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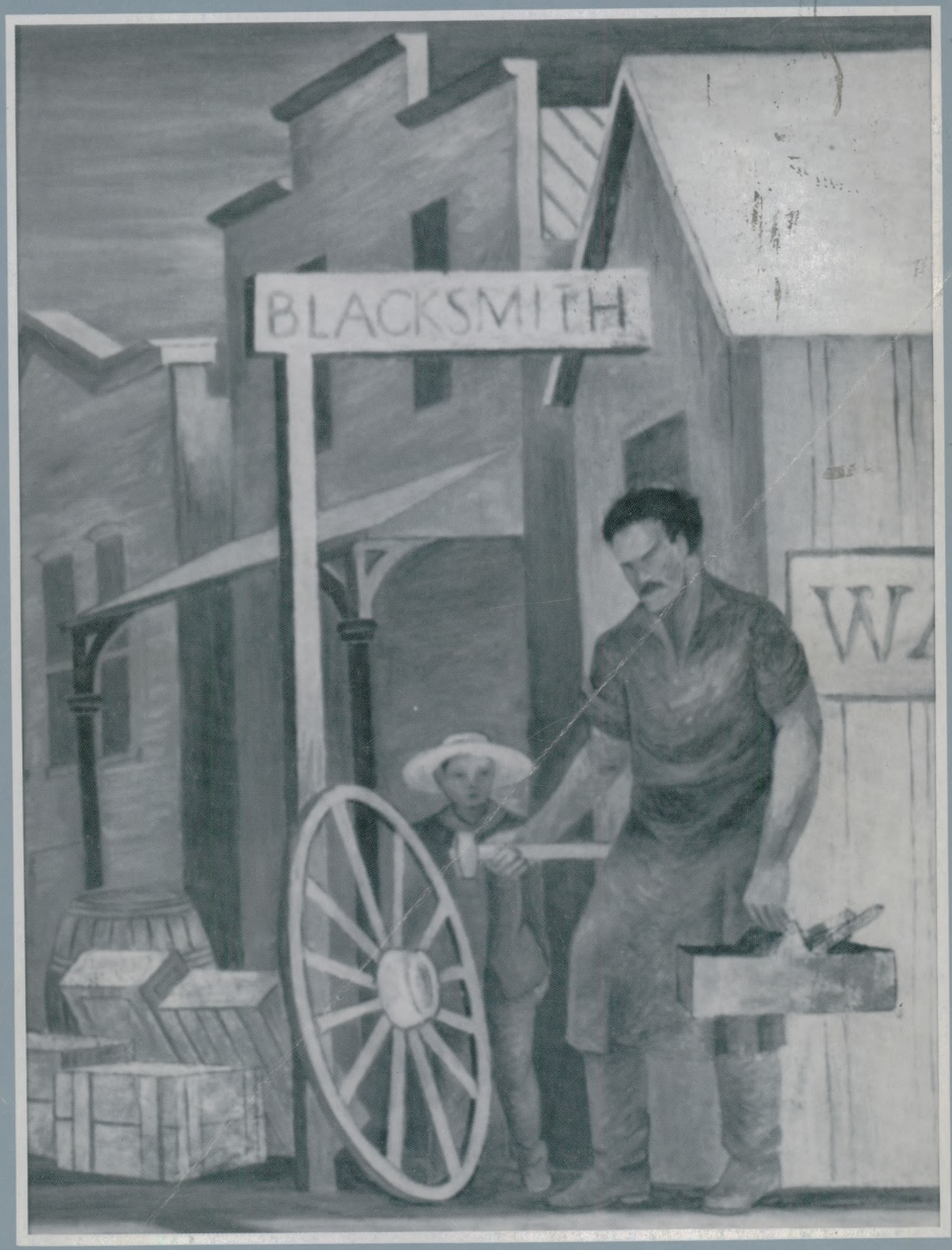
Productivity in agricultural chemicals
The shift to contingent workers



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Detail from ***Western Town,***
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MONTHLY LABOR REVIEW

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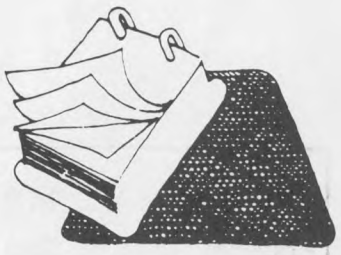
Labor Month In Review



THE CHANGING WORK FORCE. Commissioner of Labor Statistics Janet L. Norwood reported on "The U.S. Economy in Transition" in an address to the Oklahoma State House of Representatives, in Oklahoma City, February 23. Following are excerpts from her discussion of the changing work force:

Slower growth. We expect to have much slower labor force growth in the future than in the past. In fact, between now and the year 2000, the labor force should grow at only about one-half the rate of the previous decade.

The baby-boom generation born in the years following World War II has moved into the more mature age categories. Today's teenagers are part of a generation born of low fertility rates. This means that the pressure for a constantly increasing rate of job creation will be less than it has been over the last few decades. Young people 16 to 24 years of age will decline in number. As a result, they will make up a much smaller proportion of the labor force of the future than in the past. Because these young workers always have higher jobless rates than older workers, this decline in young entrants should produce much less upward pressure on the Nation's future unemployment rate. In addition, competition for entry-level jobs should moderate; employers may even face increasing difficulty in finding younger workers to fill the jobs customarily held by them in the past. In fact, retail store owners and restuarant managers, who, in the past, have relied upon young, part-time minimum wage workers to fill many of their needs, are already beginning to experience recruitment problems in some areas of the country.

Because there will be fewer young people to enter the labor force in the future, the average age of the labor force will be higher than in the past. The number of "prime age" workers—those in the 25- to 54-year age group—will make up a larger proportion of the labor force in the years ahead. This change in the supply of prime age workers could bring increased competition among them for high-paying jobs. The change in age mix also could bring with it increased rates of productivity growth, because workers in these age groups generally are more mature, have more job stability, and have more work experience than younger workers. Nevertheless, we must remember that many of our minority youngsters, who have had great difficulty in the labor market, will reach the prime working age without ever having had a successful employment experience. This group clearly will require our attention.

More minorities and women. The most striking fact about the labor force of the future is that it will be more notably female and minority. The labor force participation of women will continue to increase, though perhaps at a somewhat slower rate than in the last few decades. The number of women will rise twice as fast as the number of men because the proportion of women who participate in the labor force (by working or looking for work) will continue to rise. This is especially true of women in the middle years—those in the 25- to 45-year age group.

This continued increase in work activity by women means that large numbers of married women, including those with children, will be working or looking for work. Women workers will constitute an essential part of the trained work force required by a number of the important industries of this country which already have a very large proportion of females employed. The continuation of this trend means that the problems faced by women workers in combining work and the family, which even now are workplace issues, will become even more so in the future. With no one at home full time, the productivity of the business establishment that has a large proportion of parents will be affected by the pressures workers face in finding adequate child care and in handling other family related issues. Indeed, as the work force ages, many of these workers (men as well as women) will face the need to provide care at both ends of the age scale—for their young children and for their elderly parents.

In addition to the continued involvement of women in the labor force of the future, we also expect that the racial and ethnic composition of the work force will change. The proportion of whites in the labor force will decrease; the share of blacks in the labor force will grow faster than that of whites because their birth rates in the past have been higher than those of whites. We can also anticipate that the proportions of Asians and Hispanics will increase because of increased immigration as well as high birth rates. The Hispanic labor force growth is projected to be especially sharp. By the year 2000, Hispanics are expected to account for 10 percent of the labor force.

Need for education. Although we will continue to have a need for some unskilled workers, the occupations that will grow the fastest will be those requiring substantial education and special skills. We expect, for example, that the technical, service, sales, and professional and executive occupations will grow faster than other occupations in the future.

The projected growth in occupational demand shows the increasing need for education. The occupations that are expected to grow the fastest are those in which a large proportion of workers have college training. Workers with college educations are far less likely to be unemployed at the turn of the century than those with less education. They are also likely to earn considerably more than workers with less than a high school education. □

What temporary workers earn: findings from new BLS survey

Study of firms supplying temporary help to other businesses reveals sharp variations in pay rates, as well as in the proportions of 'temps' offered vacation pay and other benefits

HARRY B. WILLIAMS

In recent years, many businesses have experienced a growing need to fill short-term job assignments, replacing regular employees who are absent because of illness, vacation, or other reasons. At the same time, many individuals, including students and recent labor market entrants and reentrants, have sought part-time or intermittent work that does not involve a long-term commitment to a single employer. These dual needs have resulted in massive growth for the Nation's temporary help supply services firms which match short-term job requests with the available pool of temporary workers or "temps." These workers are supervised by the client firm but are on the payroll of the temporary help organization.

Until recently, little was known about the pay and benefits offered by these firms. In September 1987, the Bureau of Labor Statistics began its first study of occupational pay and employee benefit provisions in the temporary help supply services industry. The survey covered more than 600,000 workers and revealed wide variations in pay rates, reflecting the diversity of occupations, skill levels, and assignments reported.[1] Employees studied included both temporary workers and the relatively small number of permanent full-time employees who manage and administer day-to-day operations of the firms in the industry.

The temporary work force earned an average of $6.42 an hour in September 1987.[2] (See table 1.) Pay for individual temps ranged from the Federal minimum wage of $3.35 an hour to $20 an hour or more.[3]

The survey developed earnings data for eight major occupational groups selected to represent the diversified assignments and wage levels of temporary workers. Group averages ranged from $4.65 an hour for operators, fabricators, and laborers to $16.96 for professional specialty occupations, which included engineers and registered nurses. Administrative support occupations, including clerical—the largest group, with 328,828 workers—averaged $6.46 an hour.

Earnings data were tabulated for almost 100 individual job classifications selected to represent the wide range of occupations, pay, and levels of responsibility associated with temporary workers. Among the classifications for which data could be published, engineers had the highest average rate—$24.74 an hour. Computer systems analysts and scientists averaged $18.17, the second highest job average published; computer programmers followed with $15.96.

In the medical field, registered professional nurses averaged $14.99 an hour, but some earned $25 or more. Licensed practical nurses averaged $10.03 an hour, about $3 more than clinical laboratory technologists and technicians ($7.11) and $4.50 more than nursing aides, orderlies, and attendants.

General office clerks, the most numerous of the jobs studied, averaged $5.11 an hour. This compared with $5.97 for typists, $6.11 for data entry keyers, $7.79 for executive secretaries, and $9.46 for word processors—an occupation currently in heavy demand.

Among the blue-collar jobs, construction laborers averaged $3.72 an hour. Pay levels for assemblers, material

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handlers, and nonconstruction laborers ranged between $4 and $5.

Earnings also were estimated separately for temporary workers employed in all large metropolitan areas combined, that is, all areas with at least 1 million inhabitants (based on the 1980 census). The 384,037 temporary workers in these large areas averaged $6.82 an hour—6 percent more than the $6.42 average recorded in the nationwide survey. This pattern usually held for occupational pay comparisons as well, with the average differences generally ranging up to 10 percent in favor of the large areas.

Local wage rates for temps varied widely around the nationwide average. In the 26 areas studied separately, the overall average for temporary workers ranged from $5.20 in Fort Lauderdale–Hollywood–Pompano Beach to $9.91 in Boston.

The industry's permanent full-time staff includes office managers, service coordinators, sales representatives, and clerical support workers. Office managers averaged $14.21 an hour, compared with $11.50 for business services sales representatives, $8.58 for accounting clerks, and $7.11 for receptionists (table 2).

Nearly three-fifths of the permanent full-time staff were coordinators and sales representatives. Service coordinators, whose primary responsibilities are to interview, hire, and place temporary workers with client firms, averaged $9.30 an hour. Coordinators-sales representatives, who regularly split their duties between the hiring and placing of temporary workers and the search for prospective clients, averaged $9.61. As a group, about one-fourth of the coordinators and sales representatives earned at least part of their pay through incentives, such as bonuses and commissions.

Within individual areas, pay for full-time permanent staff usually averaged between $9 and $11 an hour. The New York metropolitan area topped the averages with $13.02, while the Fort Lauderdale area was lowest at $8.49.

Table 1. Average straight-time hourly earnings and number of temporary workers in temporary help supply establishments, selected occupational categories, United States and large metropolitan areas, September 1987

Occupational categories	United States		Large metropolitan areas[1]	
	Number of workers[2]	Average hourly earnings[3]	Number of workers[2]	Average hourly earnings[3]
All temporary workers	628,592	$6.42	384,037	$6.82
Selected categories				
Executive, administrative, and managerial	2,483	12.31	2,239	12.14
Professional specialty	20,653	16.96	13,670	18.71
Computer systems analysts and scientists	512	18.17	354	21.56
Engineers	3,071	24.74	2,282	26.43
Registered nurses	13,451	14.99	7,935	17.18
Technical and related support	24,301	11.02	15,500	11.78
Clinical laboratory technologists and technicians	546	7.11	96	8.98
Computer programmers	463	15.96	324	17.62
Drafters	4,571	12.78	2,962	13.32
Electrical and electronic technicians	1,889	10.30	1,529	10.43
Licensed practical nurses	9,714	10.03	4,844	11.42
Mechanical engineering technicians	889	11.00	428	10.48
Sales and marketing	9,744	5.39	5,983	5.62
Cashiers	592	4.54	461	4.65
Demonstrators, promoters, and models, sales	2,582	5.51	1,281	5.86
Telemarketing, sales	2,704	5.26	2,041	5.33
Administrative support	328,828	6.46	207,768	6.82
Bookkeepers, accounting, and auditing clerks	12,987	6.61	8.227	6.84
Computer equipment operators	10,938	7.83	7,131	8.26
Data entry keyers	40,468	6.11	23,383	6.36
General office clerks	71,723	5.11	42,629	5.33
Messengers	3,913	4.74	3,056	4.67
Receptionists	25,667	$5.66	16,685	$5.96
Nontyping	13,164	5.67	8,749	5.94
Typing	12,503	5.65	7,936	5.99
Secretaries	45,086	7.66	26,380	8.24
Executive	24,399	7.79	13,675	8.32
Legal	1,247	8.06	713	9.54
Stock and inventory clerks	3,856	4.97	3,180	4.82
Typists and word processors	61,810	7.89	41,702	8.67
Word processors	33,745	9.46	24,741	10.27
Typists	25,435	5.97	15,028	6.33
Service	46,347	5.13	25,153	5.44
Guards	2,571	6.36	1,503	6.99
Health aides, except nursing	2,955	4.89	1,989	4.85
Kitchen workers, food preparation	2,568	4.35	1,068	4.58
Janitors and cleaners	6,526	4.36	3,313	4.30
Nursing aides, orderlies, and attendants	22,964	5.50	13,265	5.77
Precision, production, craft, and repair occupations	7,708	8.14	4,753	8.06
Construction trade (journeyman)	502	9.03	117	10.27
Electrical and electronic equipment assemblers	1,988	6.97	1,948	6.99
Machinists	276	12.43	136	11.88
Precision inspector, testers and related workers	604	9.09	578	9.27
Operators, fabricators, and laborers	160,631	4.65	90,403	4.63
Assemblers	30,380	4.59	12,527	4.68
Construction laborers	8,555	3.72	6,668	3.73
Freight, stock, and material handlers	23,341	4.57	12,910	4.55
Helpers, mechanics and repairers	1,177	5.78	179	5.47
Laborers, except construction	45,589	4.33	26,190	4.32
Material moving equipment operators	1,249	5.72	755	5.91
Motor vehicle operators	3,439	9.25	1,842	11.37

[1]Defined as metropolitan areas with 1 million or more population based on the 1980 census.

[2]Estimates of the number of workers are intended as a general guide to the size and composition of the industry's labor force, rather than as precise measures of employment. The study excluded workers in establishments employing fewer than 50 workers and establishments in Alaska and Hawaii.

[3]Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments and cost-of-living increases, where found, were included as part of the workers' regular pay. Excluded were performance bonuses and lump-sums, such as profit-sharing payments, Christmas or yearend bonuses and other nonproduction bonuses.

NOTE: Broad occupational groups may include data for subclassifications not shown separately.

Table 2. Average straight-time hourly earnings and number of full-time permanent workers in temporary help supply establishments, selected occupational categories, United States and large metropolitan areas, September 1987

Occupational categories and method of pay	United States		Large metropolitan areas[1]	
	Number of workers[2]	Average hourly earnings[3]	Number of workers[2]	Average hourly earnings[3]
All full-time workers	19,515	$10.15	11,788	$10.71
Time	15,352	9.77	8,768	10.25
Incentive	4,163	11.57	3,020	12.02
Office managers	2,667	14.21	1,707	14.81
Time	1,995	13.78	1,168	14.37
Incentive	672	15.49	539	15.76
Coordinators and sales representatives	11,151	9.76	6,633	10.18
Time	8,052	9.31	4,434	9.62
Incentive	3,099	10.92	2,199	11.31
Service coordinators	7,787	9.30	4,460	9.64
Time	6,177	9.14	3,363	9.53
Incentive	1,610	9.90	1,097	9.99
Business services sales representatives	2,171	11.50	1,437	12.09
Time	1,214	10.40	702	10.61
Incentive	957	12.90	735	13.50
Coordinators-sales representatives	1,193	9.61	736	9.69
Time	661	8.92	369	8.55
Incentive	532	10.47	367	10.85
Accounting clerks[4]	564	8.58	333	9.12
Accounting clerks II	266	8.92	196	9.34
Accounting clerks III	190	8.49	75	8.84
Receptionists[4]	499	7.11	286	7.36

[1]Defined as metropolitan areas with 1 million or more population based on the 1980 census.

[2]Estimates of the number of workers are intended as a general guide to the size and composition of the industry's labor force, rather than as precise measures of employment. The study excluded workers in establishments employing fewer than 50 workers and establishments in Alaska and Hawaii.

[3]Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments and cost-of-living increases, where found, were included as part of the workers' regular pay. Excluded were performance bonuses and lump-sums, such as profit-sharing payments, Christmas, or year-end bonuses, and other nonproduction bonuses.

[4]Virtually all workers were time-rated.

NOTE: Broad occupational groups may include data for subclassifications not shown separately.

Employee benefits

The survey developed information on the incidence of selected benefit provisions for the industry's temporary workers and full-time permanent staff. As in other industries, workers had to meet a variety of requirements to become eligible for paid leave, health care, and other benefits. The study determined proportions of workers employed by establishments providing specified benefit plans, but did not ascertain the proportions who had achieved the minimum requirements to be eligible to receive the benefits. Because of their intermittent work schedules, temporaries often have more difficulty than permanent staff in meeting eligibility requirements related to length of service.

Where available to temps, eligibility for paid holidays and vacation benefits generally required a specified number of hours worked (for example, 1,000 or 1,500 hours). Workers often were allowed up to 1 year to accumulate these hours. Establishments providing paid holidays, typically 6 days annually, employed about two-fifths of the temporary workers; those providing vacation pay employed nearly three-fourths of these workers. Most temps could qualify for 1 week of vacation pay if they worked 1,500 hours within a 1-year period; one-fifth could qualify for 2 weeks after working 2,000 hours.

Health insurance eligibility requirements for temps almost always included a qualifying period, specified in hours, days, or weeks of work. For example, an individual may be required to work a specified number of hours to qualify for health insurance and to work a minimum number of hours per month thereafter to maintain coverage. Such requirements may vary by benefit within a single establishment.

About one-fourth of the temporary workers were in establishments paying at least part of the cost of hospitalization, surgical, medical, and major medical insurance plans; most of these workers could qualify for initial coverage by working fewer than 500 hours. One-fifth were in establishments providing life insurance.

Three-fifths of the temps could earn referral bonuses for recommending new hires who sign on and work for a specified period of time. Slightly more than half of the temps were in establishments providing job training, and nearly one-fourth were in establishments providing free transportation or cash allowances for traveling to and from the job site. Child care and credit union membership

were rarely available, applying to 2 percent and 5 percent of the temporary work force.

Employee benefit plans for permanent workers resembled those offered to workers in other industries. Paid holidays and paid vacations were available to virtually all of the permanent workers in temporary help supply establishments. Paid holiday provisions were usually 6 to 8 days, annually. Typical vacation provisions were 2 weeks of vacation pay after 1 year of service, 3 weeks after 5 years, and 3 or 4 weeks after 15 years or more.

Almost all of the permanent workers were offered employer-sponsored health benefit plans including hospitalization, surgical, medical, and major medical coverage. Seven-eighths were offered life insurance; the same proportion had short-term disability protection. Seven-tenths had accidental death and dismemberment insurance and two-thirds had dental care available. These plans were usually financed jointly by the employer and employee. However, retirement plans, covering slightly more than half of the permanent workers, were usually financed by the employer.

The survey covered establishments with 50 workers or more primarily engaged in supplying temporary help, except agricultural, on a contract basis to other businesses as defined in the 1972 *Standard Industrial Classification Manual*, prepared by the U.S. Office of Management and Budget. □

FOOTNOTES

[1]Estimates of the number of workers are intended as a general guide to the size and composition of the industry's labor force, rather than as precise measures of employment. The study excluded workers in establishments employing fewer than 50 workers and establishments in Alaska and Hawaii. The estimate of employment in the industry differs from other statistical sources, such as, the Bureau's Current Employment Survey series, largely because of the survey's design.

[2]Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments and cost-of-living increases, where found, were included as part of the workers' regular pay. Excluded were performance bonuses and lump-sum payments, such as profit-sharing payments, Christmas or yearend bonuses, and other nonproduction bonuses.

[3]A comprehensive report on the survey findings, *Industry Wage Survey: Temporary Help Supply, September 1987* (Bulletin 2313), may be purchased from the Superintendent of Documents, Washington, DC 20402, or from the Bureau of Labor Statistics, Publication Sales Center, P.O. Box 2145, Chicago, IL 60690.

How human resource systems adjust to the shift toward contingent workers

The dramatic increase of workers who do not have strong ties to their employers, such as temporary workers and consultants, has caused corporations to make major institutional changes in their human resource systems; the net result has created benefits as well as costs

RICHARD S. BELOUS

The human resource systems at many American corporations have experienced vast change in recent years because of increased competitive pressures. A key part of this change has been the dramatic growth of the "contingent" work force, which consists of workers who do not have a long-term attachment to their employers (for example, temporary, part-time, and subcontracted workers).

Corporations have responded to the competitive pressures by making employer-employee relations more flexible. In the 1980's, employers have generally used three methods to increase human resource flexibility. These shifts in employer behavior represent major institutional changes:

- They altered compensation systems, tying wages and benefits more to corporate economic realities and less to customs and traditions.
- They made the employment relationships more flexible and dependent upon corporate economic factors (a growing percentage of workers no longer remain with one employer).
- They made long-term relationships with employees more flexible and based on corporate economic conditions by changing job ladders (career paths and structures), allowing flexible work assignments, more reassignments, and so forth.

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Elements of human resource systems

Strategic choices. A few years ago, discussing strategic choices and labor costs at the same time would have sounded pretentious. Strategic choices that influence the entire direction of a company were made in departments such as finance and marketing. The personnel department was not involved in strategic thinking—its staff created and designed forms, recruited and hired workers, assisted in skills development, and processed workers' separations. The staff also helped plan and form compensation policies that complied with government regulations. While all of this was very important to the life of a corporation, it was often viewed by some as administrative work and even as bureaucratic.[1]

But, because of flexibility and the growing numbers of contingent workers, corporate managers have discovered that human resources provide a vital and effective strategic lever. In fact, in certain cases, it may be the most important control mechanism that management has in the short run, given that management often can treat labor as a variable cost while other costs usually are fixed.[2]

Common threads. While the situations experienced by each corporation are unique, there are several common concepts in the labor-related choices that all companies face. The recent shifts to contingent workers in the human resource landscape become quite clear when one examines these common concepts. One involves affiliation, or the degree to which workers will be associated with a specific employer. One end of the affiliation spectrum is repre-

sented by a model of lifetime employment. In this model, workers spend their entire career with one company. (See exhibit 1.) The model has often been compared to a marriage in which both partners make a commitment to each other and have significant responsibilities in the course of the ongoing relationship.

The other end of the affiliation spectrum is represented by the day-laborer model. In this model, neither the worker nor the employer makes a commitment. While workers under the lifetime employment model tend to have a strong identity with their company, the day-laborer model workers place their identity in the occupation, rather than the employer.

The lifetime employment model, of course, represents very strong affiliation with a corporation, and the day-laborer model represents weak affiliation. Both models have benefits and costs for an employer, employees, and society. The primary benefit from a weak affiliation system is that employers leave their future options open in the realm of human resources and labor costs. In many cases, an employer may value the added flexibility generated by a weak affiliation system. The primary cost of a weak affiliation system is that workers may not have a strong common identification with an employer or a firm's long-term goals.[3]

Flexibility can provide workers with an increased sense of freedom. But often the new freedom can come at the expense of lower wages, no fringe benefits, and no prospects for job advancement.

A second common concept all companies face in the area of human resources involves stakeholders—that is, the legal, moral, political, and economic claims groups can make on a corporation. All employers function within a specific legal and cultural framework, but have significant discretion in establishing the stake employees have at work. Many employers are in the process of shifting the stake workers have in specific establishments. Workers may not be viewed as part of a corporate entity.

Core and contingent workers. The two concepts—affiliation and stakeholders—fashion the general type of human resource system used by a company. There are two very general types of workers: core workers and contingent workers. Core workers are part of the corporate entity. They have a strong affiliation with an employer and are treated as if they have a significant stake in a company; they show long-term attachment with a company and have a real measure of job stability; and they have an implicit contract with their employers that, if they follow certain rules and norms and meet certain standards, their employers will provide job security and some measure of advancement.[4]

In contrast, contingent workers are not part of the corporate entity. They have a weak affiliation with a specific employer and do not have a significant stake in a company. Also, they do not show long-term attachment with a company, and do not have job stability. Employers most often do not make implicit contracts with contingent workers. In forming a human resource system, a corporation can use both core and contingent workers. It appears that in recent years, many employers have altered their basic systems to reduce their core work force in favor of contingent workers.

Some evidence of change

As noted earlier, employers use three basic methods to increase the flexibility of their human resource systems: compensation systems based more on economic factors and less on tradition, more contingent and flexible employment relationships, and more flexibility in long-term

Exhibit 1. The employer-employee affiliation spectrum

Lifetime employment model (strong affiliation)	Day-laborer model (weak affiliation)
Workers spend their entire career with one company.	Workers and employers make agreements that cover a very short period.
Workers and employers make a deep commitment to each other, and have long-term responsibilities to each other.	Workers and employers retain a very high degree of flexibility and freedom in the long run because of the lack of commitment to each other.
Workers link their future to the fate of a company, and they have a strong identity with the company.	Workers build up a strong identity with their occupation (and not their employer) because they do not link their future to the fate of any specific employer.
Employer has a strong incentive to make significant human capital investments (for example, skills development, training, and education) in a worker.	Employer does not have a strong incentive to make significant human investments in a specific worker. However, employer may support a system that provides human capital investments.
Example of lifetime employment model: employer-employee relationships at many Japanese companies.	Example of day-laborer model: employer-employee relationships in some agricultural markets.

relationships. Data from many surveys show evidence of these human resource changes.

For example, a survey of leading American employers, conducted by The Conference Board, examined the relative importance of factors used to set corporate wage objectives.[5] The data show major shifts in compensation practices between the 1970's and the 1980's. In 1978, employers said "industry patterns" were the most important factor in setting wage objectives, while "productivity or labor cost trends in this company" ranked fourth. (See exhibit 2.) However, in 1983, the same employers placed "productivity or labor cost trends in this company" at the top of the list, and "industry patterns" fell to fourth place. The Conference Board's survey data indicate that "corporations have switched their wage-setting policies from imitation of other companies' wage increases toward internal criteria. Under growing competitive pressures, companies now base wage changes on labor costs per unit of output, and on expected profits."[6]

Other evidence indicates shifting employer attitudes. For example, area wage survey data collected by the Bureau of Labor Statistics indicate a growing deviation in area wage patterns. To illustrate, consider tool-and-die workers in Detroit. In the 1970's the wage levels for this occupation were very similar among firms in the area. However, in the 1980's the wage levels have varied significantly. In many local labor markets, wage patterns that were once quite narrow have become very wide.[7]

Besides compensation flexibility, many American employers have slashed the size of their core work forces and increased their use of contingent workers.[8] According to private industry estimates, between 1979 and 1983, roughly 700,000 managers and professionals (who had been employed at a firm for 3 years or more) lost their jobs; in the 1985-86 period, an additional 600,000 middle and upper level executives lost their jobs, despite improved business conditions.[9]

The result of these changes has been a dramatic reduction in the percentage of the labor force that is employed by the largest U.S. corporations. For example, in 1970, the Fortune 500 corporations represented 18.9 percent of American civilian employment; however, by 1986, they represented only 12.2 percent.[10]

Benefits and costs

The shift towards increased human resource flexibility and a contingent work force has altered labor market behavior and has created various benefits and costs.

Among the benefits, in theory, are:

- The potential for employers to lower their labor costs.
- The potential for employers to increase their competitiveness in product markets as a result of reduced labor costs.
- The increased security of remaining core workers and an increase in job opportunities for contingent workers.
- The ability for the economy to sustain economic growth and not rekindle high levels of inflation.
- The ability of many workers to be active in the world of work, family, and other areas, while traditional full-time employment would block the potential to be active in all of these areas.
- The increased ability of jobless workers to find a job.

Major costs of increased human resource flexibility are:

- Many contingent workers are economically insecure because their chance of obtaining various employee benefits—such as health insurance and pension coverage—are less than that for traditional core workers.
- Contingent workers may be paid less than core workers for working at similar types of jobs.
- The level and rate at which unemployment rises in a recession could be increased because of the growing use of flexible human resource systems.
- There may be a tendency to underinvest in human capital development (that is, training, skills development, and education) with a system that uses more contingent workers, because employers may not be willing to make the same investments in contingent workers that they would be willing to make in core workers.
- There may be a reduction in the chance that affirmative action goals will be met.

Estimating contingent workers

Measuring the contingent work force is quite difficult, but there is evidence that it has experienced significant increases in recent years. For example, there has been growth in the variety of contingent workers including part-timers, temporary workers, subcontractors, consultants, "life-of-project" workers, and leased employees ("rented" long term from an agency). While there is no official government measure of contingent workers, various data sources can be used to construct an estimate.

The following tabulation illustrates the growth of several components of the contingent work force. Data are from the Bureau of Labor Statistics—the estimates for temporary, self-employed, and part-time workers are from the household survey; the estimate for business services workers is from the establishment survey:

	Number (millions)		*Percent change*
	1980	*1987*	
Temporary workers	.4	.9	125
Part-time workers	16.3	19.5	20
Self-employed workers	8.5	9.6	13
Business services workers	3.3	5.1	55
Civilian labor force	106.9	119.9	12

Between 1980 and 1987, these components of the contingent work force all increased at a faster rate than did

the entire labor force. For example, part-time employment climbed 20 percent, while the total civilian labor force increased roughly 12 percent. However, in using this approach to measure the size of the contingent work force, there are two serious problems: double counting and undercounting.

The upper boundary. If all of the various contingent worker components are added together, an upper boundary can be obtained. If this is done, then there were 35.1 million contingent workers in the United States in 1987. However, there is a problem with this estimate—it double counts. For example, suppose a person is a temporary worker and also works in the business services industry. Given the definition of the contingent work force, this person would have been counted twice (as a temporary worker and as a business services employee).

The lower boundary. The lower boundary tries to eliminate double counting. However, in doing so, it overadjusts and excludes some workers who should be counted. Thus, the lower boundary undercounts. For example, BLS household survey data show that about 40 percent of temporary workers are part-timers. Thus, instead of counting 900,000 temporary workers as contingents in 1987, a conservative estimate would count only 40 percent, or 360,000. The remaining temporary workers already would be counted in the part-time worker totals. It is not possible to make the same type of adjustment for business services workers. A very conservative estimate might assume that all business service workers are already counted in the part-time, temporary, or self-employed worker group. Under this conservative definition, the lower boundary on the contingent work force was 29.1 million in 1987. The following tabulation gives some rough idea of the upper and lower boundaries of the contingent work force in 1987:

	Number (millions)		*Percent change*
	1980	*1987*	
Upper boundary	28.5	35.1	23
Lower boundary	24.8	29.1	17

The upper boundary double counts some workers and the lower boundary undercounts. Hence, the real size of the contingent work force would appear to be somewhere in between the upper and lower boundary estimates.

Suppose that the upper boundary estimate is the correct size of the contingent work force. If this were the case, then the following would have been true during the 1980–87 period:

- about 29 percent of the labor force would have been contingent workers;
- the contingent work force would have grown at a rate about twice as fast as the civilian labor force; and
- about half of the labor force increase would have been among contingent workers.

Exhibit 2. The relative importance of factors used to set wage objectives in corporations in 1978 and 1983

Rank	1978	1983
1	Industry patterns	Productivity or labor trends in this company
2	Local labor market conditions and wage rates	Expected profits of this company
3	Expected profits of this company	Local labor market conditions and wage rates
4	Productivity or labor cost trends in this company	Industry patterns
5	Consumer Price Index increases	Consumer Price Index increases
6	Influence of this settlement on other wage settlements or nonunion wage levels, or both	Internal (company) wage patterns (historical)
7	Potential losses from a strike	Influence of this settlement on other settlements or nonunion wage levels, or both
8	Internal (company) wage patterns (historical)	Internal (company) benefit patterns (historical)
9	Internal (company) benefit patterns (historical)	Potential losses from a strike
10	Major union settlements in other industries	National labor market conditions and wage rates
11	National labor market conditions and wage rates	Major union settlements in other industries

NOTE: The sample comprised 197 major U.S. corporations which, in both 1978 and 1983, ranked factors used in settling company wage objectives, with 1 being the most important factor and 11, the least important.

SOURCE: Audrey Freedman, *The New Look in Wage Policy and Employee Relations* (New York, The Conference Board, 1985).

Now, suppose that the lower boundary is the correct size of the contingent work force. Then the following would have been true during the 1980–87 period:

- about 24 percent of the American labor force would have been contingent workers;
- the contingent work force would have grown at about a 40-percent faster rate than the civilian labor force; and
- about 33 percent of the labor force increase would have been among contingent workers.

Thus, using this concept of contingent work, we can make the following assertions:

- the contingent work force is growing at a faster pace than the entire labor force;
- nearly one-fourth, or more, of the labor force is now in the contingent work force; and
- a significant number of the jobs created in the 1980's have been for contingent workers.

Compensation of contingent workers

What do we know about the compensation of contingent employees? There are extensive data concerning compensation of core workers, but not for contingent workers.[11]

As indicated earlier, the largest segment of the contingent work force is part-time workers. The following tabulation, based on data from the Bureau of Labor Statistics, shows median weekly earnings in 1987 for various occupations for both full-time (35 hours a week) and part-time (20 hours a week) workers:

	Full-time workers	*Part-time workers*	*Percent difference*
Professional	$518	$166	212
Clerical	308	114	170
Service	234	83	182
Blue-collar*	308	99	211

*Unskilled labor, crafts, and operatives

In all of the occupational groups, full-time median weekly earnings are much higher than part-time median weekly earnings. Even for clerical workers, the group with the smallest earnings difference, full-timers still earned 170 percent more than part-timers. However, given that part-timers work fewer hours per week than do full-timers, one would expect their earnings to be lower.

If a comparison of compensation levels of full-timers and part-timers is to be made, then a more useful statistic would be median hourly earnings. However, government survey data do not include median hourly earnings by occupation; nevertheless, some indication of the full-time/part-time differences can be obtained by making two assumptions. Assume that full-timers work an average of 35 hours a week, while part-timers work an average of 20 hours a week. The following tabulation, based on Bureau of Labor Statistics data and using hours of work assumptions, shows estimated 1987 median hourly earnings of full- and part-time workers:

	Full-time workers	*Part-time workers*	*Percent difference*
Professional	$14.80	$8.30	78
Clerical	8.80	5.20	69
Service	6.69	4.15	61
Blue collar*	8.80	4.95	78

*Unskilled labor, crafts, and operatives

The hours of work assumptions contribute to a narrowing of the differences between full-time and part-time compensation levels. However, the median hourly earnings of full-timers are still much higher than those of part-timers.

Table 1. Percent of full- and part-time workers with pension plan and health insurance coverage, 1985

Benfit	Full time, full year	Part-time — For noneconomic reasons	Part-time — For economic reasons
Health insurance			
Covered by:			
Own employer	78.6	26.2	34.8
Other's employer	7.0	34.3	17.3
Other nonemployer	6.3	21.4	17.4
No coverage	8.1	18.1	30.6
Pension plan			
Men:			
No plan	35.8	72.2	73.0
Plan exists:			
Covered	59.7	17.3	19.6
Not covered	4.6	10.5	7.7
Women:			
No plan	34.4	71.3	69.6
Plan exists:			
Covered	57.9	15.5	17.9
Not covered	7.7	13.2	12.5

NOTE: Estimates are based on Current Population Survey data from the March 1985 supplement. See Sar A. Levitan and Elizabeth Conway, *Part-Time Employment: Living on Half-Rations* (Center for Social Policy Studies, George Washington University, 1988), Working Paper No. 101.

Benefits. While our knowledge of contingent worker earnings is limited, our knowledge of contingent worker benefit levels is even more limited. Sar A. Levitan and Elizabeth Conway have provided some basic estimates in this area.[12] (See table 1.) Their research shows that employers of part-time workers often do not pay for such employee benefits as health insurance coverage. More than three-quarters of individuals who worked full time, full year received health insurance coverage from their employers, compared with roughly one-third or fewer of part-time workers.

However, many of the part-timers who did not receive health insurance directly from their employers were covered in some other plan. Such plans included those of another employer (for example, a part-time worker may be covered by a spouse's plan). Also, many part-timers are covered under nonemployer plans. Nevertheless, these es-

timates indicate that many part-timers have no medical coverage.

A smaller percentage of part-timers are included in the pension plans of their employers, compared with full-time workers. For example, while almost three-fifths of all full-time, full-year workers are included in their employers' pension plan—when one exists—well under one-fifth of part-timers are included in their employers' pension plan. Also, a much higher percentage of part-timers than full-timers work at establishments that do not have a pension plan.

Social welfare—a related system

In dealing with human resource flexibility, public decisionmakers, business executives, and labor leaders will soon discover that they are working with two related systems. One system is the labor market, which represents the vast number of ways employers demand, and workers supply, labor services. The other system is the social welfare system, which represents a combination of programs and policies in both the private and public sectors. Social security and unemployment insurance are two key public sector programs of the social welfare system. Pensions, health benefits, savings plans, and so forth, represent major areas of the private sector's growing role in the social welfare system.

Prior to the 1980's, there was a high degree of rigidity in both the labor market and the social welfare system. However, in the 1980's, labor markets became more flexible. Yet the same degree of change has not been experienced within the social welfare system. Thus, while labor markets often may be flexible, the social welfare system often is not. For example, the worker-related problems most often cited deal with the loss of such benefits as pensions and health coverage. As a worker shifts from core to contingent status, the worker may experience a significant loss in the value of his or her pension. The worker also may not be eligible for other types of benefits.

While labor markets have become much more flexible and now incorporate both core and contingent workers, the social welfare system, in many cases, still incorporates only the traditional core worker. This could cause difficulties for some workers.

One solution would be to move labor markets away from flexibility and back towards rigidity. However, this would create many new labor market regulations under which employers would have to function. The major problem with this solution is that it assumes that labor markets can be both rigid and competitive. Given current international conditions and other factors, this assumption could be quite wrong.

A second solution would be to increase the flexibility of the social welfare system. If both the social welfare system and labor markets were flexible, then a shift from core to contingent work systems would have a much smaller potential for hardship. Examples of increased social welfare system flexibility include prorated employee benefits and portable pensions. Several major corporate employers have chosen this solution to potential equity-related issues.

Also in terms of equity issues, a few employers—who have increased their contingent work forces—have been concerned that these changes not alter commitments to equal employment opportunity. These employers have taken steps to see that affirmative action goals are still obtained under a more flexible human resource environment.

As public decisionmakers become more interested in these issues, corporate executives and labor leaders will find that they must relate to the Congress, the courts, and the media on numerous contingent worker and flexibility-related questions. □

——FOOTNOTES——

[1]Thomas A. Kochan, Harry C. Katz, and Robert B. McKersie, *The Transformation of American Industrial Relations* (New York, Basic Books, Inc., 1986), pp. 21–46.

[2]Lawrence Schein, *Current Issues in Human-Resource Management* (New York, The Conference Board, 1986), pp. 3–17.

[3]Richard S. Belous, *Flexibility and American Labour Markets: The Evidence and Implications* (Geneva, International Labour Office, 1987), pp. 5–27, Working Paper No. 14; and *Flexibility in the Labour Market* (Paris, Organization for Economic Cooperation and Development, 1986) pp. 9–38 and 90–122.

[4]Sherwin Rosen, "Implicit Contracts," *Journal of Economic Literature*, September 1985, pp. 1144–75.

[5]Audrey Freedman, *The New Look in Wage Policy and Employee Relations* (New York, The Conference Board, 1985), pp. 1–14.

[6]Freedman, *The New Look*, p. iv.

[7]Richard Belous, *Wage Restraints in the 1980's: A Turning Point in U.S. Labor Markets?* (Washington, Congressional Research Service, 1984), pp. 31–34.

[8]Audrey Freedman, "A Fundamental Change in Wage Bargaining," *Challenge*, July-August 1982, pp. 15–17.

[9]Susan R. Sanderson and Lawrence Schein, "Sizing Up the Down-Sizing Era," *Across The Board*, November 1986, pp. 14–23.

[10]Estimates based on data from *Fortune's* statistical department.

[11]Data on wages and benefit of temporary and permanent employees in the temporary help supply industry are provided in Harry B. Williams, "What temporary workers earn: findings from new BLS survey," *Monthly Labor Review*, March 1989, pp. 3–6.

[12]Sar A. Levitan and Elizabeth Conway, *Part-Time Employment: Living on Half-Rations* (Center for Social Policy Studies, George Washington University, 1988), pp. 11–13.

Productivity continued to rise in many industries during 1987

Increases in output per employee hour were not as widespread as in 1986; among industries showing strong gains were steel, aluminum, and semiconductors

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Productivity, as measured by output per employee hour, increased in 1987 in more than two-thirds of the industries for which current data are available. More than three-fourths of the same industries recorded gains in 1986.

This article updates all indexes included in the Bureau of Labor Statistics industry productivity measurement program.[1] It extends the labor productivity measures through 1987 and includes certain industry multifactor productivity measures through 1986, as well as selected government productivity measures through 1987.

Table 1 shows labor productivity trends in the industries annually covered by the Bureau and includes measures for the following additional industries: men's and boys' suits and coats; agricultural chemicals; carburetors, pistons, rings, and valves; and variety stores.[2]

Changes in industry labor productivity

Manufacturing. Among major manufacturing industries, both steel and motor vehicles posted gains in output per employee hour in 1987. The steel industry registered a gain of 7.0 percent, well above the industry's long-term average. Output was up 9.5 percent in 1987, in contrast to a large decline in 1986. Demand for steel grew in construction, chemicals, oil and gas production, and heavy equipment manufacturing, while employee hours grew 2.4 percent in 1987. This was the fifth consecutive year of productivity growth in the steel industry. Motor vehicle manufacturing registered a productivity gain of 2.9 percent, slightly below the industry's long-term average. Output grew 0.8 percent, reversing the decline in 1986, while employee hours fell 2.0 percent in 1987. Although the production of passenger cars fell in 1987, this drop was more than compensated by output gains in trucks, buses, truck trailers, motor homes, and replacement parts. The gain was the seventh consecutive one in the industry.

Among the other manufacturing industries, some had large output per employee hour increases in 1987. Semiconductors posted a high gain of 23.6 percent after registering only a small increase in the previous year. Output was up 14.0 percent, aided by increased demand from computer manufacturers and limits placed on imports from Japan. Employee hours were off 7.8 percent, caused in part by mergers and consolidations in the industry.

The aluminum industries also had higher productivity gains in 1987 than in 1986. Aluminum rolling and drawing had an increase of 13.3 percent, based on an output gain of 12.3 percent and a decline in employee hours of 0.9 percent. Primary aluminum manufacturing registered a productivity gain of 7.1 percent, as output was up 10.2 percent while employee hours grew 2.9 percent. Both domestic demand for aluminum products and exports accelerated at the same time that new, more efficient plant and equipment were increasingly being utilized.

Productivity in the oilfield machinery industry rose 12.6 percent in 1987. However, it reflected a drop in output of 10.7 percent, because of continued poor demand for oilfield equipment as oil prices remained low, accompanied by an even larger drop of 20.6 percent in employee hours, as the industry continued to cut back on employment. The tires and tubes industry, benefiting from cost cutting in previous years involving elimination of outdated plant and equipment, recorded a large productivity gain of 10.8 percent in 1987, compared with a substantially smaller gain in 1986. Output was up 10.3 percent in 1987, while employee hours fell 0.5 percent in this industry.

Other important manufacturing industries with sub-

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Table 1. Indexes of output per employee hour in selected industries, 1982–87, and percent changes, 1986–87 and 1982–87
[1977 = 100]

SIC code[1]	Industry	1982	1983	1984	1985	1986	1987[2]	Percent change, 1986–87	Average annual percent change, 1982–87
	Mining								
1011	Iron mining, crude ore	100.9	139.0	173.3	187.9	200.3	267.5	33.5	18.9
1011	Iron mining, usable ore	98.2	138.6	171.7	187.9	197.8	262.0	32.5	18.9
1021	Copper mining, crude ore	106.4	129.9	140.3	164.2	195.4	193.1	−1.2	13.3
1021	Copper mining, recoverable metal	116.2	130.9	155.4	193.1	228.9	209.8	−8.3	14.9
111, 121	Coal mining	119.2	136.1	151.3	154.0	167.3	179.7	7.4	8.0
121	Bituminous coal and lignite mining	120.0	136.9	152.3	154.6	168.2	180.6	7.4	7.9
14	Nonmetallic minerals, except fuels	89.3	98.2	105.5	107.5	108.2	107.9	−.3	3.7
142	Crushed and broken stone	94.1	103.9	105.8	104.5	104.9	102.7	−2.1	1.3
	Manufacturing								
2011, 13	Red meat products	112.3	115.9	117.0	119.5	117.3	114.0	−2.8	.4
2011	Meat packing plants	119.5	123.4	125.6	130.1	126.2	124.1	−1.7	.8
2013	Sausages and other prepared meats	96.5	100.0	99.5	98.8	98.7	94.7	−4.1	−.4
2016, 17	Poultry dressing and processing	125.6	131.7	130.3	133.2	127.3	[3]	[3]	[4]4
2026	Fluid milk	135.3	142.4	147.7	152.3	157.0	164.2	4.6	3.8
203	Preserved fruits and vegetables	107.9	110.4	112.4	111.7	118.3	[3]	[3]	[4]2.0
2033	Canned fruits and vegetables	108.6	112.2	115.7	122.1	131.5	[3]	[3]	[4]4.8
204	Grain mill products	121.0	125.5	132.8	144.9	146.6	[3]	[3]	[4]5.4
2041, 45	Flour (including flour mixes) and other grains	112.3	117.7	122.9	126.0	132.1	[3]	[3]	[4]4.0
2041	Flour and other grain mill products	104.1	110.4	114.9	122.9	130.6	129.0	−1.2	4.8
2043	Cereal breakfast foods	115.0	118.8	129.3	133.8	134.0	[3]	[3]	[4]4.3
2044	Rice milling	104.5	103.3	93.2	103.2	112.6	118.4	5.2	2.9
2046	Wet corn milling	138.8	156.9	192.1	198.4	218.1	[3]	[3]	[4]12.1
2047, 48	Prepared feeds for animals and fowls	124.9	127.5	132.5	143.8	140.0	[3]	[3]	[4]3.5
205	Bakery products	103.3	106.9	106.8	108.5	114.4	[3]	[3]	[4]2.2
2061, 62, 63	Sugar	90.4	98.6	99.7	105.5	110.1	127.4	15.7	6.2
2061, 62	Raw and refined cane sugar	87.6	100.0	94.7	108.7	109.6	118.5	8.1	5.6
2063	Beet sugar	94.8	94.5	108.8	100.7	111.8	142.6	27.5	7.3
2082	Malt beverages	122.6	131.3	137.9	130.3	152.3	154.8	1.6	4.5
2086	Bottled and canned soft drinks	114.1	121.5	131.0	136.7	146.6	157.3	7.3	6.5
2111, 21, 31	Total tobacco products	100.7	105.1	110.3	113.4	117.2	119.2	1.7	3.5
2111, 31	Cigarettes, chewing and smoking tobacco	99.5	104.1	107.2	111.7	115.5	121.2	4.9	3.9
2121	Cigars	111.4	112.3	141.4	129.3	133.1	111.1	−16.5	1.2
2211, 21	Cotton and synthetic broad woven fabrics	112.5	121.8	119.9	123.7	132.9	133.7	.6	3.4
2251, 52	Hosiery	114.2	118.0	119.9	118.5	121.0	121.1	.1	1.0
2281	Nonwool yarn mills	118.2	128.5	129.6	134.5	141.1	142.8	1.2	3.7
2311	Men's and boys' suits and coats	95.2	90.2	96.9	106.3	107.5	114.8	6.8	4.5
2421	Sawmills and planing mills, general	115.1	126.8	132.3	139.2	155.1	151.6	−2.3	6.0
2431	Millwork	86.1	87.9	88.7	85.7	90.1	[3]	[3]	[4].7
2434	Wood kitchen cabinets	96.1	94.3	94.2	89.1	87.0	[3]	[3]	−[4]2.5
2435, 36	Veneer and plywood	114.4	121.1	120.0	125.1	126.6	[3]	[3]	[4]2.4
2435	Hardwood veneer and plywood	101.4	110.1	103.9	118.4	122.8	[3]	[3]	[4]4.7
2436	Softwood veneer and plywood	122.1	127.3	129.6	128.8	128.8	[3]	[3]	[4]1.2
251	Household furniture	104.7	110.1	112.2	112.5	118.5	115.9	−2.2	2.1
2511, 17	Wood household furniture	98.2	103.8	105.5	104.4	111.9	[3]	[3]	[4]2.7
2512	Upholstered household furniture	115.9	121.6	122.7	124.6	127.1	[3]	[3]	[4]2.1
2514	Metal household furniture	107.5	108.9	121.4	124.2	128.8	[3]	[3]	[4]5.1
252	Office furniture	107.4	112.0	117.8	116.7	122.6	4.1	2.3	
2521	Wood office furniture	90.3	93.9	96.0	96.2	93.4	[3]	[3]	[4].9
2522	Metal office furniture	116.6	122.1	130.5	128.2	131.9	[3]	[3]	[4]3.0
2611, 21, 31, 61	Paper, paperboard, and pulp mills	111.3	119.5	121.0	123.1	133.5	141.8	6.2	4.6
2643	Paper and plastic bags	95.3	102.9	105.6	107.1	112.3	[3]	[3]	[4]3.8
2651	Folding paperboard boxes	104.2	104.5	102.4	99.6	101.4	98.1	−3.3	−1.2
2653	Corrugated and solid fiber boxes	111.9	114.0	118.9	122.5	126.7	128.9	1.7	3.1
281	Industrial inorganic chemicals	86.3	94.0	104.5	101.4	105.4	[3]	[3]	[4]4.9
2812	Alkalies and chlorine	100.8	127.7	146.1	148.3	197.5	[3]	[3]	[4]16.1
2816	Inorganic pigments	96.7	107.4	128.0	132.7	138.8	[3]	[3]	[4]9.8
2819 PT	Industrial inorganic chemicals, n.e.c.	80.8	85.8	95.0	91.5	90.6	[3]	[3]	[4]3.0
2823, 24	Synthetic fibers	103.6	126.2	125.3	135.8	146.2	155.7	6.5	7.6
2834	Pharmaceutical preparations	107.0	114.3	116.4	118.1	121.8	124.0	1.8	2.7
2841	Soaps and detergents	100.9	97.7	101.8	103.3	104.5	[3]	[3]	[4]1.3
2844	Cosmetics and other toiletries	84.0	86.2	85.2	87.3	94.3	[3]	[3]	[4]2.5
2851	Paints and allied products	106.5	113.8	121.5	125.6	125.2	128.5	2.6	3.7
2869	Industrial organic chemicals, n.e.c.	87.2	105.3	113.9	112.5	119.5	[3]	[3]	[4]7.2
287	Agricultural chemicals	94.5	106.2	119.8	115.6	108.0	[3]	[3]	[4]3.7
2873	Nitrogenous fertilizers	114.7	128.1	152.6	149.7	133.5	[3]	[3]	[4]4.0
2874	Phosphatic fertilizers	88.0	108.1	121.8	113.5	104.7	[3]	[3]	[4]4.0
2875	Fertilizers, mixing only	79.8	91.9	99.1	102.6	95.7	[3]	[3]	[4]4.8
2879	Pesticides and agricultural chemicals, n.e.c.	95.7	97.2	110.0	103.1	103.1	[3]	[3]	[4]2.1
2911	Petroleum refining	79.4	81.8	92.5	102.6	113.8	118.8	4.4	9.3
3011	Tires and inner tubes	128.2	136.1	146.8	146.7	151.4	167.8	10.8	4.9
3079	Miscellaneous plastics products	110.1	107.2	110.5	113.0	114.1	[3]	[3]	[4]1.2
314	Footwear	106.4	103.9	105.7	107.3	109.5	104.5	−4.6	.2
3221	Glass containers	105.8	108.5	128.0	127.0	138.9	143.0	3.0	6.6

See footnote at end of table.

