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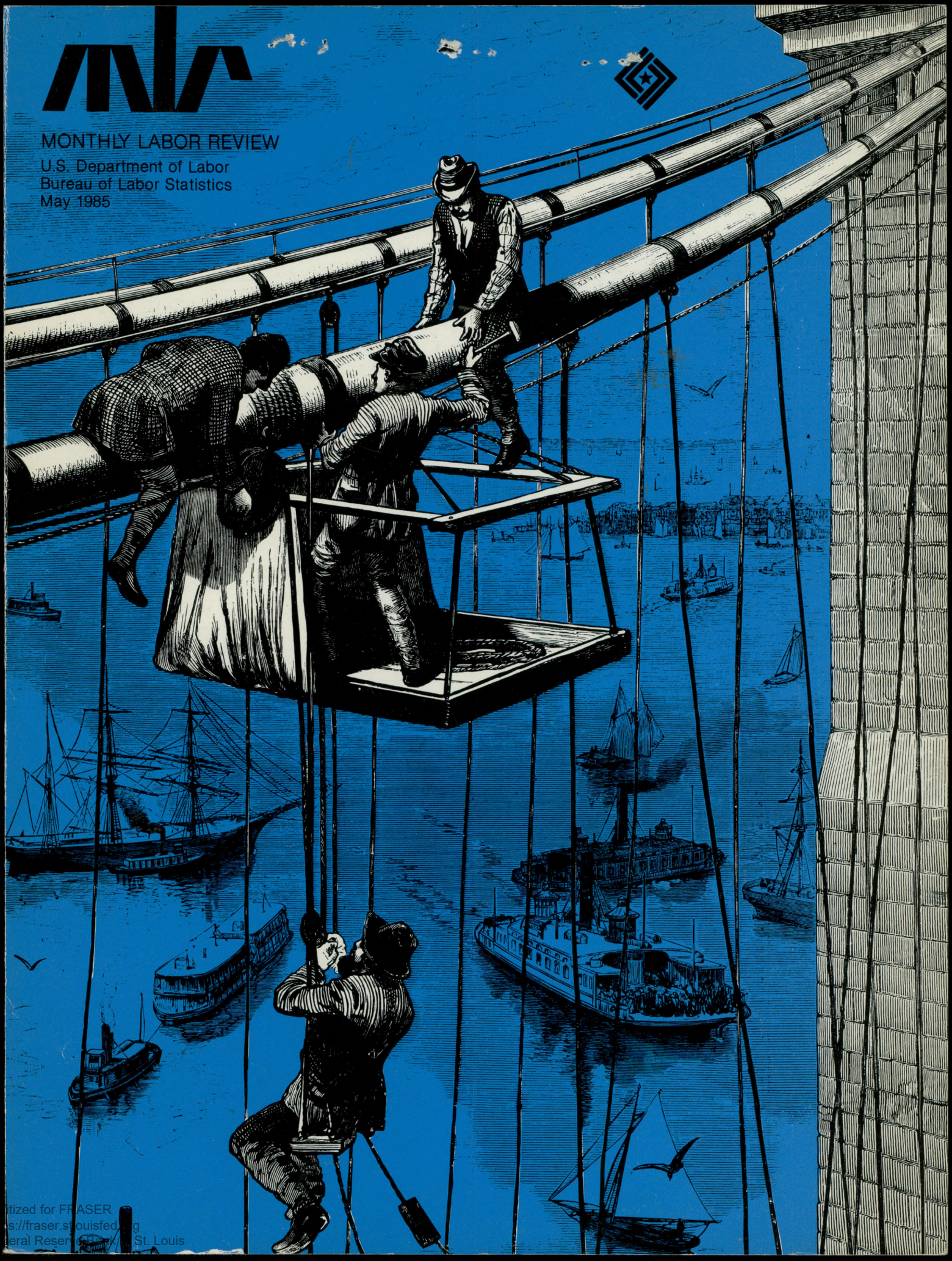

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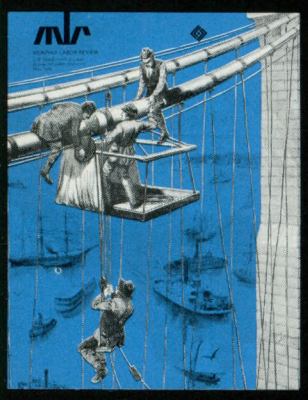

May cover:

An ink drawing from ***Leslie's*** magazine, December 15, 1879, showing workmen attaching the suspenders to the great cables for support of the roadway of New York's East River Bridge.

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MONTHLY LABOR REVIEW

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

Labor Month In Review

KLEIN AWARD. The trustees of the Lawrence R. Klein Award selected two *Monthly Labor Review* authors as winners of the 16th annual Lawrence R. Klein Award. The awards were presented at the annual BLS awards ceremony, April 16. Awards for the best *Monthly Labor Review* articles written in 1984 went to:

- Richard J. McDonald of the Bureau's Office of Research and Evaluation for "The 'underground economy' and BLS statistical data," in the January issue, and to

- H. M. Douty, a former assistant commissioner for wages and industrial relations, for "A century of wage statistics: the BLS contribution," in the November issue.

Klein award trustees also cited for honorable mention Constance Sorrentino, a 1977 award winner, for "Japan's low unemployment: an in-depth analysis," in the March issue, as well as for "the consistently high quality of her international comparison articles," which discuss the labor force, employment, unemployment, productivity, and labor costs in the United States and 10 other countries.

The McDonald article evaluates literature concerning the effects of the underground economy on the Bureau's economic data.

Critics have argued that the existence of an underground economy implies the existence of unreported activity and, as a result, government's statistics may be erroneous because they do not reflect this activity.

McDonald examines the Bureau's series on employment, productivity, and prices. He concludes that while it is *possible* that underground activities may affect the series, the literature "has not made the case—far from it."

The Douty article traces the work of the Bureau in the field of wage statistics from the late 19th century to the present (1984). He also discusses the growth of wage supplements since World War II, wage stabilization programs, and wage laws covering workers. Douty concludes that "without the Bureau's surveys and studies... we would know far less than we do about the money return for work during the past century . . . ."

Purpose of award. The Klein Award was established by Lawrence R. Klein, editor-in-chief of the *Review* from 1946 until he retired in 1968. Klein donated his retirement gift and matched the amount collected to initiate the fund. The purpose of the award is to encourage originality of ideas or method of analysis, adherence to principles of scientific inquiry, and good writing in *Monthly Labor Review* articles. Articles by BLS authors as well as by persons outside BLS are eligible for awards. Winners receive a cash award of $200.

Tax deductible contributions to the Klein Award Fund may be sent to Ben Burdetsky, c/o School of Government and Business Administration, The George Washington University, Washington, D.C. 20052. □

The winners

Since the Lawrence R. Klein Award was established in 1969, 36 authors of 32 articles have been honored. Topics range from explanations of how poverty is measured to high tech employment. A list of winning authors follows:

1970	Mollie Orshansky
1971	Hyman Kaitz
1972	Janice N. Hedges Denis Johnston
1973	Peter Henle T. Aldrich Finegan
1974	Robert W. Fisher Jonathan Grossman
1975	John Early Joseph Mire
1976	Curtis Gilroy Nicholas Ashford
1977	Constance Sorrentino Rita M. Maldonado
1978	William Deuterman H. M. Douty
1979	Morris Newman Fred Best
1980	Paul O. Flaim
1981	Norman Bowers Philip L. Rones Robert L. Bach and Jennifer B. Bach
1982	George Stamas Peter Finn
1983	Paul O. Flaim Norman Bowers Paul S. Adler
1984	Richard W. Riche, Daniel E. Hecker, and John U. Burgan Koji Taira Michele M. Hoyman and Lamont E. Stallworth
1985	Richard J. McDonald H. M. Douty

Changing utilization of fixed capital: an element in long-term growth

A small but measurable part of the long-term rise in multifactor productivity can be attributed to the increased 'workweek' of fixed capital, which largely reflects the spread of multiple shifts

MURRAY F. FOSS

The workweek of labor has gone down since the early part of this century, but what can be said about the "workweek" of fixed capital—that is, the number of hours per week that factories, retail stores, coal mines, and the like were utilized? According to estimates based on data from the Bureau of the Census, the Bureau of Labor Statistics, and other sources, the workweek of fixed capital in the nonfarm business sector increased from the late 1920's to the 1970's. Manufacturing plants in 1976 were in operation approximately 25 percent more hours per week than they were in 1929. In some nonmanufacturing industries—services and construction—average weekly hours of capital fell, but in others they rose—retail and wholesale trade, radio and TV broadcasting, and mining. An important part of the business stock of fixed capital experienced no changes in its weekly hours of operation—electric and gas utilities, telephone companies, and most transportation companies—because it tends to operate around the clock. These findings can help our understanding of the long-run growth of productivity and output, especially in light of what important investigations have told us about long-term growth. For example, it has been found that output has risen much faster than the weighted sum of all inputs or factors of production. This difference is a reflection of the growth of multifactor, or total factor, productivity. According to four major studies, productivity growth was an important part of output growth from 1948 to 1973: 32 percent as estimated by Dale Jorgenson; 54 percent by BLS; 56 percent by Edward Denison; and 62 percent by John Kendrick.[1] The pattern observed for the entire private economy has been apparent also for major industry divisions like manufacturing, for major manufacturing industries, and for earlier periods.

Economists disagree about what lies behind the long-run growth in productivity. They have given many different designations—besides multifactor productivity—to the difference between measured output growth and input growth, such as "technical progress" or the "residual." But whatever the name, economists have been disturbed that they have known so little about so large a part of output growth. Indeed, Moses Abramovitz, referring to this phenomenon almost 30 years ago, declared that the residual could be taken as "a measure of our ignorance about the causes of economic growth."[2] In presenting its new estimates of multifactor productivity in September 1983, BLS felt constrained to use the same characterization.

Measuring inputs

A corollary of the above is that the role of fixed capital in output growth, while important, has been overshadowed by the growth in productivity. To understand this requires an understanding of how contributions of inputs are measured. In studies of output growth, changes in each input or factor of production must be weighted by the importance of the factor in output. Not only is the weight of capital,

Murray F. Foss is a visiting scholar at the American Enterprise Institute. This article is based on the first chapter of his book "Changing Utilization of Fixed Capital: An Element in Long-Term Growth," published by AEI in 1984.

or the share of output attributable to capital, much smaller than the labor share, but it must be divided among four broad kinds of capital—plant, equipment, inventories, and land. As for input changes, economists have typically measured fixed capital inputs by the stock of plant and equipment in place—or by the flow of services from such a stock. Changes in capital input from one point in time to another have been measured by changes in this stock or in the services it renders. An important implication of this kind of measurement of capital is that changes in the workweek of capital have not been reflected in capital input. With capital input so measured, the effect of a longer workweek of capital would be included in the change in productivity as conventionally measured.

Edward Denison has pioneered in his several studies of output growth and of the factors underlying productivity change. He attributed the growth of total factor productivity in the U.S. nonresidential business sector from 1948 to 1973 to three main influences: the shift of resources from farms to nonfarm uses; economies of scale due to the larger size of markets; and the increase in knowledge. Denison divided the last item into two main components: increased managerial experience and skill and increased scientific and technological knowledge. Some of these influences can be measured but others, like the increase in knowledge, cannot be; in Denison's system, as in most others, the increase in knowledge is a residual.

Not all investigators agree with Denison's explanations of productivity change. For example, many investigators have attempted to quantify the contribution of research and development, an influence that all concede to be important but the treatment of which has provoked much controversy. Denison, for example, remains deeply skeptical about attempts to measure R&D contributions to growth. Theodore Schultz, who was among the first to emphasize the role of education in growth, acknowledges that the relationship is poorly understood and not easily comprehended.

Extended use of capital

Under these circumstances, it is helpful if we can establish a close connection between a particular influence and productivity growth. A longer workweek of capital is a measurable influence whose effect on productivity growth is direct.

We find that the workweek of fixed capital in manufacturing expanded during the 1930's and has continued to increase since, mainly as a result of increased shiftwork: the use of multiple shifts has been the dominant mode of factory production in the postwar period. For the nonfarm business sector, the workweek of fixed capital has also increased but much less than for manufacturing. However, it is significant that these overall changes in the weekly hours of fixed capital have been positive, unlike the changes in labor's workweek. Thus, a small but measurable part of the rise in multifactor productivity can be accounted for by a longer workweek of fixed capital. In a growth accounting framework, the contribution of plant and equipment can be thought of as somewhat greater than is apparent.

