.9	–
Heating equipment, except electric	3433	–	80.4	95.8	99.7	94.6	102.3	93.2	102.0	101.6	105.0	109.3	–
Fabricated structural metal	3441	102.2	97.4	102.1	102.1	98.5	99.5	103.0	107.9	117.7	117.7	117.7	–
Metal doors, sash, and trim	3442	82.1	89.3	92.8	90.6	90.4	96.0	99.7	102.8	106.3	104.1	104.9	–
Metal stampings	3465,66,69	86.4	93.2	102.3	99.9	101.4	98.1	104.7	110.4	104.7	108.7	115.6	–
Valves and pipe fittings	3494	93.6	92.4	105.3	102.8	105.4	101.3	103.6	105.1	104.5	104.4	110.8	–
Farm and garden machinery	352	75.7	97.7	100.5	93.3	95.1	94.9	95.1	105.2	101.5	103.0	109.6	–

See footnotes at end of table.

47. Continued—Annual productivity indexes for selected industries

(1977=100)

Industry	SIC	1970	1975	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Construction machinery and equipment	3531	83.4	93.9	100.3	97.4	96.1	88.9	88.2	102.6	104.1	107.1	100.8	101.6
Oilfield machinery and equipment	3533	86.4	107.9	105.6	104.0	104.7	98.4	91.8	87.5	79.9	73.2	75.6	72.0
Machine tools	3541,42	91.7	103.0	102.0	98.8	96.5	88.0	83.0	93.6	96.7	97.7	110.8	106.0
Metal-cutting machine tools	3541	89.5	102.9	103.0	100.6	98.9	89.2	81.1	93.3	96.4	97.6	112.4	95.1
Metal-forming machine tools	3542	98.5	104.0	99.2	93.5	89.4	85.0	87.6	93.7	96.6	97.1	105.9	127.4
Pumps and compressors	3561,63	85.8	91.4	102.9	100.2	102.4	95.9	100.2	106.1	106.8	108.3	115.4	–
Ball and roller bearings	3562	85.5	97.5	105.8	95.4	94.3	83.3	86.3	94.4	92.1	95.6	103.6	106.3
Refrigeration and heating equipment	3585	88.4	89.9	101.4	93.8	99.4	100.1	100.9	105.5	103.7	101.5	107.9	–
Carburetors, pistons, rings, and valves	3592	–	100.1	94.6	90.3	91.7	92.0	99.6	110.3	114.0	111.1	118.8	–
Transformers	3612	89.1	89.3	108.4	110.6	106.9	99.6	99.1	97.6	99.3	100.4	101.5	103.1
Switchgear and switchboard apparatus	3613	83.3	93.4	102.8	103.2	99.5	101.3	106.1	107.4	110.6	110.7	107.9	112.8
Motors and generators	3621	87.8	93.0	99.3	96.7	100.4	102.4	104.3	107.9	110.5	112.3	119.2	117.4
Major household appliances	3631,32,33,39	70.2	93.6	108.7	105.8	107.6	108.6	117.6	123.6	127.2	134.1	137.2	138.9
Household cooking equipment	3631	68.7	97.8	108.9	103.9	105.7	112.6	120.8	131.9	135.6	158.4	168.5	170.9
Household refrigerators and freezers	3632	71.7	94.5	112.3	114.4	117.4	116.1	127.1	127.5	136.8	133.5	129.0	131.2
Household laundry equipment	3633	70.7	93.6	108.1	102.1	103.9	105.4	112.2	117.5	118.2	123.1	125.3	129.8
Household appliances, not elsewhere classified	3639	70.4	88.8	102.6	99.1	100.4	94.7	103.7	109.8	110.0	113.1	120.1	117.7
Electric lamps	3641	88.3	96.4	105.2	103.2	106.9	108.4	124.8	131.9	126.9	131.1	144.5	150.4
Lighting fixtures	3645,46,47,48	78.1	89.2	94.6	93.3	88.7	91.0	96.3	102.2	107.1	113.9	109.9	109.8
Radio and television receiving sets	3651	70.6	90.1	118.5	116.9	133.6	163.9	196.1	236.9	249.8	278.1	257.7	258.5
Semiconductors and related devices	3674	–	56.0	138.1	149.4	171.6	197.9	211.5	229.2	206.4	215.6	292.2	318.2
Motor vehicles and equipment	371	70.5	87.7	97.8	90.8	93.1	96.9	109.6	115.7	121.2	121.7	129.1	133.8
Instruments to measure electricity	3825	–	95.9	100.2	108.4	111.9	119.2	121.8	133.7	130.4	122.2	132.2	–
Photographic equipment and supplies	3861	67.6	92.9	120.6	112.7	111.2	110.2	124.8	131.8	131.1	144.3	153.4	–
Railroad transportation, revenue traffic	401 Class I	77.7	89.5	104.7	107.3	111.5	115.8	141.9	152.9	161.7	178.1	206.4	226.5
Railroad transportation, car-miles	401 Class I	89.1	98.3	102.9	107.9	107.6	110.1	128.9	137.7	138.9	148.2	167.5	179.4
Class 1 bus carriers	411,13,14 pts.	107.3	97.0	98.3	100.9	90.7	98.8	95.4	90.9	87.4	86.8	90.6	–