Table 1. Continued—Indexes of output per employee hour in selected industries, 1982–87, and percent changes, 1986–87 and 1982–87

[1977 = 100]

SIC code[1]	Industry	1982	1983	1984	1985	1986	1987[2]	Percent change, 1986–87	Average annual percent change, 1982–87
3241	Hydraulic cement	94.0	108.4	125.3	128.3	135.5	142.2	4.9	8.2
325	Structural clay products	102.6	105.4	111.3	112.8	115.6	118.7	2.7	3.0
3251, 53, 59	Clay construction products	103.3	101.1	110.4	112.6	114.5	116.2	1.5	2.8
3251	Brick and structural clay tile	88.6	85.7	93.4	100.4	98.9	102.9	4.0	3.6
3253	Ceramic wall and floor tile	128.1	126.2	144.0	131.1	140.5	[3]	[3]	[4]2.3
3255	Clay refractories	100.0	121.6	115.1	114.1	122.9	131.4	6.9	4.0
3271, 72	Concrete products	91.0	97.6	99.2	100.5	105.9	[3]	[3]	[4]3.4
3273	Ready-mixed concrete	90.6	93.7	96.3	97.4	100.1	[3]	[3]	[4]2.4
331	Steel	90.9	116.8	131.3	139.5	141.8	151.7	7.0	9.6
3321	Gray iron foundries	93.7	98.3	106.8	104.2	107.4	104.8	−2.4	2.3
3325	Steel foundries	89.0	89.9	98.8	95.6	100.3	94.3	−6.0	1.7
3325, 25	Steel foundries n.e.c.	88.4	90.2	103.5	101.0	104.3	101.9	−2.3	3.3
3331, 32, 33	Primary copper, lead, and zinc	128.0	141.2	148.0	181.5	210.8	221.1	4.9	12.6
3331	Primary copper	128.5	138.3	151.9	189.8	229.2	228.2	−.4	14.1
3334	Primary aluminum	103.0	111.5	125.4	125.4	134.0	143.5	7.1	6.5
3351	Copper rolling and drawing	106.0	121.1	128.1	122.0	127.2	139.8	9.9	4.3
3353, 54, 55	Aluminum rolling and drawing	99.2	110.4	116.2	115.9	125.0	141.6	13.3	6.3
3411	Metal cans	118.5	120.5	123.0	125.6	126.0	134.3	6.6	2.3
3423	Hand and edge tools	92.8	89.3	90.1	90.6	89.8	[3]	[3]	[4]−.5
3433	Heating equipment, except electric	102.3	93.2	102.0	101.6	105.0	[3]	[3]	[4]1.4
3441	Fabricated structural metal	99.5	103.0	107.9	117.7	117.7	[3]	[3]	[4]4.8
3442	Metal doors, sash, and trim	96.0	99.7	102.8	106.3	104.1	[3]	[3]	[4]2.3
3465, 66, 69	Metal stampings	98.1	104.7	110.4	104.7	108.7	[3]	[3]	[4]2.1
3465	Automotive stampings	106.7	122.3	127.9	120.1	121.8	[3]	[3]	[4]2.5
3469	Metal stampings, n.e.c.	89.3	89.3	95.1	90.0	95.9	[3]	[3]	[4]1.5
3494	Valves and pipe fittings	101.3	103.6	105.1	104.5	104.5	[3]	[3]	[4].7
3498	Fabricated pipe and fittings	89.5	87.2	98.0	90.4	91.0	[3]	[3]	[4].7
3519	Internal combustion engines, n.e.c.	82.0	86.8	99.8	102.7	108.5	[3]	[3]	[4]7.6
352	Farm and garden machinery	94.9	95.1	105.2	101.5	103.0	[3]	[3]	[4]2.3
3523	Farm machinery and equipment	92.6	92.0	104.6	98.6	95.5	[3]	[3]	[4]1.3
3524	Lawn and garden equipment	106.9	111.8	111.3	115.7	132.1	[3]	[3]	[4]4.7
3531	Construction machinery and equipment	88.9	88.2	102.6	104.1	107.1	99.3	−7.3	3.3
3532	Mining machinery and equipment	91.0	91.3	98.5	101.4	103.7	[3]	[3]	[4]3.7
3533	Oilfield machinery and equipment	98.4	91.8	87.5	80.1	70.1	78.9	12.6	−5.6
3541, 42	Machine tools	88.0	83.0	93.6	96.7	98.5	101.9	3.5	3.7
3541	Metal cutting machine tools	89.2	81.1	93.3	96.4	105.1	100.2	−4.7	4.1
3542	Metal forming machine tools	85.0	87.6	93.7	96.6	97.1	104.6	7.7	4.0
3545	Machine tool accessories	89.1	83.0	95.4	92.6	95.4	[3]	[3]	[4]2.5
3561, 63	Pumps and compressors	95.9	100.2	106.1	106.8	108.7	[3]	[3]	[4]3.2
3561	Pumps and pumping equipment	93.1	97.7	104.4	104.4	105.5	[3]	[3]	[4]3.2
3562	Ball and roller bearings	83.3	86.3	94.4	92.1	95.6	101.2	5.9	3.7
3563	Air and gas compressors	102.0	105.2	109.7	111.9	115.0	[3]	[3]	[4]3.1
3585	Refrigeration and heating equipment	100.1	100.9	105.5	103.7	101.5	[3]	[3]	[4].6
3592	Carburetors, pistons, rings, and valves	92.0	99.6	110.3	114.0	111.1	[3]	[3]	[4]5.3
3612	Transformers	99.6	99.1	97.6	99.3	99.4	94.6	−4.8	−.7
3613	Switchgear and switchboard apparatus	101.3	106.1	107.4	110.6	110.7	109.3	−1.3	1.5
3621	Motors and generators	102.4	104.3	107.9	110.5	112.3	115.9	3.2	2.5
3631, 32, 33, 39	Major household appliances	108.6	117.6	123.6	127.2	134.1	139.2	3.8	4.9
3631	Household cooking equipment	112.6	120.8	131.9	135.6	158.4	168.1	6.1	8.5
3632	Household refrigerators and freezers	116.1	127.1	127.5	136.8	133.5	131.6	−1.4	2.4
3633	Household laundry equipment	105.4	112.2	117.5	118.2	123.1	133.0	8.0	4.2
3639	Household appliances, n.e.c.	94.7	103.7	109.8	110.0	113.1	117.3	3.7	3.9
3641	Electric lamps	108.4	124.8	131.9	126.9	131.1	146.9	12.1	4.8
3645, 46, 47, 48	Lighting fixtures	91.0	96.3	102.2	107.0	113.8	116.5	2.4	5.2
3651	Radio and television receiving sets	163.9	196.1	236.9	249.8	278.1	300.5	8.1	12.5
3674	Semiconductors and related devices	197.9	211.5	229.2	206.1	210.5	260.1	23.6	3.6
371	Motor vehicles and equipment	96.9	109.6	115.7	121.2	121.7	125.2	2.9	4.8
3825	Instruments to measure electricity	119.2	121.8	133.7	130.4	122.2	[3]	[3]	[4]1.2
	Other								
401	Railroad transportation, revenue traffic	115.8	141.9	152.6	162.1	178.6	208.3	16.6	11.1
401	Railroad transportation, car miles	110.1	128.9	137.7	138.9	148.2	166.8	12.6	7.4
4111,13,414 PT	Class I bus carriers	98.8	95.4	90.9	87.4	86.8	[3]	[3]	−[4]3.4
4213 PT	Intercity trucking	108.0	130.7	135.1	130.2	134.5	[3]	[3]	[4]4.4
4213 PT	Intercity trucking, general freight	107.8	136.0	137.6	131.7	140.9	[3]	[3]	[4]5.1
4511, 4521 PT	Air transportation[5]	114.9	126.8	131.7	136.5	138.2	146.4	5.9	4.4
4612, 13	Petroleum pipelines	89.2	94.3	104.5	104.9	107.0	106.6	−.4	3.7
4811	Telephone communications	129.1	145.1	143.0	149.8	161.3	166.1	3.0	4.7
491, 492, 493	Gas and electric utilities	89.3	88.1	91.4	90.5	89.1	92.7	4.0	.6
491, 493 PT	Electric utilities	89.5	90.9	94.4	93.5	96.2	101.0	5.0	2.2
492, 493 PT	Gas utilities	89.0	81.1	83.6	82.1	73.0	74.8	2.5	−3.4
5251	Hardware stores[6]	109.2	111.4	121.1	124.6	137.4	149.5	8.8	6.6
5311	Department stores	112.4	119.5	126.6	129.2	135.3	137.2	1.4	4.1
5331	Variety stores[6]	112.5	119.7	123.7	114.3	101.2	[3]	[3]	−[4]2.5

See footnotes at end of table.

Table 1. Continued—Indexes of output per employee hour in selected industries, 1982–87, and percent changes, 1986–87 and 1982–87
[1977 = 100]

SIC code[1]	Industry	1982	1983	1984	1985	1986	1987[2]	Percent change, 1986–87	Average annual percent change, 1982–87
54	Retail food stores[6]	95.5	95.5	96.1	96.6	94.6	92.8	−1.9	−0.5
5411	Grocery stores[6]	97.9	98.6	100.1	98.4	96.3	94.3	−2.1	−0.8
546	Retail bakeries[6]	90.6	93.0	87.2	81.6	85.5	86.3	.9	−1.6
5511	Franchised new car dealers	100.4	109.4	110.4	109.7	110.7	105.3	−4.9	.8
5541	Gasoline service stations[6]	111.8	122.5	129.1	134.3	143.9	145.7	1.3	5.4
56	Apparel and accessory stores[6]	126.4	132.9	141.0	146.5	153.7	146.4	−4.7	3.5
5611	Men's and boys' clothing stores[6]	116.6	120.6	127.4	135.0	139.5	135.0	−3.2	3.6
5621	Women's ready-to-wear stores[6]	142.0	151.3	158.3	162.8	176.4	171.9	−2.6	4.2
5651	Family clothing stores[6]	140.7	149.2	145.8	138.5	136.0	130.9	−3.8	−2.0
5661	Shoe stores[6]	110.2	107.6	110.1	117.4	125.8	124.0	−1.4	3.3
57	Furniture, home furnishings & equip. stores[6]	109.2	118.4	129.4	133.5	144.6	145.2	.4	6.0
571	Furniture and home furnishings stores[6]	97.6	104.1	113.1	108.7	115.5	116.0	.4	3.3
572, 3	Appliance, radio, television & music stores[6]	128.7	143.4	155.1	180.0	199.5	199.8	.2	10.0
572	Household appliance stores[6]	102.0	111.8	139.2	154.6	178.8	185.2	3.6	13.7
573	Radio, television, and music stores[6]	142.4	159.5	165.9	190.2	206.5	204.3	−1.1	8.1
58	Eating and drinking places[6]	96.9	95.3	91.1	87.9	89.7	90.4	.8	−1.6
5912	Drug and proprietary stores[6]	107.9	111.4	106.2	106.5	105.6	105.9	.3	−.7
5921	Liquor stores[6]	108.1	101.6	98.7	107.1	98.0	91.6	−6.5	−2.4
602	Commercial banking	93.2	101.3	104.3	109.7	111.7	[3]	[3]	[4]4.5
7011	Hotels, motels, and tourist courts[6]	88.8	95.4	102.1	97.5	92.8	88.0	−5.2	−.5
721	Laundry and cleaning services[6]	90.6	90.4	92.3	87.3	85.0	84.0	−1.2	−1.8
7231, 7241	Beauty and barber shops[6]	108.3	114.0	103.9	98.6	97.3	99.2	2.0	−2.7
7231	Beauty shops[6]	113.1	120.1	112.3	104.1	98.8	100.4	1.6	−3.5
753	Automotive repair shops[6]	87.4	86.1	88.3	96.1	93.2	98.4	5.6	2.6

[1] As defined in the *Standard Industrial Classification Manual*, 1972, published by the Office of Management and Budget.

[2] Preliminary.

[3] Not available.

[4] Percent change, 1982–86.

[5] Output per employee.

[6] Output per hour of all persons.

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

stantial gains in productivity in 1987 included radio and television sets (8.1 percent); bottled and canned soft drinks (7.3 percent); men's and boys' suits and coats (6.8 percent); metal cans (6.6 percent), synthetic fibers (6.5 percent); and paper, paperboard, and pulp mills (6.2 percent). All of these industries had output gains in 1987.

However, a number of manufacturing industries registered large declines in productivity in 1987. These industries included cigars (−16.5 percent); construction machinery (−7.3 percent); steel foundries (−6.0 percent); transformers (−4.8 percent); metal cutting machine tools (−4.7 percent); and footwear (−4.6 percent).

Mining. Productivity changes were mixed among the mining industries. Iron mining (usable ore) had a very high productivity gain of 32.5 percent in 1987. Output grew 21.0 percent, in response to strong demand from the steel industry, while employee hours continued to decline (−8.7 percent). In contrast, copper mining (recoverable metal), posted a productivity decline of 8.3 percent. Although output increased strongly (11.0 percent) as demand for copper expanded sharply, employee hours were up even more (21.1 percent), as many workers were engaged in renovating reopened mines prior to the actual production of ore.

Coal mining productivity was up 7.4 percent. Output grew 3.0 percent, partially because of increased demand from utilities, while employee hours fell 4.1 percent due to changes in work rules and a continued decline in small mines. Nonmetallic mineral mining recorded a small drop in productivity of 0.3 percent. Although output was up slightly (1.8 percent), based on demand from the construction industry, employee hours were up somewhat more (2.0 percent).

Transportation and utilities. Almost all of the transportation and utility industries had productivity gains in 1987. Productivity grew 16.6 percent in railroad transportation (revenue traffic), well above the gain in 1986. Output was up 8.2 percent, as shipments of coal, grain, lumber, and wood increased, and passenger transportation grew. Air transportation had a gain of 5.9 percent in 1987. Output was up 10.4 percent, as both passenger and freight traffic increased, while employees were up 4.2 percent.

Productivity in electric utilities grew 5.0 percent as output was up 3.3 percent and employee hours fell 1.5 percent. Gas utilities had a gain of 2.5 percent, with output up 1.4 percent and hours down 1.0 percent. Extreme weather conditions, both heat and cold, resulted in output growth for both of these utility industries, while technological changes helped to lower labor requirements.

Productivity in telephone communications grew 3.0

percent with output up 5.6 percent and hours up 2.5 percent. Continued productivity growth was aided by expanding the installation of electronic switches and fiber optic cables. Productivity declined slightly in petroleum pipelines (–0.4 percent); output and employee hours were off slightly (–0.8 percent and–0.5 percent, respectively).

Trade and services. Most of the productivity gains in trade and services were small in 1987, and many industries recorded declines. The hardware store industry was an exception with a gain of 8.8 percent. Output grew 11.6 percent as expenditures for maintenance and repair of residential properties were up, while hours increased 2.6 percent. Another exception was automotive repair shops, which grew 5.6 percent based on a gain in output of 4.3 percent and a drop in hours of 1.1 percent. Productivity of beauty and barber shops increased 2.0 percent; department store productivity rose 1.4 percent; and gasoline stations posted a 1.3-percent gain. Productivity in eating and drinking places increased 0.8 percent, output grew 4.9 percent, and hours were up 4.2 percent. Furniture and home furnishings stores had a 0.4-percent gain in productivity. Demand for furniture and appliances remained high in 1987 because of the continued growth in the housing market. Productivity in drug stores grew 0.3 percent, output increased 2.8 percent, because of expanding prescription sales, while hours were up 2.5 percent.

Among the trade and service industries with declines, retail food stores posted a drop of 1.9 percent in productivity. The slight increase in output of 0.3 percent was outweighed by the 2.2-percent increase in hours. Apparel and accessory stores had a productivity decline of 4.7 percent. Output declined slightly (–0.1 percent), while hours were up (4.9 percent) as the number of stores continued to grow. All of the components of this industry (men's, women's, and family clothing and shoe stores) also registered declines in productivity. Productivity of franchised new car dealers fell 4.9 percent, output was down 2.5 percent because of declining sales of new and used cars, while hours were up 2.4 percent. Productivity fell 5.2 percent in hotels and motels as the industry continued to feel the effects of overbuilding. Output was up only 0.2 percent while hours grew 5.7 percent 1987. Liquor store productivity declined 6.5 percent, as output fell 3.0 percent and hours increased 3.9 percent. Productivity declined in the laundry and cleaning services industry by 1.2 percent, as a result of an increase in hours (3.0 percent) that exceeded the output increase of 1.7 percent.

Trends, 1982–87

Gains. Almost all of the industries measured registered growth in productivity over the 1982–87 period. Iron mining (usable ore) posted the highest rate of gain at an average annual rate of 18.9 percent per year. Demand was up from the steel industry and output grew at a 4.4-percent rate, while employee hours averaged a decline of 12.2-percent from 1982 to 1987. During this period, production of iron ore became more concentrated in the large scale, highly efficient taconite mining operations in the Lake Superior district. Copper mining (recoverable metal) had a large productivity gain of 14.9 percent from 1982–87. Copper mine output grew at a rate of 2.4 percent while employee hours declined at an average of 10.9 percent per year. Intense international competition in recent years led to domestic copper mine modernization, adaptation of advanced mining methods, and the shutdown of old mines and facilities.

Other industries recording significant gains from 1982 to 1987 included primary copper, lead, and zinc (12.6 percent); radio and TV sets manufacturing (12.5 percent); railroad transportation (revenue traffic) (11.1 percent); and appliance, radio, TV, and music stores (10.0 percent).

It is noteworthy that the steel industry recorded a productivity gain of 9.6 percent during 1982–87. The gain is significantly above the 1.6-percent long-term rate for this industry during the 1947–82 period. Demand for steel recovered from the low level of the 1982 recession while the industry continued the widespread elimination of less efficient plant and equipment. The motor vehicle industry registered a productivity gain of 4.8 percent over the 1982–87 period. This is above the long-term rate of 3.0 percent for the previous period, 1957–82. Output of motor vehicles grew at the high rate of 10.0 percent from 1982 to 1987, while employee hours were up an average of 4.9 percent. During this period, the industry was involved in modernizing existing plant and equipment, opening new, highly advanced plants and closing older, less efficient production facilities.

Declines. Among the relatively few industries that registered average annual productivity declines over the 1982–87 period, the oilfield machinery and equipment industry posted the steepest, declining at a rate of –5.6 percent. Output recorded significant declines in every year, averaging –21.6 percent. Employee hours also fell off sharply, dropping at a rate of –16.9 percent. Demand for oilfield equipment decreased sharply over this period as drilling activity declined because of an oversupply of oil and a falloff in its price. Other industries with declining productivity rates from 1982–87 included gas utilities (–3.4 percent), beauty and barber shops (–2.7 percent); liquor stores (–2.4 percent); family clothing stores (–2.0 percent); and laundry and cleaning services (–1.8 percent).

Industry multifactor productivity

Measures of multifactor productivity for the tires and inner tubes and footwear industries are presented for the first time. They are included with the updated measures for the steel and motor vehicles industries. This is an ongoing program and measures for additional industries will be published as they are completed.[3]

In multifactor productivity measures, output is related

to the combined inputs of labor, capital, and intermediate purchases. Multifactor productivity is equal to output per hour adjusted to remove the effects of changes in capital per hour and intermediate purchases per hour (materials, fuels, electricity, and services). These effects are measured as the change in the nonlabor to labor input ratio, weighted by the nonlabor input's share in total output. The capital effect, for example, is the change in the capital-labor ratio weighted by capital's share in output. Multifactor productivity measures still show the effect of many influences such as economies of scale, capacity utilization, skill and effort of the work force, and technological change. Multifactor measures are available through 1986. Data for multifactor productivity and related indexes for 1982–86 are presented in table 2.

Current developments. In 1986, multifactor productivity grew in the tires and inner tubes industry (2.8 percent) and steel industry (2.2 percent), but declines were recorded in motor vehicles (–5.0 percent) and footwear (–0.2 percent). All four industries experienced declining output in 1986, but in steel and tires and inner tubes, combined inputs fell faster than output.

In the tires and inner tubes industry, output fell 3.7 percent while combined inputs dropped 6.2 percent resulting in the multifactor productivity gain. Labor hours and intermediate purchases fell significantly (–6.1 and –8.3 percent, respectively), while capital declined a slight 0.4 percent. In the steel industry, the fall in output of 4.3 percent was exceeded by the reduction in combined inputs of 6.3 percent leading to the multifactor productivity increase in 1986. Substantial declines were recorded for labor (–8.5 percent); capital (–5.1 percent); and intermediate purchases (–5.2 percent).

The multifactor productivity drop in the motor vehicles industry can be attributed to a decline in output of 2.9 percent which was accompanied by an increase of 2.3 percent in combined inputs. Although labor hours fell (–3.4 percent), both capital and intermediate purchases increased (by 2.9 percent and 3.8 percent, respectively).

The multifactor productivity decrease in the footwear industry is based on a drop in output (–11.0 percent) which was not quite matched by the reduction in combined inputs (–10.8 percent). The decline in labor hours (–12.7 percent) and in intermediate purchases (–11.7 percent) exceeded the drop in output, but capital fell somewhat less (–4.7 percent).

Trends, 1982–86. Over the 1982–86 period, substantial average annual gains in multifactor productivity were recorded in the steel industry (5.9 percent) and in the motor vehicles and tires and inner tubes industries (both 2.8 percent). However, the footwear industry posted a 2.7-percent rate of decline in multifactor productivity. The gain in multifactor productivity in steel manufacturing can be attributed to the closing of older plants and the increasing shift to continuous casting of steel. In motor vehicles, sharp output gains in 1983 and 1984 (29.3 and 22.3 percent, respectively) were accompanied by strong gains in multifactor productivity (6.4 and 4.6 percent, respectively). In tires and inner tubes, the multifactor productivity gain from 1982–86 was based on continuing elimination of older, less efficient plants. Strong output increases in 1983 and 1984 led to substantial gains in

Table 2. Multifactor and related productivity indexes[1] for selected industries, 1982–86, and percent changes, 1985–86 and 1982–86

[1977 = 100]

SIC code	Industry and measure	1982	1983	1984	1985	1986[2]	Percent change, 1985–86	Average annual percent change 1982–86
3011	Tires and tubes:							
	Multifactor productivity	118.9	126.9	132.6	130.9	134.5	2.8	2.8
	Output per hour	128.8	136.0	147.7	147.3	151.2	2.6	4.0
	Output per unit of capital	93.0	107.2	128.2	120.5	116.5	–3.3	5.8
	Output per unit of intermediate purchases	121.9	126.6	124.2	124.0	130.2	5.0	1.1
314	Footwear:							
	Multifactor productivity	100.3	99.2	97.6	91.4	91.2	–.2	–2.7
	Output per hour	106.0	104.1	105.0	105.4	107.4	1.9	.4
	Output per unit of capital	88.1	85.2	77.9	69.4	64.7	–6.8	–7.9
	Output per unit of intermediate purchases	101.6	101.8	101.6	93.5	94.3	.9	–2.3
331	Steel:							
	Multifactor productivity	96.4	115.0	119.4	121.9	124.6	2.2	5.9
	Output per hour	98.1	119.5	131.3	138.6	145.1	4.7	9.8
	Output per unit of capital	72.5	82.6	95.4	95.8	96.7	.9	7.5
	Output per unit of intermediate purchases	96.8	114.0	113.6	114.4	115.7	1.1	3.7
371	Motor vehicles and equipment:							
	Multifactor productivity	90.9	96.7	101.1	105.2	99.9	–5.0	2.8
	Output per hour	96.2	109.4	115.3	121.3	121.8	.4	5.9
	Output per unit of capital	57.2	80.7	104.1	110.9	104.8	–5.5	16.5
	Output per unit of intermediate purchases	95.6	94.1	93.9	96.9	90.6	–6.5	–.8

[1] The output measures underlying the productivity indexes relate to the total net production of the industry. They do not relate to the specific output of any single factor of production.

[2] Preliminary.

Table 3. Productivity[1] indexes for government, 1982–87, and percent changes, 1986–87 and 1982–87

[1977 = 100]

SIC Code	Functional group	1982	1983	1984	1985	1986	1987	Percent change, 1986–87	Average annual percent change, 1982–87
	Federal								
	Total Federal sample	108.6	110.2	110.2	110.9	112.7	113.0	0.2	0.8
	Audit of operations	93.3	95.3	97.9	100.6	93.7	84.5	−9.8	−1.5
	Buildings and grounds	127.0	127.9	130.4	128.8	122.5	121.8	−.5	−1.0
	Communications	183.2	196.1	213.8	226.1	236.2	247.4	4.8	6.2
	Education and training	111.8	109.2	108.1	108.6	109.2	107.8	−1.3	−.5
	Electric power production and distribution	62.8	77.9	67.2	58.5	54.5	44.2	−18.8	−8.1
	Equipment maintenance	110.5	110.5	115.5	117.1	119.5	119.2	−.2	1.8
	Finance and accounting	150.8	166.9	163.6	163.2	168.8	174.1	3.1	2.2
	General support services	162.0	158.2	148.6	136.1	142.7	144.1	1.0	−2.8
	Information services	106.7	114.1	118.8	125.2	126.6	130.4	3.0	4.0
	Legal and judicial	108.9	111.7	110.1	113.1	113.5	113.7	.2	.8
	Library services	107.2	110.1	118.6	120.9	130.8	128.7	1.7	4.2
	Loans and grants	104.7	117.3	112.2	122.4	122.7	112.8	−8.1	1.7
	Medical services	101.9	104.0	103.4	103.6	105.5	106.1	.6	.7
	Military base services	109.3	107.9	99.4	100.4	108.0	110.2	2.0	.1
	Natural resources and environmental management	111.9	112.7	115.6	119.3	120.4	125.7	4.4	2.3
	Personal investigations	104.5	99.4	102.2	105.6	98.6	106.9	8.4	.4
	Personnel management	106.7	94.3	101.9	100.1	100.7	98.4	−2.3	−.7
4311	Postal service	107.0	107.4	108.8	109.1	110.9	110.9	([3])	.8
	Printing and duplication	105.8	113.1	120.3	122.1	125.0	126.8	1.5	3.6
	Procurement	125.3	124.7	127.2	122.5	119.5	121.4	1.6	−.9
	Records management	120.2	122.0	125.2	121.4	128.5	125.3	−2.5	1.0
	Regulation—compliance and enforcement	118.6	126.6	126.9	130.2	140.6	136.6	−2.8	3.0
	Rgulation—rulemaking and licensing	131.4	139.3	146.1	153.9	150.9	154.8	2.6	3.2
	Social services and benefits	102.4	109.7	110.1	118.4	114.6	120.3	5.0	2.9
	Specialized manufacturing	133.4	138.0	143.8	146.9	149.1	141.2	−2.0	2.1
	Supply and inventory control	106.1	104.3	100.2	96.7	99.1	104.2	5.2	−.8
	Traffic management	117.0	115.8	112.7	120.8	111.8	130.8	17.0	1.5
	Transportation	114.3	114.6	113.2	114.4	116.4	115.0	−1.2	.2
	State and local								
4911	Electric power	96.7	94.8	93.4	93.8	95.8	([2])	([2])	−.3[4]
5182 pt and 5921 pt	Alcoholic beverages	106.3	108.0	109.0	103.1	100.0	98.7	−1.3	−1.9
9441	Unemployment insurance	117.5	119.2	102.0	105.1	110.1	107.1	−2.7	−1.9

[1] Output per employee year.
[2] Not available.
[3] Less than 0.05 percent.
[4] Percent change, 1982–86.

multifactor productivity in those years.

The footwear industry's declining rate of multifactor productivity is based on a sharp fall in output (by a total of 36 percent) over the 1982–86 period because of a strong rise in shoe imports. This steep decline in output (an acceleration of an earlier trend), combined with slow rates of introduction and diffusion of technological innovations, has made it difficult to attain productivity gains.

Government productivity

Measures of output per employee year for the Federal Government and selected State and local government services are updated to 1987. Data are presented for fiscal years 1982–87 for most series and are shown in table 3.[4]

Federal. Output per employee year increased 0.2 percent in fiscal 1987 in the productivity index covering the measured sample of Federal Government organizations. This gain reflected a 1.4-percent increase in output and a 1.2-percent increase in employee years.

The measure covers 61 Federal agencies and is based on data representing 372 organizational units in fiscal 1987. The organizations included 2.1 million executive branch civilian employees representing 69 percent of the total Federal civilian labor force.

The Federal organizations are divided into 28 functional categories based on similarity of tasks performed (for example, auditing, medical, personnel, and transportation) to better identify and understand the forces which affect Federal productivity. The change in output per employee year for the 28 functions in 1987 ranged from an increase of 17.0 percent for traffic management, to a decline of 18.8 percent for electric power production and distribution. Productivity increased in 15 functions, decreased in 12, and remained unchanged in one.

The traffic management function, which includes those organizations responsible for arranging for the movement of people and goods, posted the largest gain among the functions with a 17.0-percent increase in productivity in 1987. Output increased by 12.0 percent in 1987 while employee years decreased by 4.2 percent. Two of the three organizational units experienced increasing output in 1987, whereas all three showed declines in employee years.

In contrast, the electric power production and distribution function had the steepest productivity falloff (−18.8

percent) caused by a 15.5-percent decrease in output and a 4.0-percent increase in employee years. Output declined in four of the six organizations while employee years increased in two, remained unchanged in two, and decreased in two. Four of the six organizations experienced productivity declines in 1987.

The postal service, the largest of the 28 functions in terms of employees, includes only a single organization, the U.S. Postal Service. Its productivity remained unchanged in 1987. By comparison, productivity rose 1.6 percent in fiscal 1986. During 1987, output increased 3.5 percent while labor increased 3.4 percent.

Trends, 1982–87. Over the 1982–87 period, output per employee year in the Federal sample rose at an average annual rate of 0.8 percent. The year-to-year changes in productivity ranged from no change in 1984 to a 1.6-percent gain in 1986. The overall increase in Federal productivity reflects an average rise of 2.3 percent in output and a 1.5-percent increase in labor input. Output increased annually at rates ranging from 1.4 percent in 1987 to 2.6 percent in 1985. Annual rates of change in employee years ranged from an increase of 0.7 percent in 1986 to 2.2 percent in 1984.

From 1982 to 1987, productivity trends for the 28 functions ranged from 6.2-percent annual growth for communications to a 8.1-percent annual decline for electric power production and distribution.

Communications had the highest average annual increase in productivity (6.2 percent) of any of the 28 functions. In 1983 and 1984, productivity increased 7.0 and 9.0 percent, respectively. The high productivity gain during the period is primarily attributed to technological changes in equipment that receives and transmits messages instantaneously all over the world. The six organizations accounting for this function in 1987 are in the Department of Defense, the General Services Administration, and the Department of State.

The function with the second largest average annual increase in productivity over the last 5 years is library services (4.2 percent), which includes the Library of Congress and four agency libraries. Output was up 2.6 percent, while employee years fell 1.6 percent over the 1982–87 period. Productivity in library services was aided by computerization of operations and the introduction of new facilities.

Between 1982 and 1987, the electric power production and distribution function registered the largest decrease in productivity of the 28 functions (–8.1 percent). During this period, productivity decreased in every year but one, which is a reflection of sharply decreasing output (–14.5 percent). Employment has been cut back over the past 5 years, but the decrease in output has exceeded the cut in input by a wide margin.

State and local government services

Electric power. Output per employee year in State and local government electric power increased 2.1 percent in 1986, the last year for which data are available, as output and employment increased 5.3 and 3.1 percent, respectively. In 1985, output, employment, and productivity also increased. However, over the 1982–86 period, productivity declined at an average annual rate of 0.3 percent as employment increased at a more rapid rate than output.

State sales of alcoholic beverages. Output per employee year in State sales of alcoholic beverages dropped 1.3 percent in 1987 as output, and input fell 3.1 and 1.9 percent, respectively. In 1986, productivity, output, and input also declined. The drop in output in 1986 and 1987 was a continuation of a trend that started in 1980 which reflects decreasing demand for spirits and a shift in several States from government to private sector operations.

Unemployment insurance. State unemployment insurance productivity decreased 2.7 percent in fiscal 1987 as output dropped 6.3 percent and inputs were cut 3.7 percent. Over the 1982–87 period, productivity, output, and labor decreased. The decrease in output is a reflection of decreasing unemployment in the Nation and the resulting drop in unemployment insurance claims and payments. While State staffing has been cut, it has not declined as rapidly as output has dropped. The result is an average annual decrease in productivity of 1.9 percent between 1982 and 1987. □

———*FOOTNOTES*———

[1]A full report, *Productivity Measures for Selected Industries and Government Services*, BLS Bulletin 2322, is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

[2]For a detailed report on productivity in these industries, see the following *Monthly Labor Review* articles: Mark Scott Sieling and Daniel Curtin, "Patterns of productivity change in men's and boys' suits and coats," November 1988, pp. 25–31; Horst Brand and Kelly Bryant, "Productivity in agricultural chemicals," March 1989, pp. 21–28; James D. York, "Variety stores experience shifting trend in productivity," October 1988, pp. 30–33; and a forthcoming article on productivity in the carburetors, pistons, and valves industry.

[3]For additional information about multifactor productivity in the steel and motor vehicles industries and a description of the methodology used to develop the industry productivity measures, see Mark K. Sherwood, "Performance of multifactor productivity in the steel and motor vehicles industries," *Monthly Labor Review*, August 1987, pp. 22–30; and forthcoming articles on multifactor productivity in the tires and inner tubes industry and the footwear industry.

[4]For additional information about productivity in government, see Donald M. Fisk, "Productivity trends in the Federal Government," *Monthly Labor Review*, October 1985, pp. 3–9; Jerome A. Mark, "Public sector productivity measurement: the BLS experience," in *The Measurement and Implications of Productivity Growth: Proceedings of a Workshop, Nov. 22–33, 1984* (Canberra, Australia Department of Employment and Industrial Relations, Bureau of Labor Market Research, 1986), Monograph Series No. 14; and Donald M. Fisk, *Measuring Productivity in State and Local Government*, Bulletin 2166 (Bureau of Labor Statistics, 1983).

Productivity trends in agricultural chemicals

Output per hour in the manufacture of synthetic fertilizers and pesticides increased almost as much as that for all manufacturing; the gain is tied partially to technological innovation

HORST BRAND AND KELLY BRYANT

Output per hour of labor in the manufacture of synthetic fertilizers and pesticides rose at an average annual rate of 2.2 percent between 1972 and 1986.[1] This rise reflected an increase of 1.3 percent a year in output and a decline of 0.9 percent a year in employee hours. The improvement in productivity compares with an average annual increase of 2.5 percent for manufacturing as a whole. As the following tabulation shows, productivity rates for the four individual agrochemical industries varied widely from the average for the group, with establishments producing nitrogenous fertilizer recording output-per-hour advances of close to 4 percent a year and establishments specializing in the mixing of fertilizers registering no strong trend at all. The pesticide industry stood in between, with a rate nearly equal to that for all manufacturing.

	Average annual rate (percent), 1972–86		
Industry	*Productivity*	*Output*	*Employee hours*
Agricultural chemicals	2.2	1.3	−0.9
Nitrogenous fertilizer ..	3.9	1.8	−2.0
Phosphatic fertilizer	2.0	.6	−1.4
Fertilizer mixing	.4	−1.8	−2.2
Pesticides	2.3	3.6	1.3

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The long-term productivity trend slowed somewhat over the second half of the study period, from 3.9 percent annually for the industry group as a whole during 1972–79 to 2.5 percent a year during 1979–86. (See table 1.) Nitrogenous and phosphatic fertilizers did not partake in the slowdown, which was dominated by a deceleration in productivity in the pesticide industry. In contrast to the first half of the period, when growth in output was accompanied by (somewhat lower) gains in employee hours in all agricultural chemicals industries, both output and employee hours declined during the second half. With the latter declining more steeply than the former, productivity improved.

Year-to-year movements fluctuated widely, with productivity rising as much as 13 percent in 1984 and dropping as much as 15 percent in 1973. These movements were tied to swings in demand and, in turn, output, and were accompanied by somewhat smaller swings in hours.

Sources of improvements in productivity in the nitrogenous and phosphatic fertilizer industries include technological advances, economies of scale, and during the 1980's, the elimination of smaller, less efficient plants.[2] Strength in the productivity of pesticide manufacturing was linked to surging demand during the seventies and declining employment in the eighties. But on balance, *levels* of employment in the eighties ran above those in the seventies, owing to increases in the industry's marketing and research and development (R&D) personnel that were

necessitated in part by more stringent environmental and registration regulations.[3]

Tables 2 through 6 present a year-by-year breakdown of output per employee hour, output, and employee hours for the agrochemical industry group as a whole and for each of its four component industries from 1972 to 1986.

Production and role of agricultural chemicals

Nitrogenous fertilizer represents one of three primary plant food nutrients, the other two being phosphates and potash (a product of the mining industry not included in the productivity and related measures discussed here).[4] Nitrogenous fertilizer materials are produced by the synthesis of natural gas to form anhydrous (waterless) ammonia, an important nitrogenous fertilizer itself. In 1985, about one-half of all the anhydrous ammonia produced in the United States was absorbed by nitrogenous fertilizer materials. One-third of this was directly applied to the soil by users, while the remaining two-thirds entered into the production of ammonium nitrate and urea.[5] Production of urea, which has the highest nitrogen content of any solid nitrogenous fertilizer material, has steadily gained in importance, attaining par with nitrate production in 1978 in terms of tonnage. In general, nitrogen solutions have expanded their share of total nitrogenous materials since the early eighties from 28–33 percent to 36 percent, but the high capital outlay required to apply them to the soil tends to retard their further expansion.[6]

Phosphatic fertilizer is derived by the action of sulfuric acid on pulverized phosphate rock, resulting in superphosphate. It is the oldest synthetic fertilizer in use, but by the mid-1970's it was virtually displaced by diammonium phosphate. Diammonium phosphate, which consists of phosphoric acid treated with ammonia, is a multinutrient fertilizer material. While the production of conventional superphosphate declined by half between 1974 and 1984, that of diammonium phosphate nearly tripled. A high proportion of active nutrients, high water solubility, ease in application, and a favorable price have given this material a decided advantage over the other.[7]

Table 1. Productivity in agricultural chemicals, 1972–79 versus 1979–86

Industry	Average annual rates, percent					
	Output per hour		Output		Employee hours	
	1972–79	1979–86	1972–79	1979–86	1972–79	1979–86
Agricultural chemicals	3.9	2.5	5.8	−2.4	1.9	−4.7
Nitrogenous fertilizer	3.5	3.7	7.1	−3.3	3.5	−6.7
Phosphatic fertilizer	3.0	3.7	3.5	−1.6	.5	−5.1
Fertilizer mixing	4.0	.6	3.4	−6.1	−.6	−6.
Pesticides, including agricultural chemicals n.e.c.[1]	4.5	1.4	9.0	−.4	4.3	−1.8

[1]Pesticides account for close to nine-tenths of this industry component.
n.e.c. = not elsewhere classified.

In combination with pesticides (especially herbicides), synthetic fertilizer has contributed decisively to rising yields per acre. Representing about 9 percent of the value of final demand for food grains, feed grains, cotton, and such oil-bearing legumes as soybeans, fertilizer and pesticides have helped raise yields per acre as much as 24 percent from 1972 to 1985, as the following tabulation shows:[8]

Crop	Yields per acre		Percent increase
	1972	1985	
Wheat (bu.)	32.7	37.5	14.7
Corn (bu.)	97.0	118.0	21.6
Cotton (pds.)	50.7	63.0	24.3
Soybeans (bu.)	27.8	34.1	22.7
Hay (tons)	2.2	2.5	13.6

Output trends

Output of agricultural chemicals rose at an average annual rate of 1.3 percent between 1972 and 1986. The trend showed a sharp break beginning in 1979. Until then, output of the industry group climbed 5.8 percent a year; thereafter, it dropped 2.4 percent annually. The following tabulation gives the breakdown by industry:

Industry	Average annual output rates, in percent		
	1972–86	1972–79	1979–86
Agricultural chemicals	1.3	5.8	−2.4
Nitrogenous fertilizer	1.8	7.1	−3.3
Phosphatic fertilizer	.6	3.5	−1.6
Fertilizer mixing	−1.8	3.4	−6.1
Pesticides	3.6	9.0	−0.4

The rise in the output of agricultural chemicals during the seventies, as well as its subsequent decline, was closely related to parallel trends in the production of grains, cotton, soybeans, and other crops. Production of these crops rose at an average annual rate of 3.2 percent during that decade, and then declined by 0.5 percent a year into the mid-eighties. Per-acre use of nitrogenous fertilizer materials grew for feed grains (mainly corn) and food grains (chiefly wheat) over the entire study period, but tended to shrink for phosphates.[9] However, the pattern of per-acre application of fertilizer did not much influence total fertilizer use. Rather, it was the contraction in acreage planted with the major crops that underlay the 1979–85 decline in output, as shown in the following tabulation, adapted from the U.S. Department of Agriculture's publication, *Agricultural Statistics, 1986:*

Crop	Percent change in acreage planted	
	1972–79	1979–85
Wheat	30	6
Corn	21	2
Cotton	0	−24
Soybeans	52	−12

The reduction in acreage planted, which resulted from changes in official farm programs compelled by declining exports and accumulating stocks, also led to cutbacks in the application of pesticides in agriculture (which accounts for roughly three-quarters of their total use).[10] Between 1972 and 1979, total output of pesticides rose strongly, even as insecticide applications to the major crops were reduced. New, wide-spectrum herbicides, mostly of the preemergent variety, were introduced and quickly became important. Postemergent herbicides then gained favor in the early eighties. These are applied when the weed species has been determined by the farmer. They were considered more effective than the preemergent herbicides in specific applications. However, preemergent herbicides have made a comeback in recent years. The expanding use of herbicides was spurred on in agriculture by the rapid growth in conservation tillage as a moisture- and soil-conserving production practice (such use reduces the need for cultivation) and, to an extent, by the rising cost of fuel during the seventies.[11]

Employment and occupational pattern

Employment in agricultural chemicals, numbering 57,000 in 1986, declined at an average annual rate of nearly 1 percent—or by a total of 15 percent—between 1972 and 1986. Hours declined at nearly the same rate, rising 11 percent over the first 7 years of the period, but plummeting 24 percent over the last 7. Thus, the trend in hours exhibited the same break noted for the trends in productivity and output, although it was more pronounced. Following is the industry breakdown:

	Average annual percent change, employee hours	
Industry	*1972–79*	*1979–86*
Agricultural chemicals	1.9	−4.7
Nitrogenous fertilizer	3.5	−6.7
Phosphatic fertilizer	.5	−5.1
Fertilizer mixing	−.6	−6.6
Pesticides.....	4.3	−1.8

The decline in the number of production workers was more than twice as high (16 percent) as that for nonproduction workers (7 percent) during the study period. (No significant change in employment was experienced by all manufacturing.) The proportion of nonproduction workers, 37 percent of the group's total employment in 1972, increased slightly to 39 percent; in manufacturing as a whole, the ratio rose from 27 to 33 percent. Hourly wages ran 17 percent above the manufacturing average in 1986, as against 1 percent in 1972. The rise in the ratio was evidently not occasioned by significant changes in skill mix.[12] Rather, the more senior and experienced workers retained their jobs in the face of reductions in the work force, and that made for an upward wage drift.[13]

Table 2. Output per employee hour and related indexes in the agricultural chemicals industry group, 1972–86[1]

[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972	75.3	76.5	72.9	67.0	89.0	87.6	91.9
1973	86.7	87.4	85.2	76.3	88.0	87.3	89.6
1974	95.9	95.4	97.1	89.2	93.0	93.5	91.9
1975	86.7	87.8	84.6	84.3	97.2	96.0	99.7
1976	92.4	94.4	88.3	90.2	97.6	95.6	102.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	101.4	108.1	97.9	100.0	98.6	97.0	102.1
1979	102.0	101.4	103.2	102.0	100.0	100.6	98.8
1980	97.2	97.7	95.9	103.4	106.4	105.8	107.8
1981	97.7	98.1	96.8	104.1	106.5	106.1	107.5
1982	94.5	99.9	84.4	88.5	93.7	88.6	104.8
1983	106.2	111.8	95.8	88.9	83.7	79.5	92.8
1984	119.8	124.3	111.3	100.3	83.7	80.7	90.1
1985	115.6	121.2	105.0	94.9	82.1	78.3	90.4
1986	108.8	115.2	97.2	82.7	76.0	71.8	85.1
	Average annual percent change						
1972–86	2.2	2.6	1.5	1.3	−0.9	−1.3	−0.2
1981–86	3.7	4.3	2.4	−2.3	−5.8	−6.4	−4.6

[1]Includes producers of nitrogenous fertilizer, manufacturers of phosphatic fertilizer, establishments engaged in fertilizer mixing, and manufacturers of agricultural chemicals not elsewhere classified (mostly pesticides).

Overtime worked in the agrochemical industry by far exceeded the manufacturing average in most years of the study period. In 12 of the 15 years examined, overtime ran ahead by one-third again as much or more, in 6 by one-half again as much. Like many other chemicals, agricultural chemicals are manufactured by means of continuous processes, operated around the clock and worked by employees on either overtime or additional shifts. According to industry sources, consistently high overtime in the industry is linked to a large extent to the highly seasonal pattern of industry output, combined with the difficulty in hiring and training additional workers on a seasonal basis. Industry sources also state that fertilizer manufacturers prefer to hold on to experienced workers to oversee and maintain instruments and equipment that are highly sensitive to small changes in variables such as temperature and pressure, and to provide the ceaseless attention that is required to forestall breakdowns and costly downtime. Stability of employment in the industry is indicated by labor turnover rates. Accessions per 100 workers employed ran well below the manufacturing average in 7 of the 10 years for which data are available (1972–81), and separations in 8 of the 10.