We should point out that there is a micro theory that underlies the practice of shift work. The number of hours per week a manufacturing plant or other business establishment operates is an aspect of a firm's investment decision. To achieve a given production level a firm, for example, can build a large plant operating a single shift or a smaller plant operating two shifts or more. Both of these aspects—the amount of capital and the scheduled number of weekly hours or shifts—are dimensions relevant to the measurement of fixed capital. Of course, a firm may also vary the number of shifts over the business cycle in response to changes in demand, but cyclical change is not the focus of this study.

Using multiple shifts is a form of economizing on fixed capital. The more capital intensive the production, the greater the incentive to use shifts. However, running late shifts usually entails increases in marginal costs, the most important of which is labor. As is well known, premiums are ordinarily paid for second and third shift work, although other costs may also be incurred, such as lighting and heating. In principle, firms produce at that point at which the savings on capital costs are equal to the added variable costs associated with late shifts. Limited managerial resources are frequently an influence restricting the number of hours of operation of a small business.

Changes in technology in which capital is substituted for labor and changes in relative prices that bring about the same result both have the effect of encouraging shift work. Declines in relative wage differentials for late shift work would have the same effect. Changes in consumer habits also affect hours of operation.

Improving efficiency

Although our focus is on changes in shiftwork, in principle it is possible to distinguish another kind of change in capital hours per week (or per year). That is, even with the shift pattern held constant, management may discover more efficient ways of operating machines longer hours, thereby reducing idle machine time and decreasing the need for additions to the stock of capital. Efficiency increases of this sort may come about in innumerable ways—by changing lot size, by using a superior lubricant on machines that reduces maintenance downtime, by discovering new uses for equipment not anticipated earlier, and the like. For manufacturing, we have been able to relate broad changes in this type of efficiency to changes in the workweek of capital attributable to increased shiftwork.

Nonfarm business

We estimated average weekly hours worked by fixed capital for 10 major industry groups in the private nonfarm business sector (excluding residential business and nonprofit organizations) and for all industries combined from 1929 to

1976.[3] Table 1 presents summary statistics in the form of average rates of change compounded annually. For the nonfarm business sector, average weekly hours of fixed capital increased at a rate of 0.18 percent from 1929 to 1976. Gross stocks of structures and equipment in these same industries rose at a rate of 2.24 percent per year, so that the growth in average weekly capital hours was 8 percent of the growth in the stock. Manufacturing accounted for most of the overall rise. The results in table 1 reflect the use of constant industry weights for fixed capital and are not the result of a changing industry mix.[4]

On the overall basis, there was little difference in the average rate of growth in weekly capital hours between prewar and postwar periods. The rise in hours was about 5 percent of the increase in the gross stock in the postwar years, reaching a peak of 7.7 percent in the decade 1959–69. The prewar picture is different, however, because the Great Depression and World War II held down the level of capital formation and thus capital stocks. From 1929 to 1948, the growth in average weekly hours was about as large as the growth of the stock itself.

Manufacturing. Average weekly hours of capital grew much more rapidly in manufacturing than in nonfarm business from 1929 to 1976: 0.47 percent versus 0.18 percent. In manufacturing, the rise was apparently much greater before 1948 than after: 0.60 percent versus 0.38 percent. It is important to note that the estimates are based on benchmarks for 1929 and 1976 and on interpolations made backward from 1976 to the early postwar period. The estimate of change from 1929 to the early postwar period is thus a residual.

Table 1. Growth rates in fixed capital and in average weekly capital hours, nonfarm business and manufacturing, 1929–76

[Average percent per year]

Period	Capital	Hours	Capital + hours	Hours as percentage of capital[1]
Nonfarm business:				
1929–76	2.24	0.18	2.42	8.0
1929–48	.15	.18	.33	120.0
1948–76	3.68	.19	3.87	5.2
1948–59	3.25	.11	3.36	3.4
1959–69	3.91	.30	4.21	7.7
1969–76	4.02	.17	4.19	4.2
Manufacturing:				
1929–76	2.30	.47	2.77	20.4
1929–48	1.00	.60	1.60	60.0
1948–76	3.19	.38	3.57	11.9
1948–59	3.39	.22	3.61	6.5
1959–69	3.11	.58	3.69	18.6
1969–76	2.99	.36	3.35	12.0
(1969–79	3.44	.36	3.80	10.5)

[1]Column 2 divided by column 1 × 100.

SOURCES: Capital: Gross stocks of plant and equipment in 1972 prices from John C. Musgrave, "Fixed Capital Stocks in the United States: Revised Estimates," *Survey of Current Business*, February 1981, p. 59, table 3, and "Fixed Reproducible Tangible Wealth in the United States, 1979–82," *Survey of Current Business*, August 1983, p. 62, table 3. Totals for manufacturing and nonfarm nonmanufacturing combined were reduced by plant and equipment stocks of nonprofit organizations (unpublished Bureau of Economic Analysis estimates). Data exclude residential capital.

From 1948 to 1976, the average rate of increase in average weekly plant hours constituted 11.9 percent of the average rate of increase in the capital stock. This percentage was least in the 1948–59 period (6.5 percent) and greatest in the 1959–69 period (18.6 percent). Note the difference in growth rates for the stock alone and for the stock plus hours. The latter shows a slight acceleration when growth rates over successive decades are compared (3.61, 3.69, and 3.80).[5]

The rise in average weekly plant hours from 1929 to 1976 would be much greater if not for the fact that a good part of manufacturing fixed capital has always operated on a 24-hour basis throughout the year. (Examples: petroleum refining, industrial chemicals, pig iron, and steel). With the omission of continuous industries as well as those industries that have typically operated only a single shift (apparel, shoes) the rise in weekly capital hours over the 47-year period comes to .60 percent per year as against .47 percent.

The pattern of change in some of the well-known capital ratios is altered somewhat when we take account of changes in average weekly hours of capital. For example, from 1948 to 1976 capital-output ratios in manufacturing declined at an annual rate of 0.3 percent but rose at a rate of 0.1 percent when stocks are adjusted for changes in average weekly hours. Over this period, the capital-labor ratio without adjustment for changing capital hours rose 3.3 percent and with the adjustment, 3.7 percent. (Labor is measured by BLS estimates of hours worked by all persons in manufacturing.)

The longer workweek of capital appears to be a response to the increased capital intensity of production in the postwar years and the desire by management to economize on capital through multiple shift work. This trend was accompanied by—and itself was a cause of—the long-term trend in manufacturing production toward large firms and away from small firms. Owners of small firms put in long hours on average but they apparently value their leisure, because they tend not to use late shifts. Also the trend in wage differentials for night work—since the late 1950's—has fostered shift work because these differentials have not kept pace with straight-time earnings generally.[6] In fact, from the end of World War II to the end of the 1950's a rising trend in wage differentials held down the rise of weekly hours of capital.

Nonmanufacturing. A large part of the nonmanufacturing sector (70 percent) works around the clock—public utilities, petroleum and natural gas, hotels, and hospitals—and thus contributes nothing to the overall change in hours. The other industries show mixed trends. From 1929 to 1976, capital hours increased in coal mining because underground coal mining became more capital intensive and because strip mining, in which capital hours tend to be quite long, accounted for a rising share of coal production. Retail store hours increased as shopping habits changed. The long store hours maintained by chain organizations make it difficult for small proprietors to compete; this is doubtless a signif-

icant factor in the fairly steady decline in the importance of the small retailer. With more of the labor force now employed on evening and night shifts, television and radio stations broadcast longer hours than formerly.

Our general approach to estimating weekly capital hours could not capture the spread of large computers since the 1950's. Computers have taken the place of conventional office equipment like typewriters, calculating machines, addressing machines, and so on. Large computers, moreover, are worked very long hours because of their high cost. Consequently, we set up a synthetic industry consisting of all the office equipment in the economy, including computers. The weight of this industry has increased but remains small. According to our estimates, the fixed capital in this industry experienced a rise of 133 percent (3.1 percent per year) in average weekly hours from 1948 to 1976. However, technological trends may be putting an end to this development and possibly reversing it. The spread of the small computer, which is much lower in cost, has weakened if not eliminated the incentive to economize on capital.

Significance of results

A growth accounting framework is one way in which we can evaluate the long-term rise in average weekly capital hours. In such a framework, the contribution made by a factor to the growth in output depends on how important it is and on its rate of growth (or decline). The importance of a factor in a particular industry or broad sector depends on the income or output it produces, but a host of questions may be raised as to how this should be done. Measuring changes in inputs is no less difficult. Persons interested in a discussion of some of the new techniques for measuring the importance of and change in inputs, especially capital inputs, should refer to BLS Bulletin 2178. For our purposes, a simple approach should suffice, and it is illustrated in table 2.

We used 1962 weights—a midpoint—to weight the changes in inputs from 1948 to 1976. The labor weight reflects the share of employee compensation in gross product originating in manufacturing; after certain adjustments, the balance is allocated to capital. In 1962, labor accounted for 68.6 percent of the weight, with the balance allocated to plant, equipment, inventories, and land. For labor input changes, we used BLS data, but for changes in fixed capital inputs we followed essentially the procedure employed by Edward Denison and John Kendrick: changes in real gross stocks of fixed capital as estimated by the Bureau of Economic Analysis.[7] We also used Bureau of Economic Analysis estimates of manufacturers' real inventories. Average rates of growth compounded annually are shown in table 2.

The last column gives the contribution to output growth and is obtained by multiplying the first column (in decimal form) by the second column. All inputs combined contributed 1.46 percentage points to growth, which is considerably less than the output growth of 3.49 percent from 1948 to 1976. The difference reflects the growth of multifactor, or total factor, productivity.

Table 2. Contribution to the growth of manufacturing output: labor input, capital input, and multifactor productivity, 1948–76

[In percent]

Item	1962 weight	Average annual growth rate	Contribution to output growth[1] (percentage points)
Labor input	68.6	0.58	0.40
Capital input	31.4	3.34	1.06
Plant	9.8	1.66	.16
Equipment	14.1	4.67	.66
Inventories	6.1	3.59	.22
Land	1.4	1.76	.02
Total input[2]	100.0	—	1.46
Manufacturing output	—	3.49	3.49
Multifactor productivity	—	—	[3]2.03
Multifactor productivity based on BLS figures[4]	—	—	(1.97)

[1]Column 1 (× .01) times column 2.

[2]Total input = labor input + total capital input.

[3]Based on indexes of multifactor productivity, BLS Bulletin 2178, table 10, p. 24.

[4]SOURCES: Weights: BLS Bulletin 2178, table 6, p. 20, and table C–29, p. 64. Growth rates reflect basic data from the following: labor—indexes of hours of all persons, BLS Bulletin 2178, p. 24; plant and equipment—gross stocks from Musgrave, "Fixed Capital Stocks in the United States," p. 59; inventories—Bureau of Economic Analysis, *The National Income and Product Accounts of the United States*, 1929–76, pp. 223–26, table 5.11, line 6; land—BLS Bulletin 2178, table C–28, p. 64; output—BLS Bulletin 2178, table 10, p. 24.

Changes in fixed capital inputs were large over this period, but we want to account for the fact that average weekly hours of capital also increased substantially over these years. As table 1 indicates, the growth in average weekly hours of capital was 11.9 percent of the growth in the fixed capital stock. If the contribution of plant and equipment to output growth is increased by 11.9 percent, it is raised by .098 percentage points. This is our estimate of the contribution of longer capital hours to output growth in manufacturing over the 28-year period. As measured in table 2, the effect of longer average weekly hours of capital is included in the 2.03-percentage-point increase in multifactor productivity. The .098-percentage points constitute 5 percent of multifactor productivity growth and 2.8 percent of the 3.49-percentage-point rise in manufacturing output growth.

The importance of rising capital hours has not been constant over the postwar period. Here is a view of how this importance changed in contributing to the annual growth rate of productivity in manufacturing:[8]

	1929-48	*1948-76*	*1948-59*	*1959-69*	*1969-79*
Contribution of productivity change to rise in output	1.67	2.03	1.63	2.09	1.61
Effect of longer workweek of capital	0.07	0.10	0.06	0.20	0.11

The contribution of longer capital hours was greatest from 1959 to 1969, when the contribution was largest not only in absolute terms but also in relative terms—approximately 10 percent. However, when *rates of change* in productivity

growth are considered, the importance of longer capital hours is enhanced. Thus, the rise in the rate of growth of multifactor productivity from 1948–59 to 1959–69 was 0.46 percentage points (2.09 minus 1.63) and of this, longer capital hours accounted for .14 percentage points (.20 minus .06) or 30 percent.