Intercity trucking	4213 pt.	83.5	89.2	116.7	107.7	116.3	108.0	130.7	135.1	130.2	134.5	138.9	–
Intercity trucking, general freight	4213 pt.	76.8	88.4	116.4	107.5	117.2	107.8	136.0	137.6	131.7	140.9	144.9	–
Air transportation	4511,4521 pt.	71.4	87.6	113.1	106.2	104.9	114.9	126.7	131.7	136.3	137.9	146.1	140.8
Petroleum pipelines	4612,13	79.5	95.7	101.7	93.0	86.0	89.2	94.3	104.5	104.9	107.0	104.9	110.7
Telephone communications	4811	62.1	85.9	110.8	118.1	124.4	129.1	145.1	143.0	149.8	161.3	165.9	176.7
Gas and electric utilities	491,92,93	83.1	94.7	97.6	96.2	94.4	89.3	88.4	91.6	90.9	90.6	93.5	97.9
Electric utilities	491,493 pt.	77.1	92.9	95.4	94.0	93.0	89.5	90.9	94.4	93.5	95.8	100.7	105.6
Gas utilities	492,493 pt.	102.1	101.4	103.4	102.1	98.1	89.0	81.1	83.6	82.1	74.1	71.6	74.7
Scrap and waste materials	5093	–	–	110.6	108.2	104.8	103.0	123.5	122.2	127.9	133.8	138.7	–
Hardware stores	5251	–	97.8	114.8	111.6	107.5	109.2	111.4	121.1	124.6	137.4	140.3	150.6
Department stores	5311	77.5	89.7	104.4	103.8	109.9	112.4	119.5	126.6	129.2	135.3	138.5	141.7
Variety stores	5331	124.9	122.5	102.4	107.8	118.8	113.0	121.5	126.8	118.5	101.1	97.2	93.8
Retail food stores	54	107.0	98.8	98.3	100.3	97.1	95.5	95.2	95.6	95.8	93.7	92.7	91.8
Grocery stores	5411	–	98.6	99.0	100.1	97.9	97.9	98.6	100.1	98.4	96.3	93.8	92.1
Retail bakeries	546	–	93.1	98.6	102.5	97.9	90.6	88.4	78.9	69.8	73.6	78.9	76.9
Franchised new car dealers	5511	86.1	95.0	97.7	99.6	98.1	100.4	109.4	110.4	109.7	110.7	107.4	111.8
Auto and home supply stores	5531	–	89.9	103.2	106.7	109.2	107.2	118.9	118.4	124.7	125.6	134.1	136.6
Gasoline service stations	5541	74.6	85.3	107.4	105.1	106.7	111.8	122.5	129.1	134.3	143.9	139.8	141.5
Apparel and accessory stores	56	81.3	105.0	112.9	117.9	123.9	126.4	132.9	140.9	146.3	153.5	142.3	141.2
Men's and boys' clothing stores	5611	82.7	102.3	108.6	107.1	116.4	116.6	119.5	125.1	131.4	135.0	134.0	133.7
Women's ready-to-wear stores	5621	76.5	106.5	116.0	117.9	127.8	142.0	151.3	158.3	162.8	176.4	166.1	162.8
Family clothing stores	5651	75.2	109.5	108.2	123.7	132.4	140.7	149.2	145.8	138.5	136.0	128.8	128.0
Shoe stores	5661	95.3	95.1	112.8	110.3	114.2	110.2	107.9	110.9	118.7	127.5	119.9	118.2
Furniture, furnishings, and equipment stores	57	80.1	91.9	107.6	107.4	112.6	109.2	118.4	129.4	133.5	144.4	146.8	154.4
Furniture and home furnishings stores	571	79.3	90.1	104.8	98.0	101.2	97.6	104.1	113.1	108.7	115.5	113.0	111.0
Appliance, radio, television, and music stores	572,73	81.2	94.8	112.4	124.0	132.4	128.7	143.4	158.5	180.0	198.9	211.9	243.2
Household appliance stores	572	–	89.5	111.3	109.9	114.9	102.0	111.8	139.2	154.6	177.2	172.1	177.2
Radio, television, and music stores	573	–	98.0	112.7	131.5	140.5	142.4	159.5	165.9	190.2	206.5	226.7	269.5
Eating and drinking places	58	100.6	100.8	99.5	99.8	97.3	96.9	95.3	91.1	87.9	89.7	90.7	91.3
Drug and proprietary stores	5912	83.4	94.2	103.8	107.0	107.6	107.9	110.9	105.7	105.5	104.6	103.8	105.3
Liquor stores	5921	–	96.3	96.6	102.2	104.0	108.1	101.6	98.7	107.1	98.0	91.6	88.5
Commercial banking	602	85.5	90.0	99.3	92.7	90.5	93.2	101.3	104.3	109.7	111.8	116.5	–
Hotels, motels, and tourist courts	7011	85.1	89.7	100.0	95.0	91.6	88.8	95.4	102.1	97.5	92.8	88.0	–
Laundry and cleaning services	721	94.7	96.6	97.7	91.0	88.4	90.6	90.4	92.3	87.3	85.0	84.1	83.8
Beauty and barber shops	7231,41	–	98.7	107.4	102.9	109.2	108.3	114.0	103.9	98.6	97.3	99.1	96.0
Beauty shops	7231	–	100.1	108.0	106.2	114.7	113.1	120.1	112.3	104.1	98.8	100.1	96.2
Automotive repair shops	753	–	102.0	100.4	95.9	93.3	87.4	86.1	88.3	96.1	93.2	96.1	101.1

– Data not available.