The occupational composition of the industry differs from the manufacturing average in important respects. The industry employed a considerably higher proportion of physical and chemical scientists and technicians in 1986 (11 percent) than did manufacturing as a whole (4 percent). Blue-collar supervisors played a relatively larger role in the industry group (9 percent of employment) than in manufacturing (4 percent), as did mechanics, installers, and preparers (10 percent versus 4 percent). Occupations

involving plant and systems operations also represented a much higher share of industry employment (8 percent versus 1 percent). Occupations requiring fewer skills and less training, such as machine setters and tenders, transportation and materials moving personnel, and helpers and laborers, made up a somewhat lower proportion of industry employment (31 percent) than in manufacturing (34 percent).[14]

Capacity changes and capital spending

Productive capacity in the fertilizer industries expanded by 35 percent between 1973 and 1981, but then contracted by 8 percent over the next 5 years.[15] These movements were linked with significant changes in employment, namely, a parallel rise and drop, and also affected output per hour. The following tabulation indicates the magnitudes involved:

	Percent change	
	1973–81	*1981–86*
Capacity	35	–8
Employment	18	–24
Productivity	10	9

In addition to, and notwithstanding, cutbacks in productive capacity, there occurred a decline in capacity utilization, from an average of 85 percent during the seventies to 78 percent during the early eighties for nitrogenous fertilizer, and from 80 percent to 74 percent for phosphatic fertilizer.[16]

The larger, more efficient fertilizer-producing plants survived the capacity cutbacks of the early eighties, thereby contributing to a strong improvement in productivity (as well as the large reduction in employment). Thus, the number of ammonium-producing plants with less than 1,000 tons per-day capacity dropped from 55 in 1982 to 30 in 1986, while the number of larger plants rose from 30 to 31.[17] The larger plants operate with substantially lower unit labor requirements than the smaller ones. For example, sulfuric acid produced in plants with one million tons of capacity or more required, on average, three-tenths of one employee hour per ton in each of operating and maintenance labor in 1986, half as much as that required by smaller plants. Similarly, ammonia-producing plants with a daily capacity of more than 1,000 tons reported employee-hour requirements of 8 minutes per ton for operating labor and just under 5 minutes for maintenance labor. By contrast, plants with 600–1,000 tons of daily capacity required 10 minutes and 7 minutes per ton of output. The pattern for the production of other fertilizer materials is similar.[18]

Table 3. Output per employee hour and related indexes in the nitrogenous fertilizer industry, 1972–86
[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972	82.6	83.2	81.4	64.2	77.7	77.2	78.9
1973	92.6	88.7	102.7	71.6	77.3	80.7	69.7
1974	99.5	95.0	111.5	82.2	82.6	86.5	73.7
1975	94.8	93.7	97.4	83.3	87.9	88.9	85.5
1976	95.5	94.6	97.6	92.4	96.8	97.7	94.7
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	109.5	115.4	98.3	107.3	98.0	93.0	109.2
1979	110.4	113.7	103.7	99.7	90.3	87.7	96.1
1980	124.2	125.1	122.5	111.2	89.5	88.9	90.8
1981	121.4	123.3	117.3	109.6	90.3	88.9	93.4
1982	114.7	122.9	99.6	97.0	84.6	78.9	97.4
1983	128.1	141.9	104.9	88.7	70.0	63.2	85.5
1984	152.6	164.2	131.6	103.8	68.0	63.2	78.9
1985	149.7	160.2	130.5	103.0	68.8	64.3	78.9
1986	133.5	141.7	118.1	72.0	54.7	51.5	61.8
	Average annual percent change						
1972–86	3.9	4.7	2.1	1.8	–2.0	–2.8	–0.3
1981–86	4.2	4.8	3.1	–4.8	–8.6	–9.1	–7.6

Fixed assets per worker in agricultural chemicals have been running about five times higher than the manufacturing average. The ratio rose over the study period as employment was slashed, owing largely to capacity cutbacks. Thus, of the 90 ammonia plants reported to be operating in 1980, 54 were left in early 1987, idling an estimated 5.5 million tons in productive capacity. Of 25 plants manufacturing phosphates in 1980, 13 closed, but 16 new ones were added, so that in this industry no net loss in productive capacity occurred.[19] In pesticide manufacturing, small increases in productive capacity have taken place over the past decade, but the utilization rate has shrunk, and employment losses in the industry since 1981 are partially attributable to this factor.[20]

Capital spending by establishments manufacturing agricultural chemicals declined at an average annual rate of 4.1 percent between 1972 and 1985, after adjusting for price changes.[21] The trend obscures great year-to-year volatility in such spending, however. Thus, in 1974, the industry's capital spending nearly doubled from the previous year's level, while in 1983, it dropped by close to half. Up to 1979, the annual rate rose nearly 13 percent, on average. Thereafter, it plunged by about same rate. The following tabulation is illustrative:

	Average annual percent change, capital spending	
	Agricultural chemicals	*All manufacturing*
1972–85	–4.1	2.3
1972–79	12.8	5.0
1979–85	–12.6	–1.0

The gross book value of fixed assets per worker in the industry ran close to four times that for all manufacturing in 1972 and rose to five times that average in 1982. The reason for the disparity was partly because employment in the industry dropped 10 percent, as against 1 percent in manufacturing generally, and partly because the indus-

try's fixed assets grew at a somewhat faster rate than those of all manufacturing establishments until 1981.

The agricultural chemicals industry is dominated by large firms, and the growth in real capital expenditures and fixed assets from 1972 to 1981 was accompanied by an increase in the concentration of these firms. The 20 largest firms manufacturing nitrogenous fertilizer accounted for 87 percent of the value of shipments in 1982, compared with 84 percent in 1972, and the 20 largest firms producing phosphate fertilizer accounted for 92 percent, as against 83 percent in the earlier year. For pesticides, the pertinent figures were 85 percent in 1982 and 76 percent 10 years earlier. The higher concentration reflects some consolidation brought on by the extended economic downturn of the early eighties.[22]

Technological advances

Important technological breakthroughs in the production of fertilizer occurred chiefly prior to the review period. Among them was the introduction of centrifugal compressors in the manufacture of nitrogenous fertilizer. The centrifugal compressor gradually displaced the reciprocal compressor, except in smaller plants where the scale of operations made it uneconomical. Compressors are needed in the amalgamation of hydrogen and nitrogen for producing ammonia. The centrifugal compressor permits—indeed requires—lower pressures (hence, less energy per unit of output), less floor space, and less extensive piping, thus reducing maintenance labor. At the time of its inception, this new ammonia-producing technology gave rise to a program of vast nitrogenous fertilizer plant expansion. Whereas up to the early sixties, the 400-tons-a-day plant had been the rule, plants began to be built three and more times as large. The technology reduced (1) the heat requirements associated with the removal of carbon dioxide from the natural gas from which ammonia is ultimately derived in the United States, (2) the power needed in compression per ton of output, and (3) the labor per ton of output, as economies of scale afforded by the larger plants increased.[23]

Table 4. Output per employee hour and related indexes in the phosphate fertilizer industry, 1972–86
[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972	73.0	70.9	79.6	75.5	103.4	106.5	94.9
1973	88.6	85.2	99.5	81.7	92.2	95.9	82.1
1974	98.0	92.8	115.9	102.6	104.7	110.6	88.5
1975	81.8	79.4	89.2	90.4	110.5	113.8	101.3
1976	93.2	92.0	96.7	95.4	102.4	103.7	98.7
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	97.2	96.7	98.9	98.9	101.7	102.3	100.0
1979	94.4	93.5	97.4	99.9	105.8	106.9	102.6
1980	92.9	91.3	97.7	105.2	113.2	115.2	107.7
1981	84.4	84.3	84.9	94.7	112.2	112.4	111.5
1982	88.0	91.9	78.6	84.7	96.3	92.2	107.7
1983	108.1	108.3	107.2	94.9	87.8	87.6	88.5
1984	121.8	124.9	114.0	108.2	88.8	86.6	94.9
1985	113.5	119.8	99.3	99.3	87.5	82.9	100.0
1986	104.7	114.2	84.9	79.5	75.9	69.6	93.6
	Average annual percent change						
1972–86	2.0	2.8	0.0	0.6	−1.4	−2.2	0.5
1981–86	5.8	7.3	2.2	−.8	−6.2	−7.5	−2.9

Table 5. Output per employee hour and related indexes in the fertilizer mixing industry, 1972–86[1]
[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972	79.7	82.3	74.9	73.0	91.6	88.7	97.4
1973	84.2	85.9	81.0	82.1	97.5	95.6	101.3
1974	95.6	97.8	91.3	84.3	88.2	86.2	92.3
1975	96.2	100.1	89.0	84.5	87.8	84.4	94.9
1976	104.3	106.5	100.0	87.2	83.6	81.9	87.2
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	102.6	104.8	98.6	89.7	87.4	85.6	91.0
1979	107.0	100.6	122.8	94.4	88.2	93.8	76.9
1980	90.6	92.2	87.4	99.7	110.1	108.1	114.1
1981	83.3	84.5	80.9	87.1	104.6	103.1	107.7
1982	79.8	84.1	72.4	64.1	80.3	76.2	88.5
1983	91.9	96.1	84.7	68.4	74.4	71.2	80.8
1984	99.1	100.6	96.3	67.9	68.5	67.5	70.5
1985	102.6	105.7	96.6	68.1	66.4	64.4	70.5
1986	95.7	98.9	89.6	64.3	67.2	65.0	71.8
	Average annual percent change						
1972–86	0.4	0.5	0.3	−1.8	−2.2	−2.2	−2.1
1981–86	4.4	4.4	4.4	−3.8	−7.9	−7.9	−7.8

[1]Includes establishments which mix, but do not manufacture, fertilizer.

Two major technological breakthroughs in the sixties provided the basis for shaping today's phosphate industry. These developments also led to changes in the overall industry system of production, distribution, and even use at the farm level. The first breakthrough was the process for producing granular diammonium phosphate from wet process acid. This technology made it possible to concentrate U.S. phosphate production in Florida and to take advantage of the economics of mining, large-scale chemical plants, and water transportation of high-analysis fertilizers to serve domestic and growing export markets. The other technological innovation led to the production of ammonium polyphosphate solutions from wet process acids. This technology paved the way for subsequent growth and development of the fluid fertilizer industry.

The diffusion of these developments was gradual, carrying well into the review period, and in fact, the methods devised remain the technology of choice today. It was a major factor underlying the productivity improvements during the period.[24]

The rising importance of ammoniated or diammonium phosphates led to changes in the production processes of fertilizer that occurred chiefly during the early seventies. The shift to ammoniated phosphates encouraged the innovation of the so-called pipe cross reactor in 1975 and its subsequent diffusion throughout the industry. This device raised the efficiency of amalgamating ammonium and phos-

phate and displaced the tank reactor, which was more energy intensive. The pipe cross reactor does not require either pumping or pipelines for moving its contents, which it spills directly into a granulator for granulation and cooling. The worker who operates the granulator can at the same time operate the pipe reactor, which use of the tank reactor did not permit. Hence, direct labor per unit of output was reduced, as was the labor needed to maintain pipes and pumps.

In addition to heightening the accuracy of a given product mix, advances in instrumentation are likely to have eased maintenance tasks and lowered unit labor requirements. Solid-state instruments have gradually replaced tubing—for example, in measuring mass flow—so that the weight and volume of a material entering a process could be determined in combination, rather than separately. Such measuring devices have come to be linked to feedback systems which ensure an accurate mix at all times. Process operators are enabled to perform more than one task, especially in the blending of fertilizer materials.[26]

Research and development

Products manufactured by the agricultural chemicals industry are regarded as technology intensive by the National Science Board, which defines research intensity as R&D expenditures in excess of 2.6 percent of value added.[27] In terms of dollars spent, R&D in agricultural chemicals is conducted predominantly by the pesticides industry, for which pertinent expenditures have accounted for between 13 and 20 percent of value added. The bulk of pesticides research has gone into the development of new products and the refinement of existing products. Only between 10 and 14 percent of total R&D expenditures have been devoted to process research, which would be the most likely research to affect unit labor requirements directly.[28] Specific information on such effects is not available. Not unlike pharmaceuticals, pesticides are manufactured mostly by multistep batch processes, which typically do not yield significant scale economies. Although these processes have in many cases been automated, the demand for individual products, of which more than 170 have been listed for the 1970's, is relatively small. Some authors believe that "productivity improvements cannot be large in the industry."[29]

Research and development in fertilizers has been conducted mostly by the National Fertilizer Development Center of the Tennessee Valley Authority.[30] In the fertilizer industry, product innovation is more closely linked with process innovation than in pesticides, and it also tends to reduce unit labor requirements more demonstrably. For example, the TVA center developed diammonium phosphate, the production of which involved a process that doubled output from a plant of a given size in comparison with output of an earlier, industry-innovated ammonium phosphate fertilizer.[31] Research and development efforts in agricultural chemicals are not focused primarily on labor savings. Rather, they are aimed mainly at reducing fertilizer costs to farmers, which entails a search for ways to reduce energy inputs, storage, handling, and transportation costs, and ease in application.[32] Nonetheless, all new technologies have reduced unit labor requirements in fertilizer production.[33]

Table 6. Output per employee hour and related indexes in the agricultural chemicals n.e.c. industry, 1972–86[1]
[1977=100]

Year	Output per employee hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1972	69.5	76.9	59.4	56.7	81.6	73.7	95.1
1973	83.0	92.6	70.4	70.4	84.8	76.0	100.0
1974	90.9	99.3	79.2	85.4	94.0	86.0	107.8
1975	79.8	86.5	70.3	79.2	99.3	91.6	112.6
1976	81.7	89.5	70.8	86.0	105.3	96.1	121.4
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	98.6	99.3	97.2	103.8	105.3	104.5	106.8
1979	99.7	100.8	97.8	112.1	112.4	111.2	114.6
1980	88.6	90.7	85.1	98.3	111.0	108.4	115.5
1981	105.7	104.8	107.2	122.9	116.3	117.3	114.6
1982	95.7	101.1	87.7	105.6	110.3	104.5	120.4
1983	97.2	104.1	87.2	96.5	99.3	92.7	110.7
1984	110.0	112.0	106.8	115.1	104.6	102.8	107.8
1985	103.1	106.5	97.7	105.3	102.1	98.9	107.8
1986	103.1	105.1	99.9	105.7	102.5	100.6	105.8
	Average annual percent change						
1972–86	2.3	1.7	3.1	3.6	1.3	1.9	0.5
1981–86	.6	.7	.5	−1.7	−2.3	−2.3	−2.1

[1]Pesticides represent nearly nine-tenths of this industry component. Pesticides denote herbicides, insecticides, and fungicides.

Outlook

Minor gains in output per hour appear likely for the agricultural chemicals industries over the next few years. To some extent, these gains will arise from further reductions of less efficient plants, especially in fertilizer manufacturing. A tally of announcements by fertilizer-producing companies indicates minor cutbacks in capacity for the production of ammonia and ammonium phosphate.[34] Other industry sources believe that a slow growth in consumption is resuming, albeit not at the peak levels of 1981.[35] Some authorities believe that as the year 2000 approaches, up to 200 world-scale plants featuring updated production technologies will have to be built.[36] Again, the design of these technologies is likely to emphasize energy and material savings, but lower maintenance costs and lowered risks of downtime would normally also be an objective. If the aims are achieved, unit labor requirements would be reduced as well.

Bureau of Labor Statistics medium-level projections of the agrochemical industry's employment needs over the next 12 years indicate a 23-percent decline in employment from 1986 levels. Even the high projection shows a 14-percent decline. However, some industry analysts doubt that employment will fall as much as projected. □

——FOOTNOTES——

[1]Agricultural chemicals are classified as No. 287 in the *Standard Industrial Classification Manual* published by the Office of Management and Budget. The group of producers consists of establishments manufacturing nitrogenous fertilizer (SIC 2873), those producing phosphatic fertilizer (SIC 2874), those engaged in fertilizer mixing (SIC 2875), and those manufacturing pesticides and agricultural chemicals not elsewhere classified (n.e.c.; SIC 2879). Productivity and related measures have been computed by BLS for all four of the group's industry components, as well as for the three-digit group itself.

Average annual rates of change presented here are based on linear least squares of the logarithms of the index numbers. All the measures will be updated annually and will appear in the annual BLS bulletin, *Productivity Measures for Selected Industries*.

[2]Labor costs in agricultural chemicals, as in other basic chemical processing industries, account for only a small proportion of total costs. In ammonia production, for example, costs of energy and materials averaged 83 percent per ton in 1982, as against 4 percent for maintenance and operating labor. The comparable figures for phosphates were 91 percent and 3 percent per ton. Hence, technological improvements in the fertilizer industries have centered on material and energy savings rather than on labor savings. (*The Fertilizer Institute, Ammonia Production Cost Survey*, year ended December 31, 1986, and *The Fertilizer Institute, Phosphate Fertilizer Production Cost Survey*, year ended December 31, 1986; compiled by National Fertilizer Development Center, Economics and Marketing Staff, Muscle Shoals, AL. The surveys include earlier years.)

[3]Industry sources.

[4]There are also many secondary soil nutrients, such as calcium, magnesium, and sulfur, as well as micronutrients. See *The Fertilizer Handbook* (Washington, DC, The Fertilizer Institute, 1982) for a discussion of subjects related to fertilizer production and use.

[5]*The Fertilizer Handbook*, p. 59; see also J. Darwin Bridges, *Fertilizer Trends*, Muscle Shoals, AL, National Fertilizer Development Center, TVA, Bulletin Y-195, October 1986, pp. 12, 13.

[6]Industry sources.

[7]*The Fertilizer Handbook*, p. 62.

[8]U.S. Department of Commerce, *The Detailed Input-Output Structure of the U.S. Economy*, Vol. 1 (Washington, DC, U.S. Government Printing Office, 1977), and *Agricultural Statistics, 1986*, various tables. "It is estimated that fertilizer use substitutes for more than 150 million acres of land plus labor, fuel and equipment requirements." [*The Impact of TVA's National Fertilizer Program* (Muscle Shoals, AL: National Fertilizer Development Center, 1983), p. 5.]

[9]U.S. Department of Agriculture, Economic Research Service, *Agricultural Resources: Inputs, Situation and Outlook Report*, January 1987, Table 7.

[10]*Agricultural Statistics, 1986*.

[11]Howard J. Sanders, "Herbicides," *Chemical and Engineering News*, August 3, 1981, p. 20ff. Also, industry sources, as well as information from the National Fertilizer Development Center.

[12]Information from the Chemical Workers Union's research office.

[13]Industry sources. *The National Survey of Professional, Administrative, Technical, and Clerical Pay, March 1985* (BLS Bulletin 2208) states that changes in average salaries reflect a variety of factors: "For example, an expansion in force may increase the proportion of employees at the minimum salary of a rate range for a work level, which would tend to lower the average for a job; a reduction or a low turnover in the work force may have the opposite effect." (p. 40).

[14]BLS matrices on employment by industry and occupation.

[15]*North American Fertilizer Capacity Data*, July 1987 (Muscle Shoals, AL, National Fertilizer Development Center, Economics and Marketing Staff).

[16]U.S. Bureau of the Census, *Survey of Plant Capacity*, Current Industrial Reports, various years.

[17]*The Fertilizer Institute Ammonia Production Cost Survey*, year ended December 31, 1986.

[18]*Ibid*.

[19]*Ibid*.

[20]*Inputs: Outlook and Situation*, October 1983, and *Agricultural Resources*, January 1987 (U.S. Department of Agriculture, Economic Research Service).

[21]Capital spending data are taken from Table B-3, *Economic Report of the President, January 1987*, and were deflated by the implicit price deflators for fixed nonresidential investment.

[22]Industry information.

[23]G. Russell James, "Large Ammonia Synthesis Plants: Their Effect on Production Costs," in *The Impact of New Technology*, Fertilizer Production and Marketing Conference, TVA, Knoxville, TN, October 4–6, 1967, p. 27. See also pertinent chapters in A.V. Slack, *Fertilizer Development and Trends, 1968* (Park Ridge, NJ, Noyes Development Corp., 1968).

[24]*The Impact of TVA's National Fertilizer Program*, p. 7.

[25]National Fertilizer Development Center, *Transferring Technology from TVA's National Fertilizer Development Center*, Muscle Shoals, AL, 1982, p. 21.

[26]Information from the National Fertilizer Development Center.

[27]*Science Indicators*, 1985 report, p. 197.

[28]National Agricultural Chemicals Association, *Industry Profile Survey*, published annually, various years.

[29]Basil Achilladelis and others, "A Study of Innovation in the Pesticide Industry: Analysis of the Innovation Record of an Industrial Sector." *Research Policy*, no. 16, 1987, p. 176.

[30]"Technology from the [TVA research center] is estimated to be involved in 3 of every 4 tons of fertilizer produced in the United States." *Transferring Technology from TVA's National Fertilizer Development Center*, p. 5.

[31]*The Impact of TVA's National Fertilizer Program*, p. 10.

[32]An example of a result of this effort is the rise in the proportion of nutrient per ton of fertilizer delivered to the user. In the late 1940's, each ton of fertilizer moved 400 pounds of nutrient; in 1985, it moved 900 pounds. "As a least common denominator, the concept of higher analysis fertilizers is the major source of benefits of fertilizer R&D." T.H. Foster, *NFDC: A National Investment Paying Global Dividends*, Muscle Shoals, AL, TVA Office of Agricultural and Chemical Development, June 1985, p. 3.

[33]*The Impact of New Technology*, p. 7; information from the National Fertilizer Development Center.

[34]*North American Fertilizer Capacity Data*.

[35]*Ibid*.

[36]"Future Fertilizer Plants: What Will They Be Like?" *Chemical Engineering*, April 1, 1985, p. 21 ff. That as many as 200 world-scale plants will be needed by the year 2000 has been questioned by industry sources.

APPENDIX: Measurement techniques and limitations

The indexes of productivity measure changes in the relation between the output of an industry and the employee hours expended on that output. An index of productivity (for example, output per employee hour) is derived by dividing an index of output by an index of industry employee hours.

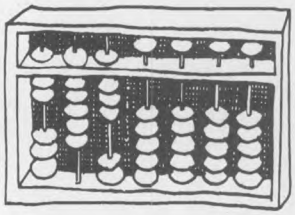
In the absence of adequate physical volume data for three of the four industries making up the agricultural chemicals group, real output was calculated in terms of the deflated value of shipments, adjusted for inventory change, for each product group. Changes in prices were removed from current-dollar values by means of appropriate price indexes at various levels of subaggregation for a variety of products in each group. For the industry classified as agricultural chemicals not elsewhere classified (including mostly pesticides), the output measure for 1972–81 has been derived from physical quantity data furnished by the National Agricultural Chemicals Association. From 1982 forward, the measure is based on deflated value data. All output segments were combined to a total output index, by employee-hour weights.

Complete output data are available only for years when a Census of Manufactures is taken (such as 1972, 1977, and 1982). For the intercensal years, the data are based on samples. Therefore, these data are benchmarked to Census-year data.

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

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.



Technical notes

Measuring the precision of the Employment Cost Index

KAREN O'CONOR AND WILLIAM WONG

The Employment Cost Index (ECI) is a quarterly measure of the rate of change in employer costs for employee compensation per hour worked. Since 1986, measures of the reliability (standard errors) of the ECI have been calculated to assist users in evaluating the precision of estimates and to improve the efficiency of the sample design. Beginning with the 1988 annual bulletin on the ECI, standard errors will be published yearly for measures of the annual change in the ECI and its subseries.

This report presents examples of the standard error tabulations that will be published. The tables provide estimates of the percent changes and corresponding standard errors for 12-month periods ending September 1987, December 1987, March 1988, and June 1988.

For the June 1988 tabulations, more than nine-tenths of the standard errors are less than 0.7 percent. Only nine of the measures are over 1 percent. These are in the series for sales occupations, wholesale trade, and finance, insurance, and real estate. The data for sales occupations reflect the volatility of commission earnings, which account for a large percentage of the standard error for those industries in which salesworkers on commission are concentrated.

An overview of the ECI. The Employment Cost Index measures the rate of change in employers' cost for employee compensation, free from the influence of employment shifts among occupations and industries. The cost of compensation has two components: wages and salaries, and employee benefits.

Wages and salaries are defined as the straight-time hourly wage rate or, for workers not paid on an hourly basis, straight-time earnings or salaries divided by the corresponding number of scheduled hours. Straight-time wages and salaries (or earnings) are the total before payroll deductions, and include production bonuses, incentive earnings, commission payments, and cost-of-living adjustments. Excluded from wages and salaries, but included in benefit costs, are premium pay for overtime and for work on weekends, holidays, and late shifts.

Benefits covered by the ECI are: *paid leave* (vacations, holidays, sick leave, and other leave); *supplemental pay* (premium pay for overtime, shift differentials, nonproduction bonuses, and lump-sum payments provided in lieu of wage increases); *insurance benefits* (life, health, and sickness and accident coverage); *retirement and savings benefits* (employer contributions to pension and other retirement plans and savings and thrift plans); *legally required benefits* (employer contributions for Social Security, railroad retirement and supplemental retirement, railroad unemployment insurance, Federal and State unemployment insurance, workers' compensation, and other legally required benefits such as State temporary disability programs); and *other benefits* (severance pay and contributions to supplemental unemployment plans).

The ECI provides data for the civilian economy, excluding farms, households, and the Federal Government. Within the civilian economy, separate index series are provided for private industry and for State and local governments. Each quarter, the Bureau collects straight-time average hourly wage and salary rates and benefit cost data (cents-per-hour-worked) from a probability sample of about 18,000 occupations within approximately 3,600 establishments in private industry and about 3,300 occupations within approximately 700 establishments in State and local governments. The data are collected initially through personal interview and are updated every quarter by mail questionnaire or by telephone interview of an establishment representative.

Reliability of the estimates. Because the ECI compensation change measures are estimates for a probability sample, they are likely to differ from results that would be obtained from a complete census of the employees within

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Table 1. Twelve-month percent changes in the Employment Cost Index and associated standard errors, by occupation and industry group, September 1987 to June 1988

[Not seasonally adjusted]

Series	September 1987		December 1987		March 1988		June 1988	
	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error
Compensation								
Civilian workers	3.4	0.2	3.6	0.2	4.1	0.2	4.6	0.2
Workers, by occupational group:								
White-collar occupations	3.8	.2	3.9	.3	4.1	.2	4.6	.3
Blue-collar occupations	2.7	.2	3.2	.2	4.3	.2	4.7	.2
Service occupations	3.3	.4	3.1	.4	3.6	.3	4.2	.3
Workers, by industry division:								
Goods-producing[1]	2.6	.2	3.1	.2	4.3	.2	4.7	.2
Manufacturing	2.6	.2	3.1	.2	4.7	.2	5.0	.3
Service-producing[2]	3.8	.2	3.8	.2	4.0	.3	4.5	.3
Services	4.8	.3	4.9	.3	5.2	.4	5.5	.3
Health services	4.3	.6	4.4	.4	4.3	.4	5.1	.5
Hospitals	4.6	.4	4.8	.3	5.1	.3	5.7	.4
Public administration	4.1	.4	4.6	.4	4.3	.4	4.5	.6
Nonmanufacturing	3.7	.2	3.8	.2	3.9	.2	4.4	.3
Private industry workers	3.3	.2	3.3	.2	3.9	.2	4.5	.2
Workers, by occupational group:								
White-collar occupations	3.7	.3	3.7	.3	3.7	.3	4.4	.4
Blue-collar occupations	2.7	.2	3.1	.2	4.4	.2	4.7	.2
Service occupations	2.7	.6	2.4	.5	2.9	.4	3.6	.3
Workers, by industry division:								
Goods-producing[1]	2.6	.2	3.1	.2	4.4	.2	4.8	.2
Service-producing[2]	3.8	.3	3.7	.4	3.6	.3	4.3	.4
State and local government workers	4.2	.3	4.4	.3	4.9	.3	5.0	.3
Workers, by occupational group:								
White-collar occupations	4.3	.4	4.6	.4	5.2	.4	5.2	.3
Blue-collar occupations	3.5	.4	3.4	.4	3.6	.5	3.3	.6
Workers, by industry division:								
Services	4.3	.4	4.4	.4	5.4	.4	5.4	.4
Excluding schools[3]	4.1	.6	3.7	.4	5.5	.6	5.0	.4
Health services	4.4	.5	4.7	.5	5.0	.5	4.8	.6
Schools	4.4	.6	4.8	.5	5.3	.5	5.5	.5
Elementary and secondary	4.8	.6	5.0	.6	5.6	.6	5.8	.6
Public administration	4.1	.4	4.6	.4	4.3	.4	4.5	.6
Wages and salaries								
Civilian workers	3.4	.2	3.5	.2	3.5	.2	3.9	.2
Workers, by occupational group:								
White-collar occupations	4.0	.3	3.9	.3	3.6	.3	4.2	.3
Blue-collar occupations	2.6	.2	3.0	.3	3.3	.2	3.5	.2
Service occupations	3.3	.4	2.9	.4	2.8	.3	3.4	.3
Workers, by industry division:								
Goods-producing[1]	2.8	.2	3.1	.2	3.4	.2	3.8	.2
Manufacturing	2.8	.2	3.4	.2	3.6	.2	3.8	.3
Service-producing[2]	3.8	.3	3.7	.3	3.5	.2	4.0	.3
Services	4.9	.3	5.0	.3	4.8	.4	4.9	.3
Health services	4.7	.4	4.6	.3	4.0	.4	4.9	.6
Hospitals	4.9	.2	5.0	.2	4.8	.3	5.6	.5
Public administration	3.7	.4	4.1	.4	3.6	.4	3.8	.5
Nonmanufacturing	3.7	.2	3.6	.3	3.3	.3	3.9	.3
Private industry workers	3.3	.2	3.3	.3	3.3	.2	3.7	.3
Workers, by occupational group:								
White-collar occupations	3.8	.3	3.7	.4	3.3	.3	4.0	.4
Blue-collar occupations	2.6	.2	3.0	.3	3.4	.3	3.6	.2
Service occupations	2.9	.6	2.4	.6	2.4	.5	3.0	.3
Workers, by industry division:								
Goods-producing[1]	2.8	.2	3.2	.2	3.5	.2	3.8	.2
Service-producing[2]	3.7	.3	3.5	.4	3.1	.3	3.7	.4
State and local government workers	4.1	.3	4.2	.3	4.4	.3	4.4	.3
Workers, by occupational group:								
White-collar occupations	4.2	.4	4.6	.4	4.6	.4	4.6	.4
Blue-collar occupations	3.3	.4	3.3	.4	3.5	.3	3.1	.5
Workers, by industry division:								
Services	4.3	.4	4.3	.5	4.7	.4	4.8	.4
Excluding schools[3]	4.0	.8	3.6	.5	4.3	.4	3.8	.4
Health services	3.8	.6	4.4	.6	4.3	.5	4.3	.5
Schools	4.3	.5	4.6	.5	4.9	.5	5.1	.5
Elementary and secondary	4.3	.6	4.8	.6	5.1	.6	5.3	.6
Public administration	3.7	.4	4.1	.4	3.6	.4	3.8	.5

[1]Includes mining, construction, and manufacturing.

[2]Includes transportation; public utilities; trade; finance, insurance, and real estate; services; and, where applicable, public administration in State and local governments.

[3]Includes, for example, library, social, and health services, formerly called hospitals and other services.

the scope of the survey (the survey population). The difference between an estimate calculated from a specific sample and an average for all samples that could be drawn from the survey population using the same methodology for the same statistic is the sampling error.

When probability techniques are used to select a sample, as in the ECI, statistical measures of precision called "estimated standard errors" can be calculated. In turn, the estimates' standard errors can be used to construct "confidence intervals," which provide an indication of the reliability of the estimates. The lower bound of a confidence interval is constructed by subtracting a multiple of the standard error from the published estimate. The upper bound of a confidence interval is constructed by adding the same multiple of the standard error to the published estimate.

Confidence intervals have the following properties: Suppose that samples are repeatedly drawn from the same population. The data from each sample are used to compute a percentage change (the survey estimate) and its estimated standard error. The confidence intervals from one standard error below each sample's estimate to one standard error above would include the value being estimated for approximately 68 percent of the samples. That is, we could say with 68-percent confidence that the "true" value of a measurement, which could be obtained only from a complete census of the population, falls within ± one standard error of the sample estimate. Confidence rises to 95 percent if the intervals surrounding sample estimate are widened to ± two standard errors.

In table 1, the 12-month percentage change for total compensation for all civilian workers was 4.6 percent for the period ending June 1988. The estimated standard error for this change was 0.2 percent. Thus the 95-percent confidence interval for the true population change is 4.2 [= 4.6 – (2 x 0.2)] percent to 5.0 [= 4.6 + (2 x 0.2)] percent. Intervals for the other table entries can be calculated in a similar manner.

Total error, the difference between the survey estimate and the true value, is composed of two parts: sampling error and nonsampling error. Nonsampling errors can be traced to sources such as: inability to obtain information about all establishments in the sample; incomplete definitions of survey data elements; differences in the interpretation of questions among survey interviewers and survey respondents; inability or unwillingness of respondents to provide correct information; mistakes in recording or coding the

Table 2. Twelve-month percent changes in the Employment Cost Index and associated standard errors, private industry workers by occupation group, September 1987 to June 1988

[Not seasonally adjusted]

Series	September 1987		December 1987		March 1988		June 1988	
	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error
	Compensation							
Private industry workers	3.3	0.2	3.3	0.2	3.9	0.2	4.5	0.2
Excluding sales	3.4	.2	3.6	.2	4.2	.2	4.5	.2
Workers, by occupational group:								
White-collar occupations	3.7	.3	3.7	.3	3.7	.3	4.4	.4
Excluding sales	4.2	.2	4.2	.3	4.2	.3	4.6	.3
Professional specialty and technical	3.9	.4	4.1	.4	4.4	.5	5.0	.5
Executive, administrative, and managerial	4.8	.4	4.4	.5	3.5	.5	3.9	.6
Sales	1.5	1.0	1.2	1.2	1.5	.9	3.4	1.5
Administrative support, including clerical	3.9	.2	4.1	.3	4.9	.3	4.9	.3
Blue-collar occupations	2.7	.2	3.1	.2	4.4	.2	4.7	.2
Precision production, craft, and repair	2.8	.3	3.1	.4	4.1	.4	4.3	.3
Machine operators, assemblers, and inspectors	2.7	.3	3.4	.4	5.0	.4	5.2	.4
Transportation and material moving	2.6	.5	2.9	.5	4.0	.4	4.7	.6
Handlers, equipment cleaners, helpers, and laborers	2.2	.4	2.8	.4	4.6	.4	4.9	.4
Service occupations	2.7	.6	2.4	.5	2.9	.4	3.6	.3
	Wages and salaries							
Private industry workers	3.3	.2	3.3	.3	3.3	.2	3.7	.3
Excluding sales	3.5	.2	3.7	.2	3.6	.2	3.9	.2
Workers, by occupational group:								
White-collar occupations	3.8	.3	3.7	.4	3.3	.3	4.0	.4
Excluding sales	4.4	.3	4.3	.3	3.9	.3	4.2	.3
Professional specialty and technical	4.3	.5	4.5	.4	4.0	.5	4.8	.5
Executive, administrative, and managerial	4.7	.4	4.3	.6	3.2	.6	3.6	.7
Sales	1.4	1.3	1.0	1.5	.6	1.0	2.9	1.7
Administrative support, including clerical	4.1	.3	4.1	.3	4.4	.3	4.2	.2
Blue-collar occupations	2.6	.2	3.0	.3	3.4	.3	3.6	.2
Precision production, craft, and repair	2.8	.4	2.9	.4	3.3	.5	3.6	.3
Machine operators, assemblers, and inspectors	2.7	.4	3.4	.5	3.5	.4	3.6	.4
Transportation and material moving	2.1	.5	2.3	.5	2.7	.5	3.2	.6
Handlers, equipment cleaners, helpers, and laborers	2.3	.4	3.0	.5	3.9	.5	4.0	.3
Service occupations	2.9	.6	2.4	.6	2.4	.5	3.0	.3

data; and other errors of collection, response, processing, coverage, and estimation (for missing data). Unlike the calculation of sampling errors, the estimation of nonsampling errors requires either the reinterview of some of the survey respondents or the availability of independent corroborative data. Thus, nonsampling errors are difficult and costly to measure and are rarely calculated.

Through the use of a quality management program, computer checks of the data for omissions, inconsistencies, and questionable values, and professional review of both individual and summarized data, efforts are made to reduce the nonsampling errors in collecting, recording, coding, and processing the data. However, nonsampling errors are introduced into the survey estimates depending on the extent to which quality management programs are imperfect, and characteristics of sample units that do not

Table 3. Twelve-month percent changes in the Employment Cost Index and associated standard errors, private industry workers by industry group, September 1987 to June 1988

[Not seasonally adjusted]

Series	September 1987		December 1987		March 1988		June 1988	
	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error
	Compensation							
Workers, by industry division:								
Goods-producing[1]	2.6	0.2	3.1	0.2	4.4	0.2	4.8	0.2
Excluding sales occupations	2.6	.2	3.1	.2	4.2	.2	4.8	.2
Construction	3.1	.5	3.7	.5	4.0	.4	4.1	.5
Manufacturing	2.6	.2	3.1	.2	4.7	.2	5.0	.3
Durables	2.3	.3	2.7	.2	4.7	.2	5.0	.3
Nondurables	3.3	.4	3.8	.3	4.5	.5	4.9	.5
Service-producing[2]	3.8	.3	3.7	.4	3.6	.3	4.3	.4
Excluding sales occupations	4.2	.3	4.0	.3	4.1	.3	4.4	.3
Transportation and public utilities	2.7	.4	3.0	.3	3.2	.4	3.1	.3
Transportation	2.2	.6	2.7	.5	3.2	.6	3.4	.5
Public utilities	3.4	.3	3.3	.4	3.1	.3	2.6	.3
Wholesale and retail trade	3.3	.5	3.0	.5	3.6	.4	4.0	.3
Excluding sales occupations	3.8	.5	3.3	.4	3.7	.4	3.9	.4
Wholesale trade	4.3	.8	4.0	1.0	3.6	.7	4.0	.8
Excluding sales occupations	3.9	.6	3.7	.5	3.8	.5	4.3	.6
Retail trade	2.8	.5	2.5	.5	3.5	.4	4.0	.3
Finance, insurance, and real estate	2.7	1.2	2.0	1.5	.6	1.5	3.1	2.5
Excluding sales occupations	4.5	.7	4.1	1.2	3.3	1.3	3.8	1.6
Insurance	—	—	—	—	—	—	6.0	1.0
Services	5.2	.5	5.2	.5	5.2	.5	5.5	.4
Health services	4.3	.7	4.3	.4	4.2	.5	5.3	.5
Hospitals	4.7	.5	4.9	.3	5.1	.4	5.9	.6
Nonmanufacturing	3.6	.3	3.5	.3	3.6	.3	4.2	.3
	Wages and salaries							
Workers, by industry division:								
Goods-producing[1]	2.8	.2	3.2	.2	3.5	.2	3.8	.2
Excluding sales occupations	2.7	.2	3.2	.2	3.3	.2	3.8	.2
Construction	2.7	.6	3.2	.5	3.5	.4	4.0	.5
Manufacturing	2.8	.2	3.4	.2	3.6	.2	3.8	.3
Durables	2.6	.3	3.1	.3	3.4	.2	3.4	.2
Nondurables	3.3	.4	3.7	.4	3.9	.6	4.4	.6
Service-producing[2]	3.7	.3	3.5	.4	3.1	.3	3.7	.4
Excluding sales occupations	4.2	.3	4.0	.3	3.7	.3	3.9	.3
Transportation and public utilities	2.1	.3	2.1	.3	2.5	.3	2.5	.3
Transportation	1.6	.6	1.7	.5	2.3	.7	2.1	.5
Public utilities	2.8	.3	2.6	.3	2.7	.2	2.7	.2
Wholesale and retail trade	3.2	.4	3.0	.5	3.1	.4	3.6	.4
Excluding sales occupations	3.8	.5	3.4	.4	3.3	.4	3.6	.4
Wholesale trade	4.6	.9	4.1	1.2	3.1	.7	3.3	.9
Excluding sales occupations	3.8	.7	3.7	.5	3.3	.5	3.7	.6
Retail trade	2.7	.5	2.6	.4	3.2	.4	3.6	.4
Finance, insurance, and real estate	2.2	1.4	1.2	1.8	–.4	1.7	2.6	2.8
Excluding sales occupations	4.3	.8	3.8	1.5	2.7	1.5	3.3	1.8
Insurance	—	—	—	—	—	—	6.0	1.1
Services	5.6	.5	5.4	.5	4.8	.6	4.9	.5
Health services	5.0	.5	4.6	.3	3.9	.5	5.2	.7
Hospitals	5.3	.3	5.1	.1	4.9	.3	5.8	.7
Nonmanufacturing	3.5	.3	3.4	.4	3.1	.3	3.8	.4

[1]Includes mining, construction, and manufacturing.

[2]Includes transportation; public utilities; trade; finance, insurance, and real estate; services; and, where applicable, public administration in State and local governments.

NOTE: Dash indicates data not available.

Table 4. Twelve-month percent changes in the Employment Cost Index for benefits and associated standard errors, private industry workers by occupation and industry group, September 1987 to June 1988

[Not seasonally adjusted]

Series	September 1987		December 1987		March 1988		June 1988	
	Benefit change	Standard error	Benefit change	Standard error	Benefit change	Standard error	Benefit change	Standard error
Private industry workers	3.1	0.3	3.5	0.3	5.8	0.3	6.4	0.2
Workers, by occupational group:								
White-collar occupations	3.5	.4	3.6	.4	5.1	.4	5.7	.4
Blue-collar occupations	2.8	.3	3.4	.3	6.8	.4	7.3	.3
Service occupations	2.4	.8	2.4	.8	4.4	.8	5.6	.7
Workers, by industry division:								
Goods-producing[1]	2.4	.3	2.9	.3	6.4	.4	7.0	.4
Service-producing[2]	3.8	.4	4.0	.4	5.3	.4	5.8	.4
Manufacturing	2.0	.3	2.6	.3	7.0	.4	7.6	.4
Nonmanufacturing	3.9	.4	4.0	.4	5.1	.4	5.6	.3

[1]Includes mining, construction, and manufacturing.
[2]Includes transportation; public utilities; trade; finance, insurance, and real estate; services; and, where applicable, public administration in State and local governments.

respond to the survey are different from those that do respond. As is the case in most surveys, the impact of these limitations on the ECI estimates is unknown.

Estimation of standard errors. As indicated earlier, a standard error is a measure of the variation among the estimates that could be calculated from different samples with the same sample design. Because the ECI estimator, like most index estimators, is a complex product of ratios, its standard error is estimated by a replication method.

Replication methods involve taking a subset of the sample selected under the original sample design, and estimating the statistic of interest using data only from the subset. This subset estimate is called a replicate. Other replicates are then computed by using different, possibly overlapping subsets of the whole sample. In the ECI program, 64 replicates are generally computed for each published estimate.

The standard error of an estimate is calculated by summing the squared differences between the replicate estimates and the estimate for the entire sample. In the ECI program, this procedure is performed for the 12-month percent change in compensation costs for a group of workers. The formula used for calculating the standard error for the 12-month percent change is:

$$\text{ST ERR}\,(P_{s,t}) = \left[\sum_{i=1}^{64} \frac{(P_{s,t,i} - P_{s,t})^2}{64}\right]^{1/2}$$

where $P_{s,t}$ is the published 12-month percent change for a group of workers from time s to time t, calculated using the whole sample; and $P_{s,t,i}$ is the 12-month percent change for the same group of workers from time s to time t, calculated using the ith replicate.

Use of variances in sample allocation. The variance (that is, the square of the standard error) is used to allocate the ECI sample of establishments among industries. Originally, the sample design allocated the number of establishments to be surveyed in proportion to the number of employees in each industry (2-digit Standard Industrial Classification, or SIC, basis), using the 1970 census as a source of estimated employment. For example, 70 establishments were selected for study in the Food and Kindred Products Industry (SIC 20) and 7 establishments in Metal Mining (SIC 10), because the employment in metal mining was approximately 10 percent of the employment in food and kindred products.

Beginning in 1981, a systematic sample replacement scheme was introduced into the ECI program. This resulted in the resampling of about one-fourth of the private-sector establishments each year. The industries that had retained smaller proportions of their original sample and that had the largest apparent volatility in their estimates were resampled first. The size of the total sample was enlarged in subsequent years in line with ECI budget increases, reflecting the Bureau's desire to publish additional series and a concern for better data quality.

With an establishment replacement schedule in place and an expanding sample to allocate, the Bureau had a growing need for reliable estimates of the standard error. Because the variance of an estimate decreases as the sample size for that estimate increases, the ECI sample could be allocated among industries in proportion to the variance of the industry estimate. Segments of the survey population such as finance, insurance, and real estate have variances that are approximately 20 times larger than those for the rest of the population and should have larger sample sizes. Because the ECI program makes estimates for many different industries and occupations, the sample size for wholesale trade and for finance, insurance, and real estate could not, in practice, be increased proportionally to the variance of estimates for those industries. However, even if the sample size could be increased, the

variance for wholesale trade and for finance, insurance, and real estate would remain large because of the large fluctuations in commission earnings for salesworkers in the survey population.

By March of 1986, the entire private-sector sample had been replaced, so that estimates of the variance could be calculated. The sample was split into 60 contiguous pieces, or strata, and each piece was divided into two samples, so that a replication method could be used. Preliminary estimates indicated that the reliability of the ECI estimates could be improved by as much as 20 percent, for a given ECI sample size, if the allocation were appropriately done using variances.

In 1986, the sample was allocated among industries using a model based on variances. In 1987, the sample was reallocated based on a revised model using current variance estimates. The allocations from the two models differed significantly. More research and data are needed to stabilize the model and its allocations.

The year-to-year fluctuation in the model results may be caused by two factors. First, the 1986 model was based on only two quarters of data in the manufacturing industries, three quarters in the mining industries, and two quarters in the retail industries. Second, the model needed to be adjusted to reflect the change in the survey population from 1970 to 1980 census totals. The source of the ECI estimates of total occupational employment by industry was changed from the 1970 census to the 1980 census, starting with the quarter ended June 1987. While work is continuing on the variance model, the model is being used to identify industries that are proportionately undersampled and to increase their sample size.

Improvements to the model also are expected because the ECI'S variances are being reduced by increasing sample sizes and by sampling occupations in proportion to their representation within establishments. Beginning April 1987, the selection of occupations was made proportional to the representation of the occupation (number of employees in the occupation) in the selected establishments. This change is expected to reduce the range of the weights assigned to data from sample establishments and help stabilize the variances. Also, the effect of the shift from the 1970 to the 1980 census will diminish over time. However, it will take 5 years for the full effect of these changes to be seen in the estimates of annual compensation change. This is because the ECI sample is replaced industry by industry over a 4-year cycle, and the new sample must be in place for 1 year to permit calculation of estimates of annual change using only new sample data.

In general, standard errors are determined by the size of the estimate, the size of the sample, the sample design, and the variability of the estimate across subsets of the total survey sample. For the ECI, the standard errors of the estimated standard errors are comparatively low. They range from 6 percent to 14 percent of the standard errors. Thus, the estimates of standard errors are reasonably precise.

As one would expect, standard errors for aggregates, such as the overall civilian estimate, are generally smaller than those for individual industries or occupations because the samples underlying the aggregates are larger. For example, the June 1988 12-month percent change in compensation costs for blue-collar workers in private industry has an estimated standard error of 0.2 percent, compared with a range of from 0.3 percent to 0.6 percent for the four occupational groups within the blue-collar category. (See table 2.) Similarly, the standard errors for government-sector estimates are larger than those for the private sector because the sample size for the government sector is smaller.

Table 2 also shows that estimated standard errors associated with wage and salary changes for white-collar workers are larger than those for blue-collar workers, primarily because of the large standard errors for salesworkers. With salesworkers excluded, the estimated standard error is virtually the same for blue- and white-collar workers.

Table 3 shows that standard errors for service-producing industries are larger than those for goods-producing industries, again because of the greater representation of salesworkers in service-producing industries, which include finance, insurance, and real estate. Table 2 shows the estimated standard errors for groups of occupations. As among industries, the highest estimated standard errors of the published occupational series are found in sales and in finance, insurance, and real estate. The estimated standard errors associated with these series from September 1987 through June 1988 were between 0.7 and 2.8 percent. The series for finance, insurance, and real estate excluding sales occupations is more reliable than the same series with salesworkers.

This relatively small component of the work force makes a disproportionate contribution to the standard error of the ECI estimate for private industry. Salesworkers accounted for 37 percent of the variance in the December 1987 12-month percent change and 53 percent of the variance in the June 1988 12-month percent change for private industry, even though they represented only 10 percent of the compensation costs in the private sector for either period. The following tabulation presents the percent of total compensation in the private sector by selected subgroups of workers in both periods, and the associated percent of variance of annual change for each period:

	Percent of—		
	Total compensation (December and June)	Variance of annual change	
		December	June
Total private industry	100	100	100
Private industry, except salesworkers	90	63	47
Salesworkers in finance, insurance, and real estate	2	24	48
Other salesworkers	8	13	5

The original sample allocations for the finance, insurance, and real estate portion of the ECI were proportional to the census employment of that industry. Once the variance of the industry estimates, particularly in sales occupations, was obtained, efforts were made to control it. The largest components of the variance are due to the sales occupations in the establishments of security and commodity brokers, dealers, exchanges, and services (that is, stockbrokers). In 1987, the sample for the industry was increased from 36 to 130 establishments, and an additional 140 establishments were selected for the collection of data for salesworkers only.