The above tabulation shows also that the contribution of longer capital hours was important in the deceleration of productivity growth in manufacturing from 1959–69 to 1969–79, accounting for almost one-fifth. The effect of a lower rate of capacity utilization[9] is quite important in the productivity change from 1959–69 to 1969–79 in manufacturing. When this is combined with the capital hours effect, we can account for more than two-fifths of the productivity slowdown in manufacturing over this period.

Table 3 is like table 2 except that it covers the entire nonfarm business sector (excluding residential business and nonprofit organizations). The annual contribution of plant and equipment to output growth is 1.08 percentage points (.35 plus .73). This is increased by 5.2 percent, which is the ratio of the average change in fixed capital hours to the average change in the stock of fixed capital, as shown in table 1. This yields .056 percentage points, which is almost 4 percent of the change in multifactor productivity, or about 1.5 percent of the output change.

These capital hours effects—expressed either as percentage points or as proportions of productivity and output growth—are smaller for nonfarm business as a whole than for manufacturing. If they seem small in an absolute sense it should be recalled that the entire change in productivity in the private nonfarm sector from 1948 to 1981 was 1.5 percent per year, as may be seen in table 4. Table 4 illustrates two other points. First, the specific influences that "explain" productivity growth account for only 40 percent of that growth from 1948 to 1981. Second, influences normally thought to be extremely important—like research and development—account for only 13 percent of productivity growth over this period. It is against these magnitudes that we should view the effect of the change in weekly hours of fixed capital.

Table 3. Contribution to the growth of private nonfarm business output: labor input, capital input, and multifactor productivity, 1948–76

Item	1962 weight	Average annual growth rate	Contribution to growth[1] (percentage points)
Labor input	65.0	1.14	0.74
Capital input	35.0	[2]3.74	1.31
Plant	12.7	2.74	.35
Equipment	15.0	4.86	.73
Inventories	3.8	3.75	.14
Land	3.6	2.47	.09
Total input[3]	100.0	—	2.05
Total output[4]	—	3.47	3.47
Multifactor productivity[5]	—	—	1.42

[1]Column 1 (× .01) times column 2.

[2]Obtained implicitly by dividing column 3 by column 1.

[3]Total input = labor input + total capital input.

[4]Total output = real gross product of nonfarm business minus housing.

[5]Multifactor productivity = output growth minus total input growth.

SOURCES: Weights: BLS Bulletin 2178, table 6, p. 20, adjusted by author to exclude rental residential capital (table C–22), p. 52. Growth rates: labor—indexes of hours of all persons in private nonfarm business, BLS Bulletin 2178, p. 23; plant and equipment—BEA gross stocks in constant dollars for nonfarm business (Musgrave, "Fixed Capital Stocks in the United States," p. 59) less capital stock of nonprofit organizations (unpublished BEA data); inventories—BEA, *The National Income and Product Accounts of the United States*, 1929–76, table 5.11, line 3, pp. 223–26; land—indexes, BLS Bulletin 2178, table C–20, p. 62.

Table 4. Sources of multifactor productivity change in private business, 1948–1981

Source	Change (percentage points)	Distribution (in percent)
Shifts of labor off farms	0.1	7
Changes in composition of labor force[1]	.4	27
Research and development	.2	13
Hours worked in lieu of hours paid	−.1	−7
Total of above factors	.6	40
Unexplained	.9	60
Multifactor productivity	1.5	100

[1]Chiefly education.

SOURCE: BLS Bulletin 2178, p. 31.

Whether a growth accounting framework is the best way to view a phenomenon like a longer workweek of fixed capital is open to question. Would the increase in the stock of capital during the postwar years have been as large as it was if not for the possibilities for increased shift work in noncontinuous industries? Over the period analyzed, capital has been substituted for labor for two principal reasons. First, the cost of labor has gone up more than the cost of capital.[10] Second, it is very likely that the trend of technology has been labor-saving and capital-using. The potential for late-shift work has been one of the factors reducing the cost of capital and this in turn has fostered more capital-intensive methods of production than would have otherwise prevailed.[11]

Late-shift work in manufacturing has been adopted on a broad scale in the postwar period in this country. Many factors affect the decision about where to locate a new plant. Our results suggest that at the margin, the potential for economizing on capital must have been a factor of some importance in the location of new plants. The movement of capital to the South—not to mention to foreign countries—probably occurred not only because of lower wage scales in the South and elsewhere but also because of the greater possibilities for using capital more efficiently than was possible on the basis of a single shift. Late-shift potential is probably also a reason business has moved factories out of cities into nonmetropolitan areas since the mid-1960's.

Implications for future

The future of shift work will be governed by the same underlying forces that have always been operative, such as the capital intensity of production and the additional costs

of operating late shifts. These influences are not necessarily constant. The development of large mainframe computers provided a strong incentive to economize on such capital through shift work. However, with the development of minicomputers, that incentive to economize is greatly lessened. A technology in which small computers predominate will entail much less shift work than one in which large computers are the dominant type.

Robots are an innovation very much in the news at present even though their current importance in the Nation's capital stock must be characterized as tiny. Although evening and night wage differentials in this country are rather small in relation to average wages, robots have the potential for increasing shift work because they will greatly reduce the wage differential that must be paid for evening and night work. Indeed, firms that now work a single shift may find it economical to operate on weekends because robots would eliminate much of the time-and-a-half for overtime now required for Saturday and Sunday labor.

Improving our understanding of how fixed capital is utilized should provide a stronger basis for public policy regarding capital formation. The gross saving rate of the United States appears to be low when compared to that of other countries. Many factors are at work here, among them the nature and size of social insurance systems. But to the extent a country utilizes its capital as intensively as the United States, it will have a lower rate of gross saving than a country that does not do so. □

———*FOOTNOTES*———

[1] *Trends in Multifactor Productivity, 1948–81,* Bulletin 2178 (Bureau of Labor Statistics, 1983), pp. 73–80.

[2] Moses Abramovitz, *Resource and Output Trends in the United States Since 1870* (New York, National Bureau of Economic Research, 1956), p. 10.

[3] Statistically, it was a manageable undertaking because of the reasonably good data for manufacturing and a few minor industries and because the public utilities, which operate continuously, were assumed to have experienced no change in their hours for the period covered. The stock of capital in these groups with good or reasonably good data accounted for about 80 percent of the capital in the universe covered. For some industries, such as services and construction, we used proxies based on the workweek of labor, while for others we had to use judgment.

[4] Suppose there were two industries, one of which always operated its capital around the clock, while the other always operated 40 hours a week. If the capital stock of the former industry grew more rapidly than that of the latter, the average workweek of the combined stock would show a rise if weights are permitted to vary.

[5] The estimates of average weekly manufacturing plant hours were extended to 1979 through the use of data on employment by shift as shown in BLS Area Wage Surveys, the basic source for the interpolations in manufacturing. Estimating details may be found in Foss, *Changing Utilization of Fixed Capital* p. 32 ff.

[6] The relative decline in late-shift wage differentials was pointed out by Charles O'Connor in "Late shift employment in manufacturing industries," *Monthly Labor Review*, November 1970, p. 37.

[7] Denison actually uses both net and gross stocks, with the latter weighted by 3 and the former by 1. From 1948 to 1973, movements in the two are fairly similar.

[8] The 1929–48 estimates are by the author, based mainly on John Kendrick's data. Indexes of labor input and total output: John Kendrick, *Productivity Trends in the United States* (Princeton, NJ, Princeton University Press for the National Bureau of Economic Research, 1961) p. 464. Gross capital stocks and inventories: Bureau of Economic Analysis. Weights for 1929–48 are from *Productivity Trends*, p. 453.

[9] See Bureau of Labor Statistics Bulletin 2178 , p. 28.

[10] Many studies have pointed this out. In Bulletin 2178 (p. 21) the BLS points to a 3-percent per annum decline in the price of capital services relative to that of labor in the private business sector from 1948 to 1981.

[11] This point is given considerable stress by Roger Betancourt and Christopher Clague in their recent book, *Capital Utilization: A Theoretical and Empirical Analysis* (New York, Cambridge University Press, 1981).

Cyclical behavior of high tech industries

During the last recession, employment declines in high tech industries were not as deep as those in manufacturing; only the group with high concentrations of skilled workers and large R&D expenditures outperformed the nonfarm sector

JOHN U. BURGAN

High technology industries are perceived to have offered good economic news during recent recessions. However, analysis of trends in these industries reveals that they are not immune from problems which occur in the economy, including the effects of the business cycle.

In the most recent recession, only the most narrowly defined of three groups of high tech industries performed better in terms of employment than the nonfarm business sector. The three groups of high tech industries are:

- Group I comprises industries with a proportion of technology-oriented workers (engineers, life and physical scientists, mathematical specialists, engineering and science technicians, and computer specialists) at least 1.5 times the average for all industries.
- Group II comprises industries with a ratio of R&D expenditures to net sales at least twice the average for all industries.
- Group III comprises manufacturing industries with a proportion of technology-oriented workers equal to or greater than the average for all manufacturing industries, and a ratio of R&D expenditures to sales close to or above the average for all industries. Two nonmanufacturing industries are also included.

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This article discusses employment trends in high tech industries through 1984, updating the November 1983 *Monthly Labor Review* article which reported developments over the 1972–82 period.[1] In addition, it presents high tech employment in 1983 by State and for the District of Columbia, the Virgin Islands, and Puerto Rico.

Reaction to economic swings

Many high tech industries posted remarkable growth during the 1972–84 period. (See table 1.) For example, employment in communications services (not elsewhere classified), which includes industries involved in cablevision service delivery and home TV antenna construction, more than quintupled during this period. Computer and data processing services grew almost as fast (345 percent). Five other industries grew more than 80 percent from 1972 to 1983—surgical, medical, and dental instruments and supplies; optical instruments and lenses; office computing and accounting machines; crude petroleum and natural gas; and engineering and architectural services.

Not all high tech industries posted such remarkable growth rates. Of the 48 high tech industries, 16 had faster employment growth rates than nonagricultural employment, which grew 27.8 percent during the 1972–84 period. Sixteen high tech industries had employment reductions during this period, including radio and TV receiving equipment (−35 percent) and plastics materials and synthetics (−25 percent). Four other industries lost one job in six over these

Table 1. Employment in high technology industries, 1972 and 1984 annual averages

[In thousands]

SIC code	Industry	High tech group[1]	Employment		Percent change
			1972	1984	1972–84
131	Crude petroleum and natural gas	I	139.7	250.8	79.5
162	Heavy construction, except highway	I	495.1	540.6	9.2
281	Industrial inorganic chemicals	I, III	141.2	157.1	11.3
282	Plastic materials and synthetics	I, III	228.7	175.8	−23.1
283	Drugs	I, II, III	159.2	200.7	26.1
284	Soaps, cleaners, and toilet preparations	I, III	122.4	148.1	21.0
285	Paints and allied products	I, III	68.6	61.7	−10.1
286	Industrial organic chemicals	I, III	142.8	163.2	14.3
287	Agricultural chemicals	I, III	56.4	61.1	8.3
289	Miscellaneous chemical products	I, III	90.0	93.5	3.9
291	Petroleum refining	I, III	151.4	150.1	−.9
301	Tires and inner tubes	I	122.1	101.3	−17.0
324	Cement, hydraulic	I	31.9	26.2	−17.9
348	Ordnance and accessories	I, III	81.9	67.5	−17.6
351	Engines and turbines	I, III	114.6	113.5	−1.0
352	Farm and garden machinery	I	135.0	115.3	−14.6
353	Construction, mining, and material handling machinery	I	293.7	276.0	−6.0
354	Metalworking machinery	I	286.0	310.2	8.5
355	Special industry machinery, except metalworking	I, III	176.9	168.5	−4.7
356	General industrial machinery	I	267.5	276.9	3.5
357	Office, computing, and accounting machines	I, II, III	259.6	505.7	94.8
358	Refrigeration and service industry machinery	I	164.4	180.7	9.9
361	Electric transmission and distribution equipment	I, III	128.4	114.1	−11.1
362	Electrical industrial apparatus	I, III	209.3	213.1	1.8
363	Household appliances	I	186.9	153.1	−18.1
364	Electric lighting and wiring equipment	I	204.4	204.0	−.2
365	Radio and TV receiving equipment	I, III	139.5	90.2	−35.3
366	Communication equipment	I, II, III	458.4	614.8	34.1
367	Electronic components and accessories	I, II, III	354.8	684.9	93.0
369	Miscellaneous electrical machinery	I, III	131.7	160.1	21.6
371	Motor vehicles and equipment	I	874.8	867.3	−.9
372	Aircraft and parts	I, II, III	494.9	601.4	21.5
376	Guided missiles and space vehicles	I, II, III	92.5	152.7	65.1
381	Engineering, laboratory, and research instruments	I, III	64.5	80.2	24.3
382	Measuring and controlling instruments	I, III	159.6	251.8	57.8
383	Optical instruments and lenses	I, III	17.6	32.1	82.4
384	Surgical, medical, and dental instruments	I, III	90.5	175.5	93.9
386	Photographic equipment and supplies	I, III	117.1	126.0	7.6
483	Radio and TV broadcasting	I	142.7	229.8	61.0
489	Communication services, not elsewhere classified	I	29.7	152.5	413.5
491	Electric services	I	312.0	438.8	40.6
493	Combination electric, gas, and utility services	I	183.4	199.3	8.7
506	Wholesale trade, electrical goods	I	331.2	467.5	41.2
508	Wholesale trade, machinery, equipment, and supplies	I	868.6	1,400.8	61.3
737	Computer and data processing services	I, III	106.7	475.3	345.5
7391	Research and development laboratories	I, III	110.7	181.3	63.8
891	Engineering, architectural, and surveying services	I	339.3	615.6	81.4
892	Noncommercial educational, scientific and research organizations	I	111.8	109.9	−1.7