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

Country	Annual average		1988	1989				1990	
	1988	1989	IV	I	II	III	IV	I	II
Total labor force basis									
United States	5.4	5.2	5.2	5.1	5.2	5.2	5.3	5.2	5.2
Canada	7.7	7.5	7.7	7.5	7.5	7.4	7.6	7.5	7.4
Australia	7.2	6.1	6.7	6.6	6.1	6.0	5.9	6.2	6.4
Japan	2.5	2.3	2.4	2.3	2.3	2.2	2.2	2.1	2.1
France	10.0	9.5	9.9	9.6	9.5	9.5	9.4	9.4	9.3
Germany	6.2	5.6	6.0	5.7	5.6	5.6	5.5	5.3	5.2
Italy [1, 2]	7.8	7.7	7.7	7.6	7.8	7.7	7.5	7.2	6.6
Sweden	1.6	1.3	1.4	1.4	1.3	1.3	1.4	1.3	1.3
United Kingdom	8.5	6.9	7.9	7.5	7.1	6.7	6.3	6.1	6.1
Civilian labor force basis									
United States	5.5	5.3	5.3	5.2	5.3	5.3	5.3	5.2	5.3
Canada	7.8	7.5	7.7	7.5	7.6	7.4	7.6	7.6	7.4
Australia	7.2	6.2	6.8	6.6	6.1	6.1	5.9	6.2	6.4
Japan	2.5	2.3	2.4	2.4	2.3	2.3	2.2	2.1	2.1
France	10.2	9.7	10.2	9.8	9.8	9.7	9.6	9.6	9.5
Germany	6.3	5.7	6.2	5.9	5.7	5.7	5.6	5.4	5.3
Italy [1, 2]	7.9	7.8	7.8	7.8	8.0	7.8	7.7	7.4	6.8
Sweden	1.6	1.3	1.4	1.4	1.3	1.3	1.4	1.4	1.3
United Kingdom	8.6	7.0	8.0	7.6	7.2	6.7	6.4	6.2	6.2

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

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

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures.

49. Annual data: Employment status of the civilian working-age population, approximating U.S. concepts, 10 countries

(Numbers in thousands)

Employment status and country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Labor force										
United States	106,940	108,670	110,204	111,550	113,544	115,461	117,834	119,865	121,669	123,869
Canada	11,573	11,899	11,926	12,109	12,316	12,532	12,746	13,011	13,275	13,503
Australia	6,693	6,810	6,910	6,997	7,135	7,300	7,588	7,758	7,974	8,237
Japan	55,740	56,320	56,980	58,110	58,480	58,820	59,410	60,050	60,860	61,920
France	22,800	22,950	23,160	23,140	23,300	23,360	23,440	23,550	23,590	23,750
Germany	27,260	27,540	27,710	27,670	27,800	28,020	28,240	28,380	28,580	28,790
Italy	21,120	21,320	21,410	21,590	21,670	21,800	22,290	22,350	22,660	22,530
Netherlands	5,860	6,080	6,140	6,170	6,260	6,280	6,370	6,540	6,560	6,650
Sweden	4,312	4,327	4,350	4,369	4,385	4,418	4,443	4,480	4,540	4,599
United Kingdom	26,520	26,590	26,560	26,590	27,010	27,210	27,380	27,720	28,150	28,250
Participation rate[1]										
United States	63.8	63.9	64.0	64.0	64.4	64.8	65.3	65.6	65.9	66.5
Canada	64.1	64.8	64.1	64.4	64.8	65.3	65.7	66.2	66.7	67.0
Australia	62.1	61.9	61.7	61.4	61.5	61.6	62.8	63.0	63.3	64.2
Japan	62.6	62.6	62.7	63.1	62.7	62.3	62.1	61.9	61.9	62.2
France	57.2	57.1	57.1	56.6	56.6	56.3	56.1	55.9	55.5	55.5
Germany	54.7	54.7	54.6	54.3	54.4	54.7	54.9	55.0	54.9	55.0
Italy	48.2	48.3	47.7	47.5	47.3	47.2	47.8	47.6	47.4	47.1
Netherlands	55.3	56.6	56.5	56.1	56.2	55.7	55.9	56.7	56.3	56.7