Table 5. Twelve-month percent changes in the Employment Cost Index and associated standard errors, private industry workers by bargaining status, region, and area size, September 1987 to June 1988

[Not seasonally adjusted]

Series	September 1987		December 1987		March 1988		June 1988	
	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error	12-month change	Standard error
	Compensation							
Workers, by bargaining status:								
Union	2.0	0.2	2.8	0.2	3.9	0.3	4.3	0.2
Goods-producing[1]	1.7	.3	3.0	.3	4.8	.4	5.1	.3
Service-producing[2]	2.3	.3	2.5	.3	2.7	.4	3.1	.4
Manufacturing	1.6	.3	2.8	.3	5.5	.4	5.8	.4
Nonmanufacturing	2.4	.3	2.7	.3	2.7	.3	3.0	.3
Nonunion	3.7	.2	3.6	.3	4.0	.3	4.5	.3
Goods-producing[1]	3.1	.3	3.2	.3	4.1	.2	4.6	.3
Service-producing[2]	4.1	.4	3.9	.4	3.8	.4	4.5	.5
Manufacturing	3.2	.3	3.2	.3	4.2	.3	4.5	.3
Nonmanufacturing	4.0	.3	3.8	.4	3.8	.4	4.6	.5
Workers, by region:								
Northeast	4.5	.5	5.0	.5	4.6	.4	5.3	.5
South	2.7	.3	3.0	.3	3.8	.4	4.6	.4
Midwest (formerly North Central)	3.1	.3	2.8	.3	4.1	.4	4.1	.4
West	2.8	.5	2.6	.5	3.1	.5	3.9	.3
Workers, by area size:								
Metropolitan areas	3.3	.2	3.4	.2	4.0	.2	4.5	.2
Other areas	3.2	.4	3.2	.5	3.6	.4	4.1	1.0
	Wages and salaries							
Workers, by bargaining status:								
Union	1.7	.2	2.6	.2	2.6	.2	2.9	.2
Goods-producing[1]	1.6	.4	3.0	.4	3.0	.2	3.1	.2
Service-producing[2]	1.8	.4	2.1	.4	2.1	.4	2.4	.4
Manufacturing	1.6	.3	3.0	.4	3.2	.2	3.3	.3
Nonmanufacturing	1.8	.3	2.2	.3	2.0	.3	2.5	.3
Nonunion	3.8	.3	3.6	.3	3.5	.3	4.0	.3
Goods-producing[1]	3.2	.2	3.4	.2	3.7	.3	4.2	.3
Service-producing[2]	4.1	.4	3.8	.5	3.3	.4	4.0	.5
Manufacturing	3.5	.3	3.4	.3	3.8	.3	4.0	.3
Nonmanufacturing	3.9	.4	3.7	.4	3.3	.3	4.0	.5
Workers, by region:								
Northeast	4.5	.5	5.0	.6	4.1	.4	4.6	.5
South	2.6	.3	2.8	.3	3.0	.4	3.8	.5
Midwest (formerly North Central)	3.4	.3	2.9	.4	3.1	.5	2.8	.5
West	2.9	.6	2.6	.7	2.8	.6	3.7	.4
Workers, by area size:								
Metropolitan areas	3.3	.2	3.4	.2	3.2	.2	3.7	.3
Other areas	3.3	.5	3.3	.6	3.4	.5	4.1	1.2

[1] Includes mining, construction, and manufacturing.

[2] Includes transportation; public utilities; trade; finance, insurance, and real estate; services; and, where applicable, public administration in State and local governments.

The most recent ECI sample has been in place for too short a time to judge its effect on the standard error. The estimate of annual relative change is a product of four quarterly relative estimates, the first of which was calculated from the old sample and the last from the new sample. (The relative is the ratio of current-quarter employment cost divided by the prior-quarter cost). An estimate of change based on two estimates from different samples will usually have a higher standard error than one based on two estimates from the same sample. This problem will continue to affect the ECI estimates until the current sample has been active for a full year. It is possible that the combination of the new sample and the fluctuations in the stockbrokers' commissions have overwhelmed any reduction in the standard error that could have been expected from the increase in sample size.

The ECI methodology cannot control for the distribution of changes in wages and benefits among establishments. This distribution has a large impact on the standard errors. Changes in economic conditions can create large variations in the change in wages and benefits offered in an industry. Planned increases in sample size may not result in smaller standard errors if economic developments cause more variability in the wage and benefit change. Conversely, standard errors may fall in the absence of any increase in sample size if wage and benefit changes become more homogeneous.

As industry samples are replaced in the ECI, new sample size allocations will be developed based on the most recent variance data available and a determination of additional industry or occupational series to be published. Recent budget increases allowed the Bureau to enlarge the sample size for the service sector beginning in 1986. Concern about the large variances for the finance industries has led to sample increases for those industries since 1987.

STANDARD ERRORS for the published ECI annual percent changes will appear in the BLS annual bulletin on the survey, enabling data users to assess the reliability of the estimates by constructing confidence intervals. Improved sampling methods, increased ECI sample sizes, and the use of variances in sample allocation are expected to reduce the magnitude of the standard errors, assuming relatively stable economic conditions. □

Erratum

Because of an editorial oversight, reference to the State of Maine was omitted from the article, "State workers' compensation: enactments in 1988," by LaVerne C. Tinsley, *Monthly Labor Review*, January 1989. The name "Maine" should appear in the second column on p. 68, just before the paragraph beginning "New coverage enacted for prisoners . . . . "

Research Summaries

Spending patterns and income of single and married parents

MAUREEN BOYLE

The number of American families headed by single parents has increased dramatically in the last three decades, growing from 9 percent of all households with children in 1960 to almost 24 percent in 1986.[1] This increase in single-parent families reflects the rise in separations and divorces, and an increase in families that are headed by unmarried mothers. The result is that 15 million of 63 million children, almost 1 of 4 live in single-parent households: 42 percent of these 15 million children have parents who are divorced, 27 percent of the children have parents who never married, 25 percent have parents who are separated, and 7 percent have a widowed parent.[2] The Census Bureau has estimated that more than 50 percent of all children will spend at least some time in single-parent households. Almost 89 percent of the children in single-parent households live with their mothers, and about 11 percent with their fathers.[3] Single-parent households headed by women are of special interest because they are more likely to be poor than are other households with children. Nearly half of all households in poverty are headed by women.[4]

The growth in the number of single-parent households and their economic situation is emerging as an important issue of public policy. Although the policy implications of single parenthood are not the topic of this summary, information about the economic situation of these families, as provided in this report, can be useful in evaluating the issue. A number of articles have examined the income and characteristics of single parents: these articles have mainly focused on households headed by women because they are the majority.[5] However, research comparing the expenditure patterns of single-parent households and married-parent households is scarce. The purpose of this report is to compare, in some detail, the expenditure patterns of these households. As an added dimension, comparisons are also made for single parents living in poverty and single parents not in poverty.

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Background on data

The data used for this study are taken from the Interview portion of the Consumer Expenditure Survey for the years 1984 through 1986.[6] Expenditures and characteristics are compared for all single parents and married parents and then for single parents in poverty and single parents not in poverty. Only consumer units which are complete income reporters are used in this sample; this step was followed so as not to distort the relationship between income and expenditures.[7] The Interview Survey selects participants on a rotating panel basis and targets approximately 5,000 consumer units each quarter. Respondents are interviewed for five consecutive quarters. One-fifth of the sample is new to the survey every quarter. The unit of study, the consumer unit, is similar to a family or household.[8] Single-parent families include those consumer units with a male or female reference person, no spouse present, and at least one child under age 18 who is living in the unit. Married parents include those consumer units in which both husband and wife are present and at least one child is under the age of 18. The reference person is the first member mentioned by the respondent to the survey when asked to "Start with the name of the person or one of the persons who owns or rents the home." Hence, either the husband or wife can be the reference person. The demographics cited refer to the reference person.

Each consumer unit, in the sample of single-parent units, is defined as above or below the poverty threshold. The poverty threshold is based on family composition as defined by the Bureau of the Census in the Current Population Reports.[9] For convenience, the following terms will generally be used throughout the text: "single-parents" for single parent units, "married parents" for married parent units, "poor single parents" for single-parent units living below the poverty threshold and "other single parents" for single-parent units living above the poverty threshold. Approximately 23 percent of all consumer units with children are single-parent units. Results indicate that married parents have more than twice as much income as have single parents and own more than twice as many vehicles (See table 1.). Married parents are more likely to be homeowners. The reference person of a single-parent unit is more likely to be black, and to have fewer years of formal schooling than the reference person for a married parent consumer unit. Single parents have a larger share of their children in the oldest age group and a

smaller share in the youngest age group when compared with married parents.

The consumption patterns of single parents may reflect the sources of income as well as their income levels because regularity of income is likely to be important when planning expenditures. The following tabulation presents the percentages of consumer units reporting income from these sources in the 1986 Consumer Expenditure Survey. Single parents and married parents differ significantly according to their sources of income:

Sources of income: percent reporting—	*Single parents*	*Married parents*
Money income before taxes	100	100
Wages and salaries	71	94
Self employment income	5	15
Social Security, Railroad Retirement, and other pensions	8	4
Dividends and other property income	17	36
Income from other sources	66	24
Public assistance	29	2
Alimony and child support	28	4
Food stamps	36	4

Only 71 percent of single parents report income from wages and salaries, compared with 94 percent of married parents. In contrast, 66 percent of single parents report income from other sources, such as public assistance, food stamps, alimony, and child support, compared to 24 percent of married parents. Income from these sources may not be received with regularity, especially income for child support and alimony payments, which for single parents make up more than a third of income from other sources. In 1983, the aggregate amount of child support payments due was $10.1 billion, but actual payments received amounted to only about $7.1 billion.[10] Of women entitled to receive child support payments, 31 percent of black women and 23 percent of white women received no payments.[11] In addition, 8 percent of single parents report income from Social Security, compared with 4 percent of married parents. With Social Security including survivor benefits, this higher percentage for single parents is not surprising because 9 percent of all single parents are widowed.

Expenditures

Table 2 includes the average annual per household and per capita expenditures of single parent and married parent consumer units. Significant differences between the two groups in the per household and per capita expenditures are noted in columns three and six.[12] Expenditure categories like shelter and fuels, utilities, and public services are best viewed in terms of per household expenditures, because these goods are assumed to be consumed jointly by household members. Other goods and services, such as public transportation, are purchased and consumed on an individual basis, and thus are more clearly viewed using per capita expenditures. Single parents spend less than married parents for all categories of transportation when per household expenditures are compared statistically. However, when per capita differences are examined, single parents do not spend differently than married parents on public transportation. When airline fares are subtracted from total public transportation, single parents spend more than married parents for the "other" category of public transportation on a per capita basis.

Making comparisons on a per capita basis may control for differences in family size, but it does not account for differences in family composition. While babysitting and day care expenditures will depend on the number of children a family has, one might be tempted to make the comparison on a per capita basis. However, because single parents and married parents have, on average, approximately the same number of children (table 1), and married parents have twice as many adults in their unit as single parents by definition, the results will be distorted. When per household expenditures for babysitting and day care are examined, there is no significant difference between the two groups. On a per capita basis, single parents appear to spend more on babysitting and day care. While one could argue that there are some married-parent households in which the wife stays at home during the day so that day care expenditures would be minimal or nonexistent, there also are single parents who must stay at home because the cost of entering the labor force may be higher than the earnings that they would receive. However, in families in which both parents work outside the home, two incomes contribute to day care, whereas the single parent theoretically only has one. Thus, the per household comparison shows a clearer picture of expenditures on day care and babysitting; there is no statistically significant difference in expenditures for the two groups in spite of the substantial difference in income.

Table 1. Characteristics of single parents and married parents, 1984–86

Characteristics	Single parents	Married parents
Number of consumer units (millions)	7.4	31.7
Income before taxes	$14,671	$33,153
Income after taxes	$13,633	$30,305
Size of consumer unit	2.9	4.1
Age of reference person	36	37
Average number in consumer unit:		
Earners	1	2
Children under 18	1.7	1.9
Vehicles	1.1	2.6
Percent reporting:		
Homeownership	36	75
Black reference person	27	7
Education of reference person (percent):		
Elementary (1–8)	7	5
High school (9–12)	55	45
College	37	49
Percentage with children of ages:		
Less than 6	35	49
6–11	43	44
12–17	55	46

Table 2. Selected per household and per capita average expenditures of single-parent and married parent consumer units, Interview Survey, 1984–86

Item	Per household expenditures			Per capita expenditures		
	Single parents	Married parents	Significant difference at α=.01.	Single parents	Married parents	Significant difference at α=.01.
Average annual expenditures	$15,867	$28,708	*	$5,979	$7,352	*
Food	2,846	4,521	*	1,023	1,134	*
Food at home	2,200	3,295	*	775	821	*
Food away from home	647	1,226	*	247	312	*
Housing	5,699	8,794	*	2,185	2,267	—
Shelter	3,264	4,937	*	1,269	1,277	—
Owned dwellings	1,306	3,491	*	510	896	*
Rented dwellings	1,756	963	*	683	258	*
Other lodging	203	483	*	77	123	*
Utilities, fuels, and public services	1,492	2,047	*	545	519	*
Household operations	440	597	*	179	158	*
Babysitting and day care	344	394	—	142	106	*
Housefurnishings and equipment	503	1,213	*	191	313	*
Transportation	2,758	6,194	*	1,039	1,597	*
Vehicle purchases	1,145	2,894	*	423	756	*
Cars and trucks, new	553	1,662	*	217	443	*
Cars and trucks, used	591	1,232	*	206	314	*
Gasoline and motor oil	659	1,412	*	249	358	*
Public transportation	175	253	*	68	6	—
Other vehicle expenses	779	1,636	*	298	418	*
Apparel	1,023	1,569	*	380	398	—
Men age 16 and over	97	286	*	35	73	*
Boys ages 2 to 15	120	140	*	43	33	*
Women age 16 and over	315	425	*	122	109	*
Girls ages 2 to 15	153	187	*	53	45	*
Children under age 2	39	96	*	15	26	*
Health care	556	1,126	*	210	286	*
Entertainment	712	1,565	*	274	400	*
Personal care	147	241	*	54	61	*
Reading	90	162	*	34	42	*
Education	245	384	*	87	94	—
Tobacco and smoking supplies	192	278	*	72	71	—
Miscellaneous[1]	277	269	—	106	70	*
Contributions	370	767	*	136	196	—
Personal insurance and pensions	1,083	3,139	*	423	812	*

[1]Miscellaneous includes safety deposit box rental, checking account fees, and other bank services; legal fees; accounting fees; funerals; cemetery lots; union dues; occupational expenses; and finance charges other than for mortgage and vehicles.

Per household expenditures. Many of the differences in expenditures between single parents and married parents can be explained by their characteristics. As mentioned earlier, married parents on average have more than twice as many vehicles as single parents and a higher rate of homeownership. These differences are clearly reflected in the expenditures of single parents and married parents. Single parents spend less than married parents for all categories of transportation: vehicle purchases, gasoline and motor oil, public transportation, and other vehicle expenses. In accordance with their lower rate of homeownership, single parents spend less than married parents on owned dwellings and more on rented dwellings. Single parents also spend less than married parents on expenditures for fuels, utilities, and public services. This is most likely due to the fact that these expenditures are often included in rental payments.

Per capita expenditures. Single parents spend more per capita than married parents on apparel for boys, girls, and women and less on apparel for men and children under age 2. It stands to reason that they would spend less on men's apparel, and more on women's apparel because 87 percent of all single-parent consumer units in this sample are headed by women. Expenditures for infants' apparel are less for single parents because they have a lower proportion of children in the younger age group. This difference may also be explained by the fact that gifts, which are more likely to be purchased by married couples are included in these expenditures.[13]

Although single parents spend less than married parents on total health care, they spend more on the services of practitioners other than physicians. Single parents spend less on all types of health insurance except Medicare, physicians' services, eye care, prescription drugs, lab tests, and x rays, excluding dental and eye care. The limited incomes of single parents may make them eligible for Medicaid or other public health services and, therefore, they have more restricted choice in their use of health care which can affect their spending.

Single parents spend more on miscellaneous expenditures, which include legal fees, than married parents. Possibly, single parents spend more on legal fees because they have fees for divorce and separation and for collection of alimony and child support. In this sample, 48 percent of

single parents are divorced and 18 percent are separated. The percentage of the sample reporting expenditures for legal fees is 7 percent for single parents versus only 3 percent for married parents.

One would expect single parents to spend less on discretionary items because their incomes are lower on average. Single parents spend less on food away from home than do married parents: 76 percent of single parents report such expenditures compared with 92 percent for married parents. Single parents also spend less than married parents on entertainment, personal care, reading, personal insurance, and pensions. The expenditures for education, tobacco and smoking supplies, and cash contributions are not significantly different between single parents and married parents.

Single parents in poverty

In the sample used for this study, approximately 50 percent of all single parents have incomes below the poverty threshold.[14] This result is consistent with that reported in the Current Population Reports for the same period. Forty-four percent of poor single parents did not graduate from high school, compared with only 13 percent of other single parents. Conversely, only 4 percent of poor single parents are college graduates, compared with 22 percent of other single parents. Thirty-one percent of poor single parents live in the South and 14 percent live in the West. The share of families in these regions is more when examining other single parents; 36 percent live in the South and 22 percent, in the West. For the Northeast and Midwest, the numbers reverse. Twenty-two percent of poor single parents live in the Northeast and 33 percent live in the Midwest, compared to 18 percent of other single parents living in the Northeast and 24 percent in the Midwest. Ninety-four percent of poor single parents are women, compared with 82 percent of other single parents. Thirty-five percent of poor single parents are black, compared with 20 percent of other single parents.

When comparing per household expenditures, poor single-parent consumer units spend less than other single parents for owned dwellings. (See table 3.) Poor single parents also spend less on fuels, utilities, and public services, and household operations, furnishings, and equipment than other single parents. However, there is no significant difference between the two groups for expendi-

Table 3. Selected per household and per capita average expenditures for single-parent consumer units in poverty and other single-parent consumer units, Interview Survey, 1984–86

Item	Per household expenditures			Per capita expenditures		
	Single parents in poverty	All other single parents	Significant difference at α=.01.	Single parents in poverty	All other single parents	Significant difference at α=.01.
Average annual expenditures	$9,423	$21,311	*	$3,197	$8,329	*
Food	2,362	3,256	*	763	1,242	*
Food at home	2,121	2,266	*	679	857	*
Food away from home	241	990	*	84	385	*
Housing	3,771	7,329	*	1,304	2,929	*
Shelter	2,135	4,218	*	750	1,708	*
Owned dwellings	441	2,036	*	152	812	*
Rented dwellings	1,662	1,835		586	764	*
Other lodging	31	348	*	12	132	*
Utilities, fuels, and public services	1,172	1,762	*	391	676	*
Household operations	183	657	*	70	272	*
Babysitting and day care	136	520	*	53	217	*
Housefurnishings and equipment	282	691	*	93	273	*
Transportation	1,284	4,002	*	434	1,550	*
Vehicle purchases	519	1,674	*	166	641	*
Cars and trucks, new	176	872	*	54	355	*
Cars and trucks, used	343	802	*	111	286	*
Gasoline and motor oil	381	893	*	133	348	*
Public transportation	92	246	*	31	99	*
Other vehicle expenses	292	1,190	*	104	462	*
Apparel	621	1,362	*	205	528	*
Men age 16 and over	39	146	*	12	54	*
Boys ages 2 to 15	94	142	*	29	55	*
Women age 16 and over	129	472	*	46	186	*
Girls ages 2 to 15	115	185	*	36	68	*
Children under age 2	51	28	*	18	12	*
Health care	221	839	*	79	321	*
Entertainment	339	1,026	*	117	407	*
Personal care	78	206	*	25	79	*
Reading	38	133	*	13	53	*
Education	113	357	*	44	124	*
Tobacco and smoking supplies	183	199		65	77	*
Miscellaneous[1]	143	389	*	55	149	*
Contributions	40	649	*	15	239	*
Personal insurance and pensions	191	1,838	*	64	727	*

[1]Miscellaneous includes safety deposit box rental, checking account fees and other bank services; legal fees; accounting fees; funerals; cemetery lots; union dues; occupational expenses; and finance charges other than for mortgage and vehicles.

tures on rented dwellings. At first glance, one would expect poor single parents to spend more for rented dwellings as a percentage of their total expenditures because 82 percent are renters, compared to only 48 percent of other single parents. But poor single parents may be more likely to live in subsidized or low rent housing than other single parents, which would lower their out-of-pocket expense for rented dwellings.

In all categories of transportation, poor single parents spend less than other single parents. Transportation is a necessity to most, but its frequency and form can vary greatly, depending on an individual's need and ability to pay.

On a per capita basis, poor single parents spend less than other single parents on all categories of expenditures listed in table 3. While poverty is common among single parents, single parents also are becoming more prevalent among those in poverty. More than one-third of the poverty population consists of single mothers and their children.[15] Children are more and more likely to live in poverty. Currently, one-fourth of all American children live in poverty, and it is estimated that more than 30 percent of children born in 1980 can expect to be on welfare before they reach age 18.[16]

THE RESULTS OF THIS STUDY indicate that there are a large number of significant differences between the expenditure patterns of single-parent and married-parent consumer units as well as between those of poor single parents and other single parents. The expenditures of single parents provide a vantage point on their economic well being, although some differences may be related to differences in socioeconomic characteristics. While the comparisons provided a preliminary look at single parents' expenditures, additional research is needed to determine the relationship between parents' marital status and expenditures. This could be done by controlling for the other differences in household composition and other demographic characteristics that may affect expenditures. □

——FOOTNOTES——

ACKNOWLEDGMENT: The author thanks Gregory M. Brown for statistical assistance and input into the development of this report.

[1]*Marital Status and Living Arrangements: March 1986, Current Population Reports*, Series P-20, No 418 (Bureau of the Census, 1986).

[2]*Ibid.*

[3]*Marital Status and Living Arrangements: March 1986.*

[4]*Poverty in the United States: 1986, Current Population Reports*, Series P-60, No. 160, (Bureau of the Census, 1988).

[5]For examples see: Mary Jo Bane and Robert Weiss, "Alone Together: The World of Single Parent Families, *American Demographics*, May 1980, pp. 11–16; Suzanne M. Bianchi and Judith Seltzer, "Life Without Father," *American Demographics*, December 1986, pp. 43–47; Irwin Garfinkel and Sara McLanahan, *Single Mothers and their Children: A New American Dilemma* (Washington, The Urban Institute, 1986); and George Masnick and Mary Jo Bane, *The Nation's Families: 1960–1990* (Cambridge, MA, Joint Center for Urban Studies of MIT and Harvard University, 1980).

[6]The Consumer Expenditure Survey is described in detail in *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), ch. 18.

[7]The distinction between complete and incomplete income reporters is based in general on whether the respondent provided values for major sources of income, such as wages and salaries, self-employment income, and Social Security income. Even complete income reporters may not have provided a full accounting of income from all sources. In the current survey, across-the-board zero income reporting was designated as invalid, and the consumer unit was categorized as an incomplete reporter.

[8]The consumer unit is identified by any one of three living arrangements: 1) all members of a household who are related by blood, marriage, adoption, or other legal arrangements; 2) a person living alone or sharing a household with others, but who is financially independent; or 3) two or more persons living together who pool their income to make joint expenditure decisions. Financial independence is determined by three major expense categories: housing, food, and other living expenses. To be considered financially independent, at least two of the three major expense categories have to be provided by the respondent. The terms "household," "family," and "consumer unit" are used interchangeably throughout the text.

[9]*Poverty in the United States: 1986* (Bureau of the Census, 1988.)

[10]Cynthia M. Taeber and Victor Valdisera, *Women in the American Economy, Current Population Reports*, Series P-23, No. 146 (Bureau of the Census, 1986).

[11]*Ibid.*

[12]To test for significant differences in sociodemographic characteristics and expenditures between single parents and married parents and between poor single parents and other single parents, a data base was created using 1984–86 Consumer Expenditures Survey data. The data used in this sample were collected in 1984–86. The actual expenditure period covered is October 1983 to October 1986. A consumer unit may appear from one to four times in the data base, due to the repeated interviewing of each unit. However, each occurrence of a consumer unit has been treated as if it were a separate unit. Treating each interview as an independent observation assumes that the covariance among interviews of the same units is small when averaged over the entire sample. The sample size is inversely related to the covariance of expenditures among interviews. In addition, the weights used for any unit can change from interview to interview because each quarter is a separate and complete sample. These are the assumptions used in all Consumer Expenditure Survey publications. For more information, see *Consumer Expenditure Survey: Interview Survey, 1984*, Bulletin 2267 (Bureau of Labor Statistics, 1986). The data base for this time period contained a sample of 17,796: 3,367 single-parent observations, 14,429 married-parent observations, 1,607 poor single-parent observations, and 1,760 other single-parent observations. Weighted ordinary least squares regressions was used to test whether differences between the groups were statistically significant at the $a = .01$ level.

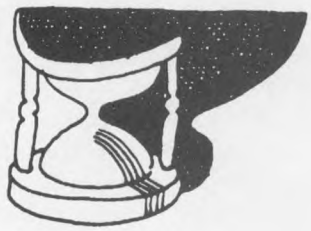
[13]Based on unpublished results, Thesia Garner, Division of Price and Index Number Research, Consumer Expenditure Surveys, Bureau of Labor Statistics, 1988.

[14]The poverty threshold used is the one established by the Bureau of the Census, see *Poverty in the United States* (Bureau of the Census, 1988). For a three-person household with two children under age 18, the poverty threshold in 1986 is $8,829 and for a four-person household with two children under 18, the poverty threshold is $11,113. The t-tests used in this section are one-tailed with $a = .01$.

[15]Barbara R. Bergmann, *The Economic Emergence of Women* (New York, Basic Books, Inc., 1986), p. 228.

[16]"We Can't Avoid Family Policy Much Longer," *Challenge*, September–October 1985, p. 10.

Major Agreements Expiring Next Month

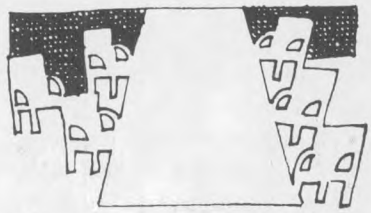


This list of selected collective bargaining agreements expiring in April is based on information collected by the Bureau's Office of Compensation and Working Conditions. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification.

Industry or activity	Employer and location	Labor organization[1]	Number of workers
Private			
Construction	Central Illinois Builders Association (Central Illinois)	Carpenters and Joiners	3,000
	Associated General Contractors, Builders Division (Minneapolis-St. Paul, MN)	Carpenters and Joiners	4,000
	Associated General Contractors (St. Louis, MO)	Laborers	4,000
	Home Builders Association (St. Louis, MO)	Carpenters and Joiners	3,000
	Associated General Contractors (St. Louis, MO)	Carpenters and Joiners	3,000
	Associated General Contractors (heavy and highway — Minnesota)	Laborers	4,500
	Ohio Contractors Association (Ohio)	Operating Engineers	10,000
	Associated General Contractors (Illinois, excluding Chicago)	Teamsters	3,500
	Ohio Contractors Association (Ohio and three counties in Kentucky)	Laborers	12,000
	Independent contractors (Minnesota)	Operating Engineers	6,000
Printing and publishing	Graphic Arts Association of the Delaware Valley (Philadelphia, PA)	Graphic Arts	1,300
Chemicals	North American Rayon Corp. (Tennessee)	United Textile Workers	1,200
Plastic products	Owens-Illinois, Inc. (Interstate)	Glass, Pottery, Plastics and Allied Workers	1,200
Primary metals	Northern California foundries (Northern California)	Molders and Allied Workers	1,000
Transportation equipment	United Technologies Corp., Hamilton Standard Division (Windsor, CT)	Auto Workers	5,500
Utilities	Central Maine Power Co. (Maine)	Electrical Workers (IBEW)	1,000
	Public Service Electric and Gas Co. (New Jersey)	Electrical Workers (IBEW)	4,650
	Public Service Electric and Gas Co. (New Jersey)	Utility Co-Workers Association	1,300
	Philadelphia Gas Works (Philadelphia, PA)	Service Employees	2,000
Retail trade	Riverside Markets Division of Penn Traffic Co. (Pennsylvania)	Food and Commercial Workers	1,000
Public			
Transportation	Twin City Area Metro Transit Commission (Minneapolis-St. Paul, MN)	Amalgamated Transit Union	2,100
	Washington Metropolitan Area Transit Authority (Washington, DC area)	Amalgamated Transit Union	5,600

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

Developments in Industrial Relations



Employment cuts sought in rail transportation

The railroads' long-standing drive to improve their competitive position by reducing employment was boosted when CSX Transportation and the United Transportation Union agreed to cut one of the two brakeman jobs from train crews on about one-third of CSX's system. After the cut, crews will consist of an engineer, a conductor, and a brakeman. The crew reduction at the Nation's largest railroad initially applied only to the Louisville & Nashville, Clinchfield, and Chattanooga lines, but similar terms were subsequently negotiated for the Pere Marquette and Hocking Valley lines. Negotiations on the issue were continuing with the United Transportation Union for the rest of the carrier's 20,000 mile system. CSX currently has 38,000 employees, down from 72,000 in 1980 when it operated on 27,000 miles of track. CSX's goal is to reduce employment to 30,000 and route mileage to 15,000 over the next 2 years.

The crew-reduction plan was a departure from plans of the past because it called for cuts effective immediately, rather than only when employees left through normal attrition. The plan offers several options to those who volunteer to leave:

- a $50,000 separation allowance;
- a transfer to another location where CSX needs workers and $20,000 relocation allowance; or
- a furlough and a $25,000 payment, with the right to be recalled to active service on a seniority basis.

If the number of volunteers falls short of the reduction goals, CSX is permitted to remove workers on a seniority basis and pay them $40,000 to resign or $10,000 to accept a furlough.

Although the carrier was centering its employment reduction effort on train crews, it also was pressing for some cuts in its repair and maintenance work force. Even before the United Transportation Union settlements, some of the various unions representing these employees had accepted similar "pay-for-job-loss" arrangements while others had not and were contesting CSX plans to unilaterally proceed with employment cuts.

Although cutting jobs is the major issue in the current industrywide bargaining, the carriers—including CSX—and the unions also are bargaining on wages, benefits, and working conditions. Contracts in the industry became amendable on June 30, 1988, under provisions of the Railway Labor Act, but bargaining has been continuing without any major threats of work stoppages.

Initial contract for air traffic controllers

The Nation's air traffic controllers negotiated their first labor contract with the Federal Aviation Administration (FAA) since 11,400 controllers were fired by President Ronald Reagan in 1981 for striking in violation of Federal law. At that time, controllers were represented by the Professional Air Traffic Controllers Organization, which ceased operation in 1982 after undergoing bankruptcy and losing its right to represent the controllers. In the following years, a small number of the strikers won reinstatement under an appeal procedure, but the Congress failed in its efforts to require the President to reinstate a substantial number of the strikers.

The successor union, the National Air Traffic Controllers Association, won the right to represent the current force of 13,000 controllers in June 1987. A year later, R. Steve Bell was elected president of the union, which has 7,000 members. The union's constitution prohibits strikes and Bell has vowed to work with the FAA to resolve continuing problems stemming from the efforts to rebuild the force of controllers and modernize the entire control system.

The initial 3-year contract, which was subject to ratification by members of the union, includes provisions that would restore immunity to controllers reporting operating errors or deficiencies in the system (immunity had been dropped in 1980); assures union participation in accident investigations involving controller actions; guarantees a rest break after 2 hours of duty; guarantees employees 2 weeks of vacation during the prime vacation season; establishes joint committees on safety, technology, and other matters;

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

and calls for development of improved methods to reduce job stress.

The accord does not deal with salaries, which are set by the President and the Congress. The annual pay of controllers ranges from $19,000 to $55,000.

Footwear accords

Bargaining jointly, the Clothing and Textile Workers and the Food and Commercial Workers negotiated contracts with Brown Shoe Co. and Florsheim Shoe Co. for a total of 9,500 employees.

The 3-year Florsheim settlement provides for a $300 lump-sum payment to all workers on the payroll on March 1, 1989. Hourly employees will receive wage increases of 15 cents in March 1990 and 10 cents in November 1990 and March 1991. On the same dates, piece workers will receive 23-, 15-, and 15-cent increases in the base rate used in calculating their earnings. Prior to the settlement, the employees reportedly earned a combined average of $6.50 an hour.

Benefit changes include three 25-cent increases in the pension rate, bringing it to $7.50 a month for each year of credited service; three $5,000 increases in lifetime major medical coverage, bringing it to $90,000; and a $50 reduction in the annual outpatient medical deductible.

The Brown accord covered 5,800 employees in Missouri and Tennessee. It provides for three wage increases totaling 45 cents an hour that will bring the average hourly pay rate to $5.95.

The 2-year contract also provides for two 25-cent increases in the $6.75 a month pension for each year of credited service and for improvements in health care benefits, including adoption of a $3,000 limit on an employee's annual out-of-pocket expenses and elimination of a $50 deductible on outpatient surgery.

Arbitrator sets wage award for textile workers

Following their earlier settlement on pensions and other matters (see *Monthly Labor Review*, October 1988, p. 46), the Bibb Co. and the Clothing and Textile Workers began unsuccessful wage negotiations that led them to resort to binding arbitration. Arbitrator Kenneth S. Brown ruled that the 2,500 union members employed in the company's Roanoke Rapids, NC, plants should receive a 4-percent wage increase, the amount the union had been seeking. Bibb had offered a 3.75-percent increase. The award also provides for employees to be paid at time and one-half rates for working Memorial Day. The union had sought double time and one-half, while Bibb had pressed for continuation of straight-time rates.

The pay changes resulted from a provision of the existing 3-year contract (which expires on March 31, 1991) permitting negotiations when nonunion textile companies raise wages.

Paperworkers settlements

Members of United Paperworkers Local 900 in Rumford, ME, agreed to a 6-year contract with Boise-Cascade Corp. that terminates premium pay for non-overtime weekend work, effective in 1994. The settlement apparently was influenced by the unsuccessful 16-month strike against International Paper Co. plants in Jay, ME, and other locations where similar changes were the focus of the dispute. A union member in Jay contended the Boise-Cascade employees were prompted to settle early and accept cost-reducing contract changes because only about 25 of the 1,200 strikers at Jay's International Paper mill had been recalled since the strike ended in October 1988. (See *Monthly Labor Review*, January 1989, p. 32, for a description of the strikes and the contract settlement that ended a lockout at International Paper's Mobile, AL, mills.)

The Boise-Cascade agreement, scheduled to take effect when the current agreement expires June 30, 1989, also provides for:

- elimination of a 1-day paid shutdown on Christmas Day, effective in 1990;
- employee assumption of some health insurance costs;
- changes in work rules and seniority provisions beneficial to the company;
- a $3,000 lump-sum payment to each employee in the first year;
- 2-percent wage increases in the second and third years, followed by 2-percent increases in each of the final 3 years; these amounts could be raised depending on the "industry standard" at the time; and
- improvements in dental, life, and sickness and accident benefits.

The 6-year contract indicated a movement toward longer term contracts in the industry, contrasting the 2- or 3-year contracts that prevailed in the past. At the time of the Boise-Cascade settlement, International Paper reportedly was seeking a 6-year contract at its Ticonderoga, NY, mill. The locked-out employees at International Paper's Mobile, AL, mill also accepted a 6-year contract, enabling them to return to work.

Elsewhere, members of United Paperworkers locals 1148 and 1140 settled with International Paper's Texarkana, AR, mill. An official at Local 1149 said the 3-year contract was accepted "reluctantly—by a narrow margin."

The new contract, running to November 30, 1991, provides for:

- immediate lump-sum payments ranging from $500 to $1,100, varying by job classification;
- an immediate 25-cent-an-hour wage increase to 440 production employees to compensate for the termination of weekend premium pay under the 1985 accord (about 130 mechanics and machine operators did not receive the increase);

- 2-percent general wage increases in the second and third years; and
- a new savings plan, permitting employees to invest up to 4 percent of their earnings, with the company matching half of the amount.

Prior to the settlement, International Paper had announced it would invest $100 million in the plant to increase output of bleached paperboard.

Philadelphia grocery store workers get 1-year contract

In Philadelphia, 2,400 grocery store employees were covered by a settlement between 35 Super Fresh Stores and Local 1357 of the United Food and Commercial Workers. Unlike past agreements, which were usually of 3-year duration, the new agreement is for only 1 year because of uncertain conditions resulting from changes in management of the chain and expected changes in the jurisdiction of local unions in Pennsylvania and nearby States.

The single wage increase is 50 cents an hour for assistant store managers, grocery and produce managers, and head cashiers, bringing their rates to $15.30, $13.30, and $12.80, respectively; 40 cents for clerks and cashiers with 3 years or more of service, and 30 cents for those with fewer than 3 years; and 30 cents for customer service clerks.

Employees continue to receive bonus payments from an allocation equal to 1 percent of their store's gross sales. The payments reportedly have averaged about 81 cents per hour worked.

The contract also obligates Super Fresh to pay an additional $5 a week per worker into the pension fund and up to $12.50 a week per employee to maintain health and welfare benefits.

In a change beneficial to the company, new employees will be paid time and one-quarter for Sunday work, although employees already on the payroll will continue to receive time and one-half.

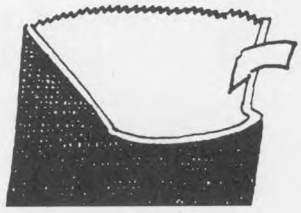
Housing-aid fund negotiated for Boston hotel workers

More than 3,000 employees of 13 Boston hotels were covered by settlements that established a fund to aid employees in purchasing homes or renting apartments. An official of Local 26 of the Hotel Employees and Restaurant Employees said that housing was the top issue in the negotiations because 98 percent of the members' families did not earn the $60,000 a year needed to buy a median priced home, and 78 percent did not earn the $32,000 a year needed to pay the monthly rent on a median priced apartment.

The fund, accumulated through an employer payment of 5 cents for each hour worked by the employees, will be administered by a joint committee that will disburse the money in the form of loans and grants. The local plans to seek to expand the available money for loans by also drawing from the pension fund covering the employees. The parties agreed not to begin the housing-aid plan until legislated changes in Federal labor law assure the legality of the joint housing fund. If this does not occur within 18 months, the accrued money will be shifted into the existing health and welfare fund and used for other benefits.

According to the AFL-CIO , this was the first time that collective bargainers established a joint trust fund for providing employee housing. The Federation did indicate that some union contracts with mining companies had provisions for providing housing for employees, but not through a trust fund.

Other terms of the new 3-year labor contracts included wage increases totaling about 16 percent (according to the union, 60 percent of the employees had been receiving $7.35 an hour, the lowest rate in the previous contract); establishment of an education fund to finance English language instruction, a literacy program, and college scholarships; increased employer financing of pensions; provision for voter registration of employees to be conducted in the hotels; and a reduction to 15, from 16, in the number of rooms an employee must clean during a work shift. □



Book Reviews

A new look at trade policy

Strategic Trade Policy and the New International Economics. Edited by Paul R. Krugman. Cambridge, MA, The MIT Press, 1986. 313 pp. $12.50, paper.

"Strategic" is one of those wonderful words that always seems to have a positive connotation and can be used in a variety of ways, depending on one's preferences or objectives. There are at least three senses of "strategic" in this collection of papers that were presented at a 1984 conference sponsored by the Export–Import Bank. First, of most interest to economists, is the theory of government policies affecting the strategic decisions of oligopolists in international markets. Second, of most interest to students of public policy, are the strategic considerations involved in the game of trade negotiation. And third, of most interest to special interests, is the designation of certain industrial activities as "strategic" in the sense of being so important they should be pursued for their own sake.

The three papers that set forth the arguments for and against an active commercial policy—export subsidies in particular—in an imperfectly competitive world do a good job of distilling this relatively new strand of theory to an accessible form. At the risk of taking the distillation process too far, I took the basic analysis to be: In an international economy in which few firms are competing for market share given the projected output of their rivals, a production subsidy will induce the domestic industry to raise output. As the foreign competition adjusts to the new output structure by reducing production, the domestic industry captures increased market share and shifts the resulting profits to the domestic economy in an amount that will more than offset the subsidy.

The argument is intriguing, but as the critique offered by Gene M. Grossman concludes, even given in theory, "...a firm basis for an ideal targeting policy. ...[H]ow close could economists and policymakers come to identifying this ideal?" Although Barbara J. Spencer's essay encourages the research necessary to find out, there can be no illusions about the ease of the task. If anything, the seven characteristics of good policy targets she outlines each hold the seeds for significant dispute. For example, her third factor, "[t]he domestic industry involved in exporting should be more concentrated or equally as concentrated as the rival foreign industry," not only leads to measurement disputes about the meaning of concentration but also raises the issue of the income distribution effects of subsidizing the most concentrated industries. For example, as Spencer points out, one implication of this policy criterion is that " . . . high worker rents due to unionization might be used as an indication that the industry could be a candidate for targeting by the government."

The second meaning of strategy—the efforts of government to influence the behavior of other governments—is reviewed by J. David Richardson. His paper very clearly summarizes the implications of the theory of "prisoners' dilemma" games for trade negotiators. The dilemma: mutually cooperative moves will benefit both parties most. However, the structure of the game makes noncooperative initiatives seem best, which costs both players on the first play. However, Richardson goes beyond that simple framework to report on the results of repeated plays and the strategy that works best in that more realistic structure. He finds, with the help of a quote from Robert Axelrod, a game theory researcher, " . . . the best kind of strategy over repeated play is 'nice, forgiving, clear and provocable.' " Active protection or promotion of one's international trade finds a justification in the provocable nature of an effective foreign economic policy.

The third meaning of strategy, the selection of industries worthy of government support on the basis of their presumed importance to the Nation, is indulged in a paper by Michael Borrus, Laura D'Andrea Tyson, and John Zysman that outlines the development of the Japanese semiconductor industry. They characterize the success of that industry as " . . . a planned result of a concerted policy effort." In an essay examining Japanese industrial policy in some detail, however, Kozo Yamamura warns that such policies may be " . . . more effective than many economists would admit but substantially less so than maintained by the Americans urging adoption of industrial policy à la Japanese. I am also persuaded that the effectiveness of Japanese

industrial policy was achieved at the cost of economic efficiency and political 'fairness' . . . "

The technical material in *Strategic Trade Policy and the New International Economics* is enlightening, yet presented without the daunting formal apparatus of the more rigorous literature from which it drew. The volume as a whole is well balanced by the editor, both in the selection of contributors and in the introductory essay. I recommend it to anyone who is interested in the essentials of this new approach to trade policy.

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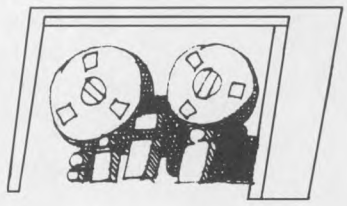
Current Labor Statistics



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Major collective bargaining settlements	.....	.....	April 25	1st quarter	.....	.....	3; 25–28
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NOTES ON CURRENT LABOR STATISTICS

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

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years. (Seasonally adjusted data appear in tables 1–3, 4–10, 13, 14, 15, 17, and 18.) Beginning in January 1980, the BLS introduced two major modifications in the seasonal adjustment methodology for labor force data. First, the data are seasonally adjusted with a procedure called X–11 ARIMA, which was developed at Statistics Canada as an extension of the standard X–11 method previously used by BLS. A detailed description of the procedure appears in *The X–11 ARIMA Seasonal Adjustment Method* by Estela Bee Dagum (Statistics Canada, Catalogue No. 12–564E, February 1980). The second change is that seasonal factors are calculated for use during the first 6 months of the year, rather than for the entire year, and then are calculated at midyear for the July-December period. However, revisions of historical data continue to be made only at the end of each calendar year.

Seasonally adjusted labor force data in tables 1 and 4–10 were revised in the February 1989 issue of the *Review,* to reflect experience through 1988.

Annual revisions of the seasonally adjusted payroll data shown in tables 13 and 17 were made in the July 1988 *Review* using the X–11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in table 42 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from quarter to quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the "real" earnings shown in table 15—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1977 = 100, the hourly rate expressed in 1977 dollars is $2 ($3/150 × 100 = $2). The $2 (or any other resulting values) are described as "real," "constant," or "1977" dollars.

Additional Information

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

Symbols

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

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

n.e.c. = not elsewhere classified.

n.e.s. = not elsewhere specified.

COMPARATIVE INDICATORS
(Tables 1–3)

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

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

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

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

Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988), as well as the additional bulletins, articles, and other publications noted in the separate sections of the *Review*'s "Current Labor Statistics Notes." Users may also wish to consult *Major Programs, Bureau of Labor Statistics,* Report 718 (Bureau of Labor Statistics, 1985).

EMPLOYMENT AND UNEMPLOYMENT DATA
(Tables 1; 4–21)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 55,800 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

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

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

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

Notes on the data

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

Data in tables 4–10 are seasonally adjusted, based on the seasonal experience through December 1988.

Additional sources of information

For detailed explanations of the data, see *BLS Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988). Historical unadjusted data from 1948 to 1987 are available in *Labor Force Statistics Derived from the Current Population Survey,* Bulletin 2307 (Bureau of Labor Statistics, 1988). Historical seasonally adjusted data appear in *Labor Force Statistics Derived from the Current Population Survey: A 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 300,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This

largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

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

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

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

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

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

The Diffusion Index represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Data are centered within the span. The March 1989 *Review* introduced an expanded index on private nonagricultural employment based on 349 industries, and a new manufacturing index based on 143 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1988 data, published in the July 1988 issue of the *Review.* Consequently, data published in the *Review* prior to that issue are not necessarily comparable to current data. Unadjusted data have been revised back to April 1986; seasonally adjusted data have been revised back to January 1983. These revisions were published in the *Supplement to Employment and Earnings* (Bureau of Labor Statistics, 1988). Unadjusted data from April 1987 forward, and seasonally adjusted data from January 1984 forward are subject to revision in future benchmarks.

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

Additional sources of information

Detailed national data from the establishment survey are published monthly in the BLS periodical, *Employment and Earnings.* Earlier comparable unadjusted and seasonally adjusted data are published in *Employment, Hours, and Earnings, United States, 1909–84,* Bulletin 1312–12 (Bureau of Labor Statistics 1985) and its annual supplement. For a detailed discussion of the methodology of the survey, see BLS *Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988).

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

Unemployment data by State

Description of the series

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

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

Notes on the data

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

Additional sources of information

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

COMPENSATION AND WAGE DATA
(Tables 1–3; 22–29)

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

Employment Cost Index

Description of the series

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

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

The Employment Cost Index probability sample consists of about 3,400 private nonfarm establishments providing about 18,000 occupational observations and 700 State and local government establishments providing 3,500 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

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

Definitions

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

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

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

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

Notes on the data

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

Additional sources of information

For a more detailed discussion of the Employment Cost Index, see the *Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988), and the following *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor'," July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; "Estimation procedures for the Employment Cost Index," May 1982; and "Introducing new weights for the Employment Cost Index," June 1985.

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

Collective bargaining settlements

Description of the series

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

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

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

Definitions

Wage rate changes are calculated by dividing newly negotiated wages by the average straight-time hourly wage rate plus shift premium at the time the agreement is reached. Compensation changes are calculated by

dividing the change in the value of the newly negotiated wage and benefit package by existing average hourly compensation, which includes the cost of previously negotiated benefits, legally required social insurance programs, and average hourly earnings.

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

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

Notes on the data

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

Additional sources of information

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

Work stoppages

Description of the series

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

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

Definitions

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

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

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

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

Notes on the data

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

Additional sources of information

Data for each calendar year are reported in a BLS press release issued in the first quarter of the following year. Monthly and historical data appear in the BLS periodical, *Current Wage Developments.* Historical data appear in the *Handbook of Labor Statistics,* Bulletin 2217 (Bureau of Labor Statistics, 1985).

Other compensation data

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

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

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

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

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

PRICE DATA
(Tables 2; 30–41)

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

Consumer Price Indexes

Description of the series

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

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

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

Notes on the data

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

Additional sources of information

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

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

Producer Price Indexes

Description of the series

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

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

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

Notes on the data

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

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

Additional sources of information

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

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

International Price Indexes

Description of the series

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

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

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

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

Notes on the data

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

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

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

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

Additional sources of information

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

Additional detailed data and analyses of international price developments are presented in the Bureau's quarterly publication *U.S. Import and Export Price Indexes* and in occasional *Monthly Labor Review* articles prepared by BLS analysts. Selected historical data may be found in the *Handbook of Labor Statistics,* Bulletin 2217 (Bureau of Labor Statistics, 1985). For further information on the foreign currency indexes, see "BLS publishes average exchange rate and foreign currency price indexes," *Monthly Labor Review,* December 1987, pp. 47–49.

PRODUCTIVITY DATA
(Tables 2; 42–44)

U.S. productivity and related data

Description of the series

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

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

Definitions

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

Multifactor productivity is output per unit of combined labor and capital inputs. Changes in this measure reflect changes in a number of factors which affect the production process such as changes in technology, shifts in the composition of the labor force, changes in

capacity utilization, research and development, skill and efforts of the work force, management, and so forth. Changes in the output per hour measures reflect the impact of these factors as well as the substitution of capital for labor.

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

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

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

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

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

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

Notes on the data

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

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

Additional sources of information

Descriptions of methodology underlying the measurement of output per hour and multifactor productivity are found in the *BLS Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988). Historical data for selected industries are provided in the *Handbook of Labor Statistics,* Bulletin 2217 (Bureau of Labor Statistics, 1985).

INTERNATIONAL COMPARISONS
(Tables 45–47)

Labor force and unemployment

Description of the series

Tables 45 and 46 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and 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 DATA**: Household Survey Data.

Notes on the data

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

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

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

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

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

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

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

Additional sources of information

For further information, see *International Comparisons of Unemployment,* Bulletin 1979 (Bureau of Labor Statistics, 1978), Appendix B, and unpublished Supplements to Appendix B, available on request. The statistics are also analyzed periodically in the *Monthly Labor Review.* The latest article appears in the April 1988 *Review.* Additional historical data, generally beginning with 1959, are published in the *Handbook of Labor Statistics* and are available in unpublished statistical supplements to Bulletin 1979.