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

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

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

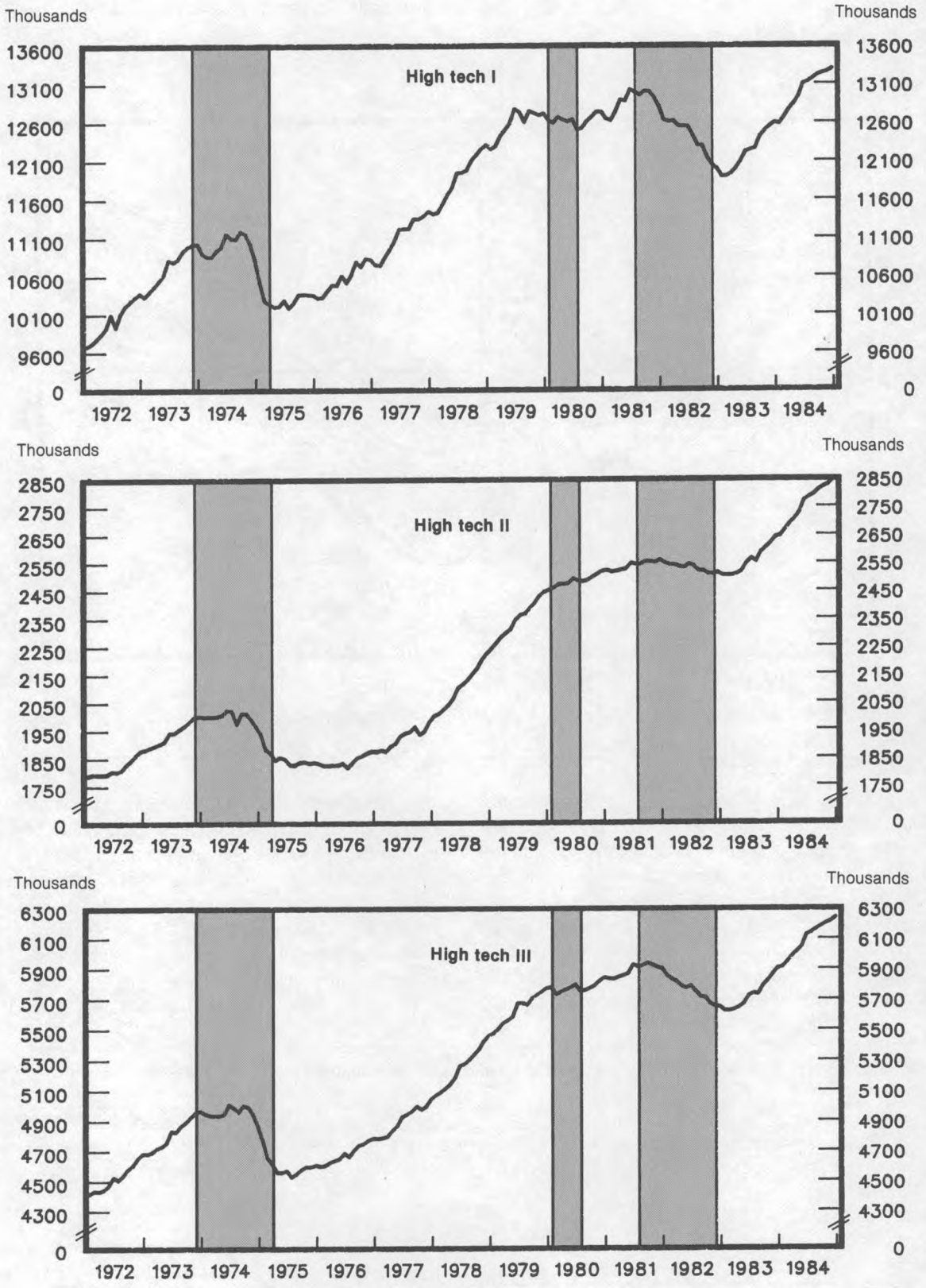
years—tires and inner tubes, hydraulic cement, ordnance and accessories, and household appliances.

Each of the three groups of high tech industries is composed primarily of manufacturing industries. Only in group I do nonmanufacturing industries make up more than 10 percent of total employment of the group. The prevalence of cyclically sensitive manufacturing industries in these groups has important consequences when their performance during recent recessions is evaluated. According to some, high tech employment is relatively secure from the effects of the business cycle because it is characterized by high growth industries. However, as chart 1 demonstrates, high tech industries have been affected, to some extent, by economic downturns. Only the industries in group II have managed to weather a national recession since 1972 without an absolute drop in employment, and that experience occurred during the short 1980 downturn.

Chart 2 provides a closer look at the employment performance of the three high tech industries during the most recent recession and the recovery to the end of 1984. Only group II, with the most restrictive definition, performed better than the total nonagricultural sector during the 1981–82 recession, although all three groups outperformed manufacturing industries. The broader the definition, the more the effects of the recession are seen. Group I—with the broadest definition—had the worst performance of the three groups. This group contains such cyclically sensitive industries as auto manufacturing, heavy construction, and electrical and nonelectrical machinery.

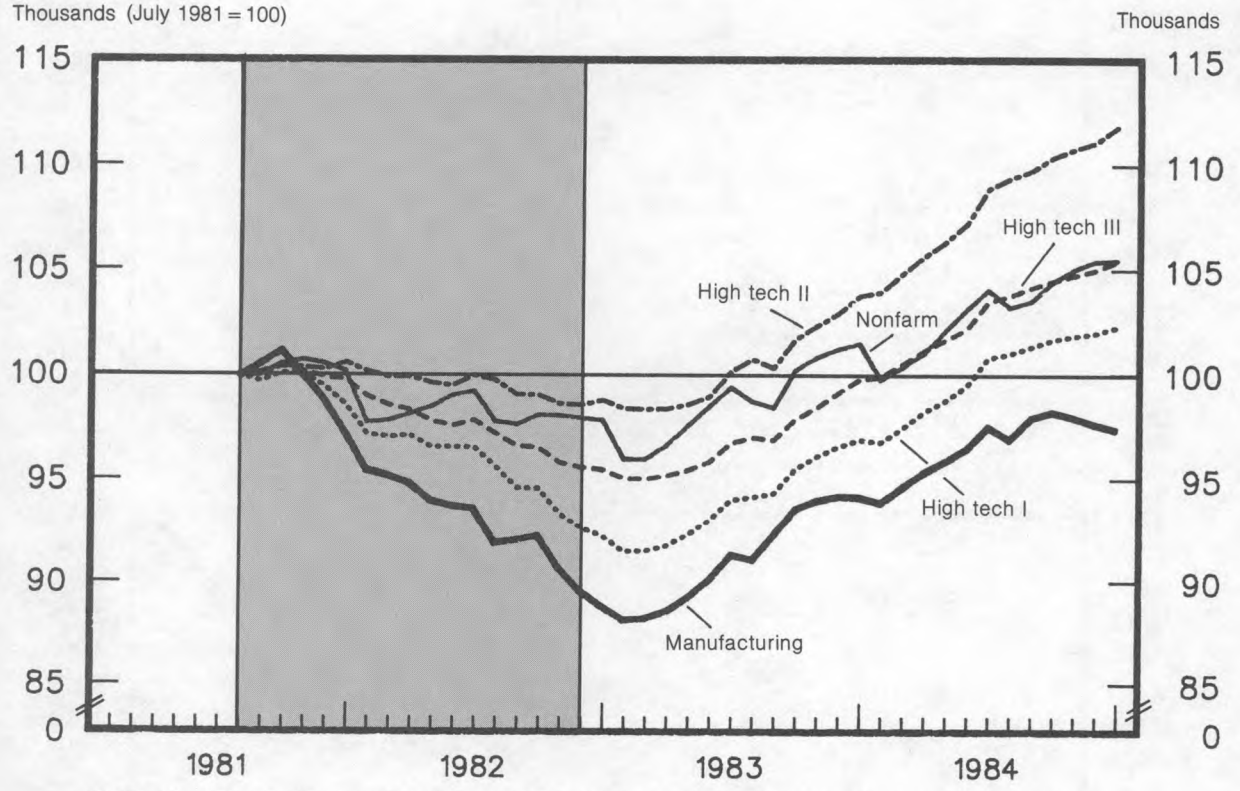
The extent to which the performance of the three high

Chart 1. Employment in high technology industries, 1972–84



NOTE: Shaded area denotes recession, as designated by the National Bureau of Economic Research.

Chart 2. Employment in high technology, manufacturing, and nonfarm industries, 1981–84



NOTE: Shaded area denotes recession, as designated by the National Bureau of Economic Research.

tech groups were affected by the most recent recession is demonstrated in table 2. Note that for each group, employment declines ended at about the same time—January or February 1983, after total nonfarm and manufacturing employment troughs (December 1982). However, the industries in group I experienced employment declines before the other two groups, at about the same time as the total nonfarm prerecession peak in midsummer of 1981. Group I industries were also the last to regain their prerecession employment levels in June of 1984, 19 months after the recession's end. Group II, the most narrowly defined group of high tech industries, shows a different pattern. Employment did not begin to decline until December 1981, and the prerecession employment level was regained in July 1983, 11 months before the industries in group I. Group III displays a recession pattern which lies between groups I and II: its employment downturn began before group II, but after group I; its prerecession peak was regained after group II but be-

Table 2. Employment in high technology, manufacturing, and nonfarm industries during the 1981–82 recession

[Numbers in thousands]

Industry	Prerecession peak		Trough		Date prerecession peak regained	Peak-to-trough employment loss (in percent)
	Number	Date	Number	Date		
High tech I	13,030	June 1981	11,897	January 1983	June 1984	8.7
High tech II	2,561	December 1981	2,504	February 1983	July 1983	2.2
High tech III	5,943	September 1981	5,626	February 1983	February 1984	5.3
Manufacturing	20,341	July 1981	18,041	December 1982	[1]	11.3
Nonfarm	91,460	July 1981	88,646	December 1982	November 1983	3.1

[1]Prerecession peak not yet regained.

NOTE: The high technology industry data have not been seasonally adjusted. Analysis of these series has shown that the seasonal component is quite small compared to the trend cycle. Nonfarm data have been seasonally adjusted. See table 1 for definition of high technology industries.

fore group I. The post-recession performance of all three groups outpaced that of manufacturing industries, which has yet to regain its prerecession peak.

The percentage of total employment lost during the recession (as measured by the percentage difference between prerecession peak employment and trough employment) also varies by definition with group I losing the most (− 8.7 percent); group II the least (− 2.2 percent); and group III again in the middle (− 5.3 percent).

From the experience of the three high tech industry groups in the recent recession and in the two other post-1972 downturns, several observations can be made. First, high tech industries are not isolated from the business cycle. In fact, during the 1981–82 recession, only group II, the most restrictive (and smallest) group, lost a smaller proportion of prerecession employment than did nonfarm industries. The other two high tech groups lost more than nonfarm industries, with the broadest—group I—losing 8.7 percent, compared with nonfarm's 3.1-percent loss. High tech industries, although comprised largely of manufacturing industries, performed better than total manufacturing during this period.