Sweden	66.9	66.8	66.8	66.7	66.6	66.9	67.0	67.1	67.6	68.1
United Kingdom	62.5	62.2	61.9	61.6	62.1	62.2	62.3	62.7	63.5	63.6
Employed										
United States	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968	117,342
Canada	10,708	11,001	10,618	10,675	10,932	11,221	11,531	11,861	12,245	12,486
Australia	6,284	6,416	6,415	6,300	6,494	6,697	6,974	7,129	7,398	7,728
Japan	54,600	55,060	55,620	56,550	56,870	57,260	57,740	58,320	59,310	60,500
France	21,330	21,200	21,240	21,170	20,980	20,920	20,950	21,020	21,180	21,440
Germany	26,490	26,450	26,150	25,770	25,830	26,010	26,380	26,580	26,770	27,140
Italy	20,200	20,280	20,250	20,320	20,390	20,490	20,610	20,590	20,870	20,770
Netherlands	5,510	5,540	5,510	5,410	5,490	5,640	5,730	5,890	5,940	6,050
Sweden	4,226	4,219	4,213	4,218	4,249	4,293	4,326	4,396	4,467	4,538
United Kingdom	24,670	23,800	23,560	23,450	23,830	24,150	24,300	24,860	25,740	26,270
Employment-population ratio[2]										
United States	59.2	59.0	57.8	57.9	59.5	60.1	60.7	61.5	62.3	63.0
Canada	59.3	59.9	57.1	56.8	57.5	58.5	59.4	60.4	61.6	62.0
Australia	58.3	58.4	57.3	55.3	56.0	56.5	57.7	57.9	58.7	60.2
Japan	61.3	61.2	61.2	61.4	61.0	60.6	60.4	60.1	60.4	60.8
France	53.5	52.8	52.3	51.8	51.0	50.4	50.2	49.9	49.8	50.1
Germany	53.1	52.5	51.6	50.6	50.5	50.7	51.3	51.5	51.5	51.9
Italy	46.1	45.9	45.2	44.7	44.5	44.4	44.2	43.8	43.7	43.4
Netherlands	52.0	51.6	50.7	49.2	49.3	50.0	50.2	51.1	51.0	51.5
Sweden	65.6	65.1	64.7	64.4	64.5	65.0	65.2	65.8	66.5	67.2
United Kingdom	58.1	55.7	54.9	54.3	54.8	55.2	55.2	56.2	58.1	59.2
Unemployed										
United States	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701	6,528
Canada	865	898	1,308	1,434	1,384	1,311	1,215	1,150	1,031	1,018
Australia	409	394	495	697	641	603	613	629	576	509
Japan	1,140	1,260	1,360	1,560	1,610	1,560	1,670	1,730	1,550	1,420
France	1,470	1,750	1,920	1,970	2,320	2,440	2,490	2,530	2,410	2,310
Germany	770	1,090	1,560	1,900	1,970	2,010	1,860	1,800	1,810	1,650
Italy	920	1,040	1,160	1,270	1,280	1,310	1,680	1,760	1,790	1,760
Netherlands	350	540	630	760	770	640	640	650	620	600
Sweden	86	108	137	151	136	125	117	84	73	61
United Kingdom	1,850	2,790	3,000	3,140	3,180	3,060	3,080	2,860	2,410	1,980
Unemployment rate										
United States	7.1	7.6	9.7	9.6	7.5	7.2	7.0	6.2	5.5	5.3
Canada	7.5	7.5	11.0	11.8	11.2	10.5	9.5	8.8	7.8	7.5
Australia	6.1	5.8	7.2	10.0	9.0	8.3	8.1	8.1	7.2	6.2
Japan	2.0	2.2	2.4	2.7	2.8	2.6	2.8	2.9	2.5	2.3
France	6.4	7.6	8.3	8.5	10.0	10.4	10.6	10.7	10.2	9.7
Germany	2.8	4.0	5.6	6.9	7.1	7.2	6.6	6.3	6.3	5.7
Italy	4.4	4.9	5.4	5.9	5.9	6.0	7.5	7.9	7.9	7.8
Netherlands	6.0	8.9	10.3	12.3	12.3	10.2	10.0	9.9	9.5	9.0
Sweden	2.0	2.5	3.1	3.5	3.1	2.8	2.6	1.9	1.6	1.3
United Kingdom	7.0	10.5	11.3	11.8	11.8	11.2	11.2	10.3	8.6	7.0