Manufacturing productivity and labor costs

Description of the series

Table 47 presents comparative measures of manufacturing labor productivity, hourly compensation costs, and unit labor costs for the United States, Canada, Japan, and nine European countries. These measures are limited to trend comparisons—that is, intercountry series of changes over time—rather than level comparisons because reliable international comparisons of the levels of manufacturing output are unavailable.

Definitions

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

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

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

Notes on the data

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

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

Additional sources of information

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

OCCUPATIONAL INJURY AND ILLNESS DATA (Table 48)

Description of the series

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

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

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

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

Definitions

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

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

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

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

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

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

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

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

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

Notes on the data

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

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

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

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

Additional sources of information

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

The definitions of occupational injuries and illnesses and lost workdays are from *Recordkeeping Requirements under the Occupational Safety and Health Act of 1970.* For additional data, see *Occupational Injuries and Illnesses in the United States, by Industry,* annual Bureau of Labor Statistics bulletin; BLS *Handbook of Methods,* Bulletin 2285 (Bureau of Labor Statistics, 1988); *Handbook of Labor Statistics,* Bulletin 2217 (Bureau of Labor Statistics, 1985), pp. 411–14; annual reports in the *Monthly Labor Review;* and annual U.S. Department of Labor press releases.

1. Labor market indicators

Selected indicators	1987	1988	1987				1988			
			I	II	III	IV	I	II	III	IV
Employment data										
Employment status of the civilian noninstitutionalized population (household survey)[1]										
Labor force participation rate	65.6	65.9	65.4	65.6	65.6	65.7	65.8	65.8	65.9	66.1
Employment-population ratio	61.5	62.3	61.1	61.5	61.7	61.9	62.1	62.2	62.3	62.5
Unemployment rate	6.2	5.5	6.6	6.3	6.0	5.9	5.7	5.5	5.5	5.3
Men	6.2	5.5	6.6	6.4	6.0	5.8	5.6	5.4	5.4	5.4
16 to 24 years	12.6	11.4	13.3	13.1	12.2	11.9	11.8	11.2	11.4	11.3
25 years and over	4.8	4.2	5.1	4.9	4.6	4.4	4.3	4.2	4.1	4.1
Women	6.2	5.6	6.6	6.2	6.0	6.0	5.8	5.6	5.6	5.3
16 to 24 years	11.7	10.6	12.5	11.7	11.4	11.2	11.0	10.7	10.5	10.3
25 years and over	4.8	4.3	5.0	4.7	4.7	4.6	4.5	4.3	4.4	4.2
Unemployment rate, 15 weeks and over	1.7	1.3	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
Employment, nonagricultural (payroll data), in thousands:[1]										
Total	102,310	106,039	101,024	101,841	102,669	103,683	104,670	105,609	106,478	107,344
Private sector	85,295	88,652	84,130	84,869	85,643	86,518	87,406	88,263	89,063	89,810
Goods-producing	24,784	25,565	24,523	24,644	24,847	25,116	25,260	25,498	25,648	25,828
Manufacturing	19,065	19,538	18,895	18,965	19,112	19,290	19,388	19,498	19,567	19,700
Service-producing	77,525	80,475	76,500	77,196	77,782	78,567	79,410	80,111	80,830	81,516
Average hours:										
Private sector	34.8	34.8	34.8	34.7	34.7	34.8	34.7	34.8	34.7	34.8
Manufacturing	41.0	41.1	41.0	40.9	40.9	41.1	41.0	41.1	41.1	41.1
Overtime	3.7	3.9	3.6	3.7	3.8	3.9	3.8	3.9	3.9	3.9
Employment Cost Index										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers)	3.6	5.0	.9	.7	1.2	.8	1.4	1.1	1.3	1.0
Private industry workers	3.3	4.9	1.0	.7	1.0	.7	1.5	1.2	1.0	1.0
Goods-producing[2]	3.1	4.4	.5	.7	.8	1.0	1.8	1.1	.6	.8
Service-producing[2]	3.7	5.1	1.3	.7	1.0	.5	1.3	1.4	1.2	1.2
State and local government workers	4.4	5.6	.8	.3	2.3	.9	1.3	.3	2.7	1.1
Workers by bargaining status (private industry):										
Union	2.8	3.9	.5	.5	.6	1.1	1.6	1.0	.7	.5
Nonunion	3.6	5.1	1.1	.7	1.1	.6	1.5	1.3	1.1	1.2

[1] Quarterly data seasonally adjusted.

[2] Goods-producing industries include mining, construction, and manufacturing. Service-producing industries include all other private sector industries.

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

Selected measures	1987	1988	1987				1988			
			I	II	III	IV	I	II	III	IV
Compensation data [1, 2]										
Employment Cost Index--compensation (wages, salaries, benefits):										
Civilian nonfarm	3.6	5.0	0.9	0.7	1.2	0.8	1.4	1.1	1.3	1.0
Private nonfarm	3.3	4.9	1.0	.7	1.0	.7	1.5	1.2	1.0	1.0
Employment Cost Index--wages and salaries										
Civilian nonfarm	3.5	4.3	1.0	.5	1.3	.7	1.0	.9	1.3	1.0
Private nonfarm	3.3	4.1	1.0	.7	1.0	.6	1.0	1.1	1.0	1.0
Price data [1]										
Consumer Price Index (All urban consumers): All items	4.4	4.4	1.4	1.2	1.3	.3	1.0	1.3	1.5	.6
Producer Price Index:										
Finished goods	2.2	4.0	.8	1.2	.2	.1	.5	1.3	.8	1.3
Finished consumer goods	2.6	4.0	.9	1.6	.3	-.2	.4	1.4	1.0	1.1
Capital equipment	1.3	3.5	.1	.3	-.2	1.1	.7	.6	.4	1.7
Intermediate materials, supplies, components	5.4	5.7	1.3	1.9	1.2	.9	1.1	2.6	1.2	.7
Crude materials	8.9	2.8	4.2	5.3	.6	-1.4	-.3	4.0	-1.2	.3
Productivity data [3]										
Output per hour of all persons:										
Business sector	.8	1.0	.3	2.7	3.9	.6	3.5	-3.4	1.7	-2.0
Nonfarm business sector	.8	1.4	0	3.2	3.7	.9	3.4	-2.4	2.0	0
Nonfinancial corporations [4]	1.5	–	-1.0	3.1	4.7	-.1	4.3	-1.6	-.8	–

[1] Annual changes are December-to-December change. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted and the price data are not compounded.

[2] Excludes Federal and private household workers.

[3] Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

[4] Output per hour of all employees.

– Data not available.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ended--					
	1987		1988				1987		1988			
	III	IV	I	II	III	IV	III	IV	I	II	III	IV
Average hourly compensation:[1]												
All persons, business sector	4.6	6.2	3.7	4.8	6.2	4.7	3.9	4.2	4.5	4.8	5.2	4.8
All employees, nonfarm business sector	4.5	6.4	3.5	4.2	5.7	5.6	3.7	4.1	4.4	4.6	5.0	4.8
Employment Cost Index--compensation:												
Civilian nonfarm [2]	1.2	.8	1.4	1.1	1.3	1.0	3.4	3.6	4.1	4.6	4.7	5.0
Private nonfarm	1.0	.7	1.5	1.2	1.0	1.0	3.3	3.3	3.9	4.5	4.5	4.9
Union	.6	1.1	1.6	1.0	.7	.5	2.0	2.8	3.9	4.3	4.5	3.9
Nonunion	1.1	.6	1.5	1.3	1.1	1.2	3.7	3.6	4.0	4.5	4.5	5.1
State and local governments	2.3	.9	1.3	.3	2.7	1.1	4.2	4.4	4.9	5.0	5.4	5.6
Employment Cost Index--wages and salaries:												
Civilian nonfarm[2]	1.3	.7	1.0	.9	1.3	1.0	3.4	3.5	3.5	3.9	3.9	4.3
Private nonfarm	1.0	.6	1.0	1.1	1.0	1.0	3.3	3.3	3.3	3.7	3.7	4.1
Union	.6	1.1	.4	.8	.7	.4	1.7	2.6	2.6	2.9	2.9	2.2
Nonunion	1.1	.5	1.0	1.2	1.0	1.1	3.8	3.6	3.5	4.0	3.9	4.5
State and local governments	2.3	.9	.9	.3	2.6	1.0	4.1	4.2	4.4	4.4	4.7	4.8
Total effective wage adjustments[3]	.9	.8	.4	.9	.8	.5	2.6	3.1	3.2	3.0	2.9	2.6
From current settlements	.2	.3	.1	.3	.2	.1	.4	.7	.8	1.0	1.0	.7
From prior settlements	.6	.3	.3	.5	.4	.2	1.7	1.8	1.8	1.6	1.4	1.3
From cost-of-living provision	.1	.2	.1	.1	.2	.2	.4	.5	.5	.5	.5	.6
Negotiated wage adjustments from settlements:[3]												
First-year adjustments	2.1	2.4	2.1	2.6	2.7	2.7	2.0	2.2	2.4	2.4	2.5	2.6
Annual rate over life of contract	2.0	1.8	2.3	2.2	2.8	2.3	2.2	2.1	2.2	2.0	2.2	2.4
Negotiated wage and benefit adjustments from settlements:[4]												
First-year adjustment	2.5	3.4	1.8	3.1	3.4	3.8	2.7	3.0	3.1	3.0	3.1	3.1
Annual rate over life of contract	2.1	2.4	1.8	2.4	3.2	2.2	2.6	2.6	2.5	2.3	2.5	2.5

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

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

(Numbers in thousands)

Employment status	Annual average		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
TOTAL															
Noninstitutional population [1, 2]	184,490	186,322	185,571	185,705	185,847	185,964	186,088	186,247	186,402	186,522	186,666	186,801	186,949	187,098	187,340
Labor force [2]	121,602	123,378	122,784	122,901	122,672	123,060	122,917	123,209	123,331	123,692	123,688	123,778	124,215	124,259	125,124
Participation rate [3]	65.9	66.2	66.2	66.2	66.0	66.2	66.1	66.2	66.2	66.3	66.3	66.3	66.4	66.4	66.8
Total employed [2]	114,177	116,677	115,804	116,009	115,865	116,392	116,117	116,686	116,707	116,895	117,074	117,260	117,652	117,705	118,407
Employment-population ratio [4]	61.9	62.6	62.4	62.5	62.3	62.6	62.4	62.7	62.6	62.7	62.7	62.8	62.9	62.9	63.2
Resident Armed Forces [1]	1,737	1,709	1,749	1,736	1,736	1,732	1,714	1,685	1,673	1,692	1,704	1,687	1,705	1,696	1,696
Civilian employed	112,440	114,968	114,055	114,273	114,129	114,660	114,403	115,001	115,034	115,203	115,370	115,573	115,947	116,009	116,711
Agriculture	3,208	3,169	3,256	3,200	3,181	3,187	3,110	3,121	3,060	3,142	3,176	3,238	3,238	3,193	3,300
Nonagricultural industries	109,232	111,800	110,799	111,073	110,948	111,473	111,293	111,880	111,974	112,061	112,194	112,335	112,709	112,816	113,411
Unemployed	7,425	6,701	6,980	6,892	6,807	6,668	6,800	6,523	6,624	6,797	6,614	6,518	6,563	6,554	6,716
Unemployment rate [5]	6.1	5.4	5.7	5.6	5.5	5.4	5.5	5.3	5.4	5.5	5.3	5.3	5.3	5.3	5.4
Not in labor force	62,888	62,944	62,787	62,804	63,175	62,904	63,171	63,038	63,071	62,830	62,978	63,023	62,734	62,839	62,216
Men, 16 years and over															
Noninstitutional population [1, 2]	88,476	89,404	89,033	89,099	89,168	89,225	89,287	89,367	89,445	89,504	89,577	89,637	89,716	89,792	89,914
Labor force [2]	67,784	68,474	68,219	68,289	68,194	68,462	68,409	68,436	68,461	68,685	68,604	68,569	68,686	68,638	69,032
Participation rate [3]	76.6	76.6	76.6	76.6	76.5	76.7	76.6	76.6	76.5	76.7	76.6	76.5	76.6	76.4	76.8
Total employed [2]	63,684	64,820	64,420	64,587	64,417	64,866	64,672	64,894	64,941	64,931	65,015	64,976	65,074	65,055	65,322
Employment-population ratio [4]	72.0	72.5	72.4	72.5	72.2	72.7	72.4	72.6	72.6	72.5	72.6	72.5	72.5	72.5	72.6
Resident Armed Forces [1]	1,577	1,547	1,588	1,577	1,573	1,569	1,553	1,523	1,512	1,529	1,540	1,526	1,542	1,534	1,532
Civilian employed	62,107	63,273	62,832	63,010	62,844	63,297	63,119	63,371	63,429	63,402	63,475	63,450	63,532	63,521	63,790
Unemployed	4,101	3,655	3,799	3,702	3,777	3,596	3,737	3,542	3,520	3,754	3,589	3,593	3,612	3,583	3,710
Unemployment rate [5]	6.1	5.3	5.6	5.4	5.5	5.3	5.5	5.2	5.1	5.5	5.2	5.2	5.3	5.2	5.4
Women, 16 years and over															
Noninstitutional population [1, 2]	96,013	96,918	96,538	96,606	96,679	96,739	96,801	96,880	96,957	97,018	97,089	97,164	97,234	97,306	97,427
Labor force [2]	53,818	54,904	54,565	54,612	54,478	54,598	54,508	54,773	54,870	55,007	55,084	55,209	55,529	55,621	56,091
Participation rate [3]	56.1	56.6	56.5	56.5	56.3	56.4	56.3	56.5	56.6	56.7	56.7	56.8	57.1	57.2	57.6
Total employed [2]	50,494	51,858	51,384	51,422	51,448	51,526	51,445	51,792	51,766	51,964	52,059	52,284	52,578	52,650	53,085
Employment-population ratio [4]	52.6	53.5	53.2	53.2	53.2	53.3	53.1	53.5	53.4	53.6	53.6	53.8	54.1	54.1	54.5
Resident Armed Forces [1]	160	162	161	159	163	163	161	162	161	163	164	161	163	162	164
Civilian employed	50,334	51,696	51,223	51,263	51,285	51,363	51,284	51,630	51,605	51,801	51,895	52,123	52,415	52,488	52,921
Unemployed	3,324	3,046	3,181	3,190	3,030	3,072	3,063	2,981	3,104	3,043	3,025	2,925	2,951	2,971	3,006
Unemployment rate [5]	6.2	5.5	5.8	5.8	5.6	5.6	5.6	5.4	5.7	5.5	5.5	5.3	5.3	5.3	5.4

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

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

(Numbers in thousands)

Employment status	Annual average		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
TOTAL															
Civilian noninstitutional population[1]	182,753	184,613	183,822	183,969	184,111	184,232	184,374	184,562	184,729	184,830	184,962	185,114	185,244	185,402	185,644
Civilian labor force	119,865	121,669	121,035	121,165	120,936	121,328	121,203	121,524	121,658	122,000	121,984	122,091	122,510	122,563	123,428
Participation rate	65.6	65.9	65.8	65.9	65.7	65.9	65.7	65.8	65.9	66.0	66.0	66.0	66.1	66.1	66.5
Employed	112,440	114,968	114,055	114,273	114,129	114,660	114,403	115,001	115,034	115,203	115,370	115,573	115,947	116,009	116,711
Employment-population ratio[2]	61.5	62.3	62.0	62.1	62.0	62.2	62.0	62.3	62.3	62.3	62.4	62.4	62.6	62.6	62.9
Unemployed	7,425	6,701	6,980	6,892	6,807	6,668	6,800	6,523	6,624	6,797	6,614	6,518	6,563	6,554	6,716
Unemployment rate	6.2	5.5	5.8	5.7	5.6	5.5	5.6	5.4	5.4	5.6	5.4	5.3	5.4	5.3	5.4
Not in labor force	62,888	62,944	62,787	62,804	63,175	62,904	63,171	63,038	63,071	62,830	62,978	63,023	62,734	62,839	62,216
Men, 20 years and over															
Civilian noninstitutional population[1]	79,565	80,553	80,120	80,203	80,260	80,326	80,402	80,526	80,608	80,669	80,751	80,851	80,924	81,001	81,162
Civilian labor force	62,095	62,768	62,421	62,614	62,532	62,774	62,721	62,669	62,729	62,916	62,884	62,915	62,995	63,002	63,358
Participation rate	78.0	77.9	77.9	78.1	77.9	78.1	78.0	77.8	77.8	78.0	77.9	77.8	77.8	77.8	78.1
Employed	58,726	59,781	59,315	59,561	59,468	59,833	59,656	59,780	59,897	59,839	59,979	60,004	59,999	60,049	60,420
Employment-population ratio[2]	73.8	74.2	74.0	74.3	74.1	74.5	74.2	74.2	74.3	74.2	74.3	74.2	74.1	74.1	74.4
Agriculture	2,329	2,271	2,302	2,279	2,258	2,259	2,238	2,231	2,252	2,273	2,249	2,315	2,313	2,292	2,277
Nonagricultural industries	56,397	57,510	57,013	57,282	57,210	57,574	57,418	57,549	57,645	57,566	57,730	57,689	57,686	57,757	58,143
Unemployed	3,369	2,987	3,106	3,053	3,064	2,941	3,065	2,889	2,832	3,077	2,905	2,911	2,996	2,953	2,938
Unemployment rate	5.4	4.8	5.0	4.9	4.9	4.7	4.9	4.6	4.5	4.9	4.6	4.6	4.8	4.7	4.6
Women, 20 years ond over															
Civilian noninstitutional population[1]	88,583	89,532	89,110	89,178	89,261	89,307	89,382	89,502	89,588	89,670	89,735	89,807	89,887	89,954	90,072
Civilian labor force	49,783	50,870	50,462	50,530	50,510	50,591	50,532	50,690	50,807	50,959	50,991	51,201	51,558	51,587	51,998
Participation rate	56.2	56.8	56.6	56.7	56.6	56.6	56.5	56.6	56.7	56.8	56.8	57.0	57.4	57.3	57.7
Employed	47,074	48,383	47,894	47,934	48,060	48,120	48,040	48,205	48,242	48,492	48,535	48,788	49,113	49,165	49,543
Employment-population ratio[2]	53.1	54.0	53.7	53.8	53.8	53.9	53.7	53.9	53.8	54.1	54.1	54.3	54.6	54.7	55.0
Agriculture	622	625	639	638	641	653	604	626	549	609	638	640	640	646	715
Nonagricultural industries	46,453	47,757	47,255	47,296	47,419	47,467	47,436	47,579	47,693	47,883	47,897	48,148	48,473	48,519	48,827
Unemployed	2,709	2,487	2,568	2,596	2,450	2,471	2,492	2,485	2,565	2,467	2,456	2,413	2,445	2,422	2,455
Unemployment rate	5.4	4.9	5.1	5.1	4.9	4.9	4.9	4.9	5.0	4.8	4.8	4.7	4.7	4.7	4.7
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	14,606	14,527	14,592	14,588	14,591	14,598	14,590	14,534	14,533	14,491	14,477	14,456	14,433	14,447	14,410
Civilian labor force	7,988	8,031	8,152	8,021	7,894	7,963	7,950	8,165	8,122	8,125	8,109	7,975	7,957	7,974	8,071
Participation rate	54.7	55.3	55.9	55.0	54.1	54.5	54.5	56.2	55.9	56.1	56.0	55.2	55.1	55.2	56.0
Employed	6,640	6,805	6,846	6,778	6,601	6,707	6,707	7,016	6,895	6,872	6,856	6,781	6,835	6,795	6,748
Employment-population ratio[2]	45.5	46.8	46.9	46.5	45.2	45.9	46.0	48.3	47.4	47.4	47.4	46.9	47.4	47.0	46.8
Agriculture	258	273	315	283	282	275	268	264	259	260	289	283	285	255	307
Nonagricultural industries	6,382	6,532	6,531	6,495	6,319	6,432	6,439	6,752	6,636	6,612	6,567	6,498	6,550	6,540	6,441
Unemployed	1,347	1,226	1,306	1,243	1,293	1,256	1,243	1,149	1,227	1,253	1,253	1,194	1,122	1,179	1,323
Unemployment rate	16.9	15.3	16.0	15.5	16.4	15.8	15.6	14.1	15.1	15.4	15.5	15.0	14.1	14.8	16.4
White															
Civilian noninstitutional population[1]	156,958	158,194	157,676	157,773	157,868	157,943	158,034	158,166	158,279	158,340	158,422	158,524	158,603	158,705	158,865
Civilian labor force	103,290	104,756	104,188	104,404	104,172	104,517	104,433	104,716	104,651	105,013	105,036	105,051	105,395	105,411	106,106
Participation rate	65.8	66.2	66.1	66.2	66.0	66.2	66.1	66.2	66.1	66.3	66.3	66.3	66.5	66.4	66.8
Employed	97,789	99,812	99,011	99,350	99,252	99,663	99,508	99,902	99,761	99,907	100,058	100,199	100,543	100,567	101,183
Employment-population ratio[2]	62.3	63.1	62.8	63.0	62.9	63.1	63.0	63.2	63.0	63.1	63.2	63.2	63.4	63.4	63.7
Unemployed	5,501	4,944	5,177	5,054	4,920	4,854	4,925	4,814	4,890	5,106	4,978	4,852	4,852	4,844	4,923
Unemployment rate	5.3	4.7	5.0	4.8	4.7	4.6	4.7	4.6	4.7	4.9	4.7	4.6	4.6	4.6	4.6
Black															
Civilian noninstitutional population[1]	20,352	20,692	20,539	20,569	20,596	20,622	20,650	20,683	20,715	20,736	20,762	20,786	20,811	20,842	20,877
Civilian labor force	12,993	13,205	13,174	13,138	13,100	13,101	13,102	13,066	13,283	13,236	13,201	13,290	13,330	13,405	13,477
Participation rate	63.8	63.8	64.1	63.9	63.6	63.5	63.4	63.2	64.1	63.8	63.6	63.9	64.1	64.3	64.6
Employed	11,309	11,658	11,570	11,504	11,461	11,534	11,514	11,543	11,761	11,733	11,758	11,807	11,831	11,856	11,860
Employment-population ratio[2]	55.6	56.3	56.3	55.9	55.6	55.9	55.8	55.8	56.8	56.6	56.6	56.8	56.8	56.9	56.8
Unemployed	1,684	1,547	1,604	1,634	1,639	1,567	1,588	1,523	1,522	1,503	1,443	1,483	1,499	1,549	1,617
Unemployment rate	13.0	11.7	12.2	12.4	12.5	12.0	12.1	11.7	11.5	11.4	10.9	11.2	11.2	11.6	12.0

See footnotes at end of table.

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

(Numbers in thousands)

Employment status	Annual average		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Hispanic origin															
Civilian noninstitutional population[1]	12,867	13,325	13,115	13,153	13,192	13,230	13,268	13,306	13,344	13,381	13,419	13,458	13,495	13,533	13,564
Civilian labor force	8,541	8,982	8,862	8,987	8,818	8,823	8,910	9,009	8,997	8,963	9,061	9,075	9,148	9,133	9,205
Participation rate	66.4	67.4	67.6	68.3	66.8	66.7	67.2	67.7	67.4	67.0	67.5	67.4	67.8	67.5	67.9
Employed	7,790	8,250	8,199	8,241	8,088	8,030	8,128	8,222	8,265	8,214	8,378	8,368	8,419	8,441	8,434
Employment-population ratio[2]	60.5	61.9	62.5	62.7	61.3	60.7	61.3	61.8	61.9	61.4	62.4	62.2	62.4	62.4	62.2
Unemployed	751	732	663	746	730	793	782	787	732	749	683	707	729	692	771
Unemployment rate	8.8	8.2	7.5	8.3	8.3	9.0	8.8	8.7	8.1	8.4	7.5	7.8	8.0	7.6	8.4

[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		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
CHARACTERISTIC															
Civilian employed, 16 years and over	112,440	114,968	114,055	114,273	114,129	114,660	114,403	115,001	115,034	115,203	115,370	115,573	115,947	116,009	116,711
Men	62,107	63,273	62,832	63,010	62,844	63,297	63,119	63,371	63,429	63,402	63,475	63,450	63,532	63,521	63,790
Women	50,334	51,696	51,223	51,263	51,285	51,363	51,284	51,630	51,605	51,801	51,895	52,123	52,415	52,488	52,921
Married men, spouse present	40,265	40,472	40,438	40,488	40,486	40,494	40,317	40,493	40,518	40,511	40,513	40,504	40,407	40,483	40,925
Married women, spouse present	28,107	28,756	28,435	28,620	28,713	28,772	28,632	28,678	28,669	28,809	28,836	28,890	28,995	29,053	29,589
Women who maintain families	6,060	6,211	6,153	6,151	6,158	6,091	6,000	6,130	6,170	6,280	6,253	6,344	6,375	6,399	6,416
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,632	1,621	1,629	1,640	1,610	1,632	1,574	1,583	1,572	1,607	1,612	1,661	1,672	1,698	1,684
Self-employed workers	1,423	1,398	1,427	1,410	1,416	1,390	1,365	1,375	1,362	1,411	1,421	1,405	1,450	1,349	1,387
Unpaid family workers	153	150	143	123	146	152	155	161	149	158	137	177	125	149	189
Nonagricultural industries:															
Wage and salary workers	100,771	103,021	102,413	102,498	102,339	102,562	102,145	102,953	103,189	103,207	103,501	103,733	103,770	103,904	104,510
Government	16,800	17,114	17,080	16,961	16,952	17,012	16,946	17,049	17,031	17,111	17,145	17,240	17,387	17,423	17,393
Private industries	83,970	85,907	85,333	85,537	85,387	85,550	85,199	85,904	86,158	86,096	86,356	86,493	86,383	86,481	87,117
Private households	1,208	1,153	1,146	1,167	1,167	1,114	1,152	1,146	1,132	1,128	1,119	1,152	1,209	1,210	1,196
Other	82,762	84,754	84,187	84,370	84,220	84,436	84,047	84,758	85,026	84,968	85,237	85,341	85,174	85,271	85,921
Self-employed workers	8,201	8,519	8,246	8,338	8,395	8,567	8,816	8,536	8,531	8,508	8,570	8,479	8,619	8,602	8,718
Unpaid family workers	260	260	241	232	250	272	301	297	251	241	230	232	300	266	298
PERSONS AT WORK PART TIME[1]															
All industries:															
Part time for economic reasons	5,401	5,206	5,355	5,369	5,331	5,212	4,878	5,302	5,341	5,192	5,097	4,963	5,061	5,321	5,097
Slack work	2,385	2,350	2,351	2,408	2,448	2,264	2,267	2,346	2,471	2,315	2,266	2,220	2,279	2,549	2,302
Could only find part-time work	2,672	2,487	2,630	2,591	2,548	2,519	2,353	2,586	2,538	2,473	2,389	2,399	2,375	2,410	2,352
Voluntary part time	14,395	14,963	14,580	14,619	14,654	14,949	14,813	14,612	15,026	14,999	15,270	15,161	15,446	15,363	15,401
Nonagricultural industries:															
Part time for economic reasons	5,122	4,965	5,113	5,101	5,087	4,953	4,676	5,073	5,102	4,972	4,862	4,727	4,819	5,033	4,837
Slack work	2,201	2,199	2,212	2,258	2,265	2,131	2,136	2,183	2,334	2,171	2,102	2,095	2,116	2,377	2,144
Could only find part-time work	2,587	2,408	2,554	2,477	2,482	2,426	2,276	2,504	2,493	2,408	2,317	2,319	2,288	2,307	2,283
Voluntary part time	13,928	14,509	14,115	14,172	14,203	14,441	14,376	14,180	14,606	14,564	14,819	14,679	14,986	14,928	14,970

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

7. Selected unemployment indicators, monthly data seasonally adjusted

(Unemployment rates)

Selected categories	Annual average		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
CHARACTERISTIC															
Total, all civilian workers	6.2	5.5	5.8	5.7	5.6	5.5	5.6	5.4	5.4	5.6	5.4	5.3	5.4	5.3	5.4
Both sexes, 16 to 19 years	16.9	15.3	16.0	15.5	16.4	15.8	15.6	14.1	15.1	15.4	15.5	15.0	14.1	14.8	16.4
Men, 20 years and over	5.4	4.8	5.0	4.9	4.9	4.7	4.9	4.6	4.5	4.9	4.6	4.6	4.8	4.7	4.6
Women, 20 years and over	5.4	4.9	5.1	5.1	4.9	4.9	4.9	4.9	5.0	4.8	4.8	4.7	4.7	4.7	4.7
White, total	5.3	4.7	5.0	4.8	4.7	4.6	4.7	4.6	4.7	4.9	4.7	4.6	4.6	4.6	4.6
Both sexes, 16 to 19 years	14.4	13.1	13.9	12.5	14.1	13.9	13.2	12.3	12.9	13.7	13.4	12.9	11.9	12.6	14.1
Men, 16 to 19 years	15.5	13.9	14.5	12.5	15.5	14.4	14.0	13.2	14.3	13.9	14.5	14.4	12.6	13.4	16.4
Women, 16 to 19 years	13.4	12.3	13.3	12.6	12.6	13.3	12.3	11.4	11.4	13.5	12.3	11.3	11.3	11.8	11.7
Men, 20 years and over	4.8	4.1	4.4	4.2	4.2	4.0	4.2	4.0	3.9	4.3	4.1	4.1	4.2	4.1	4.0
Women, 20 years and over	4.6	4.1	4.2	4.4	3.9	4.0	4.1	4.1	4.3	4.1	4.1	4.0	4.0	3.9	3.9
Black, total	13.0	11.7	12.2	12.4	12.5	12.0	12.1	11.7	11.5	11.4	10.9	11.2	11.2	11.6	12.0
Both sexes, 16 to 19 years	34.7	32.4	34.2	36.8	35.8	30.8	33.9	30.6	31.7	32.1	31.9	30.9	31.1	29.6	34.5
Men, 16 to 19 years	34.4	32.7	34.6	39.9	37.8	27.9	33.2	31.5	31.2	32.1	31.9	32.8	32.1	29.8	36.7
Women, 16 to 19 years	34.9	32.0	33.7	33.8	33.9	33.9	34.8	29.6	32.4	32.0	31.9	28.6	29.9	29.3	32.0
Men, 20 years and over	11.1	10.1	10.2	10.9	11.0	10.4	10.4	9.9	9.6	9.7	9.1	9.6	9.8	10.0	10.4
Women, 20 years and over	11.6	10.4	11.0	10.5	10.8	10.9	10.6	10.6	10.3	10.0	9.7	9.8	9.8	10.5	10.4
Hispanic origin, total	8.8	8.2	7.5	8.3	8.3	9.0	8.8	8.7	8.1	8.4	7.5	7.8	8.0	7.6	8.4
Married men, spouse present	3.9	3.3	3.5	3.4	3.4	3.1	3.3	3.2	3.1	3.4	3.1	3.1	3.3	3.1	3.1
Married women, spouse present	4.3	3.9	4.1	4.0	4.0	3.8	3.9	3.9	4.0	4.0	3.8	3.7	3.8	3.7	3.6
Women who maintain families	9.2	8.1	8.8	8.3	7.5	8.5	8.4	7.9	8.5	7.5	8.1	7.9	7.7	8.2	8.0
Full-time workers	5.8	5.2	5.4	5.3	5.3	5.1	5.2	5.0	5.0	5.3	5.1	5.0	5.0	5.1	5.0
Part-time workers	8.4	7.6	8.3	7.9	7.8	7.5	7.7	7.7	8.0	7.4	7.4	7.4	7.1	7.0	7.9
Unemployed 15 weeks and over	1.7	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2
Labor force time lost[1]	7.1	6.3	6.6	6.6	6.5	6.2	6.4	6.3	6.4	6.4	6.3	6.1	6.2	6.3	6.2
INDUSTRY															
Nonagricultural private wage and salary workers	6.2	5.5	5.8	5.7	5.6	5.4	5.6	5.4	5.4	5.6	5.4	5.4	5.5	5.4	5.6
Mining	10.0	7.9	7.5	7.8	8.2	8.1	9.4	6.8	5.4	7.0	8.6	8.8	8.9	7.7	6.1
Construction	11.6	10.6	11.9	10.9	10.6	10.6	10.5	10.3	10.4	10.7	9.6	10.0	10.6	10.4	10.4
Manufacturing	6.0	5.3	5.5	5.6	5.2	5.3	5.3	4.9	5.2	5.5	5.4	5.3	5.1	5.2	5.3
Durable goods	5.8	5.0	5.3	5.7	5.1	4.8	4.9	4.5	4.9	5.0	5.2	5.0	4.9	5.0	5.0
Nondurable goods	6.3	5.7	5.8	5.4	5.4	5.9	5.9	5.5	5.6	6.3	5.8	5.7	5.3	5.5	5.7
Transportation and public utilities	4.5	3.9	3.7	3.8	4.1	3.8	4.2	4.1	3.6	3.8	3.8	3.5	4.0	3.8	3.8
Wholesale and retail trade	6.9	6.2	6.2	6.3	6.7	5.9	6.3	6.0	6.2	6.4	6.2	6.0	6.2	6.3	6.3
Finance and service industries	4.9	4.5	4.9	4.6	4.3	4.3	4.6	4.6	4.5	4.4	4.4	4.5	4.6	4.1	4.7
Government workers	3.5	2.8	3.0	2.9	2.9	3.0	2.9	2.9	3.0	2.9	2.7	2.6	2.5	2.7	2.7
Agricultural wage and salary workers	10.5	10.6	11.4	10.5	11.0	11.0	12.4	10.0	11.0	11.0	10.8	10.2	9.3	8.8	9.5

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

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

(Civilian workers)

Sex and age	Annual average		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Total, 16 years and over	6.2	5.5	5.8	5.7	5.6	5.5	5.6	5.4	5.4	5.6	5.4	5.3	5.4	5.3	5.4
16 to 24 years	12.2	11.0	11.6	11.1	11.6	11.2	11.2	10.5	10.9	11.0	10.9	10.9	10.6	10.9	11.9
16 to 19 years	16.9	15.3	16.0	15.5	16.4	15.8	15.6	14.1	15.1	15.4	15.5	15.0	14.1	14.8	16.4
16 to 17 years	19.1	17.4	18.5	17.7	17.7	17.7	16.7	15.9	17.5	18.5	19.6	17.2	15.8	16.6	18.3
18 to 19 years	15.2	13.8	14.5	14.1	15.3	14.1	14.8	13.3	13.1	13.7	12.8	13.3	12.9	13.3	15.4
20 to 24 years	9.7	8.7	9.1	8.7	9.0	8.7	8.8	8.5	8.5	8.4	8.4	8.6	8.7	8.7	9.3
25 years and over	4.8	4.3	4.5	4.4	4.2	4.2	4.3	4.2	4.2	4.4	4.2	4.1	4.2	4.1	4.1
25 to 54 years	5.0	4.5	4.6	4.7	4.5	4.4	4.5	4.4	4.4	4.5	4.4	4.3	4.4	4.3	4.2
55 years and over	3.3	3.1	3.4	3.2	2.9	3.0	3.3	3.0	3.1	3.2	2.9	2.8	2.8	3.0	3.1
Men, 16 years and over	6.2	5.5	5.7	5.5	5.7	5.4	5.6	5.3	5.3	5.6	5.4	5.4	5.4	5.3	5.5
16 to 24 years	12.6	11.4	12.2	11.4	11.9	11.2	11.5	11.0	11.3	11.4	11.3	11.8	10.9	11.1	12.8
16 to 19 years	17.8	16.0	16.5	15.8	17.4	15.9	16.3	15.4	16.3	16.0	16.4	16.5	14.8	15.4	18.6
16 to 17 years	20.2	18.2	19.2	17.6	18.6	17.6	17.4	17.5	18.1	17.7	20.8	18.5	17.3	17.3	20.6
18 to 19 years	16.0	14.6	15.1	14.9	16.6	14.7	15.3	14.3	14.4	14.5	13.5	15.0	13.0	13.5	17.9
20 to 24 years	9.9	8.9	9.8	9.0	9.0	8.7	8.9	8.5	8.5	8.9	8.5	9.2	8.8	8.7	9.6
25 years and over	4.8	4.2	4.3	4.3	4.3	4.1	4.3	4.1	4.0	4.4	4.1	4.0	4.2	4.1	4.0
25 to 54 years	5.0	4.4	4.5	4.5	4.5	4.3	4.4	4.2	4.2	4.5	4.3	4.2	4.4	4.3	4.2
55 years and over	3.5	3.3	3.8	3.4	3.4	3.2	3.5	3.2	3.2	3.4	2.9	3.0	3.2	3.3	3.0
Women, 16 years and over	6.2	5.6	5.8	5.9	5.6	5.6	5.6	5.5	5.7	5.5	5.5	5.3	5.3	5.4	5.4
16 to 24 years	11.7	10.6	11.0	10.9	11.2	11.1	10.9	10.0	10.5	10.4	10.5	9.9	10.3	10.7	10.9
16 to 19 years	15.9	14.4	15.6	15.1	15.2	15.6	15.0	12.6	13.8	14.8	14.5	13.3	13.3	14.2	14.0
16 to 17 years	18.0	16.6	17.7	17.7	16.7	17.7	16.0	14.1	16.8	19.2	18.2	15.8	14.1	15.8	15.9
18 to 19 years	14.3	12.9	13.9	13.3	14.0	13.5	14.2	12.1	11.6	12.8	12.0	11.6	12.8	13.1	12.7
20 to 24 years	9.4	8.5	8.4	8.5	9.0	8.6	8.6	8.6	8.6	8.0	8.2	7.9	8.6	8.7	9.1
25 years and over	4.8	4.3	4.6	4.6	4.1	4.3	4.4	4.3	4.4	4.3	4.3	4.2	4.2	4.1	4.1
25 to 54 years	5.1	4.6	4.9	4.9	4.5	4.6	4.6	4.6	4.7	4.6	4.5	4.5	4.4	4.4	4.3
55 years and over	3.0	2.8	2.9	3.0	2.4	2.8	3.1	2.8	2.9	2.8	2.9	2.4	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		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Job losers	3,566	3,092	3,181	3,182	3,131	2,968	3,201	3,070	3,085	3,112	3,079	2,951	3,031	3,066	3,121
On layoff	943	851	872	877	882	844	806	861	853	880	833	844	814	819	827
Other job losers	2,623	2,241	2,309	2,305	2,249	2,124	2,395	2,209	2,232	2,232	2,246	2,107	2,217	2,247	2,294
Job leavers	965	983	1,046	969	1,059	985	942	953	923	986	985	984	963	998	985
Reentrants	1,974	1,809	1,907	1,916	1,792	1,804	1,804	1,747	1,883	1,843	1,767	1,747	1,766	1,725	1,835
New entrants	920	816	870	855	871	886	811	800	799	800	761	747	799	799	780
PERCENT OF UNEMPLOYED															
Job losers	48.0	46.1	45.4	46.0	45.7	44.7	47.4	46.7	46.1	46.2	46.7	45.9	46.2	46.5	46.4
On layoff	12.7	12.7	12.5	12.7	12.9	12.7	11.9	13.1	12.8	13.1	12.6	13.1	12.4	12.4	12.3
Other job losers	35.3	33.4	33.0	33.3	32.8	32.0	35.4	33.6	33.4	33.1	34.1	32.8	33.8	34.1	34.1
Job leavers	13.0	14.7	14.9	14.0	15.5	14.8	13.9	14.5	13.8	14.6	14.9	15.3	14.7	15.1	14.7
Reentrants	26.6	27.0	27.2	27.7	26.1	27.2	26.7	26.6	28.1	27.3	26.8	27.2	26.9	26.2	27.3
New entrants	12.4	12.2	12.4	12.4	12.7	13.3	12.0	12.2	11.9	11.9	11.5	11.6	12.2	12.1	11.6
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.0	2.5	2.6	2.6	2.6	2.4	2.6	2.5	2.5	2.6	2.5	2.4	2.5	2.5	2.5
Job leavers	.8	.8	.9	.8	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8
Reentrants	1.6	1.5	1.6	1.6	1.5	1.5	1.5	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.5
New entrants	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.6	.6	.7	.7	.6

10. Duration of unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Weeks of unemployment	Annual average		1988												1989
	1987	1988	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Less than 5 weeks	3,246	3,084	3,118	3,097	3,057	3,093	3,072	3,093	2,985	3,158	3,116	3,059	3,117	3,029	3,181
5 to 14 weeks	2,196	2,007	2,214	2,093	2,060	1,969	2,068	1,910	2,041	1,956	1,896	1,835	1,935	2,039	2,081
15 weeks and over	1,983	1,610	1,728	1,732	1,693	1,582	1,614	1,543	1,619	1,636	1,568	1,554	1,502	1,495	1,512
15 to 26 weeks	943	801	838	842	851	756	789	749	826	831	775	788	787	758	757
27 weeks and over	1,040	809	890	890	842	826	825	794	793	805	793	766	715	737	755
Mean duration in weeks	14.5	13.5	14.2	14.1	13.8	13.5	13.8	13.2	13.5	13.5	13.5	13.4	12.6	12.8	12.7
Median duration in weeks	6.5	5.9	6.3	6.3	6.4	5.8	5.9	5.9	6.2	5.9	5.7	5.7	5.6	5.8	5.7

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

State	Dec. 1987	Dec. 1988	State	Dec. 1987	Dec. 1988
Alabama	7.1	7.2	Montana	6.7	6.3
Alaska	10.0	9.0	Nebraska	4.9	4.0
Arizona	5.8	6.5	Nevada	6.3	4.8
Arkansas	8.0	7.0	New Hampshire	2.1	3.0
California	4.9	4.3	New Jersey	3.6	4.0
Colorado	7.4	6.1	New Mexico	8.0	6.6
Connecticut	3.1	3.4	New York	4.2	4.6
Delaware	2.6	3.4	North Carolina	4.2	3.3
District of Columbia	5.9	4.5	North Dakota	5.0	5.6
Florida	5.0	5.4	Ohio	6.1	5.4
Georgia	4.8	5.0	Oklahoma	6.0	6.0
Hawaii	3.8	3.2	Oregon	5.9	5.4
Idaho	8.0	5.4	Pennsylvania	5.1	4.2
Illinois	6.9	6.2	Rhode Island	3.5	3.5
Indiana	6.0	6.2	South Carolina	5.1	4.1
Iowa	4.8	4.2	South Dakota	4.8	4.6
Kansas	5.0	4.8	Tennessee	6.2	5.8
Kentucky	8.2	8.3	Texas	6.8	6.2
Louisiana	9.5	10.0	Utah	5.9	4.7
Maine	3.7	3.5	Vermont	3.7	3.1
Maryland	4.2	4.6	Virginia	4.0	4.1
Massachusetts	2.6	3.0	Washington	7.9	6.0
Michigan	8.3	7.1	West Virginia	10.0	9.9
Minnesota	5.9	4.7	Wisconsin	6.0	4.1
Mississippi	8.7	8.9			
Missouri	6.3	5.9	Wyoming	7.6	7.5

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.

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

(In thousands)

State	Dec. 1987	Nov. 1988	Dec. 1988[p]	State	Dec. 1987	Nov. 1988	Dec. 1988[p]
Alabama	1,527.9	1,563.6	1,548.2	Nebraska	670.2	681.7	679.8
Alaska	203.1	207.3	204.8	Nevada	514.4	547.3	544.6
Arizona	1,423.1	1,440.6	1,435.3	New Hampshire	529.0	547.1	549.5
Arkansas	851.2	872.4	872.5				
California	11,973.2	12,327.2	12,391.6	New Jersey	3,653.2	3,727.6	3,729.3
				New Mexico	536.4	553.7	549.6
Colorado	1,415.6	1,413.5	1,417.8	New York	8,219.5	8,354.1	8,373.9
Connecticut	1,674.5	1,696.3	1,707.0	North Carolina	2,930.5	3,018.0	3,012.2
Delaware	330.9	338.1	339.4	North Dakota	254.4	259.9	258.8
District of Columbia	664.2	679.0	683.0				
Florida	5,037.3	5,215.7	5,236.7	Ohio	4,676.9	4,847.2	4,790.5
				Oklahoma	1,108.3	1,107.8	1,112.3
Georgia	2,807.8	2,822.3	2,833.6	Oregon	1,116.5	1,177.1	1,171.5
Hawaii	470.6	474.5	479.5	Pennsylvania	5,016.5	5,120.0	5,118.1
Idaho	340.0	354.6	353.1	Rhode Island	458.3	463.4	461.4
Illinois	4,963.8	5,117.0	5,082.1				
Indiana	2,360.1	2,450.9	2,446.9	South Carolina	1,422.1	1,470.4	1,465.4
				South Dakota	256.3	261.6	260.1
Iowa	1,133.4	1,166.8	1,163.9	Tennessee	2,056.7	2,089.4	2,079.3
Kansas	1,020.7	1,040.4	1,035.2	Texas	6,580.8	6,680.7	6,693.7
Kentucky	1,352.0	1,386.4	1,381.6	Utah	652.9	676.8	678.1
Louisiana	1,504.3	1,516.0	1,516.8				
Maine	517.9	533.8	532.6	Vermont	252.3	258.1	259.7
				Virginia	2,744.7	2,857.4	2,871.0
Maryland	2,050.8	2,079.3	2,090.3	Washington	1,880.4	1,974.2	1,971.2
Massachusetts	3,101.9	3,165.8	3,180.5	West Virginia	607.3	624.5	612.3
Michigan	3,776.3	3,853.9	3,827.3	Wisconsin	2,121.4	2,192.3	2,184.9
Minnesota	1,997.9	2,066.5	2,059.0				
Mississippi	884.7	907.3	897.1	Wyoming	177.2	179.5	177.2
Missouri	2,215.1	2,248.2	2,244.5	Puerto Rico	789.1	810.5	813.6
Montana	275.3	283.1	277.3	Virgin Islands	40.2	39.9	40.4

[p] = preliminary

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.