Thus, the degree to which industries defined as high tech were influenced by recent recessions depended, in part, on the definition. Industries included in the narrow definition

Table 3. Employment in high technology industries for all States, the District of Columbia, Puerto Rico, and the Virgin Islands, 1981, 1982, and 1983 annual averages

[In thousands]

State	Group I			State	Group II			State	Group III		
	1981	1982	1983		1981	1982	1983		1981	1982	1983
United States	12,876.5	12,413.0	12,181.8	United States	2,562.5	2,555.6	2,578.7	United States	5,859.9	5,736.5	5,701.0
California	1,534.8	1,522.9	1,537.6	California	592.7	609.3	624.5	California	929.1	940.1	960.3
Texas	1,055.6	1,039.8	968.0	New York	201.8	202.4	202.9	New York	491.7	489.3	473.1
New York	917.5	905.4	882.8	Massachusetts	158.3	158.5	167.2	Texas	375.8	366.8	363.3
Ohio	722.1	660.3	634.9	Texas	160.5	155.0	155.6	New Jersey	316.9	312.6	313.9
Michigan	691.4	631.4	627.4	New Jersey	113.3	115.4	118.6	Massachusetts	300.9	299.9	306.5
Illinois	716.0	652.7	615.6	Florida	102.0	106.3	107.7	Illinois	287.0	269.7	259.7
Pennsylvania	628.6	598.5	571.2	Connecticut	99.0	97.0	97.4	Pennsylvania	285.5	269.4	256.5
New Jersey	511.4	506.5	507.2	Pennsylvania	94.6	90.8	89.8	Ohio	258.0	239.5	232.4
Massachusetts	441.9	435.3	442.8	Illinois	98.4	93.7	86.1	Connecticut	182.4	178.5	175.6
Florida	359.2	362.7	367.9	Washington	90.5	87.6	78.1	Florida	164.0	167.6	170.9
Indiana	367.2	336.5	326.0	Ohio	73.5	70.1	69.6	Indiana	169.1	153.2	148.3
Connecticut	285.7	276.1	270.6	Arizona	68.1	68.3	68.6	Missouri	128.3	125.1	124.7
North Carolina	265.1	262.3	264.8	Montana	61.8	59.4	59.7	North Carolina	120.6	119.5	122.2
Missouri	274.3	263.2	260.6	Indiana	65.9	61.7	57.8	Minnesota	119.5	119.0	120.0
Wisconsin	283.1	260.8	250.6	Minnesota	53.3	54.7	54.7	Michigan	128.4	121.2	119.0
Virginia	222.3	224.3	234.0	North Carolina	44.8	44.9	47.8	Washington	129.3	121.7	114.2
Georgia	212.1	215.5	225.3	Colorado	39.5	42.8	43.8	Tennessee	109.3	106.2	105.0
Minnesota	233.2	224.4	223.3	Maryland	33.7	36.0	37.5	Virginia	97.7	99.8	104.7
Tennessee	233.3	219.3	217.4	Kansas	50.9	40.4	37.2	Wisconsin	110.9	103.3	97.3
Louisiana	219.4	209.2	198.0	Georgia	25.7	27.4	29.5	Maryland	85.9	87.0	91.0
Maryland	191.6	191.0	196.0	New Hampshire	26.6	26.8	28.8	Colorado	81.4	87.1	89.3
Washington	213.6	201.1	188.2	Michigan	30.4	28.8	28.3	Arizona	86.5	86.5	86.5
Colorado	180.5	189.0	186.7	Puerto Rico	25.9	26.3	27.7	Georgia	68.1	70.2	74.0
Oklahoma	192.6	187.3	170.5	Virginia	20.2	21.7	25.5	South Carolina	70.4	70.6	69.2
South Carolina	146.7	144.2	144.9	Alabama	19.9	21.8	25.0	Louisiana	66.4	64.3	60.1
Arizona	150.1	144.3	143.9	Utah	21.1	22.2	23.9	Kansas	76.3	64.3	59.5
Alabama	137.7	134.6	139.5	Oklahoma	23.6	22.3	21.8	Puerto Rico	54.0	51.9	52.2
Kentucky	152.9	139.6	134.7	Tennessee	17.9	16.4	16.3	Alabama	49.2	50.2	52.0
Kansas	153.8	138.1	133.6	Oregon	14.5	15.3	15.9	New Hampshire	44.2	44.1	45.1
Iowa	153.8	134.8	126.8	South Carolina	14.0	14.8	13.9	Kentucky	48.5	43.4	42.9
Arkansas	90.9	85.2	87.6	Vermont	13.2	13.2	12.9	Oklahoma	45.9	44.8	42.4
Oregon	96.4	89.4	86.3	Iowa	14.0	13.5	12.4	Oregon	42.0	40.8	39.5
Mississippi	87.5	83.7	82.7	Wisconsin	12.1	11.6	11.2	Delaware	38.6	38.4	37.8
New Hampshire	70.2	72.6	73.5	Nebraska	11.5	10.6	10.4	Utah	32.2	33.5	35.7
Puerto Rico	73.5	69.8	70.1	Kentucky	10.7	9.4	9.6	Arizona	34.8	32.3	33.3
Utah	65.4	66.9	67.8	Louisiana	9.7	10.1	9.5	Iowa	36.6	34.3	31.7
West Virginia	63.9	61.9	58.1	New Mexico	6.7	7.7	8.0	Mississippi	28.5	26.3	28.5
Delaware	56.7	55.8	56.2	Maine	7.8	7.9	8.0	West Virginia	28.1	27.4	25.4
Nebraska	58.9	55.1	53.4	Rhode Island	7.8	7.8	7.7	New Mexico	19.2	20.6	21.6
New Mexico	49.7	51.8	51.4	Arizona	5.4	5.3	6.4	Nebraska	21.2	20.2	20.4
Rhode Island	38.4	36.3	36.0	Mississippi	5.9	5.6	6.2	Vermont	19.8	19.9	19.7
Idaho	32.7	31.3	31.1	Idaho	4.4	4.7	5.5	Rhode Island	17.9	17.4	16.6
District of Columbia	33.1	31.4	31.1	South Dakota	3.5	3.0	3.2	Idaho	13.9	14.1	14.9
Vermont	32.3	31.2	30.1	Nevada	2.7	2.8	2.6	Maine	13.6	12.9	12.6
Maine	29.8	29.3	28.7	Delaware	1.8	1.3	1.2	Nevada	10.6	11.1	11.4
Nevada	26.2	26.4	27.5	West Virginia	1.3	1.1	1.1	South Dakota	6.1	5.8	6.0
North Dakota	22.8	23.6	24.2	North Dakota	.6	0.6	.5	District of Columbia	3.8	3.4	3.5
Montana	20.0	20.6	19.6	District of Columbia	.3	0.3	.3	Montana	2.4	2.3	2.3
Wyoming	25.4	25.2	19.5	Wyoming	.2	0.2	.3	Wyoming	2.7	2.5	2.2
South Dakota	20.1	18.2	18.4	Montana	.3	0.3	.3	Hawaii	2.3	2.1	2.1
Alaska	14.5	16.4	18.0	Alaska	[1]	[1]	[1]	Virgin Islands	2.0	1.9	1.6
Hawaii	17.1	16.7	16.7	Hawaii	[1]	[1]	[1]	North Dakota	1.4	1.3	1.3
Virgin Islands	3.4	2.9	2.7	Virgin Islands	[1]	[1]	[1]	Alaska	.9	1.1	1.1

[1]Fewer than 100 workers.

NOTE: States are ranked by 1983 high technology employment. See table 1 for definition of high technology industries.

(group II), which have relatively large concentrations of highly skilled workers and relatively large R&D expenditures, were less affected by general economic downturns than industries in groups I and III, which include industries with lesser concentrations of highly skilled workers and lower R&D expenditures.

Employment by State

As noted earlier, high tech industries were not immune from the effects of the 1981–82 recession. Of 53 States and territories, only 11 had over-the-year increases in group I employment between 1981 and 1982, and only 14 had increases under group III definition. Even under group II, the narrowest definition, fewer than half (23) had over-the-year increases.[3] (See table 3.)

Seven States—Colorado, Florida, Georgia, Nevada, New Mexico, Utah, and Virginia—had annual average increases under all three high tech groups during the 1981–82 period. Most of these States are in the Sun Belt, an area that has been characterized by high growth rates in both population and employment in recent years. Four of the States—Colorado, Florida, Georgia, and Utah—were also among the eight States that had over-the-year increases in total nonagricultural employment for that period. Colorado and New Mexico had the highest percentage increases under each of the three high tech definitions.

The general economic improvement in 1983 affected the performance of each high tech group. High tech I employ-

Table 4. High technology employment as a percent of total nonagricultural employment in all States, the District of Columbia, Puerto Rico, and the Virgin Islands, 1983 annual averages

Group I		Group II		Group III	
Delaware	21.1	New Hampshire	7.1	Delaware	14.2
Michigan	19.7	Connecticut	6.8	Connecticut	12.2
Connecticut	18.8	Arizona	6.4	Massachusetts	11.5
New Hampshire	18.0	California	6.3	New Hampshire	11.1
Massachusetts	16.6	Massachusetts	6.3	New Jersey	10.0
Indiana	16.2	Vermont	6.3	California	9.7
New Jersey	16.1	Washington	4.9	Vermont	9.6
Texas	15.7	Puerto Rico	4.3	Arizona	8.1
California	15.5	Utah	4.2	Puerto Rico	8.1
Ohio	15.5	Kansas	4.1	Indiana	7.4
Vermont	14.7	New Jersey	3.8	Washington	7.2
Kansas	14.6	Colorado	3.3	Minnesota	7.0
Oklahoma	14.6	Minnesota	3.2	Colorado	6.7
Colorado	14.1	Missouri	3.1	Kansas	6.5
Illinois	13.7	Indiana	2.9	Missouri	6.5
Missouri	13.6	United States	2.8	New York	6.5
Wisconsin	13.6	Florida	2.8	United States	6.3
Arizona	13.5	New York	2.8	Utah	6.3
United States	13.4	Texas	2.5	Tennessee	6.1
Minnesota	13.0	Maryland	2.2	South Carolina	5.9
Louisiana	12.7	North Carolina	2.0	Texas	5.9
Pennsylvania	12.6	Pennsylvania	2.0	Illinois	5.8
Tennessee	12.6	Rhode Island	2.0	Ohio	5.7
Iowa	12.4	Alabama	1.9	Pennsylvania	5.7
South Carolina	12.3	Illinois	1.9	Maryland	5.4
New York	12.1	Maine	1.9	Wisconsin	5.3
Utah	12.0	Oklahoma	1.9	North Carolina	5.1
Washington	11.9	Idaho	1.7	Virginia	4.8
Arkansas	11.8	Nebraska	1.7	Idaho	4.7
Kentucky	11.7	New Mexico	1.7	Arkansas	4.5
Maryland	11.5	Ohio	1.7	New Mexico	4.5
North Carolina	11.0	Oregon	1.6	Virgin Islands	4.5
Puerto Rico	10.9	South Dakota	1.4	Florida	4.4
New Mexico	10.7	Georgia	1.3	West Virginia	4.4
Virginia	10.7	Iowa	1.2	Rhode Island	4.2
Alabama	10.6	South Carolina	1.2	Oregon	4.1
Mississippi	10.5	Virginia	1.2	Alabama	3.9
West Virginia	10.0	Arkansas	.9	Louisiana	3.8
Georgia	9.9	Michigan	.9	Kentucky	3.7
Idaho	9.8	Tennessee	.9	Michigan	3.7
North Dakota	9.7	Kentucky	.8	Mississippi	3.6
Wyoming	9.6	Mississippi	.8	Oklahoma	3.6
Florida	9.5	Louisiana	.6	Nebraska	3.4
Rhode Island	9.2	Nevada	.6	Georgia	3.3
Oregon	9.0	Wisconsin	.6	Iowa	3.1
Nebraska	8.8	Delaware	.5	Maine	3.0
Alaska	8.5	North Dakota	.2	Nevada	2.8
South Dakota	7.9	West Virginia	.2	South Dakota	2.6
Virgin Islands	7.4	District of Columbia	.1	Wyoming	1.1
Montana	7.3	Montana	.1	Montana	.9
Maine	6.8	Wyoming	.1	District of Columbia	.6
Nevada	6.8	Alaska	(1)	Alaska	.5
District of Columbia	5.2	Hawaii	(1)	Hawaii	.5
Hawaii	4.1	Virgin Islands	(1)	North Dakota	.5

[1]Fewer than 100 workers.

NOTE: See table 1 for definition of high technology industries.

ment increased in 18 States and Puerto Rico, compared with 11 States in 1982; high tech II employment increased in 26 States and Puerto Rico, compared with 23 States in 1982; and high tech III employment increased in 21 States and Puerto Rico, compared with 14 States in 1982. Thirteen States and Puerto Rico had employment increases during 1983 under all three definitions; three of these States—Alabama, Georgia, and Virginia—had increases which placed them in the top six in each high tech group.