[1] Labor force as a percent of the civilian working-age population.
[2] Employment as a percent of the civilian working-age population.

NOTE: See "Notes on the data" for information on breaks in series for Germany, Italy, the Netherlands, and Sweden.

50. Annual indexes of manufacturing productivity and related measures, 12 countries

(1977=100)

Item and country	1960	1970	1973	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Output per hour															
United States	56.9	75.2	86.9	95.3	95.3	95.3	97.5	100.0	105.2	110.8	115.9	120.2	124.7	127.6	130.1
Canada	51.6	76.9	91.9	102.9	103.8	99.9	104.8	100.0	107.3	116.4	119.8	118.4	119.2	121.2	123.8
Japan	17.2	48.0	61.5	80.0	85.0	90.9	94.3	100.0	105.4	113.0	119.4	121.3	130.7	136.9	144.8
Belgium	24.2	44.2	57.7	77.8	82.0	87.3	94.2	100.0	110.2	114.7	116.9	118.2	122.8	128.8	–
Denmark	32.4	57.2	72.7	88.6	92.9	98.0	99.6	100.0	104.9	104.3	105.0	98.9	100.6	103.8	106.8
France	30.7	58.5	68.7	85.7	89.9	90.6	93.4	100.0	102.5	104.5	108.8	110.8	113.8	119.6	125.1
Germany	36.9	65.2	76.3	94.1	97.9	97.8	99.3	100.0	105.1	108.5	112.4	111.4	109.5	114.4	119.6
Italy	28.9	54.3	64.9	82.9	90.7	95.1	97.6	100.0	105.3	115.8	122.1	123.2	126.5	130.1	133.8
Netherlands	27.3	54.1	68.4	89.2	94.1	95.1	97.7	100.0	106.7	116.4	121.1	122.4	123.3	128.9	134.7
Norway	47.8	74.5	86.4	92.2	97.7	96.3	96.5	100.0	105.2	112.6	116.0	114.6	120.4	123.9	131.7
Sweden	36.5	69.6	81.8	88.7	95.6	96.4	95.8	100.0	106.5	111.9	112.6	114.3	115.7	117.4	119.3
United Kingdom	49.4	70.8	84.1	89.3	90.3	89.9	94.5	100.0	108.4	114.3	118.0	122.6	130.1	137.1	144.1
Output															
United States	53.4	79.9	97.9	107.7	109.8	104.8	106.5	100.0	106.4	119.4	124.0	126.8	132.3	139.9	144.0
Canada	44.1	78.5	100.0	111.7	115.9	110.7	114.8	100.0	106.5	120.2	127.0	128.4	135.8	144.1	146.9
Japan	14.0	51.0	67.0	77.8	83.0	90.4	94.5	100.0	108.0	120.5	128.9	129.6	138.9	150.0	161.1
Belgium	37.8	70.8	86.8	91.3	93.7	96.2	95.8	100.0	105.0	107.3	108.4	107.1	108.4	113.9	–
Denmark	45.4	75.7	88.5	92.0	97.3	101.7	98.4	100.0	106.7	111.7	115.3	115.3	111.8	111.6	113.2
France	35.1	72.7	87.0	98.4	101.3	100.6	99.0	100.0	99.9	98.7	99.1	99.1	99.6	103.0	107.2
Germany	48.8	84.6	93.8	99.4	104.0	104.0	102.4	100.0	101.1	103.9	107.4	107.4	105.2	109.5	114.8
Italy	27.8	58.1	70.4	88.4	97.5	102.7	101.0	100.0	100.9	105.5	108.7	111.1	115.6	124.4	128.2
Netherlands	42.7	80.3	91.2	97.9	101.0	101.5	101.5	100.0	101.9	107.9	111.1	113.7	114.4	119.6	125.7
Norway	56.0	88.4	101.3	99.8	102.7	101.7	100.7	100.0	99.3	105.0	108.8	108.8	110.8	107.5	107.8
Sweden	51.8	91.0	98.7	95.7	101.9	102.3	99.6	100.0	105.7	113.7	115.9	116.7	119.9	123.7	126.5
United Kingdom	82.3	109.8	121.2	116.4	116.2	106.1	99.8	100.0	102.9	107.1	109.8	111.1	116.9	125.5	131.1
Total hours															
United States	93.8	106.1	112.7	113.0	115.2	110.0	109.2	100.0	101.2	107.7	107.0	105.5	106.1	109.6	110.6
Canada	85.5	102.1	108.8	108.6	111.6	110.8	109.6	100.0	99.2	103.3	106.0	108.5	114.0	118.9	118.6
Japan	81.3	106.1	108.8	97.2	97.6	99.5	100.3	100.0	102.5	106.6	108.0	106.8	106.3	109.6	111.2
Belgium	156.2	159.9	150.3	117.4	114.3	110.1	101.7	100.0	95.2	93.6	92.7	90.6	88.3	88.4	–
Denmark	140.0	132.3	121.8	103.9	104.7	103.7	98.8	100.0	101.7	107.1	109.8	116.6	111.2	107.6	106.0
France	114.5	124.1	126.7	114.8	112.6	111.0	106.0	100.0	97.4	94.4	91.0	89.4	87.5	86.1	85.7
Germany	132.0	129.7	123.0	105.6	106.2	106.4	103.1	100.0	96.2	95.8	95.6	96.4	96.1	95.7	96.0
Italy	96.2	107.0	108.3	106.6	107.4	108.0	103.4	100.0	95.8	91.1	89.0	90.1	91.4	95.7	95.9
Netherlands	156.6	148.5	133.4	109.8	107.4	106.8	103.9	100.0	95.5	92.7	91.8	92.9	92.7	92.8	93.3
Norway	117.3	118.6	117.3	108.3	105.1	105.5	104.3	100.0	94.3	93.2	93.8	94.9	92.1	86.8	81.8