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

(In thousands)

Industry	Annual average		1988												1989
	1987	1988[p]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[p]	Jan.[p]
TOTAL	102,310	106,039	104,262	104,729	105,020	105,281	105,489	106,057	106,271	106,425	106,737	106,973	107,419	107,640	108,048
PRIVATE SECTOR	85,295	88,652	87,044	87,475	87,700	87,973	88,139	88,678	88,941	89,066	89,205	89,481	89,855	90,094	90,520
GOODS-PRODUCING	24,784	25,565	25,180	25,271	25,330	25,435	25,466	25,592	25,663	25,639	25,648	25,743	25,849	25,892	26,040
Mining	721	733	728	731	733	737	739	740	740	739	734	729	722	719	719
Oil and gas extraction	405	417	414	415	419	421	425	425	424	423	419	413	406	402	402
Construction	4,998	5,294	5,083	5,150	5,192	5,238	5,237	5,308	5,330	5,340	5,365	5,366	5,413	5,436	5,538
General building contractors	1,326	1,396	1,365	1,377	1,383	1,400	1,394	1,412	1,400	1,401	1,404	1,393	1,406	1,414	1,446
Manufacturing	19,065	19,538	19,369	19,390	19,405	19,460	19,490	19,544	19,593	19,560	19,549	19,648	19,714	19,737	19,783
Production workers	12,995	13,338	13,225	13,249	13,251	13,280	13,302	13,341	13,382	13,352	13,332	13,412	13,465	13,474	13,524
Durable goods	11,218	11,516	11,393	11,404	11,411	11,459	11,477	11,515	11,566	11,547	11,537	11,595	11,637	11,650	11,672
Production workers	7,453	7,677	7,582	7,599	7,598	7,632	7,649	7,676	7,720	7,705	7,689	7,733	7,765	7,776	7,798
Lumber and wood products	740	758	754	756	755	758	757	757	756	753	753	760	767	772	774
Furniture and fixtures	518	538	536	535	534	535	537	537	541	537	538	540	541	540	540
Stone, clay, and glass products	582	587	583	584	585	587	585	587	589	586	585	588	590	593	593
Primary metal industries	749	782	768	770	772	773	776	781	789	785	787	794	796	794	794
Blast furnaces and basic steel products	269	281	279	280	281	281	281	281	282	281	280	282	282	279	280
Fabricated metal products	1,407	1,455	1,435	1,438	1,439	1,444	1,448	1,457	1,464	1,458	1,460	1,469	1,474	1,477	1,483
Machinery, except electrical	2,023	2,138	2,085	2,091	2,099	2,111	2,121	2,134	2,151	2,156	2,159	2,173	2,185	2,188	2,195
Electrical and electronic equipment	2,084	2,121	2,112	2,112	2,115	2,117	2,115	2,120	2,122	2,126	2,124	2,126	2,130	2,126	2,123
Transportation equipment	2,048	2,042	2,036	2,031	2,025	2,045	2,048	2,047	2,052	2,044	2,032	2,045	2,050	2,050	2,060
Motor vehicles and equipment	865	850	839	837	835	848	851	850	857	855	849	859	860	857	867
Instruments and related products	696	713	704	705	705	706	709	713	715	718	716	719	721	725	726
Miscellaneous manufacturing industries	370	383	380	382	382	383	381	382	387	384	383	381	383	385	384
Nondurable goods	7,847	8,022	7,976	7,986	7,994	8,001	8,013	8,029	8,027	8,013	8,012	8,053	8,077	8,087	8,111
Production workers	5,543	5,661	5,643	5,650	5,653	5,648	5,653	5,665	5,662	5,647	5,643	5,679	5,700	5,698	5,726
Food and kindred products	1,624	1,645	1,647	1,649	1,647	1,648	1,643	1,645	1,631	1,630	1,632	1,654	1,661	1,654	1,666
Tobacco manufactures	54	53	55	54	54	54	52	53	52	52	51	52	53	52	51
Textile mill products	725	726	732	732	729	727	728	727	726	719	722	722	723	724	726
Apparel and other textile products	1,100	1,097	1,105	1,104	1,106	1,100	1,100	1,097	1,096	1,089	1,087	1,086	1,093	1,095	1,097
Paper and allied products	679	689	685	686	687	687	689	691	692	691	688	691	691	692	694
Printing and publishing	1,507	1,565	1,538	1,544	1,548	1,554	1,559	1,565	1,567	1,572	1,575	1,581	1,583	1,592	1,597
Chemicals and allied products	1,026	1,063	1,047	1,049	1,052	1,056	1,060	1,065	1,067	1,070	1,069	1,071	1,073	1,076	1,080
Petroleum and coal products	165	167	166	165	164	165	166	167	167	167	168	169	169	168	167
Rubber and misc. plastics products	823	873	854	856	860	864	870	873	882	878	874	882	887	889	887
Leather and leather products	144	146	147	147	147	146	146	146	147	145	146	145	144	145	146
SERVICE-PRODUCING	77,525	80,475	79,082	79,458	79,690	79,846	80,023	80,465	80,608	80,786	81,089	81,230	81,570	81,748	82,008
Transportation and public utilities	5,385	5,584	5,499	5,513	5,530	5,543	5,556	5,582	5,598	5,605	5,618	5,631	5,658	5,667	5,713
Transportation	3,166	3,336	3,261	3,272	3,285	3,298	3,308	3,332	3,345	3,351	3,366	3,380	3,407	3,419	3,458
Communication and public utilities	2,218	2,248	2,238	2,241	2,245	2,245	2,248	2,250	2,253	2,254	2,252	2,251	2,251	2,248	2,255
Wholesale trade	5,872	6,156	6,010	6,035	6,061	6,089	6,115	6,148	6,174	6,192	6,219	6,246	6,275	6,300	6,333
Durable goods	3,449	3,666	3,555	3,573	3,591	3,610	3,635	3,660	3,681	3,696	3,714	3,736	3,758	3,778	3,795
Nondurable goods	2,423	2,490	2,455	2,462	2,470	2,479	2,480	2,488	2,493	2,496	2,505	2,510	2,517	2,522	2,538
Retail trade	18,509	19,206	18,927	19,045	19,050	19,093	19,130	19,205	19,261	19,279	19,291	19,327	19,401	19,427	19,560
General merchandise stores	2,432	2,539	2,526	2,561	2,543	2,546	2,541	2,549	2,545	2,539	2,533	2,520	2,533	2,539	2,555
Food stores	2,957	3,089	3,014	3,029	3,044	3,049	3,053	3,080	3,097	3,106	3,110	3,143	3,157	3,177	3,208
Automotive dealers and service stations	2,004	2,079	2,038	2,047	2,055	2,064	2,070	2,076	2,088	2,095	2,095	2,103	2,106	2,106	2,108
Eating and drinking places	6,127	6,360	6,260	6,291	6,319	6,326	6,336	6,352	6,369	6,377	6,384	6,415	6,440	6,449	6,466
Finance, insurance, and real estate	6,549	6,679	6,633	6,636	6,651	6,650	6,656	6,679	6,684	6,689	6,692	6,708	6,725	6,743	6,735
Finance	3,275	3,305	3,308	3,305	3,306	3,302	3,299	3,304	3,300	3,298	3,300	3,308	3,314	3,326	3,318
Insurance	2,022	2,074	2,052	2,053	2,060	2,065	2,067	2,074	2,077	2,081	2,083	2,089	2,092	2,099	2,098
Real estate	1,252	1,299	1,273	1,278	1,285	1,283	1,290	1,301	1,307	1,310	1,309	1,311	1,319	1,318	1,319
Services	24,196	25,464	24,795	24,975	25,078	25,163	25,216	25,472	25,561	25,662	25,737	25,826	25,947	26,065	26,139
Business services	5,172	5,478	5,321	5,385	5,405	5,420	5,443	5,480	5,500	5,512	5,538	5,553	5,563	5,607	5,595
Health services	6,828	7,228	7,019	7,056	7,088	7,126	7,153	7,203	7,238	7,271	7,323	7,365	7,414	7,466	7,500
Government	17,015	17,387	17,218	17,254	17,320	17,308	17,350	17,379	17,330	17,359	17,532	17,492	17,564	17,546	17,528
Federal	2,943	2,972	2,973	2,972	2,970	2,963	2,957	2,951	2,951	2,956	2,989	2,989	2,989	2,999	3,003
State	3,963	4,051	4,006	4,014	4,031	4,041	4,050	4,049	4,059	4,070	4,086	4,070	4,074	4,071	4,056
Local	10,109	10,364	10,239	10,268	10,319	10,304	10,343	10,379	10,320	10,333	10,457	10,433	10,501	10,476	10,469

[p] = preliminary

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

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

Industry	Annual average		1988												1989
	1987	1988[p]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[p]	Jan.[p]
PRIVATE SECTOR	34.8	34.8	34.7	34.8	34.6	34.9	34.7	34.7	34.9	34.6	34.7	34.9	34.8	34.7	34.9
MANUFACTURING	41.0	41.1	41.1	41.0	40.9	41.2	41.0	41.1	41.1	41.0	41.2	41.2	41.2	40.9	41.0
Overtime hours	3.7	3.9	3.9	3.7	3.7	3.9	3.9	3.9	3.9	3.9	3.9	4.0	3.9	3.9	3.9
Durable goods	41.5	41.8	41.6	41.5	41.5	42.0	41.8	41.8	41.8	41.6	41.9	41.9	41.9	41.6	41.7
Overtime hours	3.8	4.1	4.0	3.8	3.8	4.2	4.2	4.1	4.0	4.1	4.0	4.2	4.2	4.1	4.1
Lumber and wood products	40.6	40.3	40.2	40.3	40.1	40.6	40.1	40.2	40.5	40.0	39.9	40.7	40.3	40.3	40.4
Furniture and fixtures	40.0	39.4	39.6	39.5	39.3	39.5	39.5	39.4	39.7	39.0	39.6	39.4	39.4	39.2	40.1
Stone, clay, and glass products	42.3	42.3	42.0	42.3	42.3	42.5	42.3	42.4	42.1	42.1	42.3	42.5	42.6	42.4	42.9
Primary metal industries	43.1	43.5	43.4	43.1	43.3	43.5	43.6	43.6	43.4	43.5	44.0	43.8	43.7	43.3	43.3
Blast furnaces and basic steel products	43.4	44.0	44.0	43.8	43.7	43.8	43.9	44.3	44.0	44.0	44.6	44.3	44.0	43.6	43.8
Fabricated metal products	41.5	41.8	41.8	41.6	41.6	42.0	41.9	42.0	41.7	41.8	42.0	41.9	42.2	41.7	41.9
Machinery except electrical	42.2	42.6	42.7	42.6	42.5	42.8	42.6	42.5	43.0	42.4	42.7	42.6	42.5	42.3	42.4
Electrical and electronic equipment	40.9	41.0	41.1	40.9	40.9	41.2	41.0	41.1	41.0	40.8	41.0	41.0	41.0	40.8	40.6
Transportation equipment	42.0	42.7	42.0	42.0	42.1	43.0	43.0	43.0	42.6	42.7	43.3	43.3	43.3	42.7	42.7
Motor vehicles and equipment	42.2	43.5	42.1	42.3	42.3	44.1	44.0	44.2	42.5	43.6	44.5	44.2	44.6	43.4	43.4
Instruments and related products	41.4	41.5	41.8	41.3	41.4	41.8	41.4	41.3	41.8	41.5	41.6	41.9	41.6	41.0	41.3
Miscellaneous manufacturing	39.4	39.2	39.1	39.3	39.2	39.4	39.2	39.3	39.2	39.2	39.2	39.1	39.2	38.9	39.6
Nondurable goods	40.2	40.2	40.3	40.2	40.1	40.3	40.0	40.1	40.2	40.1	40.2	40.2	40.2	40.0	40.1
Overtime hours	3.6	3.7	3.8	3.6	3.6	3.6	3.6	3.6	3.7	3.6	3.7	3.8	3.6	3.6	3.6
Food and kindred products	40.2	40.4	40.6	40.3	40.1	40.1	40.1	40.3	40.5	40.4	40.3	40.6	40.6	40.4	40.5
Textile mill products	41.8	41.1	41.5	41.6	41.2	41.6	40.8	40.7	41.1	41.1	41.1	41.0	41.0	40.7	40.7
Apparel and other textile products	37.0	36.9	36.8	37.0	37.0	37.4	36.8	36.9	36.9	36.8	37.1	36.8	37.0	36.6	37.0
Paper and allied products	43.4	43.2	43.4	43.3	43.2	43.3	43.3	43.2	43.2	43.2	43.3	43.2	43.1	42.9	42.4
Printing and publishing	38.0	38.0	38.1	38.1	38.1	38.2	37.7	38.0	38.0	38.0	38.1	38.0	37.8	37.7	38.0
Chemicals and allied products	42.3	42.3	42.5	42.4	42.5	42.1	42.0	42.4	42.3	42.1	42.1	42.5	42.4	42.4	42.5
Rubber and miscellaneous plastics products	41.6	41.6	41.7	41.6	41.7	42.0	41.7	41.6	41.6	41.5	41.6	41.5	41.7	41.3	41.6
Leather and leather products	38.2	37.5	38.0	37.8	37.9	37.3	37.3	36.9	37.0	37.6	37.5	37.9	37.3	37.6	38.2
TRANSPORTATION AND PUBLIC UTILITIES	39.2	39.3	39.5	39.1	38.8	39.5	39.4	39.3	39.5	39.3	39.4	39.4	39.2	39.4	39.5
WHOLESALE TRADE	37.5	37.4	38.1	38.2	38.1	38.3	38.0	37.9	38.2	37.8	38.1	38.1	38.0	38.0	38.3
RETAIL TRADE	29.2	29.1	29.0	29.1	29.0	29.2	29.0	29.1	29.3	29.0	28.9	29.2	29.0	29.1	29.3
SERVICES	32.5	32.6	32.6	32.7	32.4	32.7	32.5	32.5	32.7	32.4	32.6	32.8	32.6	32.6	32.7

[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 nonagricultural payrolls by industry, seasonally adjusted

Industry	Annual average		1988											1988	1989
	1987	1988[p]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[p]	Jan.[p]
PRIVATE SECTOR (in current dollars)[1]	$8.98	$9.29	$9.14	$9.13	$9.16	$9.23	$9.27	$9.27	$9.32	$9.32	$9.37	$9.43	$9.42	$9.44	$9.50
Construction	12.69	12.97	12.91	12.82	12.90	12.93	12.91	12.93	13.03	12.99	13.04	13.03	13.01	13.09	13.15
Manufacturing	9.91	10.17	10.02	10.03	10.05	10.11	10.15	10.18	10.17	10.20	10.26	10.28	10.29	10.31	10.33
Excluding overtime	9.48	9.71	9.57	9.59	9.61	9.65	9.69	9.72	9.71	9.74	9.78	9.81	9.83	9.85	9.87
Transportation and public utilities	12.03	12.32	12.14	12.19	12.21	12.29	12.35	12.33	12.37	12.39	12.37	12.43	12.37	12.35	12.49
Wholesale trade	9.59	9.92	9.75	9.72	9.76	9.88	9.88	9.86	9.97	9.93	10.01	10.13	10.04	10.08	10.20
Retail trade	6.11	6.30	6.20	6.20	6.22	6.25	6.28	6.29	6.33	6.32	6.34	6.37	6.42	6.41	6.43
Finance, insurance, and real estate	8.73	9.09	8.92	8.91	8.90	8.99	9.08	9.00	9.10	9.09	9.18	9.36	9.26	9.37	9.45
Services	8.48	8.90	8.72	8.72	8.75	8.81	8.88	8.86	8.92	8.93	8.99	9.06	9.04	9.09	9.16
PRIVATE SECTOR (in constant (1977) dollars)[1]	4.86	4.84	4.85	4.84	4.84	4.85	4.85	4.84	4.84	4.82	4.83	4.84	4.83	4.82	–

[1] Includes mining, not shown separately

– Data not available.

[p] = preliminary

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

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

Industry	Annual average		1988												1989
	1987	1988[p]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[p]	Jan.[p]
PRIVATE SECTOR	$8.98	$9.29	$9.18	$9.17	$9.18	$9.23	$9.26	$9.23	$9.25	$9.24	$9.40	$9.45	$9.46	$9.46	$9.55
MINING	12.52	12.69	12.77	12.71	12.59	12.60	12.54	12.55	12.66	12.62	12.75	12.72	12.83	12.96	13.07
CONSTRUCTION	12.69	12.97	12.99	12.82	12.87	12.88	12.87	12.85	12.91	12.95	13.13	13.13	13.04	13.16	13.23
MANUFACTURING	9.91	10.17	10.07	10.05	10.07	10.12	10.14	10.16	10.16	10.12	10.25	10.24	10.30	10.37	10.38
Durable goods	10.43	10.70	10.60	10.58	10.59	10.65	10.67	10.69	10.67	10.64	10.78	10.78	10.85	10.91	10.90
Lumber and wood products	8.40	8.60	8.51	8.53	8.45	8.50	8.54	8.60	8.65	8.58	8.67	8.76	8.68	8.76	8.75
Furniture and fixtures	7.67	7.92	7.80	7.74	7.76	7.81	7.87	7.91	7.97	8.00	8.07	8.04	8.00	8.04	8.05
Stone, clay, and glass products	10.25	10.48	10.35	10.33	10.36	10.41	10.45	10.48	10.54	10.46	10.55	10.58	10.61	10.57	10.61
Primary metal industries	11.94	12.15	12.06	12.03	12.07	12.11	12.13	12.15	12.22	12.11	12.25	12.20	12.23	12.27	12.24
Blast furnaces and basic steel products	13.78	13.98	13.82	13.89	13.89	13.94	13.96	13.96	14.09	13.96	14.08	14.04	14.01	14.08	14.02
Fabricated metal products	10.00	10.24	10.12	10.13	10.14	10.22	10.23	10.26	10.18	10.20	10.32	10.32	10.35	10.42	10.42
Machinery, except electrical	10.70	10.97	10.85	10.82	10.84	10.88	10.90	10.93	10.94	10.93	11.05	11.07	11.17	11.20	11.17
Electrical and electronic equipment	9.88	10.13	10.02	10.02	10.04	10.09	10.12	10.15	10.13	10.15	10.19	10.16	10.24	10.29	10.31
Transportation equipment	12.95	13.36	13.22	13.17	13.20	13.28	13.31	13.35	13.23	13.26	13.49	13.49	13.60	13.70	13.63
Motor vehicles and equipment	13.55	14.07	13.94	13.85	13.93	14.09	14.10	14.16	13.86	13.90	14.17	14.16	14.25	14.40	14.30
Instruments and related products	9.71	9.95	9.93	9.92	9.88	9.89	9.87	9.88	9.93	9.91	9.97	10.05	10.05	10.11	10.18
Miscellaneous manufacturing	7.75	7.98	7.97	7.90	7.91	7.92	7.94	7.93	7.94	7.93	7.99	8.07	8.09	8.17	8.18
Nondurable goods	9.18	9.42	9.32	9.31	9.33	9.37	9.38	9.39	9.45	9.40	9.50	9.48	9.53	9.61	9.64
Food and kindred products	8.94	9.11	9.06	9.06	9.07	9.14	9.15	9.12	9.13	9.04	9.12	9.04	9.16	9.26	9.29
Tobacco manufactures	14.03	14.59	13.79	14.01	14.42	14.98	15.24	15.78	15.66	14.84	13.98	13.92	14.43	14.57	14.43
Textile mill products	7.17	7.37	7.34	7.30	7.31	7.35	7.31	7.33	7.31	7.37	7.43	7.45	7.47	7.52	7.58
Apparel and other textile products	5.93	6.10	6.02	6.02	6.03	6.04	6.05	6.08	6.02	6.07	6.19	6.20	6.23	6.27	6.31
Paper and allied products	11.43	11.64	11.54	11.50	11.52	11.60	11.64	11.65	11.71	11.63	11.70	11.67	11.72	11.78	11.78
Printing and publishing	10.28	10.53	10.38	10.40	10.45	10.40	10.43	10.43	10.49	10.55	10.70	10.68	10.68	10.72	10.75
Chemicals and allied products	12.37	12.68	12.55	12.55	12.53	12.57	12.59	12.60	12.70	12.63	12.76	12.79	12.87	12.95	12.92
Petroleum and coal products	14.59	15.05	14.89	14.96	14.98	15.00	14.93	15.04	14.99	14.91	15.08	15.22	15.25	15.29	15.30
Rubber and miscellaneous plastics products	8.91	9.11	9.00	9.00	9.00	9.04	9.04	9.07	9.11	9.14	9.18	9.20	9.22	9.28	9.37
Leather and leather products	6.08	6.28	6.16	6.19	6.23	6.29	6.27	6.27	6.20	6.23	6.31	6.34	6.42	6.43	6.50
TRANSPORTATION AND PUBLIC UTILITIES	12.03	12.32	12.16	12.23	12.19	12.27	12.28	12.27	12.33	12.35	12.41	12.43	12.46	12.42	12.50
WHOLESALE TRADE	9.59	9.92	9.78	9.78	9.78	9.88	9.87	9.85	9.93	9.88	10.01	10.08	10.05	10.12	10.23
RETAIL TRADE	6.11	6.30	6.24	6.23	6.24	6.26	6.28	6.26	6.28	6.26	6.37	6.38	6.43	6.41	6.47
FINANCE, INSURANCE, AND REAL ESTATE	8.73	9.09	8.96	9.02	8.97	9.03	9.09	8.98	9.03	9.04	9.14	9.29	9.27	9.32	9.50
SERVICES	8.48	8.90	8.81	8.81	8.80	8.82	8.84	8.78	8.79	8.79	8.98	9.07	9.10	9.15	9.26

[p] = preliminary

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

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

Industry	Annual average		1988												1989
	1987	1988[p]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[p]	Jan.[p]
PRIVATE SECTOR															
Current dollars	$312.50	$323.29	$315.79	$316.37	$315.79	$320.28	$320.40	$322.13	$324.68	$323.40	$327.12	$329.81	$328.26	$330.15	$329.48
Seasonally adjusted	–	–	317.16	317.72	316.94	322.13	321.67	321.67	325.27	322.47	325.14	329.11	327.82	327.57	331.55
Constant (1977) dollars	169.28	168.29	167.97	168.01	167.08	168.57	167.92	168.13	168.75	167.30	168.10	168.96	167.99	168.70	–
MINING	530.85	536.79	537.62	531.28	527.52	539.28	529.19	533.38	535.52	530.04	538.05	543.14	537.58	554.69	559.40
CONSTRUCTION	479.68	491.56	466.34	462.80	481.34	488.15	491.63	497.30	497.04	499.87	504.19	512.07	491.61	489.55	484.22
MANUFACTURING															
Current dollars	406.31	417.99	412.87	409.04	411.86	414.92	414.73	418.59	413.51	412.90	423.33	422.91	427.45	432.43	424.54
Constant (1977) dollars	220.10	217.59	219.61	217.23	217.92	218.38	217.36	218.47	214.92	213.61	217.54	216.66	218.76	220.97	–
Durable goods	432.85	447.26	440.96	436.95	440.54	444.11	444.94	448.98	439.60	439.43	452.76	452.76	457.87	463.68	454.53
Lumber and wood products	341.04	346.58	336.15	339.49	337.16	345.10	345.87	351.74	348.60	345.77	348.53	358.28	347.20	353.90	347.38
Furniture and fixtures	306.80	312.05	303.42	301.09	302.64	305.37	307.72	311.65	310.03	314.40	323.61	322.40	318.40	325.62	316.37
Stone, clay, and glass products	433.58	443.30	423.32	426.63	435.12	442.43	447.26	448.54	446.90	444.55	451.54	454.94	451.99	446.05	443.50
Primary metal industries	514.61	528.53	524.61	519.70	523.84	526.79	527.66	530.96	525.46	521.94	539.00	531.92	536.90	539.88	531.22
Blast furnaces and basic steel products	598.05	615.12	606.70	609.77	606.99	613.36	612.84	621.22	619.96	608.66	629.38	616.36	616.44	620.93	614.08
Fabricated metal products	415.00	428.03	423.02	418.37	421.82	426.17	426.59	431.95	417.38	423.30	433.44	433.44	439.88	444.93	436.60
Machinery, except electrical	451.54	467.32	464.38	459.85	462.87	463.49	462.16	465.62	462.76	459.06	471.84	470.48	478.08	486.08	474.73
Electrical and electronic equipment	404.09	415.33	413.83	406.81	410.64	411.67	411.88	417.17	409.25	412.09	417.79	416.56	423.94	431.15	420.65
Transportation equipment	543.90	570.47	560.53	553.14	561.00	569.71	572.33	574.05	551.69	554.27	580.07	581.42	592.96	601.43	586.09
Motor vehicles and equipment	571.81	612.05	592.45	587.24	598.99	621.37	624.63	625.87	576.58	587.97	624.90	623.04	635.55	646.56	626.34
Instruments and related products	401.99	412.93	415.07	408.70	411.01	410.44	406.64	409.03	408.12	408.29	414.75	419.09	422.10	424.62	420.43
Miscellaneous manufacturing	305.35	312.82	310.03	307.31	310.07	309.67	309.66	311.65	305.69	309.27	314.01	319.57	321.17	324.35	322.29
Nondurable goods	369.04	378.68	374.66	370.54	373.20	373.86	374.26	377.48	377.06	377.88	384.75	382.04	385.97	390.17	385.60
Food and kindred products	359.39	368.04	366.93	358.78	359.17	361.03	366.92	367.54	368.85	368.83	373.01	368.83	374.64	379.66	375.32
Tobacco manufactures	547.17	580.68	540.57	540.79	566.71	576.73	601.98	628.04	613.87	595.08	575.98	574.90	581.53	579.89	549.78
Textile mill products	299.71	302.91	303.14	301.49	299.71	301.35	297.52	300.53	295.32	304.38	307.60	306.94	309.26	310.58	306.99
Apparel and other textile products	219.41	225.09	220.33	220.93	223.11	222.27	222.64	226.18	220.33	223.98	229.03	229.40	232.38	232.62	231.58
Paper and allied products	496.06	502.85	501.99	494.50	494.21	498.80	501.68	502.12	502.36	498.93	511.29	505.31	508.65	515.96	500.65
Printing and publishing	390.64	400.14	392.36	393.12	399.19	395.20	391.13	392.17	396.52	403.01	411.95	406.91	406.91	411.65	405.28
Chemicals and allied products	523.25	536.36	533.38	530.87	532.53	529.20	528.78	534.24	533.40	527.93	539.75	541.02	548.26	556.85	549.10
Petroleum and coal products	641.96	668.22	658.14	647.77	654.63	666.00	658.41	678.30	679.05	664.99	674.08	680.33	674.05	675.82	676.26
Rubber and miscellaneous plastics products	370.66	378.98	376.20	372.60	375.30	377.87	376.06	378.22	373.51	377.48	381.89	382.72	386.32	390.69	390.73
Leather and leather products	232.26	235.50	231.62	227.79	233.00	232.73	235.75	237.63	231.26	234.87	236.63	240.29	240.11	245.63	245.70
TRANSPORTATION AND PUBLIC UTILITIES	471.58	484.18	474.24	475.75	470.53	480.98	481.38	484.67	490.73	490.30	490.20	490.99	489.68	490.59	488.75
WHOLESALE TRADE	365.38	377.95	370.66	370.66	370.66	377.42	375.06	375.29	380.32	375.44	381.38	385.06	381.90	386.58	389.76
RETAIL TRADE	178.41	183.33	176.59	177.56	178.46	180.91	181.49	184.04	188.40	186.55	184.73	185.66	185.18	189.10	185.04
FINANCE, INSURANCE, AND REAL ESTATE	316.90	326.33	324.35	328.33	321.13	326.89	325.42	321.48	326.89	322.73	327.21	334.44	330.94	333.66	344.85
SERVICES	275.60	290.14	285.44	287.21	284.24	287.53	286.42	287.11	290.07	288.31	291.85	296.59	295.75	297.38	300.95

– Data not available.
[p] = preliminary

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

18. Diffusion indexes of employment change, seasonally adjusted

(In percent)

Time span and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Private nonagricultural payrolls, 349 industries											
Over 1-month span:												
1987	57.4	58.3	59.9	64.6	61.3	61.6	68.6	60.6	62.3	67.6	63.9	65.0
1988	60.3	64.6	64.0	63.0	58.9	66.6	62.3	56.2	54.0	62.5	68.9	61.2
1989	62.5	–	–	–	–	–	–	–	–	–	–	–
Over 3-month span:												
1987	61.3	62.2	67.3	68.9	69.3	69.8	71.5	72.5	72.1	73.4	74.5	68.2
1988	70.6	68.8	68.3	67.2	69.1	69.8	68.8	61.9	62.6	68.3	71.6	73.4
1989	–	–	–	–	–	–	–	–	–	–	–	–
Over 6-month span:												
1987	69.2	66.3	66.3	70.1	72.5	75.2	76.9	77.4	78.5	74.2	74.4	75.6
1988	72.2	71.5	70.8	74.2	72.2	69.1	68.8	74.5	70.9	72.8	–	–
1989	–	–	–	–	–	–	–	–	–	–	–	–
Over 12-month span:												
1987	68.1	70.3	71.1	74.1	76.6	77.2	77.4	77.8	79.1	78.7	77.8	80.5
1988	77.2	78.1	74.2	73.9	75.6	75.9	77.2	–	–	–	–	–
1989	–	–	–	–	–	–	–	–	–	–	–	–
	Manufacturing payrolls, 143 industries											
Over 1-month span:												
1987	46.8	52.5	53.9	56.4	58.9	55.7	67.7	56.0	64.2	64.2	64.2	61.0
1988	58.2	55.7	55.7	60.6	57.4	61.3	60.3	44.0	46.8	61.7	68.1	56.0
1989	59.9	–	–	–	–	–	–	–	–	–	–	–
Over 3-month span:												
1987	50.7	50.7	58.5	63.8	63.5	68.4	69.5	73.8	70.2	74.1	74.5	67.0
1988	66.0	61.0	62.8	64.5	66.7	68.8	61.3	52.1	53.5	65.6	70.2	69.1
1989	–	–	–	–	–	–	–	–	–	–	–	–
Over 6-month span:												
1987	58.5	57.1	57.1	66.7	69.1	74.5	75.5	76.6	79.4	74.1	72.7	72.3
1988	68.4	67.0	66.0	70.9	66.0	63.8	62.1	68.8	65.6	65.6	–	–
1989	–	–	–	–	–	–	–	–	–	–	–	–
Over 12-month span:												
1987	59.6	63.5	64.5	68.8	73.0	73.8	75.2	75.2	75.9	75.9	75.2	79.1
1988	74.1	72.3	68.8	70.6	72.0	70.9	70.6	–	–	–	–	–
1989	–	–	–	–	–	–	–	–	–	–	–	–

– Data not available.

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

19. Annual data: Employment status of the noninstitutional population

(Numbers in thousands)

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

20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1980	1981	1982	1983	1984	1985	1986	1987	1988[p]
Total employment	90,406	91,156	89,566	90,200	94,496	97,519	99,525	102,310	106,039
Private sector	74,166	75,126	73,729	74,330	78,472	81,125	82,832	85,295	88,652
Goods-producing	25,658	25,497	23,813	23,334	24,727	24,859	24,558	24,784	25,565
Mining	1,027	1,139	1,128	952	966	927	777	721	733
Construction	4,346	4,188	3,905	3,948	4,383	4,673	4,816	4,998	5,294
Manufacturing	20,285	20,170	18,781	18,434	19,378	19,260	18,965	19,065	19,538
Service-producing	64,748	65,659	65,753	66,866	69,769	72,660	74,967	77,525	80,475
Transportation and public utilities	5,146	5,165	5,082	4,954	5,159	5,238	5,255	5,385	5,584
Wholesale trade	5,275	5,358	5,278	5,268	5,555	5,717	5,753	5,872	6,156
Retail trade	15,035	15,189	15,179	15,613	16,545	17,356	17,930	18,509	19,206
Finance, insurance, and real estate	5,160	5,298	5,341	5,468	5,689	5,955	6,283	6,549	6,679
Services	17,890	18,619	19,036	19,694	20,797	22,000	23,053	24,196	25,464
Government	16,241	16,031	15,837	15,869	16,024	16,394	16,693	17,015	17,387
Federal	2,866	2,772	2,739	2,774	2,807	2,875	2,899	2,943	2,972
State	3,610	3,640	3,640	3,662	3,734	3,832	3,893	3,963	4,051
Local	9,765	9,619	9,458	9,434	9,482	9,687	9,901	10,109	10,364

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

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

Industry	1980	1981	1982	1983	1984	1985	1986	1987	1988[p]
Private sector									
Average weekly hours	35.3	35.2	34.8	35.0	35.2	34.9	34.8	34.8	34.8
Average hourly earnings (in dollars)	6.66	7.25	7.68	8.02	8.32	8.57	8.76	8.98	9.29
Average weekly earnings (in dollars)	235.10	255.20	267.26	280.70	292.86	299.09	304.85	312.50	323.29
Mining									
Average weekly hours	43.3	43.7	42.7	42.5	43.3	43.4	42.2	42.4	42.3
Average hourly earnings (in dollars)	9.17	10.04	10.77	11.28	11.63	11.98	12.46	12.52	12.69
Average weekly earnings (in dollars)	397.06	438.75	459.88	479.40	503.58	519.93	525.81	530.85	536.79
Construction									
Average weekly hours	37.0	36.9	36.7	37.1	37.8	37.7	37.4	37.8	37.9
Average hourly earnings (in dollars)	9.94	10.82	11.63	11.94	12.13	12.32	12.48	12.69	12.97
Average weekly earnings (in dollars)	367.78	399.26	426.82	442.97	458.51	464.46	466.75	479.68	491.56
Manufacturing									
Average weekly hours	39.7	39.8	38.9	40.1	40.7	40.5	40.7	41.0	41.1
Average hourly earnings (in dollars)	7.27	7.99	8.49	8.83	9.19	9.54	9.73	9.91	10.17
Average weekly earnings (in dollars)	288.62	318.00	330.26	354.08	374.03	386.37	396.01	406.31	417.99
Transportation and public utilities									
Average weekly hours	39.6	39.4	39.0	39.0	39.4	39.5	39.2	39.2	39.3
Average hourly earnings (in dollars)	8.87	9.70	10.32	10.79	11.12	11.40	11.70	12.03	12.32
Average weekly earnings (in dollars)	351.25	382.18	402.48	420.81	438.13	450.30	458.64	471.58	484.18
Wholesale trade									
Average weekly hours	38.5	38.5	38.3	38.5	38.5	38.4	38.3	38.1	38.1
Average hourly earnings (in dollars)	6.96	7.56	8.09	8.55	8.89	9.16	9.35	9.59	9.92
Average weekly earnings (in dollars)	267.96	291.06	309.85	329.18	342.27	351.74	358.11	365.38	377.95
Retail trade									
Average weekly hours	30.2	30.1	29.9	29.8	29.8	29.4	29.2	29.2	29.1
Average hourly earnings (in dollars)	4.88	5.25	5.48	5.74	5.85	5.94	6.03	6.11	6.30
Average weekly earnings (in dollars)	147.38	158.03	163.85	171.05	174.33	174.64	176.08	178.41	183.33
Finance, insurance, and real estate									
Average weekly hours	36.2	36.3	36.2	36.2	36.5	36.4	36.4	36.3	35.9
Average hourly earnings (in dollars)	5.79	6.31	6.78	7.29	7.63	7.94	8.36	8.73	9.09
Average weekly earnings (in dollars)	209.60	229.05	245.44	263.90	278.50	289.02	304.30	316.90	326.33
Services									
Average weekly hours	32.6	32.6	32.6	32.7	32.6	32.5	32.5	32.5	32.6
Average hourly earnings (in dollars)	5.85	6.41	6.92	7.31	7.59	7.90	8.18	8.48	8.90
Average weekly earnings (in dollars)	190.71	208.97	225.59	239.04	247.43	256.75	265.85	275.60	290.14

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

(June 1981 = 100)

Series	1986	1987				1988				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 1988	
Civilian workers [2]	133.8	135.0	135.9	137.5	138.6	140.6	142.1	144.0	145.5	1.0	5.0
Workers, by occupational group:											
White-collar workers	136.9	138.5	139.3	141.2	142.2	144.2	145.7	147.9	149.7	1.2	5.3
Blue-collar workers	128.4	129.1	130.1	131.3	132.5	134.7	136.2	137.2	138.2	.7	4.3
Service occupations	136.6	138.0	138.5	139.9	140.8	142.9	144.3	147.2	148.5	.9	5.5
Workers, by industry division:											
Goods-producing	129.5	130.2	131.1	132.2	133.5	135.8	137.3	138.2	139.3	.8	4.3
Manufacturing	130.1	130.7	131.5	132.7	134.1	136.8	138.1	139.0	140.1	.8	4.5
Service-producing	136.5	138.1	138.9	140.8	141.7	143.6	145.1	147.6	149.2	1.1	5.3
Services	143.6	145.2	145.8	149.2	150.6	152.8	153.8	157.7	159.7	1.3	6.0
Health services	–	–	–	–	–	–	–	–	–	1.3	5.7
Hospitals	–	–	–	–	–	–	–	–	–	1.3	5.9
Public administration [3]	141.6	144.1	144.7	146.4	148.1	150.3	151.2	154.0	154.4	.3	4.3
Nonmanufacturing	135.4	136.9	137.8	139.6	140.5	142.3	143.9	146.1	147.7	1.1	5.1
Private industry workers	131.6	132.9	133.8	135.1	136.0	138.1	139.8	141.2	142.6	1.0	4.9
Workers, by occupational group:											
White-collar workers	134.3	136.1	137.0	138.5	139.3	141.2	143.0	144.6	146.3	1.2	5.0
Professional specialty and technical occupations	–	–	–	–	–	–	–	–	–	.6	4.9
Executive, administrative, and managerial occupations	–	–	–	–	–	–	–	–	–	1.3	4.1
Sales occupations	–	–	–	–	–	–	–	–	–	2.4	6.8
Administrative support occupations, including clerical	–	–	–	–	–	–	–	–	–	.7	5.0
Blue-collar workers	127.8	128.4	129.5	130.6	131.8	134.1	135.6	136.5	137.6	.8	4.4
Precision production, craft, and repair occupation	–	–	–	–	–	–	–	–	–	.7	3.8
Machine operators, assemblers, and inspectors	–	–	–	–	–	–	–	–	–	1.1	5.2
Transportation and material moving occupations	–	–	–	–	–	–	–	–	–	.3	4.7
Handlers, equipment cleaners, helpers, and laborers	–	–	–	–	–	–	–	–	–	.7	4.5
Service occupations	133.5	134.7	135.2	135.9	136.7	138.6	140.1	142.2	143.9	1.2	5.3
Workers, by industry division:											
Goods-producing	129.2	129.9	130.8	131.9	133.2	135.6	137.1	137.9	139.0	.8	4.4
Construction	–	–	–	–	–	–	–	–	–	.8	4.2
Manufacturing	130.1	130.7	131.5	132.7	134.1	136.8	138.1	139.0	140.1	.8	4.5
Durables	–	–	–	–	–	–	–	–	–	.7	4.5
Nondurables	–	–	–	–	–	–	–	–	–	1.1	4.4
Service-producing	133.5	135.3	136.3	137.7	138.4	140.2	142.1	143.8	145.5	1.2	5.1
Transportation and public utilities	–	–	–	–	–	–	–	–	–	.0	2.8
Transportation	–	–	–	–	–	–	–	–	–	–.3	3.5
Public utilities	–	–	–	–	–	–	–	–	–	.4	2.1
Wholesale and retail trade	–	–	–	–	–	–	–	–	–	.8	5.2
Wholesale trade	–	–	–	–	–	–	–	–	–	.5	4.2
Retail trade	–	–	–	–	–	–	–	–	–	1.0	5.7
Finance, insurance, and real estate	–	–	–	–	–	–	–	–	–	3.5	6.5
Service	–	–	–	–	–	–	–	–	–	1.1	5.7
Health services	–	–	–	–	–	–	–	–	–	1.4	6.0
Hospitals	–	–	–	–	–	–	–	–	–	1.5	6.1
Nonmanufacturing	132.4	134.1	135.1	136.4	137.1	138.9	140.8	142.4	143.9	1.1	5.0
State and local government workers	144.7	145.9	146.3	149.7	151.1	153.1	153.6	157.8	159.6	1.1	5.6
Workers, by occupational group:											
White-collar workers	146.0	147.2	147.5	151.2	152.7	154.8	155.2	159.6	161.8	1.4	6.0
Blue-collar workers	139.5	140.8	141.3	143.3	144.3	145.9	145.9	148.4	149.1	.5	3.3
Workers, by industry division:											
Services	146.6	147.3	147.6	151.8	153.1	155.2	155.6	160.5	163.0	1.6	6.5
Hospitals and other services [4]	141.1	142.5	143.3	145.1	146.3	150.3	150.4	153.2	155.2	1.3	6.1
Health services	–	–	–	–	–	–	–	–	–	.8	4.6
Schools	148.4	148.9	149.1	154.1	155.5	156.8	157.3	163.1	165.7	1.6	6.6
Elementary and secondary	150.3	150.5	150.7	156.5	157.8	158.9	159.4	165.4	168.3	1.8	6.7
Public administration [3]	141.6	144.1	144.7	146.4	148.1	150.3	151.2	154.0	154.4	.3	4.3

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

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

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

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

– Data not available.

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

(June 1981 = 100)

Series	1986	1987				1988				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 1988	
Civilian workers [1]	131.5	132.8	133.5	135.2	136.1	137.4	138.7	140.5	141.9	1.0	4.3
Workers, by occupational group:											
White-collar workers	135.0	136.6	137.3	139.4	140.2	141.5	143.0	145.2	146.8	1.1	4.7
Blue-collar workers	125.6	126.2	127.1	128.3	129.4	130.4	131.6	132.5	133.4	.7	3.1
Service occupations	132.8	134.2	134.7	136.0	136.6	138.0	139.3	141.8	142.9	.8	4.6
Workers, by industry division											
Goods-producing	127.0	127.8	128.5	129.8	131.0	132.2	133.4	134.1	135.1	.7	3.1
Manufacturing	127.9	128.7	129.5	130.8	132.2	133.3	134.4	135.1	136.2	.8	3.0
Service-producing	134.2	135.8	136.5	138.5	139.2	140.5	141.9	144.2	145.8	1.1	4.7
Services	141.1	142.7	143.4	146.8	148.2	149.5	150.4	154.0	155.7	1.1	5.1
Health services	–	–	–	–	–	–	–	–	–	1.3	5.5
Hospitals	–	–	–	–	–	–	–	–	–	1.3	5.7
Public administration [2]	138.1	140.5	141.0	142.6	143.8	145.5	146.4	148.9	149.4	.3	3.9
Nonmanufacturing	133.0	134.5	135.2	137.1	137.8	139.0	140.5	142.7	144.1	1.0	4.6
Private industry workers	129.5	130.8	131.7	133.0	133.8	135.1	136.6	137.9	139.3	1.0	4.1
Workers, by occupational group:											
White-collar workers	132.7	134.6	135.4	137.0	137.6	139.0	140.8	142.4	144.0	1.1	4.7
Professional specialty and technical occupations	136.4	138.4	139.1	141.2	142.6	144.0	145.8	148.1	148.9	.5	4.4
Executive, administrative, and managerial occupations	133.5	135.6	136.4	138.6	139.2	139.9	141.3	142.5	144.4	1.3	3.7
Sales occupations	124.9	126.7	127.1	127.0	126.1	127.5	130.8	131.5	134.4	2.2	6.6
Administrative support occupations, including clerical	132.7	134.3	135.5	137.1	138.1	140.2	141.2	143.2	144.1	.6	4.3
Blue-collar workers	125.1	125.6	126.6	127.7	128.9	129.9	131.1	131.9	132.9	.8	3.1
Precision production, craft, and repair occupations	127.4	127.9	128.8	130.2	131.1	132.1	133.4	134.0	134.9	.7	2.9
Machine operators, assemblers, and inspectors	124.9	125.5	126.7	127.5	129.2	129.9	131.2	131.9	133.3	1.1	3.2
Transportation and material moving occupations	120.1	120.5	121.5	122.3	122.9	123.7	125.4	126.7	126.9	.2	3.3
Handlers, equipment cleaners, helpers, and laborers	121.4	121.9	122.6	123.7	125.0	126.7	127.5	128.4	129.3	.7	3.4
Service occupations	130.1	131.4	131.9	132.6	133.2	134.5	135.8	137.6	139.1	1.1	4.4
Workers, by industry division:											
Goods-producing	126.8	127.5	128.3	129.6	130.8	132.0	133.2	133.9	134.9	.7	3.1
Construction	120.8	121.7	122.7	123.8	124.7	125.9	127.6	128.6	129.4	.6	3.8
Manufacturing	127.9	128.7	129.5	130.8	132.2	133.3	134.4	135.1	136.2	.8	3.0
Durables	127.2	127.7	128.7	129.7	131.1	132.1	133.1	133.7	134.6	.7	2.7
Nondurables	129.3	130.5	131.0	132.8	134.1	135.6	136.7	137.6	139.1	1.1	3.7
Service-producing	131.6	133.4	134.3	135.7	136.2	137.5	139.3	141.0	142.6	1.1	4.7
Transportation and public utilities	127.5	128.1	129.3	130.0	130.2	131.3	132.5	133.5	133.4	–.1	2.5
Transportation	–	–	–	–	–	–	–	–	–	–.4	2.5
Public utilities	–	–	–	–	–	–	–	–	–	.4	2.6
Wholesale and retail trade	126.9	127.9	129.9	130.6	130.7	131.9	134.6	136.0	136.9	.7	4.7
Wholesale trade	133.1	134.8	137.2	137.8	138.5	139.0	141.7	143.2	143.6	.3	3.7
Retail trade	124.5	125.2	127.1	127.8	127.7	129.2	131.7	133.2	134.3	.8	5.2
Finance, insurance, and real estate	130.0	133.5	131.5	131.8	131.6	132.9	134.9	134.9	139.9	3.7	6.3
Services	139.5	141.8	142.8	145.9	147.1	148.6	149.8	152.9	154.4	1.0	5.0
Health services	–	–	–	–	–	–	–	–	–	1.3	5.7
Hospitals	–	–	–	–	–	–	–	–	–	1.4	5.9
Nonmanufacturing	130.4	131.9	132.8	134.2	134.8	136.0	137.8	139.4	140.8	1.0	4.5
State and local government workers	141.4	142.5	142.8	146.1	147.4	148.7	149.1	153.0	154.5	1.0	4.8
Workers, by occupational group											
White-collar workers	142.8	143.9	144.1	147.7	149.3	150.5	150.8	154.9	156.8	1.2	5.0
Blue-collar workers	135.1	136.3	136.9	139.0	139.6	141.1	141.1	143.5	144.1	.4	3.2
Workers, by industry division											
Services	143.3	143.9	144.2	148.2	149.5	150.7	151.1	155.6	157.6	1.3	5.4
Hospitals and other services [3]	137.3	138.6	139.4	141.2	142.2	144.5	144.7	147.4	148.7	.9	4.6
Health services	–	–	–	–	–	–	–	–	–	1.0	4.8
Schools	145.1	145.5	145.6	150.3	151.8	152.6	153.0	158.0	160.3	1.5	5.6
Elementary and secondary	146.4	146.5	146.6	152.0	153.4	154.0	154.3	159.7	162.1	1.5	5.7
Public administration [2]	138.1	140.5	141.0	142.6	143.8	145.5	146.4	148.9	149.4	.3	3.9

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

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

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

– Data not available.

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

(June 1981=100)

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

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

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

Measure	Annual average		Quarterly average							
	1986	1987	1987				1988			
			I	II	III	IV	I	II[p]	III[p]	IV[p]
Specified adjustments:										
Total compensation [1] adjustments, [2] settlements covering 5,000 workers or more:										
First year of contract	1.1	3.0	1.1	4.1	2.5	3.4	1.8	3.1	3.4	3.8
Annual rate over life of contract	1.6	2.6	2.1	3.9	2.1	2.4	1.8	2.4	3.2	2.2
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract	1.2	2.2	.8	2.6	2.1	2.4	2.1	2.6	2.7	2.7
Annual rate over life of contract	1.8	2.1	1.6	2.9	2.0	1.8	2.3	2.2	2.8	2.3
Effective adjustments:										
Total effective wage adjustment [3]	2.3	3.1	.4	1.0	.9	.8	.4	.9	.8	.5
From settlements reached in period	.5	.7	(4)	.2	.2	.3	.1	.3	.2	.1
Deferred from settlements reached in earlier periods	1.7	1.8	.3	.7	.6	.3	.3	.5	.4	.2
From cost-of-living-adjustments clauses	.2	.5	.1	.2	.1	.2	.1	.1	.2	.2

[1] Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.

[2] Adjustments are the net result of increases, decreases, and no changes in compensation or wages.

[3] Because of rounding, total may not equal sum of parts.

[4] Between -0.05 and 0.05 percent.

[p] = preliminary

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

Measure	Average for four quarters ending--							
	1987				1988			
	I	II	III	IV	I	II[p]	III[p]	IV[p]
Specified total compensation adjustments, settlements covering 5,000 workers or more, all industries:								
First year of contract	1.2	1.8	2.7	3.0	3.1	3.0	3.1	3.1
Annual rate over life of contract	1.7	2.1	2.6	2.6	2.5	2.3	2.5	2.5
Specified wage adjustments, settlements covering 1,000 workers or more:								
All industries								
First year of contract	1.2	1.5	2.0	2.2	2.4	2.4	2.5	2.6
Contracts with COLA clauses	2.0	1.8	2.1	2.3	2.2	2.4	2.4	2.4
Contracts without COLA clauses	.8	1.3	2.0	2.1	2.5	2.4	2.6	2.7
Annual rate over life of contract	1.8	2.0	2.2	2.1	2.2	2.0	2.2	2.4
Contracts with COLA clauses	1.8	1.7	1.7	1.5	1.4	1.5	1.5	1.8
Contracts without COLA clauses	1.8	2.1	2.5	2.5	2.7	2.5	2.8	2.8
Manufacturing								
First year of contract	-1.5	-.8	1.1	2.1	2.4	2.5	2.5	2.2
Contracts with COLA clauses	1.3	1.3	2.1	2.4	2.4	2.5	2.4	2.1
Contracts without COLA clauses	-3.5	-2.7	-.1	1.3	2.4	2.5	3.0	2.5
Annual rate over life of contract	([2])	.3	1.0	1.3	1.5	1.6	1.9	2.1
Contracts with COLA clauses	.8	.8	1.0	1.0	1.0	1.3	1.4	1.8
Contracts without COLA clauses	-.6	-.2	1.2	2.1	2.7	2.5	3.1	2.6
Nonmanufacturing								
First year of contract	2.2	2.3	2.4	2.3	2.3	2.3	2.4	2.8
Contracts with COLA clauses	2.2	2.1	2.1	1.9	1.6	2.2	2.4	2.9
Contracts without COLA clauses	2.1	2.3	2.6	2.4	2.5	2.4	2.5	2.7
Annual rate over life of contract	2.4	2.6	2.8	2.7	2.7	2.4	2.4	2.5
Contracts with COLA clauses	2.2	2.2	2.4	2.7	2.4	1.9	1.8	1.7
Contracts without COLA clauses	2.5	2.7	2.9	2.7	2.7	2.6	2.7	2.8
Construction								
First year of contract	2.4	2.7	3.0	2.9	2.9	2.6	2.1	2.2
Contracts with COLA clauses	1.6	3.7	([1])	([1])	([1])	.0	.0	.0
Contracts without COLA clauses	2.4	2.7	([1])	([1])	([1])	2.6	2.1	2.2
Annual rate over life of contract	2.5	2.9	3.2	3.1	([1])	2.7	2.4	2.6
Contracts with COLA clauses	1.4	3.8	([1])	([1])	([1])	.0	.0	.0
Contracts without COLA clauses	2.6	2.9	([1])	([1])	.0	2.7	2.4	2.6

[1] Data do not meet publication standards.

[2] Between -0.05 and 0.05 percent.

[p] = preliminary.

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

Effective wage adjustment	Average for four quarters ending--						
	1987			1988			
	II	III	IV	I	IIp	IIIp	IVp
For all workers:[1]							
Total	2.2	2.6	3.1	3.2	3.0	2.9	2.6
From settlements reached in period	.3	.4	.7	.8	1.0	1.0	.7
Deferred from settlements reached in earlier period	1.6	1.7	1.8	1.8	1.6	1.4	1.3
From cost-of-living-adjustments clauses	.3	.4	.5	.5	.5	.5	.6
For workers receiving changes:							
Total	2.8	3.2	3.6	3.8	3.7	3.5	3.3
From settlements reached in period	.9	1.8	2.9	2.9	2.9	2.9	3.1
Deferred from settlements reached in earlier period	3.5	3.3	3.3	3.3	3.3	3.0	3.0
From cost-of-living-adjustments clauses	1.8	2.3	2.6	2.7	2.3	2.5	2.7

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

p = preliminary.

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

Measure	Annual average		
	1986	1987	1988p
Specified adjustments:			
Total compensation [1] adjustments, [2] settlements covering 5,000 workers or more:			
First year of contract	6.2	4.9	5.4
Annual rate over life of contract	6.0	4.8	5.3
Wage adjustments, settlements covering 1,000 workers or more:			
First year of contract	5.7	4.9	5.1
Annual rate over life of contract	5.7	5.1	5.3
Effective adjustments:			
Total effective wage adjustment [3]	5.5	4.9	4.7
From settlements reached in period	2.4	2.7	2.3
Deferred from settlements reached in earlier periods	3.0	2.2	2.4
From cost-of-living-adjustment clauses	(4)	(4)	(4)

[1] Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.