A total of 14 States had employment decreases under all three high tech definitions. Many of the declines occurred in Great Lakes States—Michigan, Ohio, Illinois, Indiana, Wisconsin, and neighboring Pennsylvania and Iowa. Two small New England States—Vermont and Rhode Island—also had declines. The largest job losers under each definition were Iowa, Louisiana, and Washington.

The importance of high tech industry to a State's economy is readily seen by observing employment in high tech industries as a percentage of total employment. (See table 4.) Employment in high tech industries is more concentrated than in manufacturing. For each group, there were fewer States with above-average proportions of employment in high tech industries as a proportion of nonfarm employment than those with below-average proportions. This is in marked contrast to the distribution of manufacturing employment among States, in which about half the States have proportions above the national average and half below. Only about one-third of the States, under each definition, have higher proportions of employment in high tech industries than the U.S. average.

There is little change in the rankings of the 10 States with the highest proportions of high tech employment since 1982.[4] The New England States still are predominant. The addition of Puerto Rico to the rankings does cause a surprising result, however. Puerto Rico appears in the top ten under groups II and III.

Puerto Rico's economy includes considerable employment in pharmaceutical manufacturing and in electrical and nonelectrical machinery manufacturing. One reason high tech companies have located in Puerto Rico may be the Federal income tax advantages given to firms there. Drug manufacturers such as G. D. Searle, Upjohn, and Schering-Plough, plus electrical equipment manufacturing firms such as General Electric, Motorola, and Prime Computer have taken advantage of these tax benefits and established high tech manufacturing establishments in Puerto Rico.[5] □

FOOTNOTES

[1] Richard W. Riche, Daniel E. Hecker, and John U. Burgan, "High technology today and tomorrow: a small slice of the employment pie," *Monthly Labor Review*, November 1983, pp. 50–58.

[2] The industry employment statistics cited in this study are from two Bureau of Labor Statistics payroll employment programs—the Current Employment Statistics and ES-202 programs. The industry classifications are taken from the Office of Management and Budget, *1972 Standard Industrial Classification Manual*, as amended in 1977.

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

Industry detail within the high technology groups, as well as national historical data, may be obtained from the Bureau's Division of Industry Employment Statistics, 441 G Street, N.W., Washington, D.C. 20212.

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

[3] State data are usually available for internal (Bureau) analysis approximately 9 months after the reference quarter. Hence, 1983 data are the most current annual averages available.

[4] See Riche and others, "High technology," table 7.

[5] See Richard Greene, "Drug Abuse," *Forbes*, Aug 16, 1982, p. 36.

Input prices and cost inflation in three manufacturing industries

The transmission of inflation varies among industries, depending most heavily on differences in input cost changes; factor substitution plays a minor role

JAMES E. DUGGAN AND ANDREW G. CLEM

Over the past two decades, U.S. industries have exhibited marked changes in their use of primary and secondary resources. Such changes have been due, at least in part, to the volatility of resource markets. For example, the rapidly rising energy prices of the 1970's led many firms to substitute away from energy and toward relatively less expensive inputs such as capital or labor. The ease with which producers are able to make these substitutions partly determines output price increases in their respective industries. Such price increases, in turn, affect factor substitution at later stages of processing, product substitution in consumption, and the general rate of inflation in the economy.

In this article, we analyze in detail the input-to-product inflation link in three key manufacturing industries: autos (Standard Industrial Classification 371), steel (SIC 331), and plastics (SIC 282).[1] These industries, particularly autos and steel, have undergone dramatic changes during the past 15 years and have been the subject of much recent research. Yet, relatively little attention has been given to the transmission of inflation between resource and product markets in the industries. Our study attempts to partially fill this gap with empirical evidence that quantifies the nature of this transmission.

The framework is a model of industrial input demand, adopted from the substantial literature on the study of industrial production.[2] Each industry is assumed to operate with a production function that incorporates four major factor inputs: capital (K), labor (L), energy (E), and materials (M). The industry combines these factors in the least costly way to produce a specified level of output. In this case, each industry is assumed to have a well-defined cost function that relates total production costs to the level of output and the prices of the inputs. The demand for each input can then be determined from the cost function.

In the model just described, the cost per unit of production (average cost) is a function of the four input prices and, in a competitive market, is equal to the output price. If the product market is not competitive, the relationship between input and output prices will be more complicated. We characterize our analysis as an investigation of the effects on "average cost" of changing input prices. The precise manner in which this effect occurs will depend upon the specific technology and implied factor substitutability that underlie the production process. The narrower the range of substitution possibilities, the greater is the transmission of input-to-cost inflation because of the limited ability of the industry to substitute away from costly inputs. We illustrate the importance of this issue by simulating average cost inflation in each industry under three alternative assumptions concerning factor substitutability.

Naturally, for any given production technology, the effect on average costs of changing input prices will also depend upon the time paths of input prices. We explore this issue by computing for each industry aggregate input price in-

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dexes that correspond to alternative scenarios for input price changes.

The first section of this analysis describes the data pertaining to the three industries and provides summary trends for key variables. The next section outlines the input-to-cost relationship that forms the basis for our simulations. The final section presents empirical results that bear on the substitutability of the four factors in each industry and illustrate the sensitivity of average cost inflation to different factor substitution possibilities and alternative input price scenarios.[3]

Trends in prices and quantities

The data for our analysis are annual price and quantity indexes (1972 = 1) represented, respectively, by P_K, P_L, P_E, P_M, and Q_K, Q_L, Q_E, and Q_M. (A full description of the underlying data and index number construction is available from the authors upon request.) P_K is an index of the rental price for the services of three major capital assets: producers' durable equipment, nonresidential structures, and inventories,[4] and Q_K is a quantity index of constant-dollar stock estimates for each of the three assets. P_L is an index of average hourly compensation for production and nonproduction workers in each industry, while Q_L is a quantity index of labor hours for the two types of workers. P_E is an index of the cost of six major types of fuel consumed in each industry: (1) coal and coke, (2) gas fuels, (3) gasoline, (4) fuel oil, (5) electricity, and (6) miscellaneous energy products; Q_E is a quantity index of constant-dollar consumption of the six types of fuel. P_M and Q_M are price and quantity indexes for nonenergy material inputs.

Table 1 summarizes the trends in these indexes over the period 1960–80 and during two subperiods, 1960–72 and 1972–80. Data for the two subperiods are shown in order to highlight the substantial changes that occurred during the early 1970's, particularly the rapid rise in energy prices. The data in the first three rows for each industry are coefficients from log-linear time trend regressions estimated for each of the indexes; the fourth row is the 1960–80 average share of each input in total production cost.

Table 1. Average annual percentage changes in prices and quantities, and average cost shares of capital, labor, energy, and materials in three industries, 1960–80

Industry and period	P_K	Q_K	P_L	Q_L	P_E	Q_E	P_M	Q_M
Plastics:								
1960–72	[1]0.6	6.9	4.3	3.6	[1]0.7	12.1	0.6	6.7
1972–80	5.4	2.7	9.8	[1]−0.7	17.3	[1]0.7	13.2	3.0
1960–80	2.7	5.1	6.6	1.6	8.5	6.8	5.5	5.6
Cost shares[2]	.297		.183		.053		.467	
Steel:								
1960–72	[1]0.7	2.1	4.7	[1]0.1	2.9	2.4	2.3	2.5
1972–80	4.8	−0.5	10.9	−2.0	13.9	[1]−1.5	10.0	[1]−0.4
1960–80	3.5	0.8	7.6	−0.8	9.0	1.0	5.2	1.8
Cost shares[2]	.160		.250		.106		.484	
Autos:								
1960–72	[1]2.3	3.5	6.8	[1]1.2	1.2	4.4	2.0	3.9
1972–80	[1]−0.9	5.9	9.8	[1]−0.2	15.0	[1]−0.1	9.5	[1]0.2
1960–80	[1]0.9	4.5	7.7	1.0	7.3	2.8	5.2	2.6
Cost shares[2]	.157		.174		.007		.662	

[1]Trend coefficient not significantly different from zero at the 95-percent confidence level.

[2]Cost shares are the share of each input in total production cost, averaged over the period 1960–80.

Several features of these estimates are noteworthy. First, with the exception of the price of capital in autos, each of the industries experienced significant input price increases over the period 1960–80. The increases are more dramatic when comparing the two subperiods: The inflation rates in input prices during 1972–80 are often many times the rates during 1960–72.[5] Second, the price of energy increased faster than the prices of the other three inputs, particularly during the 1972–80 subperiod. The prices of labor and nonenergy materials to each industry also rose rapidly during the later subperiod, although labor price increases showed more persistence over the entire period. In fact, during 1960–72, the price of labor rose more rapidly than the prices of capital, energy, or materials in each of the three industries. Finally, when comparing the two subperiods, it can be seen that the rate of change in quantity generally varied inversely with the rate of change in price, indicating a certain amount of price responsiveness in each industry.

How closely does the combination of input prices represented in table 1 reflect output prices in each of the three industries? To answer this question, we constructed a chain-weighted aggregate input price index for each industry using the indexes represented in table 1 and the respective cost shares during 1960–80. The result is a Tornqvist aggregate input price (cost) index, shown as the first column for the respective industry in table 2.[6] The second column for each industry is the corresponding Producer Price Index (PPI), a fixed-weight output price index.[7] The two indexes are highly correlated, as shown by the correlation coefficients at the bottom of the table. The implication is that the appropriate combination of input prices is a good predictor of output prices, in the sense that the same information is contained in both.

Input prices and product inflation

The relationship between input prices and average cost can be described very simply as

$$(1) \qquad C_t = \sum_i P_{it} (X_{it}/Q), \; i = K, L, E, M$$

where C_t is average cost in period t; P_{it} is the price of input i in period t; and X_{it}/Q is the physical input-output coefficient of the ith input in period t. The relationship between input and cost inflation rates is found by differentiating equation (1) with respect to time. Assuming a constant rate of output, this reduces to:

$$(2) \qquad \dot{C}_t = \sum_i S_{it} \dot{P}_{it}, \; i = K, L, E, M$$

where $\dot{C}_t = \Delta C_t / C_{t-1}$; $\dot{P}_{it} = \Delta P_{it} / P_{it-1}$; and $S_{it} =$

Table 2. Aggregate input and output price indexes,[1] three industries,[2] 1960–80

[1972 = 1]

Year	Plastics		Steel		Autos	
	Input prices	Output prices	Input prices	Output prices	Input prices	Output prices
1960	.845	1.156	.746	.739	.699	.837
1961	.834	1.116	.742	.736	.688	.836
1962	.866	1.108	.737	.735	.731	.836
1963	.873	1.094	.770	.738	.748	.829
1964	.901	1.087	.799	.745	.771	.833
1965	.911	1.071	.830	.748	.796	.835
1966	.912	1.074	.839	.758	.792	.836
1967	.875	1.062	.814	.767	.777	.847
1968	.958	1.011	.828	.786	.836	.871
1969	.941	1.006	.867	.824	.860	.888
1970	.909	1.007	.903	.876	.910	.921
1971	.949	.995	.939	.942	.977	.974
1972	1.000	1.000	1.000	1.000	1.000	1.000
1973	1.125	1.023	1.135	1.028	1.041	1.010
1974	1.417	1.417	1.530	1.304	1.153	1.095
1975	1.527	1.657	1.537	1.512	1.282	1.225
1976	1.678	1.759	1.658	1.609	1.445	1.303
1977	1.830	1.816	1.747	1.763	1.554	1.387
1978	1.906	1.857	1.944	1.952	1.676	1.492
1979	2.202	2.133	2.197	2.150	1.786	1.614
1980	2.465	2.497	2.332	2.321	1.821	1.769
Average annual rate of change[1]	5.7	4.3	6.1	6.1	5.0	3.9
Correlation coefficient for annual percent changes	.81		.76		.66	

[1]Output price indexes are BLS Producer Price Indexes.

[2]Computed from a log-linear time trend regression.

$P_{it} X_{it} / C_t$ is the share of the ith input in the total value of output (or cost). Equation (2) makes clear that cost inflation depends upon input price inflation and relative cost shares. For example, if input prices are constant, average cost will be determined solely by the nature of the production technology. In the extreme case of fixed production coefficients, the cost share corresponding to the input with the largest inflation rate will increase and cost inflation will increase proportionately.[8] On the other hand, if the production technology allows for different patterns of input substitution, then share values will vary through time in a manner that reflects substitution away from relatively costly inputs. In this last case, we would expect cost inflation to be lower than for the fixed coefficients case.