Sweden	141.9	130.7	120.6	108.0	106.5	106.1	103.9	100.0	99.2	101.6	103.0	102.1	103.6	105.3	106.0
United Kingdom	166.7	155.0	144.1	130.3	128.8	118.1	105.6	100.0	94.8	93.7	93.1	90.6	89.9	91.5	91.0
Compensation per hour															
United States	22.5	35.9	43.0	68.2	74.9	83.7	91.8	100.0	102.5	106.0	111.1	116.1	119.2	123.5	128.8
Canada	16.4	28.7	35.9	64.4	71.0	78.6	90.4	100.0	106.1	111.1	116.8	121.4	126.3	132.5	143.8
Japan	6.5	24.8	40.4	78.1	83.1	88.4	95.0	100.0	103.0	106.1	110.9	116.3	119.0	121.6	129.9
Belgium	9.1	23.1	35.5	71.5	77.9	86.3	95.9	100.0	106.0	114.8	121.8	126.6	129.4	131.6	–
Denmark	7.7	22.3	34.5	67.7	75.6	83.4	91.9	100.0	106.9	113.0	120.6	123.1	135.7	140.5	147.8
France	7.4	17.8	25.5	55.4	62.9	72.8	84.3	100.0	110.4	120.0	130.2	135.9	142.7	148.7	155.5
Germany	13.7	35.1	48.9	78.6	83.9	90.4	96.2	100.0	104.4	108.9	115.1	119.7	125.0	130.1	136.0
Italy	3.9	11.6	17.7	49.4	59.8	70.2	84.8	100.0	117.0	134.3	150.9	157.1	166.7	175.6	194.4
Netherlands	9.1	28.5	44.1	78.8	85.0	89.6	93.7	100.0	104.6	107.9	113.6	117.1	120.7	123.8	125.7
Norway	9.9	24.6	35.3	70.9	74.7	81.2	90.3	100.0	110.3	120.9	132.2	145.0	165.6	175.9	183.3
Sweden	9.3	24.4	34.3	70.5	76.1	84.5	93.0	100.0	109.9	119.3	130.9	141.8	151.6	162.9	180.7
United Kingdom	7.2	14.9	22.6	55.1	65.6	79.7	91.5	100.0	106.9	114.2	122.6	132.1	140.5	149.2	164.3
Unit labor costs: National currency basis															
United States	39.5	47.7	49.5	71.6	78.6	87.8	94.1	100.0	97.5	95.6	95.9	96.6	95.6	96.8	99.0
Canada	31.9	37.3	39.1	62.6	68.4	78.7	86.3	100.0	98.9	95.5	97.6	102.5	106.0	109.3	116.1
Japan	37.9	51.6	65.6	97.5	97.7	97.2	100.8	100.0	97.7	93.9	92.9	95.9	91.1	88.9	89.7
Belgium	37.8	52.3	61.4	92.0	95.0	98.9	101.8	100.0	96.1	100.1	104.2	107.2	105.4	102.2	–
Denmark	23.8	39.0	47.4	76.4	81.4	85.1	92.2	100.0	101.9	108.3	114.9	124.5	134.9	135.5	138.3
France	24.0	30.4	37.1	64.6	70.0	80.3	90.3	100.0	107.6	114.9	119.6	122.6	125.4	124.4	124.3
Germany	37.2	53.8	64.1	83.5	85.7	92.4	96.8	100.0	99.4	100.4	102.4	107.5	114.1	113.7	113.7
Italy	13.6	21.4	27.2	59.5	65.9	73.8	86.9	100.0	111.2	115.9	123.6	127.5	131.8	135.0	145.4
Netherlands	33.4	52.7	64.5	88.4	90.4	94.2	95.9	100.0	98.1	92.7	93.9	95.7	97.9	96.0	93.3
Norway	20.6	33.0	40.9	76.9	76.5	84.3	93.6	100.0	104.8	107.4	114.0	126.5	137.6	142.0	139.1
Sweden	25.5	35.0	42.0	79.5	79.5	87.6	97.0	100.0	103.1	106.7	116.3	124.1	131.0	138.7	151.4
United Kingdom	14.6	21.0	26.9	61.7	72.7	88.7	96.8	100.0	98.6	99.9	103.9	107.8	108.0	108.8	114.0
Unit labor costs: U.S. dollar basis															
United States	39.5	47.7	49.5	71.6	78.6	87.8	94.1	100.0	97.5	95.6	95.9	96.6	95.6	96.8	99.0
Canada	40.6	44.1	48.2	67.8	72.1	83.1	88.9	100.0	99.0	91.0	88.2	91.1	98.6	109.7	121.0
Japan	26.2	35.9	60.3	116.6	111.5	107.3	113.8	100.0	102.5	98.5	97.0	141.9	156.9	172.7	161.8
Belgium	34.7	48.2	72.5	133.9	148.2	155.0	125.9	100.0	86.1	79.3	80.4	109.8	129.1	127.1	–
Denmark	28.8	43.4	65.7	115.7	129.1	126.2	107.8	100.0	92.9	87.3	90.4	128.3	164.4	167.7	157.7
France	32.2	36.2	55.0	94.4	108.2	125.2	109.2	100.0	92.9	86.5	87.7	116.4	137.2	137.3	128.2
Germany	21.7	35.8	58.8	101.1	113.5	123.6	104.3	100.0	94.5	85.7	84.5	120.2	154.1	157.1	146.8
Italy	29.6	46.2	63.4	95.0	107.4	116.8	103.3	100.0	99.1	89.4	87.7	115.8	137.6	140.3	143.4
Netherlands	23.7	38.9	62.0	109.3	120.4	126.8	103.0	100.0	91.8	77.2	75.6	104.4	129.1	129.7	117.5
Norway	18.7	29.8	46.0	94.7	97.5	110.2	105.2	100.0	92.6	85.0	85.7	110.4	131.8	140.5	130.0
Sweden	31.0	42.5	60.6	110.7	116.6	130.2	120.4	100.0	84.5	81.0	84.9	109.4	129.7	142.1	147.4
United Kingdom	23.4	28.7	37.7	67.7	88.3	118.1	112.1	100.0	85.5	76.4	77.1	90.5	101.3	110.9	106.9