[2] Adjustments are the net result of increases, decreases, and no changes in compensation or wages.

[3] Because of rounding, total may not equal sum of parts.

[4] Less than 0.05 percent.

p = preliminary.

29. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1988											1989p	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Number of stoppages:															
Beginning in period	46	40	5	3	0	5	7	4	7	2	3	1	0	3	–
In effect during period	51	43	8	11	7	11	15	14	18	14	9	5	1	4	–
Workers involved:															
Beginning in period (in thousands)	174.4	118.0	17.5	17.9	.0	14.5	13.6	21.0	11.7	4.0	8.6	2.3	.0	7.4	–
In effect during period (in thousands)	377.7	121.4	21.1	39.0	23.9	31.4	34.8	47.4	46.9	34.0	25.9	10.6	2.5	9.9	–
Days idle:															
Number (in thousands)	r4,481.0	4,381.1	236.6	505.0	331.7	344.5	490.5	725.9	713.1	510.0	293.2	77.9	52.5	152.7	–
Percent of estimated working time[1]	.02	.02	.01	.02	.02	.02	.02	.03	.03	.02	.01	(2)	(2)	.01	–

[1] Agricultural and government employees are included in the total employed and total working time: private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in "'Total economy' measure of strike idleness," *Monthly Labor Review,* October 1968, pp. 54-56.

[2] Less than .005 percent.

– Data not available.

p = preliminary

r = revised

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

(1982-84 = 100, unless otherwise indicated)

Series	Annual average		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:															
All items	113.6	118.3	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	121.1	–
All items (1967 = 100)	340.4	354.3	347.4	349.0	350.8	352.0	353.5	354.9	356.6	358.9	360.1	360.5	360.9	362.7	–
Food and beverages	113.5	118.2	115.8	116.0	116.7	117.1	117.6	118.8	119.4	120.1	120.3	120.2	120.6	122.0	–
Food	113.5	118.2	115.7	115.9	116.6	117.0	117.6	118.8	119.4	120.2	120.3	120.2	120.7	122.2	–
Food at home	111.9	116.6	113.9	113.9	114.6	115.1	115.8	117.3	118.1	119.0	119.0	118.7	119.1	121.2	–
Cereals and bakery products	114.8	122.1	118.7	118.9	119.8	120.3	120.8	122.1	124.0	124.7	125.6	125.9	126.6	127.9	–
Meats, poultry, fish, and eggs	110.5	114.3	110.6	111.2	111.5	112.1	114.6	116.5	117.3	117.4	116.8	116.4	116.1	118.5	–
Dairy products	105.9	108.4	107.3	107.2	107.1	107.4	107.2	107.6	108.2	108.9	109.9	110.6	111.4	112.6	–
Fruits and vegetables	119.1	128.1	124.7	123.0	126.0	127.1	126.1	129.0	129.9	133.2	131.7	129.5	131.0	134.8	–
Other foods at home	110.5	113.1	111.8	112.0	112.1	112.3	112.4	113.1	113.6	114.0	114.8	114.9	115.3	116.6	–
Sugar and sweets	111.0	114.0	112.2	112.6	112.3	112.5	113.3	114.0	114.8	115.6	116.0	115.9	116.7	117.2	–
Fats and oils	108.1	113.1	109.5	110.3	110.3	111.2	111.5	112.6	114.9	115.9	117.1	117.1	118.5	119.6	–
Nonalcoholic beverages	107.5	107.5	107.7	107.7	107.8	107.5	107.1	107.2	107.0	107.4	108.1	108.2	107.8	109.6	–
Other prepared foods	113.8	118.0	116.1	116.3	116.6	117.0	117.1	118.3	118.7	119.1	119.9	120.1	120.7	121.9	–
Food away from home	117.0	121.8	119.7	120.2	120.7	121.0	121.5	122.1	122.5	123.0	123.4	123.7	124.1	124.7	–
Alcoholic beverages	114.1	118.6	116.8	117.4	118.0	118.2	118.7	119.2	119.3	119.6	119.8	119.9	119.9	120.3	–
Housing	114.2	118.5	116.6	117.0	117.3	117.7	118.6	119.1	119.5	119.9	119.9	119.9	120.2	120.7	–
Shelter	121.3	127.1	125.0	125.6	125.8	126.2	126.6	127.4	128.2	128.4	128.8	129.1	129.3	129.8	–
Renters' costs (12/82 = 100)	128.1	133.6	131.3	132.9	132.9	133.1	133.7	134.7	135.6	134.7	134.8	134.2	134.1	135.2	–
Rent, residential	123.1	127.8	126.3	126.4	126.6	126.9	127.3	127.8	128.4	129.1	129.4	129.8	130.1	130.5	–
Other renters' costs	127.4	134.8	130.4	136.6	136.0	135.7	137.0	139.2	141.3	135.5	134.8	131.1	130.0	132.7	–
Homeowners' costs (12/82 = 100)	124.8	131.1	129.0	129.2	129.4	129.9	130.4	131.0	131.8	132.6	133.1	133.8	134.0	134.4	–
Owners' equivalent rent (12/82 = 100)	124.8	131.1	129.0	129.2	129.5	130.0	130.4	131.1	131.9	132.7	133.1	133.9	134.1	134.5	–
Household insurance (12/82 = 100)	124.0	129.0	127.1	127.8	128.2	128.2	128.9	129.7	130.1	130.2	130.4	130.2	130.6	130.9	–
Maintenance and repairs	111.8	114.7	114.3	113.3	115.3	114.3	114.7	114.5	115.0	115.3	115.0	115.4	115.8	116.1	–
Maintenance and repair services	114.8	117.9	117.9	116.4	119.4	117.8	118.1	117.9	118.1	118.1	117.6	118.2	118.4	118.7	–
Maintenance and repair commodities	107.8	110.4	109.5	109.2	109.7	109.8	110.1	110.1	110.8	111.7	111.6	111.7	112.4	112.8	–
Fuel and other utilities	103.0	104.4	102.8	102.7	102.8	103.5	105.9	106.0	106.1	106.4	105.4	104.3	105.0	106.0	–
Fuels	97.3	98.0	96.0	95.8	95.7	96.5	100.8	100.8	100.9	101.0	98.6	96.8	97.4	98.7	–
Fuel oil, coal, and bottled gas	77.9	78.1	80.9	80.5	80.2	80.0	79.1	76.9	76.3	75.9	74.6	75.0	76.8	80.5	–
Gas (piped) and electricity	103.8	104.6	101.9	101.7	101.6	102.6	107.8	108.1	108.3	108.5	105.8	103.7	104.1	105.1	–
Other utilities and public services	120.1	122.9	121.8	121.7	122.3	122.6	122.3	122.4	122.6	123.3	124.5	124.4	125.5	125.9	–
Household furnishings and operations	107.1	109.4	107.7	108.3	109.1	109.3	109.6	109.8	109.7	110.1	110.3	110.6	110.6	110.9	–
Housefurnishings	103.6	105.1	103.7	104.7	104.9	104.9	105.3	105.5	105.3	105.7	105.9	106.1	105.9	106.0	–
Housekeeping supplies	111.5	114.7	113.2	112.9	113.8	114.1	114.7	115.2	114.8	115.5	115.6	116.5	117.0	117.5	–
Housekeeping services	110.6	114.3	111.6	111.7	114.7	114.8	114.8	115.0	115.1	115.5	115.5	115.7	115.9	116.6	–
Apparel and upkeep	110.6	115.4	110.2	114.3	117.0	116.3	114.6	112.7	112.6	117.8	120.7	119.9	118.0	115.3	–
Apparel commodities	108.9	113.7	108.3	112.7	115.5	114.8	112.9	110.8	110.7	116.2	119.3	118.4	116.3	113.3	–
Men's and boys' apparel	109.1	113.4	109.1	111.6	112.9	113.6	112.5	111.9	111.6	115.2	117.6	118.2	117.3	115.1	–
Women's and girls' apparel	110.4	114.9	107.8	115.3	119.6	117.3	114.1	109.8	109.9	118.1	121.9	120.2	116.5	111.6	–
Infants' and toddlers' apparel	112.1	116.4	111.4	114.0	117.1	117.7	116.5	116.2	118.2	119.0	118.1	117.2	117.3	115.6	–
Footwear	105.1	109.9	105.8	107.3	109.4	109.7	109.2	108.2	107.4	112.2	115.9	114.5	113.5	112.2	–
Other apparel commodities	108.0	116.0	113.1	113.6	114.6	114.9	114.6	116.5	116.2	117.4	119.4	119.5	119.1	119.2	–
Apparel services	119.6	123.7	122.0	122.2	122.6	122.8	123.1	123.4	124.0	124.4	125.5	126.3	126.7	127.3	–
Transportation	105.4	108.7	106.8	106.5	107.2	108.1	108.5	108.9	109.6	109.7	110.0	110.7	110.8	111.1	–
Private transportation	104.2	107.6	105.7	105.4	106.0	107.0	107.4	107.8	108.6	108.6	109.0	109.6	109.6	109.8	–
New vehicles	114.4	116.5	116.0	115.7	115.6	115.9	116.1	116.1	115.9	116.2	117.2	118.4	119.0	119.4	–
New cars	114.6	116.9	116.2	116.0	115.9	116.3	116.5	116.5	116.3	116.8	117.7	118.7	119.1	119.5	–
Used cars	113.1	118.0	116.0	116.1	116.6	117.0	117.6	117.9	119.2	119.4	119.9	119.7	120.2	120.5	–
Motor fuel	80.2	80.9	78.3	77.5	79.4	81.4	81.4	82.3	84.1	83.1	81.6	81.5	80.3	79.6	–
Gasoline	80.1	80.8	78.1	77.3	79.2	81.3	81.3	82.3	84.2	83.1	81.6	81.4	80.3	79.4	–
Maintenance and repair	114.8	119.7	117.7	118.5	118.8	119.3	119.7	120.0	120.3	120.9	121.1	121.5	121.5	122.4	–
Other private transportation	120.8	127.9	125.0	124.9	125.0	126.3	127.2	127.5	128.7	129.3	131.0	132.1	132.5	133.5	–
Other private transportation commodities	96.9	98.9	98.1	98.3	98.2	98.9	98.8	98.2	99.2	99.7	99.3	99.4	100.3	101.0	–
Other private transportation services	125.6	133.9	130.6	130.3	130.5	132.0	133.1	133.7	134.8	135.5	137.7	139.1	139.3	140.4	–
Public transportation	121.1	123.3	120.8	121.4	122.4	122.4	123.2	123.7	123.7	124.0	124.2	125.3	126.5	127.5	–
Medical care	130.1	138.6	135.5	136.3	136.9	137.5	138.2	139.3	139.9	140.4	141.2	141.8	142.3	143.8	–
Medical care commodities	131.0	139.9	136.1	137.0	138.1	139.0	139.4	140.5	141.1	142.0	143.2	143.3	144.2	145.0	–
Medical care services	130.0	138.3	135.3	136.1	136.6	137.2	137.9	139.0	139.6	140.1	140.8	141.5	141.9	143.5	–
Professional services	128.8	137.5	134.5	135.4	136.0	136.4	137.5	138.4	138.7	139.2	139.8	140.4	140.8	142.2	–
Hospital and related services	131.6	143.9	139.0	140.0	140.7	141.8	142.1	144.3	145.9	146.9	148.5	149.7	150.8	152.9	–
Entertainment	115.3	120.3	118.3	119.0	119.6	119.7	120.1	120.5	120.7	121.3	121.8	122.2	122.8	123.8	–
Entertainment commodities	110.5	115.0	112.9	113.4	114.2	114.5	114.8	115.3	115.4	116.0	116.3	117.2	117.5	118.1	–
Entertainment services	122.0	127.7	125.7	126.5	127.0	126.9	127.3	127.7	128.1	128.6	129.4	129.3	130.0	131.6	–
Other goods and services	128.5	137.0	134.2	134.6	134.8	135.1	135.5	136.5	137.5	140.0	140.6	141.0	141.3	143.4	–
Tobacco products	133.6	145.8	142.2	142.8	142.9	143.2	143.6	147.5	148.6	148.9	149.3	149.7	149.9	157.0	–
Personal care	115.1	119.4	117.8	118.1	118.5	118.7	119.0	119.2	119.0	120.3	121.0	121.8	122.4	122.8	–
Toilet goods and personal care appliances	113.9	118.1	116.4	116.8	117.4	117.2	117.5	117.8	117.2	118.7	119.8	120.7	121.6	121.7	–
Personal care services	116.2	120.7	119.1	119.2	119.5	120.1	120.4	120.6	121.0	121.9	122.0	122.7	123.1	123.8	–
Personal and educational expenses	138.5	147.9	144.7	145.0	145.2	145.5	146.0	146.3	147.8	151.8	152.4	152.7	153.0	154.0	–
School books and supplies	138.1	148.1	146.3	146.2	146.3	146.4	146.5	146.5	146.9	151.1	152.0	152.1	152.2	153.3	–
Personal and educational services	138.7	148.0	144.8	145.1	145.3	145.6	146.2	146.5	148.1	152.1	152.7	152.9	153.2	154.2	–

See footnotes at end of table.

GO TOP HALF P. 85

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

(1982-84=100, unless otherwise indicated)

Series	Annual average		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Apparel commodities	108.8	113.4	108.3	112.4	114.9	114.3	112.6	110.6	110.5	115.8	118.9	118.1	116.0	113.0	–
Men's and boys' apparel	108.5	112.8	108.7	111.1	112.2	113.0	112.1	111.5	111.0	114.4	116.9	117.5	116.5	114.4	–
Women's and girls' apparel	110.3	114.5	107.9	114.9	118.8	116.7	113.5	109.5	109.5	117.6	121.5	119.9	116.2	111.3	–
Infants' and toddlers' apparel	114.0	118.6	113.3	116.0	119.1	119.7	118.8	118.6	120.4	121.5	120.6	120.1	120.3	118.5	–
Footwear	105.5	110.4	106.4	107.7	109.6	109.9	109.6	108.7	108.0	112.7	116.3	115.0	114.0	112.8	–
Other apparel commodities	107.4	114.9	112.0	112.8	113.9	114.0	113.5	115.2	114.9	116.2	117.9	118.2	117.8	117.8	–
Apparel services	119.2	123.0	121.5	121.6	122.0	122.2	122.4	122.7	123.3	123.7	124.7	125.4	125.8	126.4	–
Transportation	105.1	108.3	106.4	106.2	106.8	107.8	108.2	108.6	109.4	109.4	109.8	110.3	110.4	110.7	–
Private transportation	104.1	107.5	105.6	105.3	105.9	107.0	107.3	107.7	108.6	108.6	109.0	109.5	109.5	109.7	–
New vehicles	114.0	116.2	115.7	115.3	115.3	115.6	115.8	115.8	115.5	115.8	116.9	118.1	118.8	119.2	–
New cars	114.3	116.6	116.0	115.7	115.7	116.0	116.2	116.2	116.0	116.4	117.5	118.5	118.9	119.3	–
Used cars	113.1	117.9	116.0	116.1	116.6	116.9	117.5	117.8	119.0	119.2	119.8	119.5	120.1	120.3	–
Motor fuel	80.3	80.9	78.3	77.5	79.4	81.4	81.4	82.3	84.3	83.1	81.6	81.5	80.4	79.6	–
Gasoline	80.2	80.8	78.1	77.3	79.2	81.3	81.3	82.3	84.3	83.2	81.6	81.5	80.4	79.5	–
Maintenance and repair	115.1	119.8	117.8	118.6	118.9	119.4	119.8	120.1	120.5	121.0	121.3	121.5	121.5	122.4	–
Other private transportation	119.0	125.8	123.2	123.1	123.0	124.3	125.2	125.4	126.5	127.2	128.9	130.0	130.4	131.4	–
Other private transportation commodities	96.7	98.6	98.0	98.1	97.9	98.6	98.5	97.9	98.8	99.3	98.8	99.0	99.9	100.5	–
Other private transportation services	123.4	131.7	128.5	128.2	128.3	129.7	130.8	131.3	132.5	133.2	135.5	136.8	137.1	138.2	–
Public transportation	120.4	122.5	120.4	120.8	121.7	121.8	122.3	123.0	123.0	123.1	123.5	124.3	125.4	126.1	–
Medical care	130.2	139.0	135.8	136.5	137.1	137.8	138.5	139.6	140.3	140.8	141.7	142.2	142.8	144.2	–
Medical care commodities	130.2	139.0	135.4	136.1	137.2	138.0	138.3	139.4	140.0	141.0	142.1	142.2	143.1	143.9	–
Medical care services	130.3	139.0	135.8	136.6	137.1	137.7	138.5	139.6	140.3	140.8	141.6	142.2	142.7	144.2	–
Professional services	129.0	137.7	134.7	135.5	136.1	136.6	137.7	138.5	138.9	139.3	139.9	140.6	141.0	142.4	–
Hospital and related services	131.1	143.3	138.4	139.3	140.1	141.2	141.5	143.8	145.4	146.3	147.8	148.9	150.0	151.9	–
Entertainment	114.8	119.7	117.6	118.2	118.9	119.0	119.4	119.8	120.1	120.6	121.2	121.7	122.2	123.1	–
Entertainment commodities	110.6	115.1	112.9	113.5	114.2	114.6	114.9	115.4	115.5	116.0	116.5	117.3	117.6	118.1	–
Entertainment services	121.8	127.2	125.2	126.0	126.5	126.3	126.8	127.2	127.6	128.1	128.9	129.0	129.7	131.3	–
Other goods and services	127.8	136.5	133.6	134.0	134.2	134.5	135.0	136.3	137.2	139.3	139.9	140.3	140.6	143.0	–
Tobacco products	133.7	146.0	142.3	143.0	143.1	143.4	143.8	147.9	148.9	149.2	149.5	149.9	150.2	156.9	–
Personal care	115.0	119.3	117.5	117.7	118.1	118.5	118.8	119.1	119.0	120.3	120.9	121.7	122.3	122.7	–
Toilet goods and personal care appliances	113.9	118.0	116.2	116.5	117.0	117.1	117.4	117.8	117.4	118.8	119.9	120.6	121.5	121.7	–
Personal care services	116.1	120.5	118.9	119.0	119.3	119.9	120.2	120.4	120.7	121.9	122.0	122.7	123.0	123.6	–
Personal and educational expenses	138.2	147.4	144.3	144.6	144.7	145.2	145.8	146.0	147.4	151.1	151.7	152.0	152.3	153.3	–
School books and supplies	137.9	147.1	145.3	145.2	145.4	145.4	145.6	145.6	146.0	150.0	150.8	150.9	151.1	152.0	–
Personal and educational services	138.4	147.7	144.5	144.8	144.9	145.4	146.0	146.3	147.8	151.5	152.0	152.3	152.7	153.7	–
All items	112.5	117.0	114.7	115.1	115.7	116.2	116.7	117.2	117.7	118.5	118.9	119.0	119.2	119.7	–
Commodities	107.3	111.0	108.7	109.3	110.1	110.5	110.7	111.1	111.6	112.5	113.0	113.1	113.0	113.5	–
Food and beverages	113.3	117.9	115.5	115.7	116.3	116.8	117.4	118.5	119.1	119.8	120.0	119.9	120.3	121.7	–
Commodities less food and beverages	103.6	106.8	104.5	105.3	106.3	106.7	106.5	106.6	107.0	108.1	108.7	108.9	108.6	108.4	–
Nondurables less food and beverages	100.8	104.6	101.4	102.7	104.3	104.8	104.3	104.3	104.9	106.6	107.2	107.1	106.3	105.9	–
Apparel commodities	108.8	113.4	108.3	112.4	114.9	114.3	112.6	110.6	110.5	115.8	118.9	118.1	116.0	113.0	–
Nondurables less food, beverages, and apparel	99.2	102.9	100.5	100.4	101.6	102.6	102.8	103.7	104.7	104.7	104.1	104.3	104.1	104.9	–
Durables	106.6	108.9	107.9	108.0	108.1	108.4	108.7	108.8	108.8	109.1	109.7	110.4	110.7	111.0	–
Services	119.4	124.7	122.5	122.8	123.1	123.6	124.5	125.1	125.7	126.3	126.7	126.9	127.2	127.9	–
Rent of shelter (12/84=100)	114.0	119.4	117.5	118.0	118.2	118.5	119.0	119.6	120.3	120.7	121.1	121.4	121.5	121.9	–
Household services less rent of shelter (12/84=100)	104.0	105.9	103.9	103.8	104.4	104.9	107.2	107.4	107.6	108.0	107.2	106.2	106.8	107.5	–
Transportation services	120.8	127.1	124.4	124.5	124.8	125.8	126.6	127.1	127.8	128.4	129.9	130.9	131.2	132.2	–
Medical care services	130.3	139.0	135.8	136.6	137.1	137.7	138.5	139.6	140.3	140.8	141.6	142.2	142.7	144.2	–
Other services	124.7	131.4	129.0	129.5	129.8	130.0	130.5	130.8	131.6	133.6	134.2	134.5	135.0	136.1	–
Special indexes:															
All items less food	112.2	116.7	114.4	115.0	115.5	116.0	116.5	116.8	117.3	118.1	118.6	118.8	118.8	119.2	–
All items less shelter	111.0	115.2	112.8	113.2	113.9	114.4	115.0	115.4	115.9	116.8	117.2	117.3	117.4	118.0	–
All items less homeowners' costs (12/84=100)	106.4	110.4	108.1	108.6	109.2	109.7	110.2	110.7	111.1	111.9	112.2	112.3	112.4	113.0	–
All items less medical care	111.5	115.8	113.6	114.0	114.6	115.0	115.6	116.0	116.6	117.3	117.7	117.8	117.9	118.5	–
Commodities less food	103.9	107.2	104.9	105.7	106.6	107.0	106.9	107.0	107.3	108.4	109.0	109.2	108.9	108.8	–
Nondurables less food	101.4	105.3	102.2	103.4	104.9	105.4	105.0	105.1	105.6	107.2	107.8	107.6	106.9	106.5	–
Nondurables less food and apparel	100.0	103.7	101.4	101.4	102.5	103.4	103.6	104.5	105.3	105.3	104.9	105.1	104.9	105.6	–
Nondurables	107.2	111.5	108.7	109.4	110.5	111.0	111.1	111.6	112.3	113.4	113.8	113.7	113.5	114.0	–
Services less rent of shelter (12/84=100)	110.8	115.6	113.2	113.4	113.9	114.4	115.7	116.1	116.6	117.3	117.6	117.6	118.1	119.0	–
Services less medical care	118.2	123.3	121.1	121.4	121.7	122.2	123.1	123.6	124.3	124.9	125.2	125.3	125.6	126.3	–
Energy	88.0	88.6	86.3	85.8	86.7	88.1	90.3	90.7	91.8	91.3	89.3	88.4	88.1	88.3	–
All items less energy	116.0	121.0	118.7	119.3	119.9	120.2	120.5	121.0	121.5	122.4	123.1	123.4	123.6	124.2	–
All items less food and energy	116.8	121.9	119.6	120.3	120.8	121.1	121.4	121.7	122.2	123.1	124.0	124.3	124.4	124.8	–
Commodities less food and energy	110.8	114.7	112.4	113.5	114.3	114.4	114.3	114.2	114.3	115.8	116.9	117.1	117.0	116.9	–
Energy commodities	80.3	80.9	78.7	77.9	79.7	81.5	81.4	82.1	83.8	82.7	81.2	81.2	80.3	79.9	–
Services less energy	121.2	127.0	124.8	125.2	125.6	126.0	126.5	127.1	127.8	128.4	129.1	129.5	129.8	130.5	–
Purchasing power of the consumer dollar:															
1982-84=$1.00	89.0	85.5	87.2	86.8	86.4	86.1	85.7	85.3	84.9	84.4	84.1	84.0	83.9	83.5	–
1967=$1.00	29.9	28.7	29.3	29.2	29.0	28.9	28.8	28.6	28.5	28.3	28.2	28.2	28.2	28.0	–

– Data not available.

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

(1982-84=100, unless otherwise indicated)

Series	Annual average		1988											1989	
	1987	1988	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
All items	113.6	118.3	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	121.1	-
Commodities	107.7	111.5	109.1	109.8	110.7	111.1	111.1	111.5	111.9	113.0	113.5	113.5	113.5	113.9	-
Food and beverages	113.5	118.2	115.8	116.0	116.7	117.1	117.6	118.8	119.4	120.1	120.3	120.2	120.6	122.0	-
Commodities less food and beverages	104.0	107.3	105.0	105.9	106.9	107.2	107.1	107.0	107.3	108.5	109.2	109.4	109.0	108.9	-
Nondurables less food and beverages	101.1	105.2	101.9	103.4	105.0	105.4	104.9	104.7	105.2	107.1	107.8	107.7	106.9	106.4	-
Apparel commodities	108.9	113.7	108.3	112.7	115.5	114.8	112.9	110.8	110.7	116.2	119.3	118.4	116.3	113.3	-
Nondurables less food, beverages, and apparel	99.5	103.2	101.0	101.0	102.0	103.0	103.2	104.0	104.8	104.9	104.5	104.6	104.5	105.3	-
Durables	108.2	110.4	109.4	109.5	109.7	109.9	110.2	110.3	110.3	110.6	111.1	111.8	112.2	112.5	-
Services	120.2	125.7	123.4	123.8	124.1	124.6	125.5	126.1	126.7	127.3	127.6	127.8	128.1	128.9	-
Rent of shelter (12/82=100)	125.9	132.0	129.8	130.4	130.6	131.0	131.5	132.3	133.1	133.4	133.8	134.1	134.3	134.8	-
Household services less rent of' shelter (12/82=100)	113.1	115.3	113.1	113.6	113.7	114.3	116.6	116.9	117.0	117.4	116.6	115.6	116.2	117.0	-
Transportation services	121.9	128.0	125.2	125.4	125.8	126.7	127.6	128.1	128.8	129.3	130.6	131.6	132.1	133.0	-
Medical care services	130.0	138.3	135.3	136.1	136.6	137.2	137.9	139.0	139.6	140.1	140.8	141.5	141.9	143.5	-
Other services	125.7	132.6	130.2	130.7	131.0	131.1	131.6	131.9	132.8	134.9	135.5	135.7	136.2	137.3	-
Special indexes:															
All items less food	113.6	118.3	116.0	116.6	117.2	117.6	118.1	118.4	118.9	119.7	120.2	120.3	120.4	120.8	-
All items less shelter	111.6	115.9	113.5	114.0	114.7	115.2	115.7	116.1	116.5	117.5	117.9	118.0	118.1	118.7	-
All items less homeowners' costs (12/82=100)	115.1	119.5	117.1	117.7	118.4	118.8	119.3	119.8	120.3	121.1	121.5	121.5	121.6	122.3	-
All items less medical care	112.6	117.0	114.8	115.3	115.9	116.3	116.8	117.2	117.8	118.6	118.9	119.0	119.1	119.7	-
Commodities less food	104.3	107.7	105.4	106.3	107.3	107.6	107.4	107.4	107.7	108.9	109.5	109.7	109.4	109.2	-
Nondurables less food	101.8	105.8	102.7	104.1	105.6	106.0	105.5	105.4	105.9	107.7	108.3	108.2	107.5	107.1	-
Nondurables less food and apparel	100.3	104.0	101.9	101.9	102.9	103.8	104.0	104.8	105.5	105.6	105.2	105.4	105.3	106.0	-
Nondurables	107.5	111.8	109.0	109.8	111.0	111.4	111.4	111.9	112.4	113.7	114.2	114.1	113.9	114.3	-
Services less rent of' shelter (12/82=100)	123.1	128.3	125.8	126.0	126.5	127.1	128.4	128.9	129.4	130.3	130.5	130.6	131.1	132.1	-
Services less medical care	119.1	124.3	122.1	122.4	122.8	123.2	124.1	124.7	125.3	125.9	126.2	126.3	126.6	127.3	-
Energy	88.6	89.3	87.0	86.5	87.3	88.7	91.0	91.4	92.3	91.9	89.9	88.9	88.7	89.0	-
All items less energy	117.2	122.3	120.0	120.6	121.2	121.5	121.8	122.3	122.8	123.8	124.4	124.7	124.8	125.5	-
All items less food and energy	118.2	123.4	121.1	121.9	122.4	122.7	123.0	123.3	123.8	124.7	125.5	125.8	126.0	126.4	-
Commodities less food and energy	111.8	115.8	113.3	114.6	115.5	115.5	115.4	115.2	115.2	116.9	118.0	118.2	118.0	117.9	-
Energy commodities	80.2	80.8	78.8	78.0	79.7	81.4	81.4	81.9	83.4	82.5	81.0	80.9	80.1	79.9	-
Services less energy	122.0	127.9	125.7	126.1	126.5	126.9	127.4	128.0	128.8	129.3	129.9	130.3	130.6	131.4	-
Purchasing power of the consumer dollar:															
1982-84=$1.00	88.0	84.6	86.2	85.8	85.4	85.1	84.7	84.4	84.0	83.5	83.2	83.1	83.0	82.6	-
1967=$1.00	29.4	28.2	28.8	28.7	28.5	28.4	28.3	28.2	28.0	27.9	27.8	27.7	27.7	27.6	-
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:															
All items	112.5	117.0	114.7	115.1	115.7	116.2	116.7	117.2	117.7	118.5	118.9	119.0	119.2	119.7	-
All items (1967=100)	335.0	348.4	341.6	343.0	344.7	346.1	347.6	349.1	350.7	353.0	354.2	354.6	355.0	356.7	-
Food and beverages	113.3	117.9	115.5	115.7	116.3	116.8	117.4	118.5	119.1	119.8	120.0	119.9	120.3	121.7	-
Food	113.3	117.9	115.4	115.6	116.2	116.7	117.3	118.5	119.2	119.9	120.1	119.9	120.4	121.9	-
Food at home	111.7	116.2	113.5	113.5	114.2	114.7	115.5	116.9	117.8	118.7	118.7	118.4	118.8	120.8	-
Cereals and bakery products	114.8	122.2	118.8	118.9	119.9	120.4	120.8	122.1	124.1	124.8	125.7	126.0	126.7	128.0	-
Meats, poultry, fish, and eggs	110.4	114.1	110.5	111.1	111.4	112.0	114.5	116.3	117.1	117.3	116.6	116.1	115.8	118.3	-
Dairy products	105.7	108.1	107.0	106.9	106.9	107.2	107.0	107.3	107.9	108.6	109.7	110.4	111.2	112.4	-
Fruits and vegetables	118.8	127.6	124.0	122.2	125.2	126.4	125.5	128.4	129.6	132.8	131.4	129.1	130.8	134.3	-
Other foods at home	110.4	113.0	111.7	111.9	112.0	112.2	112.3	113.0	113.5	113.9	114.7	114.8	115.1	116.5	-
Sugar and sweets	110.9	113.9	112.1	112.4	112.2	112.4	113.1	113.9	114.8	115.6	115.9	115.7	116.7	117.3	-
Fats and oils	107.9	113.0	109.5	110.3	110.2	111.0	111.4	112.5	114.8	115.8	117.0	117.0	118.3	119.5	-
Nonalcoholic beverages	107.5	107.7	107.9	108.0	107.9	107.7	107.3	107.4	107.2	107.6	108.3	108.4	107.8	109.8	-
Other prepared foods	113.6	117.8	115.8	116.0	116.4	116.8	116.9	118.1	118.5	118.8	119.7	119.9	120.5	121.7	-
Food away from home	116.9	121.6	119.6	120.0	120.6	120.9	121.4	122.0	122.3	122.8	123.2	123.5	124.0	124.6	-
Alcoholic beverages	113.9	118.3	116.6	117.3	117.9	118.0	118.4	118.9	118.9	119.2	119.5	119.5	119.5	119.8	-
Housing	112.8	116.8	115.0	115.4	115.6	116.0	116.9	117.4	117.8	118.2	118.2	118.3	118.5	119.0	-
Shelter	118.8	124.3	122.4	122.9	123.0	123.4	123.9	124.5	125.3	125.6	126.0	126.4	126.5	126.9	-
Renters' costs (12/84=100)	114.6	119.2	117.3	118.4	118.4	118.6	119.3	120.0	120.7	120.2	120.4	120.1	120.0	120.7	-
Rent, residential	122.9	127.5	126.1	126.2	126.3	126.6	126.9	127.5	128.0	128.7	129.0	129.4	129.7	130.1	-
Other renters' costs	128.2	135.2	130.0	136.9	136.1	136.2	138.8	140.8	143.0	136.1	135.1	131.4	129.2	131.8	-
Homeowners' costs (12/84=100)	113.8	119.5	117.6	117.8	118.0	118.4	118.8	119.4	120.2	120.9	121.3	122.0	122.2	122.5	-
Owners' equivalent rent (12/84=100)	113.7	119.5	117.6	117.8	118.0	118.5	118.8	119.5	120.2	120.9	121.4	122.1	122.2	122.5	-
Household insurance (12/84=100)	114.1	118.2	116.7	117.2	117.3	117.3	118.0	118.6	119.0	119.1	119.3	119.2	119.6	119.9	-
Maintenance and repairs	111.3	114.0	113.6	112.8	114.7	113.7	113.9	113.8	114.2	114.4	114.1	114.6	115.2	115.6	-
Maintenance and repair services	114.7	117.7	117.6	116.6	119.8	117.6	117.9	117.6	118.0	117.7	117.0	117.6	117.8	118.3	-
Maintenance and repair commodities	106.0	108.3	107.5	107.1	107.5	107.9	107.9	108.0	108.3	109.1	109.2	109.7	110.6	110.9	-
Fuel and other utilities	102.7	104.1	102.5	102.3	102.5	103.0	105.5	105.6	105.8	106.1	105.1	104.1	104.8	105.7	-
Fuels	97.1	97.7	95.6	95.4	95.4	96.1	100.5	100.5	100.6	100.8	98.3	96.6	97.2	98.4	-
Fuel oil, coal, and bottled gas	77.6	77.9	80.6	80.2	79.9	79.7	78.9	76.7	76.2	75.9	74.6	75.0	76.7	80.3	-
Gas (piped) and electricity	103.6	104.4	101.6	101.4	101.4	102.2	107.5	107.8	108.0	108.2	105.5	103.5	103.9	104.8	-
Other utilities and public services	120.1	122.9	121.8	121.7	122.3	122.5	122.2	122.4	122.5	123.3	124.7	124.6	125.6	126.2	-
Household furnishings and operations	106.7	108.9	107.2	107.8	108.7	108.8	109.1	109.4	109.1	109.6	109.9	110.2	110.2	110.4	-
Housefurnishings	103.1	104.5	103.1	104.1	104.2	104.2	104.6	104.9	104.5	105.1	105.4	105.6	105.4	105.5	-
Housekeeping supplies	111.8	115.1	113.6	113.4	114.3	114.5	115.1	115.5	115.1	115.8	116.1	116.9	117.4	117.9	-
Housekeeping services	110.9	115.0	111.8	111.9	115.6	115.7	115.7	115.9	116.0	116.3	116.3	116.4	116.5	116.9	-
Apparel and upkeep	110.4	114.9	110.0	113.9	116.3	115.7	114.1	112.4	112.2	117.2	120.1	119.5	117.6	114.8	-

See footnotes at end of table.

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

(1982-84=100, unless otherwise indicated)

Area[1]	Pricing schedule[2]	All Urban Consumers							Urban Wage Earners						
		1988					1989		1988					1989	
		Feb.	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.
U.S. city average	M	116.0	116.5	120.2	120.3	120.5	121.1	–	114.7	115.1	118.9	119.0	119.2	119.7	–
Region and area size[3]															
Northeast urban	M	119.2	119.6	124.1	124.4	124.5	125.4	–	118.1	118.4	122.9	123.2	123.3	124.1	–
Size A - More than 1,200,000	M	119.9	120.4	124.9	125.1	125.3	126.1	–	118.0	118.5	122.9	123.1	123.2	124.0	–
Size B - 500,000 to 1,200,000	M	117.0	117.5	122.5	122.9	122.2	123.1	–	116.0	116.4	121.2	121.6	121.0	121.9	–
Size C - 50,000 to 500,000	M	117.2	117.2	121.7	122.7	123.3	124.4	–	119.8	119.8	124.2	125.1	125.7	126.8	–
North Central urban	M	113.7	114.3	118.1	118.1	118.2	118.7	–	111.8	112.3	116.1	116.2	116.3	116.8	–
Size A - More than 1,200,000	M	114.7	115.1	119.1	119.1	119.2	119.8	–	112.1	112.5	116.4	116.5	116.6	117.1	–
Size B - 360,000 to 1,200,000	M	113.5	114.2	118.2	118.0	118.2	118.3	–	111.1	111.8	115.7	115.7	115.8	116.0	–
Size C - 50,000 to 360,000	M	113.4	114.6	117.7	118.4	118.2	118.8	–	112.3	113.4	116.5	117.3	117.1	117.7	–
Size D - Nonmetropolitan (less than 50,0000	M	110.5	111.1	114.2	114.1	114.0	114.5	–	110.2	110.6	113.9	113.9	113.8	114.3	–
South urban	M	114.4	114.8	118.2	118.3	118.5	118.9	–	113.8	114.2	117.7	117.8	118.0	118.3	–
Size A - More than 1,200,000	M	115.2	115.5	118.9	118.9	119.2	119.7	–	114.4	114.7	118.1	118.0	118.4	118.8	–
Size B - 450,000 to 1,200,000	M	115.1	115.8	119.5	119.6	119.7	119.9	–	113.0	113.6	117.5	117.7	117.8	117.9	–
Size C - 50,000 to 450,000	M	113.4	114.0	117.1	117.4	117.6	117.8	–	113.8	114.3	117.7	117.9	118.1	118.4	–
Size D - Nonmetropolitan (less than 50,000)	M	112.7	112.7	116.0	116.3	116.3	116.9	–	113.4	113.4	116.8	117.0	117.0	117.7	–
West urban	M	116.9	117.5	120.7	120.7	120.9	121.7	–	115.6	116.2	119.4	119.4	119.6	120.3	–
Size A - More than 1,250,000	M	118.2	118.9	122.2	122.3	122.5	123.3	–	115.6	116.2	119.6	119.6	119.7	120.5	–
Size B - 330,000 to 1,250,000	M	115.6	115.9	–	–	119.3	–	–	115.7	116.0	–	–	119.4	–	–
Size C - 50,000 to 330,000	M	115.9	116.2	119.4	119.0	119.0	119.8	–	115.3	115.6	118.7	118.4	118.4	119.3	–
Size classes:															
A 12/86	M	105.3	105.7	109.2	109.2	109.4	110.0	–	105.2	105.6	109.1	109.1	109.3	109.9	–
B	M	115.2	115.8	119.7	119.7	119.8	120.1	–	113.8	114.3	118.3	118.4	118.5	118.8	–
C	M	114.6	115.1	118.5	118.9	119.1	119.6	–	114.9	115.4	118.9	119.3	119.4	120.0	–
D	M	113.1	113.5	116.8	117.0	116.8	117.5	–	113.4	113.7	117.1	117.3	117.1	117.8	–
Selected local areas															
Chicago, IL-Northwestern IN	M	116.6	116.9	121.6	121.0	121.3	121.5	–	112.9	113.2	117.8	117.4	117.7	117.9	–
Los Angeles-Long Beach, Anaheim, CA	M	119.7	120.6	124.0	124.1	124.2	124.6	–	116.6	117.5	121.0	120.9	121.1	121.4	–
New York, NY-Northeastern NJ	M	121.1	121.5	126.2	125.9	126.0	127.0	–	119.3	119.7	124.3	124.1	124.1	125.1	–
Philadelphia, PA-NJ	M	119.3	119.6	124.6	125.3	125.6	125.7	–	119.0	119.5	124.4	125.0	125.2	125.5	–
San Francisco-Oakland, CA	M	117.9	119.1	122.3	122.2	122.6	124.0	–	117.0	117.9	121.3	121.1	121.5	122.8	–
Baltimore, MD	1	–	117.7	–	121.2	–	121.3	–	–	117.3	–	120.8	–	120.9	–
Boston, MA	1	–	122.1	–	127.4	–	129.0	–	–	121.8	–	127.4	–	128.9	–
Cleveland, OH	1	–	115.1	–	118.0	–	118.9	–	–	110.2	–	113.0	–	113.8	–
Miami, FL	1	–	115.1	–	118.3	–	120.0	–	–	114.3	–	117.2	–	118.8	–
St. Louis, MO-IL	1	–	114.2	–	118.3	–	118.4	–	–	113.8	–	117.8	–	118.0	–
Washington, DC-MD-VA	1	–	119.2	–	123.2	–	124.3	–	–	118.5	–	122.6	–	123.7	–
Dallas-Ft. Worth, TX	2	114.0	–	117.9	–	117.2	–	–	113.8	–	117.7	–	117.0	–	–
Detroit, MI	2	113.7	–	118.6	–	118.3	–	–	110.9	–	115.6	–	115.7	–	–
Houston, TX	2	108.0	–	111.1	–	111.3	–	–	108.1	–	111.4	–	111.4	–	–
Pittsburgh, PA	2	113.3	–	116.3	–	116.7	–	–	108.9	–	111.7	–	112.2	–	–

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

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

[3] Regions are defined as the four Census regions.

– Data not available.

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

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

(1982-84=100)

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

33. Producer Price Indexes, by stage of processing

(1982=100)

Grouping	Annual average		1988										1989	
	1987	1988	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Finished goods	105.4	108.0	106.3	107.0	107.5	107.7	108.6	108.7	108.6	109.3	109.7	110.0	111.0	–
Finished consumer goods	103.6	106.2	104.4	105.1	105.7	105.9	107.0	107.1	107.0	107.5	107.9	108.2	109.3	–
Finished consumer foods	109.5	112.6	110.1	110.3	111.2	112.3	113.6	113.6	115.1	114.6	114.9	115.1	116.5	–
Finished consumer goods excluding foods	100.7	103.1	101.5	102.6	103.0	102.8	103.8	103.9	103.0	104.0	104.5	104.8	105.8	–
Nondurable goods less food	94.9	97.3	95.6	97.0	97.4	97.1	98.3	98.4	97.6	97.7	98.4	98.8	99.9	–
Durable goods	111.5	113.7	112.6	112.8	113.1	113.2	113.6	113.8	112.8	115.8	115.8	116.0	116.6	–
Capital equipment	111.7	114.3	113.2	113.6	113.8	113.9	114.2	114.5	114.3	115.8	116.0	116.3	117.0	–
Intermediate materials, supplies, and components	101.5	107.1	104.7	105.6	106.3	107.4	108.2	108.4	108.7	108.6	109.0	109.5	110.5	–
Materials and components for manufacturing	105.3	113.2	110.5	111.6	112.3	112.9	114.0	114.3	114.9	115.5	116.2	116.8	117.8	–
Materials for food manufacturing	100.8	105.9	101.6	102.6	104.0	106.9	109.9	108.9	109.5	108.2	107.4	108.3	109.9	–
Materials for nondurable manufacturing	102.2	112.9	109.6	110.9	111.7	112.2	113.8	114.5	115.2	116.2	116.8	117.5	118.9	–
Materials for durable manufacturing	106.2	118.8	114.7	116.8	117.7	118.5	119.3	119.7	120.3	121.7	123.5	124.4	125.3	–
Components for manufacturing	108.8	112.3	111.1	111.5	111.9	112.1	112.4	112.8	113.2	113.5	113.8	114.1	114.9	–
Materials and components for construction	109.8	116.1	114.4	115.0	115.4	115.8	116.5	116.7	117.1	117.7	118.2	118.8	119.3	–
Processed fuels and lubricants	73.3	71.3	69.6	70.5	71.5	73.9	73.6	73.5	72.6	69.7	69.5	70.3	71.5	–
Containers	114.5	120.1	117.4	118.4	119.5	120.0	120.5	121.3	122.3	122.5	122.7	122.7	123.0	–
Supplies	107.7	113.7	111.1	111.7	112.3	113.8	115.2	115.1	115.6	116.1	116.2	116.1	117.1	–
Crude materials for further processing	93.7	95.9	94.1	95.6	97.2	97.9	97.3	96.9	96.7	95.8	94.0	97.0	101.0	–
Foodstuffs and feedstuffs	96.2	106.0	99.8	101.1	104.7	108.6	110.1	110.4	112.0	111.4	107.7	109.5	112.4	–
Crude nonfood materials	87.9	85.5	86.4	88.0	88.2	87.0	85.1	84.4	83.0	82.0	81.4	85.1	89.5	–
Special groupings														
Finished goods, excluding foods	104.0	106.5	105.1	105.9	106.2	106.1	106.9	107.1	106.4	107.6	108.0	108.3	109.1	–
Finished energy goods	61.8	59.8	58.2	60.9	61.6	60.3	61.3	61.1	58.8	58.7	59.8	59.3	60.9	–
Finished goods less energy	112.3	115.8	114.1	114.3	114.8	115.3	116.2	116.4	116.7	117.6	117.8	118.2	119.1	–
Finished consumer goods less energy	112.5	116.3	114.4	114.6	115.2	115.8	116.9	117.0	117.5	118.2	118.4	118.9	119.9	–
Finished goods less food and energy	113.3	117.0	115.7	115.9	116.2	116.4	117.1	117.4	117.2	118.7	118.9	119.4	120.0	–
Finished consumer goods less food and energy	114.2	118.5	117.1	117.3	117.6	117.9	118.8	119.1	118.9	120.3	120.5	121.2	121.8	–
Consumer nondurable goods less food and energy	116.3	122.0	120.4	120.6	120.9	121.3	122.7	123.0	123.3	123.7	124.0	125.0	125.8	–
Intermediate materials less foods and feeds	101.7	107.0	104.8	105.7	106.4	107.2	107.8	108.1	108.3	108.3	108.8	109.3	110.2	–
Intermediate foods and feeds	99.2	109.5	102.0	103.4	104.8	111.8	116.6	114.5	115.5	114.7	113.3	112.8	115.2	–
Intermediate energy goods	73.0	71.0	69.3	70.2	71.2	73.5	73.3	73.1	72.3	69.4	69.2	70.0	71.2	–
Intermediate goods less energy	107.3	114.6	112.1	113.0	113.6	114.4	115.5	115.7	116.3	116.9	117.4	117.8	118.7	–
Intermediate materials less foods and energy	107.8	115.2	112.9	113.8	114.4	114.9	115.7	116.1	116.7	117.4	118.0	118.6	119.4	–
Crude energy materials	75.0	67.8	68.7	70.6	71.4	70.0	67.3	66.1	64.7	63.5	62.6	66.7	71.2	–
Crude materials less energy	100.9	112.5	108.1	109.0	111.1	114.0	115.5	116.0	117.1	116.6	114.1	115.6	118.5	–
Crude nonfood materials less energy	115.7	132.7	133.4	133.1	131.3	131.2	132.9	133.9	133.4	133.3	134.0	134.9	137.7	–

– Data not available.

34. Producer Price indexes, by durability of product

(1982=100)

Grouping	Annual average		1988										1989	
	1987	1988	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Total durable goods	109.9	114.7	113.3	113.8	114.1	114.4	114.8	115.1	115.2	116.2	116.7	117.1	117.9	-
Total nondurable goods	97.5	101.1	98.8	99.8	100.8	101.8	102.6	102.6	102.7	102.2	102.1	102.9	104.6	-
Total manufactures	104.4	109.1	107.1	107.9	108.6	109.0	109.8	110.0	110.1	110.5	111.0	111.3	112.3	-
Durable	109.6	114.0	112.6	113.2	113.5	113.7	114.1	114.4	114.5	115.5	116.0	116.3	117.0	-
Nondurable	99.2	104.1	101.7	102.7	103.7	104.3	105.4	105.6	105.6	105.5	106.0	106.3	107.6	-
Total raw or slightly processed goods	94.2	95.9	93.8	94.9	95.6	97.5	97.8	97.2	97.5	96.4	94.7	96.9	99.8	-
Durable	122.6	147.4	146.2	146.1	143.1	144.2	149.3	150.6	149.5	149.9	151.8	153.8	158.4	-
Nondurable	92.9	93.5	91.4	92.5	93.3	95.3	95.3	94.7	95.0	93.9	92.1	94.2	97.0	-

- Data not available.