To illustrate the importance of factor substitution in cost inflation, we simulated annual inflation rates for three forms of production technology: fixed coefficients, Cobb–Douglas, and one that is consistent with a translog cost function.[9] These three technologies embrace a broad spectrum of factor substitutability. The fixed coefficients case is the most restrictive, disallowing any factor substitution, while the translog cost function imposes no *a priori* restrictions on substitution parameters. The Cobb–Douglas technology is a special case of the translog that permits factor substitution but requires constant factor cost shares.

The three technologies influence cost inflation through equation (2) according to what each implies for the behavior of input cost shares. In the Cobb–Douglas case, input cost shares, and thus the rate of average cost inflation, remain constant through time. For the fixed coefficients technology, share values will depend upon the relative changes in input and average cost inflation. In the translog model, the share values vary from period to period and depend upon the pattern of input prices and the parameters of the cost function. Thus, the translog input cost shares in period t are determined by a share equation of the form:

$$(3) \quad S_{it} = \alpha_i + \sum \gamma_{ij} \ln P_{it} + \gamma_i \ln Q, \; i = K, L, E, M$$

where α_i, γ_{ij}, and γ_i are cost function parameters that must be estimated; and Q is the level of output.

The data underlying tables 1 and 2 were used to estimate the translog cost function parameters. These estimates provide some interesting information on factor substitutability and price responsiveness within each of the three industries. Given the parameters of equation (3), we can immediately calculate price elasticities of demand, $E_{ij} = \partial ln X_i / \partial ln P_j$, for the four inputs. These price elasticities measure the percentage change in the cost-minimizing derived demand for input i in response to a change in the price of input j when gross output and all other input prices are held constant (but after all input quantities have adjusted to new cost-minimizing levels). In general, $E_{ij} \neq E_{ji}$. When $E_{ij} < 0$, inputs i and j are substitutes; when $E_{ij} > 0$, they are complements; and when $E_{ij} = 0$, the inputs are independent.[10]

The input price elasticities of demand for the auto, steel, and plastics industries, shown in table 3, form the basis for a number of conclusions. First, a high percentage of the elasticities are statistically significant, implying a substantial amount of responsiveness to price change. Second, energy demand is highly responsive to a change in its own price in autos and plastics, with own-price elasticities E_{EE} of -1.2 and $-.75$, respectively. Third, labor and capital are substitutes, though only slightly so, in autos and plastics; cross price elasticities E_{KL} and E_{LK} are about .01 in autos and .09 and .14 in plastics. The capital-labor elasticities are somewhat lower than reported in previous studies,[11] although direct comparisons are difficult due to differences in the data and time periods analyzed. Fourth, energy and capital display a substantial complementarity, a finding that is consistent with that reported elsewhere by Ernst Berndt and David Wood.[12] Finally, the cross price elasticities E_{LE} and E_{EL} reveal that energy and labor are complements in all three industries. This result differs from previous findings based on aggregate data, which typically show energy and labor to be substitutes.

Inflation scenarios

We simulated inflation rates for the period 1980–90 under the three assumptions about substitution technology and eight alternative input price scenarios, described below. For a given set of input prices, average cost inflation will be determined by the input cost shares according to equation

Table 3. Estimated input price elasticities of demand based on translog cost function, three industries, 1960–80

Elasticity	Autos	Steel	Plastics
E_{KK}	−.512 (.033)	−.250 (.053)	−.291 (.042)
E_{KL}	[1].010 (.016)	[1]−.005 (.039)	.087 (.009)
E_{KE}	−.034 (.011)	−.117 (.039)	[1]−.027 (.019)
E_{KM}	.535 (.055)	.372 (.115)	.231 (.053)
E_{LK}	[1].009 (.029)	[1]−.003 (.036)	.142 (.028)
E_{LL}	−.522 (.046)	−.496 (.069)	−.257 (.092)
E_{LE}	−.026 (.014)	−.157 (.031)	−.197 (.044)
E_{LM}	.539 (.068)	.657 (.111)	.312 (.096)
E_{EK}	−.709 (.242)	−.176 (.059)	[1]−.153 (.107)
E_{EL}	−.615 (.336)	−.372 (.073)	−.686 (.153)
E_{EE}	1.225 (.435)	[1]−.057 (.077)	−.755 (.190)
E_{EM}	2.547 (.907)	.605 (.157)	1.594 (.268)
E_{MK}	.127 (.013)	.123 (.038)	.147 (.034)
E_{ML}	.141 (.018)	.340 (.057)	.122 (.037)
E_{ME}	.029 (.010)	.132 (.034)	.179 (.030)
E_{MM}	−.297 (.033)	−.595 (.110)	−.448 (.068)

[1]Statistically insignificant at the 90-percent confidence level based on a two-tailed test.

NOTE: Approximate standard errors are shown in parentheses.

(2). The behavior of cost shares, in turn, depends upon the nature of the production technology. Therefore, we begin the inflation simulations by postulating a set of annual inflation rates for each of the four inputs for the period 1981–90. Next, we solve for the equilibrium cost shares in each period according to equation (3) for the translog technology using, as a starting point, the fitted shares for 1980 estimated earlier. We use the same 1980 shares as the base share values for all three technologies. Finally, we use the computed shares to calculate average cost inflation through equation (2). We repeat this procedure seven times, each time beginning with a different set of input price inflation rates.[13]

Our first set of inflation rates consists of the average rates that prevailed for each input during 1972–80: $\dot{P}_K = 5\%$, $\dot{P}_L = 10\%$, $\dot{P}_E = 15\%$, and $\dot{P}_M = 10\%$. In view of the generally high levels of inflation in the economy during the mid- to late seventies this set may be considered an upper reference limit. A lower reference limit is the set that has $\dot{P}_L = \dot{P}_E = 0$. For all scenarios we hold $\dot{P}_K = 5\%$ and focus mainly on variations in $\dot{P}_L$ and $\dot{P}_E$.[14]

Table 4 presents the simulated cost inflation rates for the year 1990. The end-of-simulation-period results should highlight any differences that exist among the various scenarios. Notice first that if the input price inflation that prevailed during the 1970's were to continue through the 1980's, substantial cost inflation would result in the three manufacturing industries studied. Although this scenario may now seem unlikely, such rapid price increases at this stage of processing would stimulate inflationary pressure throughout many sectors of the economy.

The effect on cost inflation of differences in factor substitutability is assessed by reading across the rows of table 4 for each industry. The most striking finding is that there appear to be relatively small differences across the three production technologies. Only in scenarios 5, 7, and 8 do we observe more than a 1-percentage-point difference in inflation rates, and the first two scenarios involve rather extreme assumptions concerning input price inflation. The implication for the analysis of inflation is that factor substitutability has little effect.

Table 4 shows that cost inflation generally is lowest under the Cobb–Douglas technology and, as expected, is highest under the fixed coefficients technology (except as noted in footnote 1 to table 4). Both technologies represent models that are *a priori* more restrictive than the translog. The translog function is a highly flexible form that does not

Table 4. Simulations of average cost inflation in 1990 for alternative cost functions and input price changes, three industries

Scenario	Percent change in input prices				Annual percent change in average costs, 1990								
					Plastics			Steel			Autos		
	$\dot{P}_K$	$\dot{P}_L$	$\dot{P}_E$	$\dot{P}_M$	Fixed coefficients	Cobb-Douglas	Translog	Fixed coefficients	Cobb-Douglas	Translog	Fixed coefficients	Cobb-Douglas	Translog
1	5.0	10.0	15.0	10.0	9.5	8.9	9.3	10.4	9.9	10.4	9.1	8.9	9.0
2	5.0	10.0	7.5	10.0	8.6	8.3	8.5	8.9	8.7	8.9	9.1	8.9	8.9
3	5.0	10.0	0.0	10.0	8.4	7.7	7.9	8.4	7.4	8.1	9.1	8.8	8.9
4	5.0	5.0	15.0	10.0	9.0	8.2	8.9	9.7	8.8	9.5	8.5	8.1	8.2
5	5.0	0.0	15.0	10.0	8.8	7.5	[1]8.9	9.5	7.6	8.8	8.3	7.1	7.6
6	5.0	5.0	7.5	10.0	8.1	7.7	7.9	8.0	7.6	7.6	8.4	8.0	8.1
7	5.0	0.0	0.0	10.0	7.6	6.3	6.3	7.0	5.2	4.9	8.2	7.1	7.3
8	5.0	10.0	15.0	5.0	7.3	6.3	6.2	8.8	7.5	7.8	6.1	5.7	5.8

[1]The translog is expected to be lower than the fixed coefficient rate. It is not the case here, perhaps because of the extreme assumptions concerning input prices.

restrict substitution elasticities and permits Cobb–Douglas and fixed coefficients hypotheses as special cases. The estimated translog cost function produced cross elasticities of substitution for each industry (data not shown) that are significantly positive and significantly less than 1, leading to the rejection of both the fixed coefficients and the Cobb–Douglas hypotheses. The implications of this result are that: 1) the high rates shown in table 4 for the fixed coefficients model are the result of disallowing any factor substitution; and 2) the low rates for the Cobb-Douglas model result from imposing more substitution than actually occurs in these industries as revealed by the translog estimates. Nevertheless, the differences that do occur among the three technologies are small.

The effect on cost inflation of alternative input price inflation rates can be seen by reading down the columns of table 4. The first three rows indicate the effect of different (assumed) rates of growth in energy prices (15%, 7.5%, 0%). For the auto industry there is virtually no effect on average cost, which is indicative of the very small share (less than 1%) that energy costs are of total production costs. Growth rates in energy prices have a greater effect on average cost in the plastics and steel industries. For example, with the translog technology, the difference between a 7.5- and a 15-percent increase in energy prices is a 0.8- and a 1.5-percentage-point difference in cost inflation in plastics and steel, respectively. The largest impact of energy price increases occurs in the steel industry. With the translog technology, the difference between no change in the growth rate of energy prices and a 15-percent increase is 2.3 percentage points in the growth rate of average cost.

The effect on changes in average cost of differences in the growth of labor prices can be seen by comparing rows 1, 4, and 5 in table 4; the effects of differences in both energy and labor prices appear in rows 1, 6, and 7. For comparable differences in rates of growth, labor prices generally have a smaller effect than energy prices on cost change in the plastics industry; the opposite occurs in autos. For example, under the translog technology, a 10-percentage-point difference in $\dot{P}_L$ is reflected in a 0.4- and a 1.4-percentage-point difference in cost inflation in plastics and autos, respectively. The auto industry is the only one of the three to experience a rising labor cost *share* over the period 1960–80. As indicated in table 1, the auto industry shows virtually no trend during 1972–80 in its use of labor input, despite the substantial labor price increases that occurred during that period. In the steel industry, energy prices also have a greater effect than labor prices, particularly at low rates of input price change: a 10-percentage-point difference in $\dot{P}_L$ has only a slightly smaller effect than a 15-percentage-point difference in $\dot{P}_E$.

Finally, nonenergy material inputs make up the largest share of total production costs in each industry. For that reason, we show in row 8 of table 4 the effect of a 5-percentage-point difference in the growth of $\dot{P}_M$ (compared to row 1). As might be expected, differences in the cost inflation rates are substantial for each industry. Sustained increases in the prices of nonenergy material inputs would have dramatic consequences for the transmission of inflation that would not be avoided by the substitution of other major inputs.

In summary, the transmission of input to average cost inflation differs by industry and appears to occur primarily through differences in input price inflation; factor substitution plays a minor role.[15] The conclusion that the effects differ by industry is, of course, not surprising; yet it warns against drawing inferences from an analysis of more aggregate data. It also implies that the prospects for controlling or reducing inflation would depend upon rather finely targeted policies. For example, significant gains could be achieved from policies that help hold down energy prices to the plastics and steel industries and labor costs in the steel and auto industries. Such conclusions, of course, need to be verified with a broader set of industries. □

FOOTNOTES

[1] The detailed components of the industries studied are presented in the *Standard Industrial Classification Manual*, prepared by the U.S. Office of Management and Budget. Autos (SIC 371) comprises manufacturers of motor vehicles and passenger car bodies; truck and bus bodies; motor vehicle parts and accessories; and truck trailers. Steel (SIC 331) covers blast furnaces, steel works, and rolling and finishing mills; electrometalurgical products; steel wire drawing and steel nails and spikes; cold rolled steel sheet, strip, and bars; and steel pipe and tubes. Plastics (SIC 282) covers the manufacture of plastics materials, synthetic resins, and nonvulcanizable elastomers; synthetic rubber (vulcanizable elastomers); and manmade fibers.