– Data not available.

51. Occupational injury and illness incidence rates by industry, United States

Industry and type of case[1]	Incidence rates per 100 full-time workers[2]								
	1980	1981	1982	1983	1984	1985	1986	1987	1988
PRIVATE SECTOR[3]									
Total cases	8.7	8.3	7.7	7.6	8.0	7.9	7.9	8.3	8.6
Lost workday cases	4.0	3.8	3.5	3.4	3.7	3.6	3.6	3.8	4.0
Lost workdays	65.2	61.7	58.7	58.5	63.4	64.9	65.8	69.9	76.1
Agriculture, forestry, and fishing[3]									
Total cases	11.9	12.3	11.8	11.9	12.0	11.4	11.2	11.2	10.9
Lost workday cases	5.8	5.9	5.9	6.1	6.1	5.7	5.6	5.7	5.6
Lost workdays	82.7	82.8	86.0	90.8	90.7	91.3	93.6	94.1	101.8
Mining									
Total cases	11.2	11.6	10.5	8.4	9.7	8.4	7.4	8.5	8.8
Lost workday cases	6.5	6.2	5.4	4.5	5.3	4.8	4.1	4.9	5.1
Lost workdays	163.6	146.4	137.3	125.1	160.2	145.3	125.9	144.0	152.1
Construction									
Total cases	15.7	15.1	14.6	14.8	15.5	15.2	15.2	14.7	14.6
Lost workday cases	6.5	6.3	6.0	6.3	6.9	6.8	6.9	6.8	6.8
Lost workdays	117.0	113.1	115.7	118.2	128.1	128.9	134.5	135.8	142.2
General building contractors:									
Total cases	15.5	15.1	14.1	14.4	15.4	15.2	14.9	14.2	14.0
Lost workday cases	6.5	6.1	5.9	6.2	6.9	6.8	6.6	6.5	6.4
Lost workdays	113.0	107.1	112.0	113.0	121.3	120.4	122.7	134.0	132.2
Heavy construction contractors:									
Total cases	16.3	14.9	15.1	15.4	14.9	14.5	14.7	14.5	15.1
Lost workday cases	6.3	6.0	5.8	6.2	6.4	6.3	6.3	6.4	7.0
Lost workdays	117.6	106.0	113.1	122.4	131.7	127.3	132.9	139.1	162.3
Special trade contractors:									
Total cases	15.5	15.2	14.7	14.8	15.8	15.4	15.6	15.0	14.7
Lost workday cases	6.7	6.6	6.2	6.4	7.1	7.0	7.2	7.1	7.0
Lost workdays	118.9	119.3	118.6	119.0	130.1	133.3	140.4	135.7	141.1
Manufacturing									
Total cases	12.2	11.5	10.2	10.0	10.6	10.4	10.6	11.9	13.1
Lost workday cases	5.4	5.1	4.4	4.3	4.7	4.6	4.7	5.3	5.7
Lost workdays	86.7	82.0	75.0	73.5	77.9	80.2	85.2	95.5	107.4
Durable goods									
Lumber and wood products:									
Total cases	18.6	17.6	16.9	18.3	19.6	18.5	18.9	18.9	19.5
Lost workday cases	9.5	9.0	8.3	9.2	9.9	9.3	9.7	9.6	10.0
Lost workdays	171.8	158.4	153.3	163.5	172.0	171.4	177.2	176.5	189.1
Furniture and fixtures:									
Total cases	16.0	15.1	13.9	14.1	15.3	15.0	15.2	15.4	16.6
Lost workday cases	6.6	6.2	5.5	5.7	6.4	6.3	6.3	6.7	7.3
Lost workdays	97.6	91.9	85.6	83.0	101.5	100.4	103.0	103.6	115.7
Stone, clay, and glass products:									
Total cases	15.0	14.1	13.0	13.1	13.6	13.9	13.6	14.9	16.0
Lost workday cases	7.1	6.9	6.1	6.0	6.6	6.7	6.5	7.1	7.5
Lost workdays	128.1	122.2	112.2	112.0	120.8	127.8	126.0	135.8	141.0
Primary metal industries:									
Total cases	15.2	14.4	12.4	12.4	13.3	12.6	13.6	17.0	19.4
Lost workday cases	7.1	6.7	5.4	5.4	6.1	5.7	6.1	7.4	8.2
Lost workdays	128.3	121.3	101.6	103.4	115.3	113.8	125.5	145.8	161.3
Fabricated metal products:									
Total cases	18.5	17.5	15.3	15.1	16.1	16.3	16.0	17.0	18.8
Lost workday cases	8.0	7.5	6.4	6.1	6.7	6.9	6.8	7.2	8.0
Lost workdays	118.4	109.9	102.5	96.5	104.9	110.1	115.5	121.9	138.8
Machinery, except electrical:									
Total cases	13.7	12.9	10.7	9.8	10.7	10.8	10.7	11.3	12.1
Lost workday cases	5.5	5.1	4.2	3.6	4.1	4.2	4.2	4.4	4.7
Lost workdays	81.3	74.9	66.0	58.1	65.8	69.3	72.0	72.7	82.8
Electric and electronic equipment:									
Total cases	8.0	7.4	6.5	6.3	6.8	6.4	6.4	7.2	8.0
Lost workday cases	3.3	3.1	2.7	2.6	2.8	2.7	2.7	3.1	3.3
Lost workdays	51.8	48.4	42.2	41.4	45.0	45.7	49.8	55.9	64.6
Transportation equipment:									
Total cases	10.6	9.8	9.2	8.4	9.3	9.0	9.6	13.5	17.7
Lost workday cases	4.9	4.6	4.0	3.6	4.2	3.9	4.1	5.7	6.6
Lost workdays	82.4	78.1	72.2	64.5	68.8	71.6	79.1	105.7	134.2
Instruments and related products:									
Total cases	6.8	6.5	5.6	5.2	5.4	5.2	5.3	5.8	6.1
Lost workday cases	2.7	2.7	2.3	2.1	2.2	2.2	2.3	2.4	2.6
Lost workdays	41.8	39.2	37.0	35.6	37.5	37.9	42.2	43.9	51.5
Miscellaneous manufacturing industries:									
Total cases	10.9	10.7	9.9	9.9	10.5	9.7	10.2	10.7	11.3
Lost workday cases	4.4	4.4	4.1	4.0	4.3	4.2	4.3	4.6	5.1
Lost workdays	67.9	68.3	69.9	66.3	70.2	73.2	70.9	81.5	91.0
Nondurable goods									
Food and kindred products:									
Total cases	18.7	17.8	16.7	16.5	16.7	16.7	16.5	17.7	18.5
Lost workday cases	9.0	8.6	8.0	7.9	8.1	8.1	8.0	8.6	9.2
Lost workdays	136.8	130.7	129.3	131.2	131.6	138.0	137.8	153.7	169.7

See footnotes at end of table.