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

(1982=100)

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

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

(1985=100, unless otherwise indicated)

Category	1974 SITC	1986			1987				1988			
		June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
ALL COMMODITIES (9/83=100)		99.1	97.9	99.0	99.9	102.2	102.8	104.9	106.5	109.5	111.7	111.5
Food	0	97.1	86.0	90.1	87.3	89.9	86.7	94.6	95.2	103.4	118.7	114.2
Meat and meat preparations	01	105.2	111.3	114.5	115.0	121.2	118.8	116.8	122.8	131.0	137.0	130.0
Fish and crustaceans	03	108.6	111.9	115.9	117.1	125.8	131.1	138.5	140.9	145.0	175.9	174.0
Grain and grain preparations	04	89.0	66.3	72.5	68.3	71.0	67.8	77.4	79.8	87.2	108.5	102.0
Vegetables and fruit	05	108.6	114.6	117.5	115.3	112.4	101.1	100.5	97.5	104.3	109.9	110.2
Animal feeds, excluding unmilled cereals	08	114.8	123.9	119.7	117.0	123.8	123.1	145.2	134.6	158.1	161.0	156.9
Miscellaneous food products	09	97.0	98.7	99.9	100.1	100.6	100.3	100.3	102.3	102.8	105.2	104.9
Beverages and tobacco (6/83=100)	1	97.4	97.3	102.6	102.6	105.0	105.5	107.0	109.6	110.6	112.0	111.7
Tobacco and tobacco products	12	97.1	97.0	102.6	102.6	105.0	105.5	107.0	109.8	110.7	112.1	111.8
Crude materials	2	102.2	99.6	102.4	105.7	114.5	118.7	125.2	130.0	139.9	140.8	136.0
Raw hides and skins	21	117.1	108.3	115.9	131.9	149.6	147.7	157.1	171.4	166.8	156.7	137.4
Oilseeds	22	98.1	97.5	95.2	90.4	101.6	95.1	109.6	115.6	143.0	154.7	135.7
Crude rubber	23	99.9	99.6	98.9	99.9	101.0	102.8	105.3	104.5	106.1	109.1	111.0
Wood	24	101.2	102.9	107.9	111.2	116.2	141.7	146.0	150.2	149.6	150.0	148.5
Pulp and waste paper	25	116.4	129.0	129.4	144.2	149.9	153.0	160.4	171.2	179.5	181.7	182.9
Textile fibers	26	98.0	73.0	90.9	97.8	112.4	116.5	111.6	107.5	109.9	100.8	103.6
Crude minerals	27	98.4	98.0	96.8	94.4	94.0	91.6	91.6	92.8	94.2	94.8	94.8
Metal ores and metal scrap	28	98.0	100.4	96.8	98.8	107.0	117.4	125.9	131.8	146.0	145.0	150.3
Fuels and related products	3	76.8	77.4	77.8	81.3	82.8	84.6	82.5	79.3	82.1	79.5	79.3
Coal and coke	32	94.0	93.5	92.0	92.6	88.2	91.0	89.8	90.6	92.0	92.9	93.4
Crude petroleum and petroleum products	33	–	–	–	–	–	–	100.0	90.8	97.2	89.2	88.1
Fats and oils	4	–	–	–	–	–	–	–	–	–	–	–
Animal oils and fats	41	62.3	62.2	79.9	81.1	86.7	86.7	88.7	101.3	101.6	104.3	95.7
Fixed vegetable oils and fats	42	70.6	60.2	64.6	67.3	71.9	71.2	75.4	85.7	93.7	99.1	87.1
Chemicals and related products	5	98.0	95.7	95.2	99.6	106.7	107.7	112.9	117.9	121.6	124.9	125.4
Organic chemicals	51	93.1	91.6	92.4	101.9	118.4	116.1	123.5	135.1	144.6	153.3	150.8
Dyeing, tanning, and coloring materials	53	99.4	101.1	101.4	103.6	104.2	105.5	108.5	109.1	110.1	111.5	113.0
Medicinal and pharmaceutical products (12/85=100)	54	101.4	101.2	100.8	101.0	101.4	102.2	105.4	109.3	106.3	105.9	107.3
Essential oils, polish and cleaning preparations	55	105.2	104.5	104.2	105.5	105.7	107.3	108.4	111.2	113.6	120.2	122.4
Fertilizers, manufactured	56	93.0	85.1	77.4	85.6	91.6	100.9	106.5	110.6	109.8	116.4	119.9
Artificial resins, plastics and cellulose	57	99.5	98.2	99.5	104.8	111.9	116.4	124.8	129.4	137.5	138.2	132.3
Chemical materials and products, n.e.s.	58	101.8	97.6	97.3	97.5	97.7	97.1	98.2	100.3	101.7	104.1	105.1
Intermediate manufactured products	6	102.5	103.8	104.2	106.4	107.9	110.3	111.2	114.4	117.7	119.6	120.8
Leather and furskins	61	103.8	104.2	107.8	123.6	126.9	128.7	118.0	125.7	125.1	128.6	125.0
Rubber manufactures	62	100.1	100.5	100.9	102.0	102.5	103.9	104.1	105.2	108.8	109.4	109.7
Paper and paperboard products	64	104.7	109.1	110.8	114.7	117.0	120.1	122.4	126.2	129.0	130.2	131.2
Textiles	65	102.9	101.9	101.8	103.3	103.7	104.1	105.2	106.5	107.9	108.6	112.7
Non-metallic mineral manufactures (9/85=100)	66	102.4	104.7	108.0	106.8	108.7	110.4	111.3	113.4	114.1	115.6	117.0
Iron and steel	67	100.2	102.3	101.9	102.9	102.9	100.7	102.9	106.1	110.8	111.4	112.1
Nonferrous metals	68	103.1	105.3	102.6	106.6	113.0	123.0	124.4	134.0	143.5	149.1	150.4
Metal manufactures, n.e.s.	69	100.8	100.8	100.8	101.5	101.3	102.3	103.4	104.5	107.6	109.9	110.9
Machinery and transport equipment, excluding military and commercial aircraft	7	100.8	101.0	101.6	101.7	101.8	102.1	102.4	103.2	104.0	104.5	105.5
Power generating machinery and equipment	71	102.4	102.5	103.7	104.6	103.7	104.8	105.2	107.0	108.4	108.5	109.3
Machinery specialized for particular industries	72	100.3	100.4	100.6	100.0	100.1	100.5	100.9	102.1	103.6	104.7	106.0
Metalworking machinery	73	102.0	103.0	104.2	105.8	106.7	107.8	108.2	109.3	110.8	111.0	114.5
General industrial machines and parts, n.e.s.	74	101.6	102.5	103.3	104.2	104.5	104.6	105.4	106.7	108.1	109.3	110.4
Office machines and automatic data processing equipment	75	99.0	98.8	98.2	96.0	96.1	95.7	95.5	95.8	95.7	96.8	96.3
Telecommunications, sound recording and reproducing equipment	76	98.9	99.7	101.3	101.9	101.4	101.4	101.9	102.8	104.6	104.1	105.1
Electrical machinery and equipment	77	99.2	99.7	100.3	101.7	102.1	102.5	101.8	103.1	103.4	103.2	103.6
Road vehicles and parts	78	101.7	101.9	103.3	103.1	103.5	103.8	104.6	104.5	104.9	105.4	107.1
Other transport equipment, excluding military and commercial aviation	79	103.1	102.8	103.5	104.5	105.5	105.8	106.6	107.4	109.6	109.7	111.8
Miscellaneous manufactured articles	8	103.5	103.4	103.8	104.6	105.2	105.4	105.6	106.9	108.1	108.9	110.5
Furniture and parts	82	–	–	–	–	–	–	–	–	–	–	–
Professional, scientific, and controlling instruments and apparatus	87	103.1	103.0	103.5	104.4	105.5	106.3	107.1	110.0	111.1	112.5	114.0
Photographic apparatus and supplies, optical goods, watches and clocks	88	102.6	102.4	102.1	102.7	102.5	99.0	97.9	97.6	100.1	99.4	99.9
Miscellaneous manufactured articles, n.e.s.	89	–	–	–	–	–	–	–	–	–	–	–

– Data not available.

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

(1985=100, unless otherwise indicated)

Category	1974 SITC	1986	1987				1988			
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
ALL COMMODITIES (9/82=100)		102.3	106.5	110.0	110.9	112.5	113.8	116.8	115.3	117.1
All commodities, excluding fuels		110.9	113.7	116.5	117.5	120.8	123.7	126.7	126.1	129.1
Food and live animals	0	109.1	105.2	108.3	109.1	112.5	114.1	114.0	112.7	113.9
Meat and meat preparations	10	109.2	105.0	108.0	114.4	113.4	111.5	107.0	111.2	108.7
Dairy products and eggs	02	113.8	119.3	122.3	121.7	125.1	125.6	125.0	122.2	125.8
Fish and crustaceans	03	119.1	121.8	126.0	130.4	131.0	132.5	129.3	125.9	126.6
Bakery goods, pasta products, grain, and grain preparations	04	118.8	122.3	126.2	124.8	130.7	135.8	139.8	136.9	142.8
Fruits and vegetables	05	104.3	101.9	110.1	110.0	116.2	115.4	120.3	123.7	126.4
Sugar, sugar preparations, and honey	06	106.5	107.4	109.6	109.0	107.0	109.6	110.0	112.1	110.7
Coffee, tea, cocoa	07	104.9	89.9	87.0	85.1	90.6	94.3	93.3	87.4	90.1
Beverages and tobacco	1	106.8	107.8	112.8	112.2	113.5	116.0	116.2	115.3	116.0
Beverages	11	109.5	112.1	114.2	114.8	116.2	118.7	120.0	118.9	119.8
Crude materials	2	109.1	115.1	116.2	120.3	122.1	129.2	137.8	135.4	142.9
Crude rubber (including synthetic and reclaimed)	23	98.4	98.4	103.7	110.7	120.1	121.7	151.1	133.3	121.5
Cork and wood	24	104.8	113.5	110.2	117.4	108.8	112.4	111.4	109.7	107.4
Pulp and waste paper	25	116.9	127.0	132.0	133.4	141.0	151.0	160.5	169.6	174.7
Textile fibers	26	102.9	110.9	118.4	128.1	135.2	137.8	145.5	141.9	145.6
Crude fertilizers and crude minerals	27	98.6	98.2	99.6	99.2	99.9	100.4	101.0	97.2	100.2
Metalliferous ores and metal scrap	28	118.3	122.8	124.5	128.7	137.9	151.2	167.6	172.2	205.3
Crude animal and vegetable materials, n.e.s.	29	111.9	113.0	109.0	107.6	118.3	135.8	148.2	122.0	138.1
Fuels and related products	3	55.9	67.4	74.1	74.3	67.2	60.6	63.4	57.7	53.2
Crude petroleum and petroleum products	33	55.0	67.4	74.4	75.2	67.8	60.4	63.6	57.7	52.7
Fats and oils	4	83.4	82.9	87.9	96.4	102.1	106.4	111.2	114.0	112.6
Fixed vegetable oils and fats (9/87=100)	42	-	-	-	100.0	105.7	111.1	116.1	119.2	117.6
Chemicals and related products	5	99.0	102.6	104.8	105.6	110.1	114.2	116.4	119.2	122.0
Organic chemicals	51	87.5	96.1	99.8	98.2	103.0	105.8	107.3	111.3	115.2
Inorganic chemicals	52	94.6	90.5	89.8	89.8	90.1	92.0	92.3	93.0	95.2
Medicinal and pharmaceutical products	54	113.6	120.1	123.4	124.3	126.3	135.3	140.3	145.4	146.5
Essential oils and perfumes	55	106.9	117.6	117.8	119.2	123.0	125.7	126.2	127.5	130.5
Manufactured fertilizers	56	89.9	92.9	94.6	109.3	133.6	133.7	136.3	136.5	139.3
Artificial resins and plastics and cellulose	58	110.3	110.0	114.7	114.4	117.6	121.6	124.3	127.6	129.4
Chemical materials and products, n.e.s.	59	112.7	115.1	117.7	120.6	124.8	138.7	148.5	153.4	156.5
Intermediate manufactured products	6	106.7	108.6	112.5	116.3	119.8	124.4	132.2	132.3	135.5
Leather and furskins	61	107.2	110.9	116.6	117.8	124.4	131.8	137.0	136.6	134.9
Rubber manufactures, n.e.s.	62	101.8	104.3	104.6	103.2	104.6	106.0	107.7	109.1	111.1
Cork and wood manufactures	63	117.4	118.0	124.3	128.3	128.2	133.8	138.2	136.1	134.1
Paper and paperboard products	64	104.9	104.8	104.9	110.3	112.3	117.2	118.3	119.5	119.9
Textiles	65	107.9	110.4	111.8	114.6	118.6	120.0	120.6	119.1	120.1
Nonmetallic mineral manufactures, n.e.s.	66	117.9	120.5	126.7	130.4	133.4	137.4	142.5	139.7	144.2
Iron and steel	67	100.9	102.7	106.6	109.4	114.0	120.0	127.2	129.9	130.2
Nonferrous metals	68	101.5	102.5	112.4	120.9	125.8	132.7	159.7	158.9	171.0
Metal manufactures	69	108.3	112.1	112.7	114.6	117.8	121.1	126.9	127.5	130.9
Machinery and transport equipment	7	114.4	117.5	119.9	119.9	123.1	125.4	127.3	126.7	129.9
Machinery (including SITC 71-77)		-	-	-	-	-	-	-	-	-
Machinery specialized for particular industries	72	123.0	130.4	136.1	134.3	142.1	146.8	149.8	143.7	149.5
Metalworking machinery	73	120.9	126.4	128.1	130.2	135.5	139.9	142.4	139.7	144.2
General industrial machinery and parts, n.e.s.	74	120.9	127.9	130.8	130.1	137.0	140.4	143.7	139.6	144.1
Office machines and automatic data processing equipment	75	108.9	110.0	114.0	114.8	118.3	118.1	119.5	118.7	119.1
Telecommunications, sound recording and reproducing apparatus	76	108.9	110.5	110.3	110.2	112.1	112.8	113.8	113.9	115.8
Electrical machinery and equipment	77	109.8	112.4	115.8	115.1	118.2	122.2	124.2	125.9	129.2
Road vehicles and parts	78	116.1	118.6	120.5	120.6	122.6	125.5	127.6	127.1	130.8
Miscellaneous manufactured articles	8	110.3	114.5	117.8	118.5	121.8	124.2	125.7	124.2	126.4
Plumbing, heating, and lighting fixtures	81	110.8	111.6	117.0	116.2	121.0	123.4	126.9	124.5	125.5
Furniture and parts	82	112.3	114.8	119.8	119.0	124.3	125.4	129.6	128.0	129.2
Travel goods, handbages, and similar goods (6/85=100)	83	87.5	96.1	99.8	98.2	103.0	105.8	107.3	111.3	115.2
Clothing	84	102.6	106.4	109.2	111.9	112.3	115.6	114.9	116.7	117.2
Footwear	85	112.3	114.8	119.8	119.0	124.3	125.4	129.6	128.0	129.2
Professional, scientific, and controlling instruments and apparatus	87	122.5	131.3	135.9	132.7	138.7	140.0	142.5	135.8	141.8
Photographic apparatus and supplies, optical goods, watches, and clocks	88	119.0	123.7	126.0	122.1	127.3	129.2	129.3	125.4	130.5
Miscellaneous manufactured articles, n.e.s.	89	-	-	-	-	-	-	-	-	-

- Data not available.

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

(1985 = 100 unless otherwise indicated)

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

– Data not available.

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

(1982=100)

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

– Data not available.

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

(1985=100)

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

[1] SIC - based classification.

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

(1985=100)

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

[1] SIC - based classification.

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

(1977=100)

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

– Data not available.

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

(1977=100)

Item	1960	1970	1973	1977	1979	1981	1982	1983	1984	1985	1986	1987
Private business												
Productivity:												
Output per hour of all persons	67.3	88.4	95.9	100.0	99.5	100.6	100.3	103.0	105.6	107.9	110.3	111.2
Output per unit of capital services	103.7	102.7	105.6	100.0	99.7	92.3	86.6	88.3	92.7	92.9	93.0	93.7
Multifactor productivity	78.5	93.1	99.2	100.0	99.6	97.6	95.2	97.6	100.9	102.4	103.9	104.7
Output	55.3	80.2	93.0	100.0	107.9	108.9	105.4	109.9	119.2	124.3	128.7	133.4
Inputs:												
Hours of all persons	82.2	90.8	96.9	100.0	108.4	108.2	105.2	106.7	112.9	115.2	116.7	120.0
Capital services	53.3	78.1	88.0	100.0	108.2	117.9	121.8	124.4	128.6	133.8	138.5	142.4
Combined units of labor and capital input	70.5	86.1	93.7	100.0	108.3	111.5	110.7	112.6	118.1	121.4	123.9	127.4
Capital per hour of all persons	64.9	86.1	90.8	100.0	99.8	108.9	115.8	116.6	113.9	116.1	118.7	118.6
Private nonfarm business												
Productivity:												
Output per hour of all persons	70.7	89.2	96.4	100.0	99.2	99.6	99.1	102.5	104.7	106.2	108.3	109.1
Output per unit of capital services	104.9	103.5	106.3	100.0	98.9	91.0	85.1	87.3	91.3	91.0	90.8	91.5
Multifactor productivity	81.2	93.8	99.7	100.0	99.1	96.7	94.1	97.0	99.9	100.7	102.0	102.7
Output	54.4	79.9	92.9	100.0	107.9	108.4	104.8	110.1	119.3	124.0	128.3	133.2
Inputs:												
Hours of all persons	77.0	89.6	96.3	100.0	108.8	108.8	105.7	107.4	114.0	116.8	118.5	122.0
Capital services	51.9	77.2	87.3	100.0	109.1	119.1	123.3	126.1	130.6	136.3	141.3	145.5
Combined units of labor and capital input	67.1	85.2	93.2	100.0	108.9	112.2	111.4	113.5	119.4	123.1	125.8	129.6
Capital per hour of all persons	67.4	86.2	90.7	100.0	100.3	109.4	116.6	117.4	114.6	116.7	119.3	119.2
Manufacturing												
Productivity:												
Output per hour of all persons	62.2	80.8	93.4	100.0	101.4	103.6	105.9	112.0	118.1	123.6	127.7	131.9
Output per unit of capital services	103.0	99.1	112.0	100.0	99.5	89.0	81.6	86.7	95.5	97.3	98.4	102.0
Multifactor productivity	72.0	85.3	98.0	100.0	100.9	99.7	99.2	105.0	112.1	116.4	119.5	123.6
Output	52.5	78.6	96.3	100.0	108.1	104.8	98.4	104.7	117.5	122.0	124.7	130.1
Inputs:												
Hours of all persons	84.4	97.3	103.1	100.0	106.5	101.1	92.9	93.5	99.5	98.7	97.7	98.6
Capital services	51.0	79.3	86.0	100.0	108.6	117.8	120.5	120.8	123.0	125.4	126.8	127.6
Combined units of labor and capital inputs	72.9	92.1	98.3	100.0	107.1	105.1	99.2	99.7	104.8	104.8	104.4	105.3
Capital per hour of all persons	60.4	81.5	83.4	100.0	101.9	116.5	129.8	129.3	123.7	127.1	129.8	129.4

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

(1977=100)

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

– Data not available.

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

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

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

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

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

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures.

46. Annual data: Employment status of the civilian working-age population, approximating U.S. concepts, 10 countries

(Numbers in thousands)

Employment status and country	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Labor force										
United States	104,962	106,940	108,670	110,204	111,550	113,544	115,461	117,834	119,865	121,669
Canada	11,231	11,573	11,904	11,958	12,183	12,399	12,639	12,870	13,121	13,275
Australia	6,519	6,693	6,810	6,910	6,997	7,133	7,272	7,562	7,736	7,949
Japan	55,210	55,740	56,320	56,980	58,110	58,480	58,820	59,410	60,050	60,860
France	22,660	22,800	22,950	23,160	23,140	23,300	23,360	23,450	23,520	–
Germany	26,250	26,520	26,650	26,700	26,650	26,770	26,970	27,110	27,290	27,440
Italy	20,850	21,120	21,320	21,410	21,590	21,670	21,800	22,280	22,340	–
Netherlands	5,100	5,310	5,520	5,570	5,600	5,620	5,710	5,760	5,810	–
Sweden	4,262	4,312	4,327	4,350	4,369	4,385	4,418	4,443	4,480	4,530
United Kingdom	26,350	26,520	26,590	26,740	26,790	27,180	27,370	27,540	27,760	–
Participation rate[1]										
United States	63.7	63.8	63.9	64.0	64.0	64.4	64.8	65.3	65.6	65.9
Canada	63.4	64.1	64.8	64.1	64.4	64.8	65.2	65.7	66.2	66.7
Australia	61.6	62.1	61.9	61.7	61.4	61.5	61.8	63.0	63.0	63.4
Japan	62.7	62.6	62.6	62.7	63.1	62.7	62.3	62.1	61.9	61.9
France	57.5	57.2	57.1	57.1	56.6	56.6	56.3	56.1	55.8	–
Germany	53.3	53.2	52.9	52.6	52.3	52.4	52.6	52.8	53.1	–
Italy	48.0	48.2	48.3	47.7	47.5	47.3	47.2	48.2	48.2	–
Netherlands	49.0	50.2	51.4	51.2	50.9	50.5	50.7	50.5	50.3	–
Sweden	66.6	66.9	66.8	66.8	66.7	66.6	66.9	67.1	67.4	67.7
United Kingdom	62.6	62.5	62.2	62.3	62.1	62.6	62.7	62.7	63.0	–
Employed										
United States	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968
Canada	10,395	10,708	11,006	10,644	10,734	11,000	11,311	11,634	11,955	12,244
Australia	6,111	6,284	6,416	6,415	6,300	6,490	6,670	6,952	7,107	7,373
Japan	54,040	54,600	55,060	55,620	56,550	56,870	57,260	57,740	58,320	59,310
France	21,300	21,330	21,200	21,240	21,170	20,980	20,920	20,960	20,970	–
Germany	25,470	25,750	25,560	25,140	24,750	24,800	24,960	25,220	25,400	25,490
Italy	19,930	20,200	20,280	20,250	20,320	20,390	20,490	20,610	20,590	–
Netherlands	4,830	4,980	5,010	4,980	4,890	4,930	5,110	5,200	5,270	–
Sweden	4,174	4,226	4,219	4,213	4,218	4,249	4,293	4,326	4,396	4,458
United Kingdom	24,940	24,670	23,800	23,710	23,600	24,000	24,310	24,450	24,910	–
Employment-population ratio[2]										
United States	59.9	59.2	59.0	57.8	57.9	59.5	60.1	60.7	61.5	62.3
Canada	58.7	59.3	59.9	57.0	56.7	57.4	58.4	59.4	60.3	61.6
Australia	57.8	58.3	58.4	57.3	55.3	56.0	56.6	57.9	57.9	58.8
Japan	61.4	61.3	61.2	61.2	61.4	61.0	60.6	60.4	60.1	60.4
France	54.0	53.5	52.8	52.3	51.8	51.0	50.4	50.2	49.7	–
Germany	51.7	51.7	50.8	49.6	48.6	48.5	48.7	49.2	49.4	–
Italy	45.9	46.1	45.9	45.2	44.7	44.5	44.4	44.6	44.4	–
Netherlands	46.4	47.0	46.6	45.8	44.5	44.3	45.3	45.6	45.6	–
Sweden	65.3	65.6	65.1	64.7	64.4	64.5	65.0	65.4	66.2	66.7
United Kingdom	59.2	58.1	55.7	55.3	54.7	55.3	55.7	55.7	56.6	–
Unemployed										
United States	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701
Canada	836	865	898	1,314	1,448	1,399	1,328	1,236	1,167	1,031
Australia	408	409	394	495	697	642	602	610	629	575
Japan	1,170	1,140	1,260	1,360	1,560	1,610	1,560	1,670	1,730	1,550
France	1,360	1,470	1,750	1,920	1,970	2,320	2,440	2,490	2,550	–
Germany	780	770	1,090	1,560	1,900	1,970	2,010	1,890	1,890	1,950
Italy	920	920	1,040	1,160	1,270	1,280	1,310	1,680	1,760	–
Netherlands	270	330	510	590	710	690	600	560	540	–
Sweden	88	86	108	137	151	136	125	117	84	72
United Kingdom	1,420	1,850	2,790	3,030	3,190	3,180	3,060	3,090	2,850	–
Unemployment rate										
United States	5.8	7.1	7.6	9.7	9.6	7.5	7.2	7.0	6.2	5.5
Canada	7.4	7.5	7.5	11.0	11.9	11.3	10.5	9.6	8.9	7.8
Australia	6.3	6.1	5.8	7.2	10.0	9.0	8.3	8.1	8.1	7.2
Japan	2.1	2.0	2.2	2.4	2.7	2.8	2.6	2.8	2.9	2.5
France	6.0	6.4	7.6	8.3	8.5	10.0	10.4	10.6	10.8	10.5
Germany	3.0	2.9	4.1	5.8	7.1	7.4	7.5	7.0	6.9	7.1
Italy	4.4	4.4	4.9	5.4	5.9	5.9	6.0	7.5	7.9	7.9
Netherlands	5.3	6.2	9.2	10.6	12.7	12.3	10.5	9.7	9.3	–
Sweden	2.1	2.0	2.5	3.1	–	3.1	2.8	2.6	1.9	1.6
United Kingdom	5.4	7.0	10.5	11.3	11.9	11.7	11.2	11.2	10.3	8.3

[1] Labor force as a percent of the civilian working-age population.
[2] Employment as a percent of the civilian working-age population.
– Data not available.

47. Annual indexes of manufacturing productivity and related measures, 12 countries

(1977=100)

Item and country	1960	1970	1973	1976	1977	1978	1980	1981	1982	1983	1984	1985	1986	1987
Output per hour														
United States	62.2	80.8	93.4	97.1	100.0	101.5	101.4	103.6	105.9	112.0	118.1	123.6	127.7	132.0
Canada	50.7	75.6	90.3	94.8	100.0	101.1	98.2	102.9	98.3	105.4	114.4	117.3	117.7	120.5
Japan	23.2	64.8	83.1	94.3	100.0	108.0	122.7	127.2	135.0	142.3	152.5	161.1	163.8	170.5
Belgium	33.0	60.4	78.8	95.3	100.0	106.1	119.2	127.6	135.2	148.2	154.3	159.0	165.3	170.3
Denmark	37.2	65.6	83.3	98.2	100.0	101.5	112.3	114.2	114.6	120.2	119.6	117.6	113.5	114.9
France	37.4	71.4	83.8	94.4	100.0	104.6	110.6	113.9	122.0	125.1	127.6	131.0	134.9	139.2
Germany	40.3	71.2	84.0	96.4	100.0	103.1	108.6	111.0	112.6	119.2	123.7	128.4	128.4	130.3
Italy	35.4	72.7	90.9	98.9	100.0	103.0	116.9	124.8	129.6	138.6	147.8	151.7	152.9	157.8
Netherlands	32.4	64.3	81.5	95.8	100.0	106.4	113.9	116.9	119.4	127.5	140.5	145.5	144.8	145.5
Norway	54.3	81.3	94.4	100.4	100.0	101.2	107.4	108.0	109.2	117.2	124.1	126.8	125.9	134.9
Sweden	42.3	80.7	94.8	101.7	100.0	102.8	112.7	113.2	116.5	125.5	131.0	136.1	136.0	141.8
United Kingdom	55.9	80.4	95.5	99.1	100.0	101.5	101.9	107.0	113.5	123.2	130.0	134.7	138.3	147.8
Output														
United States	52.5	78.6	96.3	93.1	100.0	106.0	103.2	104.8	98.4	104.7	117.5	122.0	124.7	130.1
Canada	41.3	73.5	93.5	96.5	100.0	104.6	103.6	107.4	93.6	99.6	112.5	118.8	121.9	128.5
Japan	19.2	69.9	91.9	94.8	100.0	106.7	124.1	129.8	137.3	148.2	165.4	177.0	178.0	184.1
Belgium	41.9	78.6	96.4	99.7	100.0	101.4	106.8	105.7	110.1	114.8	117.5	119.9	122.0	123.1
Denmark	49.2	82.0	95.9	99.6	100.0	99.7	110.1	106.6	108.3	115.6	121.0	123.0	123.9	120.5
France	36.5	75.5	90.5	95.6	100.0	102.3	104.6	102.9	104.0	103.8	102.6	101.5	102.1	103.3
Germany	50.0	86.6	96.1	98.0	100.0	101.8	106.6	104.9	102.4	103.6	106.4	110.0	110.8	111.6
Italy	36.4	78.0	90.5	97.9	100.0	101.8	115.4	115.1	113.4	114.3	119.0	121.8	125.8	131.2
Netherlands	44.8	84.4	95.8	99.0	100.0	102.8	106.6	106.7	105.0	107.0	113.3	116.7	118.1	118.7
Norway	54.8	86.5	99.2	102.1	100.0	97.7	99.5	98.6	96.8	97.2	102.7	106.5	106.9	108.3
Sweden	52.6	92.5	100.3	106.1	100.0	97.3	104.0	100.6	100.1	105.2	111.5	115.3	114.7	119.2
United Kingdom	71.2	95.0	104.8	98.2	100.0	100.6	91.7	86.2	86.4	88.9	92.6	95.2	95.4	100.6
Total hours														
United States	84.4	97.3	103.1	95.9	100.0	104.4	101.7	101.1	92.9	93.5	99.5	98.7	97.7	98.6
Canada	81.4	97.2	103.6	101.8	100.0	103.4	105.5	104.3	95.2	94.5	98.3	101.2	103.6	106.6
Japan	82.7	107.9	110.7	100.6	100.0	98.8	101.2	102.0	101.7	104.2	108.5	109.8	108.7	108.0
Belgium	127.1	130.2	122.3	104.6	100.0	95.5	89.6	82.8	81.4	77.5	76.1	75.4	73.8	72.3
Denmark	132.4	125.1	115.2	101.4	100.0	98.3	98.0	93.4	94.5	96.2	101.2	104.6	109.2	104.9
France	97.6	105.7	107.9	101.3	100.0	97.8	94.6	90.3	85.2	83.0	80.4	77.5	75.7	74.2
Germany	123.8	121.7	114.4	101.6	100.0	98.7	98.1	94.6	91.0	86.9	86.1	85.7	86.3	85.7
Italy	102.8	107.4	99.6	99.0	100.0	98.8	98.7	92.2	87.5	82.5	80.5	80.3	82.3	83.2
Netherlands	138.4	131.2	117.6	103.3	100.0	96.6	93.6	91.2	88.0	83.9	80.6	80.2	81.5	81.6
Norway	101.0	106.4	105.1	101.7	100.0	96.5	92.6	91.3	88.6	82.9	82.8	84.0	84.9	80.3
Sweden	124.4	114.6	105.7	104.3	100.0	94.6	92.3	88.9	85.9	83.9	85.1	84.7	84.3	84.0
United Kingdom	127.3	118.1	109.8	99.0	100.0	99.1	90.1	80.6	76.2	72.2	71.2	70.7	69.0	68.0
Compensation per hour														
United States	36.5	57.4	68.8	92.1	100.0	108.2	132.4	145.2	157.5	162.4	168.0	176.4	183.0	186.9
Canada	27.5	47.9	60.0	90.3	100.0	107.6	131.3	151.1	167.0	177.2	185.6	194.4	203.5	214.0
Japan	8.9	33.9	55.1	90.7	100.0	106.6	120.7	129.8	136.6	140.7	144.9	151.4	158.8	161.1
Belgium	13.8	34.9	53.5	89.5	100.0	107.8	130.3	144.5	150.7	159.8	173.1	183.6	190.8	194.5
Denmark	12.6	36.3	56.1	90.4	100.0	110.2	135.9	149.7	162.9	174.2	184.1	196.2	202.7	226.3
France	15.0	36.3	51.9	87.8	100.0	113.0	148.5	172.0	204.0	225.1	245.0	265.4	277.2	285.7
Germany	18.8	48.0	67.5	91.2	100.0	107.8	125.6	134.5	141.0	148.3	155.5	164.6	171.7	178.6
Italy	8.4	26.1	43.7	84.2	100.0	114.5	160.2	198.4	238.3	282.9	316.5	348.0	359.4	380.5
Netherlands	12.5	39.0	60.5	91.9	100.0	108.4	123.6	129.1	137.5	144.0	150.0	157.4	162.2	166.5
Norway	15.8	37.9	54.5	88.8	100.0	110.0	128.0	142.8	156.0	173.5	188.3	204.3	224.2	262.6
Sweden	14.7	38.5	54.2	91.5	100.0	111.4	133.6	148.1	158.9	173.3	189.7	212.4	228.7	244.8
United Kingdom	15.2	31.4	47.9	88.4	100.0	116.7	168.6	193.4	211.7	226.6	242.3	258.8	277.9	297.6
Unit labor costs: National currency basis														
United States	58.7	71.0	73.7	94.9	100.0	106.6	130.6	140.1	148.7	145.0	142.2	142.7	143.3	141.7
Canada	54.2	63.4	66.5	95.3	100.0	106.5	133.7	146.7	170.0	168.1	162.3	165.7	172.8	177.5
Japan	38.4	52.3	66.4	96.2	100.0	98.7	98.4	102.0	101.2	98.9	95.0	94.0	97.0	94.5
Belgium	41.7	57.8	67.9	93.9	100.0	101.6	109.3	113.2	111.5	107.8	112.2	115.5	115.5	114.2
Denmark	33.8	55.4	67.4	92.1	100.0	108.6	121.0	131.1	142.2	144.9	153.9	166.8	178.7	197.0
France	40.2	50.8	62.0	93.0	100.0	108.0	134.3	151.0	167.2	179.9	192.0	202.7	205.4	205.2
Germany	46.6	67.4	80.3	94.6	100.0	104.5	115.7	121.2	125.2	124.4	125.8	128.3	133.7	137.1
Italy	23.7	36.0	48.1	85.1	100.0	111.2	137.0	158.9	184.0	204.1	214.1	229.4	235.1	241.2
Netherlands	38.5	60.7	74.3	96.0	100.0	101.8	108.5	110.4	115.2	113.0	106.8	108.1	112.0	114.4
Norway	29.2	46.6	57.8	88.5	100.0	108.7	119.1	132.2	142.9	148.0	151.8	161.1	178.1	194.7
Sweden	34.8	47.7	57.2	90.0	100.0	108.4	118.6	130.9	136.3	138.1	144.8	156.1	168.2	172.6
United Kingdom	27.2	39.1	50.2	89.2	100.0	115.0	165.5	180.7	186.5	184.0	186.4	192.1	200.9	201.3
Unit labor costs: U.S. dollar basis														
United States	58.7	71.0	73.7	94.9	100.0	106.6	130.6	140.1	148.7	145.0	142.2	142.7	143.3	141.7
Canada	59.4	64.5	70.6	102.7	100.0	99.3	121.5	130.0	146.3	144.9	133.2	128.9	132.1	142.3
Japan	28.5	39.1	65.6	86.9	100.0	126.8	116.8	123.8	108.8	111.5	107.2	105.6	154.2	175.0
Belgium	30.0	41.7	62.7	87.2	100.0	115.8	134.2	109.6	87.2	75.6	69.6	69.7	92.6	109.6
Denmark	29.5	44.4	67.2	91.5	100.0	118.4	129.0	110.3	102.3	95.1	89.3	94.5	132.5	172.7
France	40.3	45.2	68.6	95.8	100.0	117.9	156.4	136.4	124.9	116.1	108.1	111.0	145.8	167.8
Germany	25.9	42.9	70.4	87.3	100.0	121.0	147.9	124.9	119.7	113.1	102.6	101.2	143.0	177.0
Italy	33.7	50.6	73.1	90.5	100.0	115.6	141.4	123.2	119.9	118.6	107.6	106.1	139.2	164.2
Netherlands	25.1	41.2	65.6	89.1	100.0	115.7	134.1	108.9	105.8	97.1	81.6	80.0	112.2	138.6
Norway	21.8	34.7	53.5	86.4	100.0	110.4	128.4	122.5	117.8	107.9	99.0	99.8	128.1	153.7
Sweden	30.1	41.1	58.7	92.3	100.0	107.2	125.3	115.4	96.9	80.4	78.2	81.1	105.4	121.5
United Kingdom	43.7	53.7	70.5	92.2	100.0	126.4	220.6	209.6	186.9	159.8	142.8	142.9	169.0	189.2

48. Occupational injury and illness incidence rates by industry, United States

Industry and type of case[1]	Incidence rates per 100 full-time workers[2]								
	1979	1980	1981	1982	1983	1984	1985	1986	1987
PRIVATE SECTOR[3]									
Total cases	9.5	8.7	8.3	7.7	7.6	8.0	7.9	7.9	8.3
Lost workday cases	4.3	4.0	3.8	3.5	3.4	3.7	3.6	3.6	3.8
Lost workdays	67.7	65.2	61.7	58.7	58.5	63.4	64.9	65.8	69.9
Agriculture, forestry, and fishing[3]									
Total cases	11.7	11.9	12.3	11.8	11.9	12.0	11.4	11.2	11.2
Lost workday cases	5.7	5.8	5.9	5.9	6.1	6.1	5.7	5.6	5.7
Lost workdays	83.7	82.7	82.8	86.0	90.8	90.7	91.3	93.6	94.1
Mining									
Total cases	11.4	11.2	11.6	10.5	8.4	9.7	8.4	7.4	8.5
Lost workday cases	6.8	6.5	6.2	5.4	4.5	5.3	4.8	4.1	4.9
Lost workdays	150.5	163.6	146.4	137.3	125.1	160.2	145.3	125.9	144.0
Construction									
Total cases	16.2	15.7	15.1	14.6	14.8	15.5	15.2	15.2	14.7
Lost workday cases	6.8	6.5	6.3	6.0	6.3	6.9	6.8	6.9	6.8
Lost workdays	120.4	117.0	113.1	115.7	118.2	128.1	128.9	134.5	135.8
General building contractors:									
Total cases	16.3	15.5	15.1	14.1	14.4	15.4	15.2	14.9	14.2
Lost workday cases	6.8	6.5	6.1	5.9	6.2	6.9	6.8	6.6	6.5
Lost workdays	111.2	113.0	107.1	112.0	113.0	121.3	120.4	122.7	134.0
Heavy construction contractors:									
Total cases	16.6	16.3	14.9	15.1	15.4	14.9	14.5	14.7	14.5
Lost workday cases	6.7	6.3	6.0	5.8	6.2	6.4	6.3	6.3	6.4
Lost workdays	123.1	117.6	106.0	113.1	122.4	131.7	127.3	132.9	139.1
Special trade contractors:									
Total cases	16.0	15.5	15.2	14.7	14.8	15.8	15.4	15.6	15.0
Lost workday cases	6.9	6.7	6.6	6.2	6.4	7.1	7.0	7.2	7.1
Lost workdays	124.3	118.9	119.3	118.6	119.0	130.1	133.3	140.4	135.7
Manufacturing									
Total cases	13.3	12.2	11.5	10.2	10.0	10.6	10.4	10.6	11.9
Lost workday cases	5.9	5.4	5.1	4.4	4.3	4.7	4.6	4.7	5.3
Lost workdays	90.2	86.7	82.0	75.0	73.5	77.9	80.2	85.2	95.5
Durable goods									
Lumber and wood products:									
Total cases	20.7	18.6	17.6	16.9	18.3	19.6	18.5	18.9	18.9
Lost workday cases	10.8	9.5	9.0	8.3	9.2	9.9	9.3	9.7	9.6
Lost workdays	175.9	171.8	158.4	153.3	163.5	172.0	171.4	177.2	176.5
Furniture and fixtures:									
Total cases	17.6	16.0	15.1	13.9	14.1	15.3	15.0	15.2	15.4
Lost workday cases	7.1	6.6	6.2	5.5	5.7	6.4	6.3	6.3	6.7
Lost workdays	99.6	97.6	91.9	85.6	83.0	101.5	100.4	103.0	103.6
Stone, clay, and glass products:									
Total cases	16.8	15.0	14.1	13.0	13.1	13.6	13.9	13.6	14.9
Lost workday cases	8.0	7.1	6.9	6.1	6.0	6.6	6.7	6.5	7.1
Lost workdays	133.7	128.1	122.2	112.2	112.0	120.8	127.8	126.0	135.8
Primary metal industries:									
Total cases	17.3	15.2	14.4	12.4	12.4	13.3	12.6	13.6	17.0
Lost workday cases	8.1	7.1	6.7	5.4	5.4	6.1	5.7	6.1	7.4
Lost workdays	134.7	128.3	121.3	101.6	103.4	115.3	113.8	125.5	145.8
Fabricated metal products:									
Total cases	19.9	18.5	17.5	15.3	15.1	16.1	16.3	16.0	17.0
Lost workday cases	8.7	8.0	7.5	6.4	6.1	6.7	6.9	6.8	7.2
Lost workdays	124.2	118.4	109.9	102.5	96.5	104.9	110.1	115.5	121.9
Machinery, except electrical:									
Total cases	14.7	13.7	12.9	10.7	9.8	10.7	10.8	10.7	11.3
Lost workday cases	5.9	5.5	5.1	4.2	3.6	4.1	4.2	4.2	4.4
Lost workdays	83.6	81.3	74.9	66.0	58.1	65.8	69.3	72.0	72.7
Electric and electronic equipment:									
Total cases	8.6	8.0	7.4	6.5	6.3	6.8	6.4	6.4	7.2
Lost workday cases	3.4	3.3	3.1	2.7	2.6	2.8	2.7	2.7	3.1
Lost workdays	51.9	51.8	48.4	42.2	41.4	45.0	45.7	49.8	55.9
Transportation equipment:									
Total cases	11.6	10.6	9.8	9.2	8.4	9.3	9.0	9.6	13.5
Lost workday cases	5.5	4.9	4.6	4.0	3.6	4.2	3.9	4.1	5.7
Lost workdays	85.9	82.4	78.1	72.2	64.5	68.8	71.6	79.1	105.7
Instruments and related products:									
Total cases	7.2	6.8	6.5	5.6	5.2	5.4	5.2	5.3	5.8
Lost workday cases	2.8	2.7	2.7	2.3	2.1	2.2	2.2	2.3	2.4
Lost workdays	40.0	41.8	39.2	37.0	35.6	37.5	37.9	42.2	43.9
Miscellaneous manufacturing industries:									
Total cases	11.7	10.9	10.7	9.9	9.9	10.5	9.7	10.2	10.7
Lost workday cases	4.7	4.4	4.4	4.1	4.0	4.3	4.2	4.3	4.6
Lost workdays	67.7	67.9	68.3	69.9	66.3	70.2	73.2	70.9	81.5

See footnotes at end of table.

48. Continued— Occupational injury and illness incidence rates by industry, United States

Industry and type of case[1]	Incidence rates per 100 full-time workers[2]								
	1979	1980	1981	1982	1983	1984	1985	1986	1987
Nondurable goods									
Food and kindred products:									
Total cases	19.9	18.7	17.8	16.7	16.5	16.7	16.7	16.5	17.7
Lost workday cases	9.5	9.0	8.6	8.0	7.9	8.1	8.1	8.0	8.6
Lost workdays	141.8	136.8	130.7	129.3	131.2	131.6	138.0	137.8	153.7
Tobacco manufacturing:									
Total cases	9.3	8.1	8.2	7.2	6.5	7.7	7.3	6.7	8.6
Lost workday cases	4.2	3.8	3.9	3.2	3.0	3.2	3.0	2.5	2.5
Lost workdays	64.8	45.8	56.8	44.6	42.8	51.7	51.7	45.6	46.4
Textile mill products:									
Total cases	9.7	9.1	8.8	7.6	7.4	8.0	7.5	7.8	9.0
Lost workday cases	3.4	3.3	3.2	2.8	2.8	3.0	3.0	3.1	3.6
Lost workdays	61.3	62.8	59.2	53.8	51.4	54.0	57.4	59.3	65.9
Apparel and other textile products:									
Total cases	6.5	6.4	6.3	6.0	6.4	6.7	6.7	6.7	7.4
Lost workday cases	2.2	2.2	2.2	2.1	2.4	2.5	2.6	2.7	3.1
Lost workdays	34.1	34.9	35.0	36.4	40.6	40.9	44.1	49.4	59.5
Paper and allied products:									
Total cases	13.5	12.7	11.6	10.6	10.0	10.4	10.2	10.5	12.8
Lost workday cases	6.0	5.8	5.4	4.9	4.5	4.7	4.7	4.7	5.8
Lost workdays	108.4	112.3	103.6	99.1	90.3	93.8	94.6	99.5	122.3
Printing and publishing:									
Total cases	7.1	6.9	6.7	6.6	6.6	6.5	6.3	6.5	6.7
Lost workday cases	3.1	3.1	3.0	2.8	2.9	2.9	2.9	2.9	3.1
Lost workdays	45.1	46.5	47.4	45.7	44.6	46.0	49.2	50.8	55.1
Chemicals and allied products:									
Total cases	7.7	6.8	6.6	5.7	5.5	5.3	5.1	6.3	7.0
Lost workday cases	3.5	3.1	3.0	2.5	2.5	2.4	2.3	2.7	3.1
Lost workdays	54.9	50.3	48.1	39.4	42.3	40.8	38.8	49.4	58.8
Petroleum and coal products:									
Total cases	7.7	7.2	6.7	5.3	5.5	5.1	5.1	7.1	7.3
Lost workday cases	3.6	3.5	2.9	2.5	2.4	2.4	2.4	3.2	3.1
Lost workdays	62.0	59.1	51.2	46.4	46.8	53.5	49.9	67.5	65.9
Rubber and miscellaneous plastics products:									
Total cases	17.1	15.5	14.6	12.7	13.0	13.6	13.4	14.0	15.9
Lost workday cases	8.2	7.4	7.2	6.0	6.2	6.4	6.3	6.6	7.6
Lost workdays	127.1	118.6	117.4	100.9	101.4	104.3	107.4	118.2	130.8
Leather and leather products:									
Total cases	11.5	11.7	11.5	9.9	10.0	10.5	10.3	10.5	12.4
Lost workday cases	4.9	5.0	5.1	4.5	4.4	4.7	4.6	4.8	5.8
Lost workdays	76.2	82.7	82.6	86.5	87.3	94.4	88.3	83.4	114.5
Transportation and public utilities									
Total cases	10.0	9.4	9.0	8.5	8.2	8.8	8.6	8.2	8.4
Lost workday cases	5.9	5.5	5.3	4.9	4.7	5.2	5.0	4.8	4.9
Lost workdays	107.0	104.5	100.6	96.7	94.9	105.1	107.1	102.1	108.1
Wholesale and retail trade									
Total cases	8.0	7.4	7.3	7.2	7.2	7.4	7.4	7.7	7.7
Lost workday cases	3.4	3.2	3.1	3.1	3.1	3.3	3.2	3.3	3.4
Lost workdays	49.0	48.7	45.3	45.5	47.8	50.5	50.7	54.0	56.1
Wholesale trade:									
Total cases	8.8	8.2	7.7	7.1	7.0	7.2	7.2	7.2	7.4
Lost workday cases	4.1	3.9	3.6	3.4	3.2	3.5	3.5	3.6	3.7
Lost workdays	59.1	58.2	54.7	52.1	50.6	55.5	59.8	62.5	64.0
Retail trade:									
Total cases	7.7	7.1	7.1	7.2	7.3	7.5	7.5	7.8	7.8
Lost workday cases	3.1	2.9	2.9	2.9	3.0	3.2	3.1	3.2	3.3
Lost workdays	44.7	44.5	41.1	42.6	46.7	48.4	47.0	50.5	52.9
Finance, insurance, and real estate									
Total cases	2.1	2.0	1.9	2.0	2.0	1.9	2.0	2.0	2.0
Lost workday cases	.9	.8	.8	.9	.9	.9	.9	.9	.9
Lost workdays	13.3	12.2	11.6	13.2	12.8	13.6	15.4	17.1	14.3
Services									
Total cases	5.5	5.2	5.0	4.9	5.1	5.2	5.4	5.3	5.5
Lost workday cases	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.5	2.7
Lost workdays	38.1	35.8	35.9	35.8	37.0	41.1	45.4	43.0	45.8

[1] Total cases include fatalities.

[2] The incidence 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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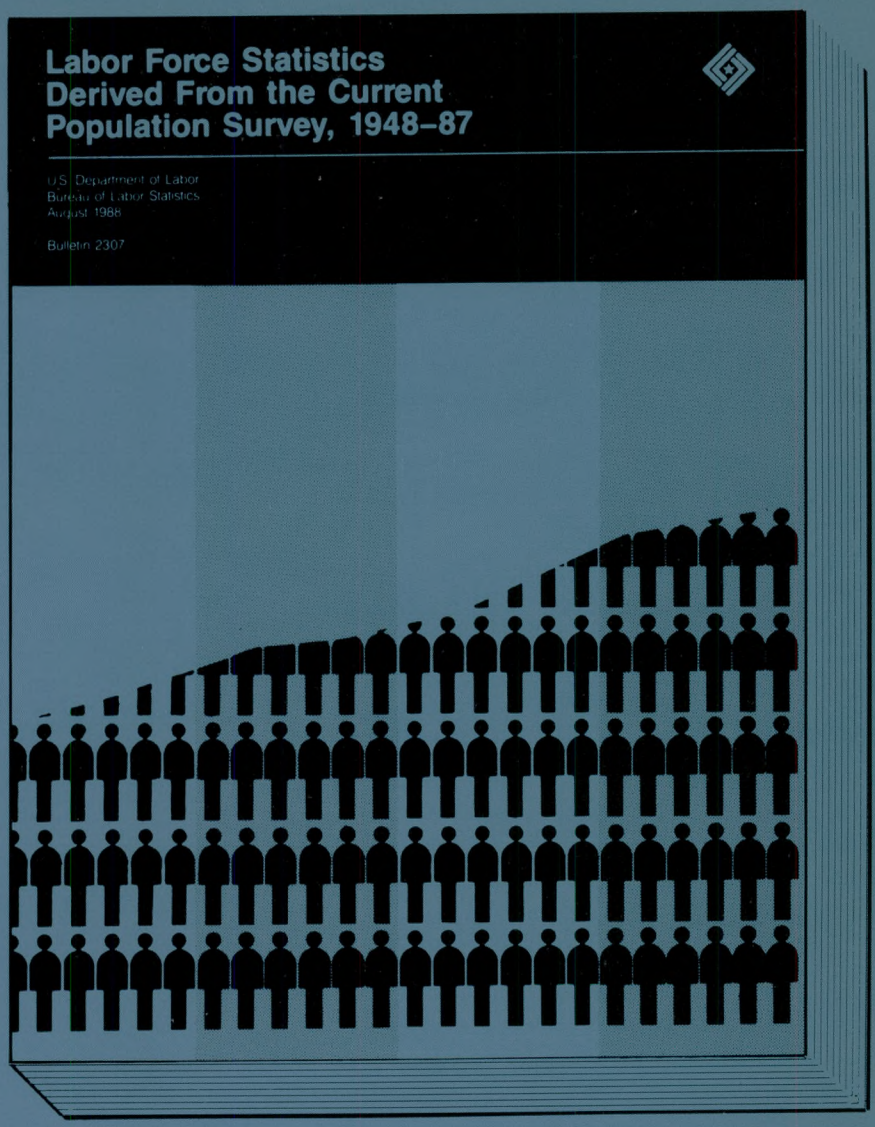

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