51. Continued— Occupational injury and illness incidence rates by industry, United States

Industry and type of case[1]	Incidence rates per 100 full-time workers[2]								
	1980	1981	1982	1983	1984	1985	1986	1987	1988
Tobacco manufacturing:									
Total cases	8.1	8.2	7.2	6.5	7.7	7.3	6.7	8.6	9.3
Lost workday cases	3.8	3.9	3.2	3.0	3.2	3.0	2.5	2.5	2.9
Lost workdays	45.8	56.8	44.6	42.8	51.7	51.7	45.6	46.4	53.0
Textile mill products:									
Total cases	9.1	8.8	7.6	7.4	8.0	7.5	7.8	9.0	9.6
Lost workday cases	3.3	3.2	2.8	2.8	3.0	3.0	3.1	3.6	4.0
Lost workdays	62.8	59.2	53.8	51.4	54.0	57.4	59.3	65.9	78.8
Apparel and other textile products:									
Total cases	6.4	6.3	6.0	6.4	6.7	6.7	6.7	7.4	8.1
Lost workday cases	2.2	2.2	2.1	2.4	2.5	2.6	2.7	3.1	3.5
Lost workdays	34.9	35.0	36.4	40.6	40.9	44.1	49.4	59.5	68.2
Paper and allied products:									
Total cases	12.7	11.6	10.6	10.0	10.4	10.2	10.5	12.8	13.1
Lost workday cases	5.8	5.4	4.9	4.5	4.7	4.7	4.7	5.8	5.9
Lost workdays	112.3	103.6	99.1	90.3	93.8	94.6	99.5	122.3	124.3
Printing and publishing:									
Total cases	6.9	6.7	6.6	6.6	6.5	6.3	6.5	6.7	6.6
Lost workday cases	3.1	3.0	2.8	2.9	2.9	2.9	2.9	3.1	3.2
Lost workdays	46.5	47.4	45.7	44.6	46.0	49.2	50.8	55.1	59.8
Chemicals and allied products:									
Total cases	6.8	6.6	5.7	5.5	5.3	5.1	6.3	7.0	7.0
Lost workday cases	3.1	3.0	2.5	2.5	2.4	2.3	2.7	3.1	3.3
Lost workdays	50.3	48.1	39.4	42.3	40.8	38.8	49.4	58.8	59.0
Petroleum and coal products:									
Total cases	7.2	6.7	5.3	5.5	5.1	5.1	7.1	7.3	7.0
Lost workday cases	3.5	2.9	2.5	2.4	2.4	2.4	3.2	3.1	3.2
Lost workdays	59.1	51.2	46.4	46.8	53.5	49.9	67.5	65.9	68.4
Rubber and miscellaneous plastics products:									
Total cases	15.5	14.6	12.7	13.0	13.6	13.4	14.0	15.9	16.3
Lost workday cases	7.4	7.2	6.0	6.2	6.4	6.3	6.6	7.6	8.1
Lost workdays	118.6	117.4	100.9	101.4	104.3	107.4	118.2	130.8	142.9
Leather and leather products:									
Total cases	11.7	11.5	9.9	10.0	10.5	10.3	10.5	12.4	11.4
Lost workday cases	5.0	5.1	4.5	4.4	4.7	4.6	4.8	5.8	5.6
Lost workdays	82.7	82.6	86.5	87.3	94.4	88.3	83.4	114.5	128.2
Transportation and public utilities									
Total cases	9.4	9.0	8.5	8.2	8.8	8.6	8.2	8.4	8.9
Lost workday cases	5.5	5.3	4.9	4.7	5.2	5.0	4.8	4.9	5.1
Lost workdays	104.5	100.6	96.7	94.9	105.1	107.1	102.1	108.1	118.6
Wholesale and retail trade									
Total cases	7.4	7.3	7.2	7.2	7.4	7.4	7.7	7.7	7.8
Lost workday cases	3.2	3.1	3.1	3.1	3.3	3.2	3.3	3.4	3.5
Lost workdays	48.7	45.3	45.5	47.8	50.5	50.7	54.0	56.1	60.9
Wholesale trade:									
Total cases	8.2	7.7	7.1	7.0	7.2	7.2	7.2	7.4	7.6
Lost workday cases	3.9	3.6	3.4	3.2	3.5	3.5	3.6	3.7	3.8
Lost workdays	58.2	54.7	52.1	50.6	55.5	59.8	62.5	64.0	69.2
Retail trade:									
Total cases	7.1	7.1	7.2	7.3	7.5	7.5	7.8	7.8	7.9
Lost workday cases	2.9	2.9	2.9	3.0	3.2	3.1	3.2	3.3	3.4
Lost workdays	44.5	41.1	42.6	46.7	48.4	47.0	50.5	52.9	57.6
Finance, insurance, and real estate									
Total cases	2.0	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0
Lost workday cases	.8	.8	.9	.9	.9	.9	.9	.9	.9
Lost workdays	12.2	11.6	13.2	12.8	13.6	15.4	17.1	14.3	17.2
Services									
Total cases	5.2	5.0	4.9	5.1	5.2	5.4	5.3	5.5	5.4
Lost workday cases	2.3	2.3	2.3	2.4	2.5	2.6	2.5	2.7	2.6
Lost workdays	35.8	35.9	35.8	37.0	41.1	45.4	43.0	45.8	47.7

[1] Total cases include fatalities.

[2] The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as:
(N/EH) X 200,000, where:
N = number of injuries and illnesses or lost workdays.
EH = total hours worked by all employees during calendar year.
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year.)

[3] Excludes farms with fewer than 11 employees since 1976.

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Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	November 2	October	December 7	November	January 4	December	1; 4–21
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