[2] Ernst Berndt and David Wood, "Technology, Prices, and the Derived Demand for Energy," *Review of Economics and Statistics*, August 1975, pp. 259–68, is an early paper to which our work is directly related. Other examples include Robert Halvorsen and Jay Ford, "Substitution Among Energy, Capital, and Labor Inputs," in Robert Pindyck, ed., *Advances in the Economics of Energy and Resources* (Greenwich, CT, JAI Press, 1979), pp.27–50; Melvyn Fuss, "The Demand for Energy in Canadian Manufacturing," *Journal of Econometrics*, vol. 5, 1977, pp. 89–116; John Norsworthy and Michael Harper, "Productivity Growth in Manufacturing in the 1980s: Labor, Capital, and Energy," *American Statistical Association, Proceedings of the Business and Economic Statistics Section* (1980), pp. 17–26; and Robert Pindyck, "Interfuel Substitution and the Industrial Demand for Energy: An International Comparison," *The Review of Economics and Statistics*, May 1979, pp. 169–79.

[3] A similar type of analysis for the period 1954–71 is reported in John Moroney and Alden Toevs, "Input Prices, Substitution, and Product Inflation," in Pindyck, ed., *Advances in the Economics*, pp. 27–50; and John Moroney and John Trapani, "Factor Demand and Substitution in Mineral-Intensive Industries," *Bell Journal of Economics*, Spring 1981, pp. 272–83. In both articles, only three factors are considered: capital, labor, and natural resources (including energy).

[4] Erwin Diewert, "Aggregation Problems in the Measurement of Capital," in Dan Usher, ed., *The Measurement of Capital* (Cambridge, MA, National Bureau of Economic Research, Studies in Income and Wealth, 1980), pp. 433–528, argues for the inclusion of inventories in the measurement of capital input. Frank Gollop and Dale Jorgenson, "U.S. Productivity Growth by Industry," in John Kendrick and Beatrice Vaccara,

eds., *New Developments in Productivity Measurement* (Cambridge, MA, National Bureau of Economic Research, 1980), pp. 17–124, follow this procedure.

[5] The substantial differences between the two subperiods suggest that the industries are operating under separate regimes in 1960–72 and 1972–80. A more detailed study would examine this possibility.

[6] The chained Tornqvist index in period t is:

$$P_t/P_{it-1} = \Pi\ (P_{it}/P_{t-1})^{**}(\tfrac{1}{2}(S_{it}+S_{it-1}))$$

where $i = K,L,E,M$; and S_i is the cost share of the ith input. Erwin Diewert, "Exact and Superlative Index Numbers," *Journal of Econometrics*, May 1976, pp. 115–46, has shown that this index is exact for the translog cost function.

[7] The corresponding industries and Producer Price Indexes (PPI's): Steel (SIC 331): 10–17, Steel Mill Products; Autos (SIC 371): 14–1, Motor Vehicles and Equipment. A corresponding PPI for SIC 282 is not available. To approximate an index for this industry, we aggregated the PPI's 06–6 (Plastic Materials and Resins), corresponding to SIC 2821; 07–11–02 (Synthetic Rubber), corresponding to SIC 2822; and 03–1 (Synthetic Fibers), corresponding to SIC 2823–24. Further, because there is no published index for 03–1 prior to 1976, we approximated this component by aggregating 03–31–02 (Cellulosic, Staple, and Tow) and 03–32–02 (Noncellulosic Yarns) for the earlier years.

[8] At the limit, the value of the share will approach 1 and cost inflation will equal input inflation.

[9] The translog (Transcendental Logarithmic) function was introduced in Laurence Christensen, Dale Jorgenson, and Laurence Lau, "Transcendental Logarithmic Production Frontiers," *Review of Economics and Statistics*, February 1973, pp. 28–45, and has since been applied widely in the study of industrial production.

[10] A well-behaved cost function requires that "own-price" elasticities, E_{ii}, be less than zero. Given the estimates for the parameters in equation (3) of the text, the elasticities are calculated as:

$$E_{ii} = (S_i^2 - S_i + \hat{\gamma}_{ii})/S_i \quad \text{and}$$

$$E_{ij} = (S_iS_j + \hat{\gamma}_{ij})/S_i$$

Table 2 reveals that $E_{ii}<0$ for each factor. Approximate standard errors for elasticity estimates are computed as:

$$SE(\hat{E}_{ii}) = SE(\hat{\gamma}_{ii})/\hat{S}_i;$$

and

$$SE(\hat{E}_{ii}) = SE(\hat{\gamma}_{ii})/\hat{S}_i;$$

where *SE* stands for standard error. The data in table 3 are based on estimated shares, averaged over the sample period.

[11] See, for example, Berndt and Wood, "Technology, Prices, and the Derived Demand."

[12] The issue of whether capital and energy are complements or substitutes is unsettled in the literature. Berndt and Wood, "Technology, Prices, and Derived Demand," and Fuss, "The Demand for Energy," for example, find energy and capital to be strong complements. James Griffin and Paul R. Gregory, "An Intercountry Translog Model of Energy Substitution Responses," *American Economic Review*, December 1981, pp. 1100–04, and Pindyck, "Interfuel Substitution," report evidence of substitutability. For further discussion, see Berndt and Wood, "Engineering and Econometric Interpretation of Energy Capital Complementarity: Reply and Further Results," *American Economic Review*, December 1981, pp. 1105–10; and Griffin, "Engineering and Economic Interpretations of Energy-Capital Complementarity: Comment," *American Economic Review*, December 1981, pp. 1100–04. It should also be pointed out that, when data for individual industries are used, elasticities vary substantially for all inputs, as in Halvorsen and Ford, "Substitution Among Energy, Capital, and Labor Inputs"; Moroney and Toevs, "Input Prices"; and Moroney and Trapani, "Factor Demand." We should expect factor substitutability to differ across industries, and our results bear this out.

[13] It should be emphasized that we are not forecasting inflation in the three industries according to what is most likely to occur during the 1980s; we are providing alternative scenarios that demonstrate the importance of input price inflation and factor substitutability.

[14] For convenience, the scenarios were generated holding output at its 1980 level.

[15] Moroney and Toevs, "Input Prices," come to a similar conclusion.

Productivity growth below average in the internal combustion engine industry

During 1967–82, output per hour increased at an annual rate of 2.1 percent; the impact of cyclical downturns in the economy, particularly in the later years, contributed to this lackluster growth

J. Edwin Henneberger and Arthur S. Herman

Productivity, as measured by output per employee hour,[1] grew at an annual rate of 2.1 percent in the internal combustion engine industry from 1967 to 1982. The corresponding rate of increase was 2.4 percent for the average of all manufacturing industries.

The productivity gain in this industry resulted from a rate of growth in output of 4.2 percent, compared with the all-manufacturing average of 2.4 percent, and a 2.1-percent rate of increase in employee hours, compared with no growth in manufacturing sector hours. Productivity growth was aided by the introduction of new, more automatic equipment for machining engine components. However, this growth was modified by the impact of cyclical downturns in the economy on demand, resulting in sharp drops in industry production in several years and corresponding declines in productivity.

Establishments in this industry manufacture a wide variety of internal combustion engines ranging from small, single-cylinder gasoline engines used in such products as chain saws and lawnmowers to very large, multicylinder diesel engines used to power ships and locomotives and to generate electricity. Other products include outboard motors, largely used for propulsion of recreational boats, and diesel engines for automobiles and trucks.

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Although markets are diverse, a majority tend to be affected by slowdowns in overall economic activity, leading to sharp declines in industry output, and corresponding declines in productivity. Conversely, in years of economic recovery, demand for internal combustion engines increases sharply, and the industry posts significant gains in output and, in turn, productivity.

Trends in productivity

The productivity trends in the industry can be divided into three distinct periods. (See table 1.) From 1967, when data first became available, to 1974, productivity grew at the high rate of 4.5 percent per year. During this period, output increased at the very high rate of 7.2 percent, while hours grew at a 2.6-percent rate. Productivity did not record any declines in this period. Although output dropped sharply in the recession year of 1970, hours fell even more and productivity posted a small gain. Output lagged somewhat in the recovery year of 1971, growing only 0.3 percent; however, it expanded sharply in 1972, up 17.5 percent. Productivity posted high gains in both years, growing 7.1 percent in 1971 and 7.5 percent in 1972.

In the 1974–78 period, productivity growth slowed to a rate of 3.8 percent per year. Despite acceleration in the rate of output gain to 8.6 percent per year, the growth in hours expanded to a 4.6-percent rate. There was 1 year of productivity decline during this period, the recession year of 1975, as output fell off sharply, and productivity dropped

Table 1. Output per employee hour and related indexes in the internal combustion engine industry, 1967–82

[1977 = 100]

Year	Output per hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1967	70.3	68.8	75.1	51.4	73.1	74.7	68.4
1968	72.2	71.4	74.7	54.9	76.0	76.9	73.5
1969	75.4	74.6	77.8	65.6	87.0	87.9	84.3
1970	76.4	76.6	75.7	59.1	77.4	77.2	78.1
1971	81.8	82.5	79.9	59.3	72.5	71.9	74.2
1972	87.9	86.9	90.9	69.7	79.3	80.2	76.7
1973	91.0	88.9	97.8	79.8	87.7	89.8	81.6
1974	93.9	91.9	100.9	88.1	93.8	95.9	87.3
1975	86.7	89.5	79.1	73.6	84.9	82.2	93.1
1976	92.8	94.3	88.7	82.6	89.0	87.6	93.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	105.4	106.0	103.8	114.3	108.4	107.8	110.1
1979	98.8	99.8	95.9	110.3	111.6	110.5	115.0
1980	94.8	98.5	85.0	94.8	100.0	96.2	111.5
1981	94.4	97.8	85.6	94.7	100.3	96.8	110.6
1982	87.0	99.2	63.5	71.4	82.1	72.0	112.4
	Average annual percent change[1]						
1967–82	2.1	2.6	0.6	4.2	2.1	1.5	3.6
1967–74	4.5	4.4	4.8	7.2	2.6	2.6	2.3
1974–78	3.8	4.0	3.0	8.6	4.6	4.4	5.5
1978–82	−4.2	−1.5	−10.4	−10.4	−6.4	−9.0	([2])

[1]Based on the least squares trends of the logarithms of the index numbers.

[2]Less than 0.05 percent.

a steep 7.7 percent. Output picked up significantly in the recovery year of 1976, gaining 12.2 percent, and expanded even more in 1977, growing 21.1 percent. Output continued to rise in 1978, up 14.3 percent. Productivity posted large gains in these years, increasing 7.0 percent in 1976, 7.8 percent in 1977, and 5.4 percent in 1978.

However, in the most recent period, 1978–82, productivity registered an annual average decline of 4.2 percent, with a decrease every year. During this period, output also declined every year, averaging −10.4 percent, while hours dropped at a rate of 6.4 percent. In the two recessions which occurred in this period, output dropped sharply and productivity recorded large declines. In the recession year of 1980, output fell 14.1 percent and hours decreased 10.4 percent resulting in a productivity falloff of 4.0 percent. Productivity registered its largest annual decline over the period in 1982, a recession year, dropping 7.8 percent as output fell 24.6 percent and hours decreased 18.1 percent.

Demand falls during 1978–82

The sharp slowdown in output and, in turn, productivity during the 1978–82 period can be attributed to a falloff in demand from most of the major markets for the industry's products. The period saw a large decline in construction activity and homebuilding. The number of new homes sold in 1982 dropped to about half of the 1978 level.[2] This decline affected the market for lawnmowers, garden tractors, snowblowers, and grass trimmers, resulting in an average annual falloff of 7.4 percent in the output of lawn and garden equipment. These items use small, gasoline-powered internal combustion engines, which are a major product of this industry. Output of construction equipment dropped at a rate of 14.0 percent over this period. The construction machinery industry uses midsized diesel and gasoline engines made in this industry. Demand from the agricultural equipment industry, which uses engines similar to those in construction machinery, also slowed as output of agricultural equipment fell at a rate of 7.6 percent during this period. The number of diesel truck engines produced also declined as the number of diesel-powered trucks manufactured declined from 1978 to 1982. Demand from the power generation and commercial shipbuilding markets also slowed, further reducing output of internal combustion engines. Conversely, demand for automobile diesel engines grew during most of the period, peaking in 1981. However, sales dropped in 1982, as the price advantage of diesel fuel versus gasoline was eroded.

Trends in employment and hours

Total employment in the internal combustion engine industry grew at a rate of 2.4 percent from 1967 to 1982. This rate of growth was significantly higher than the 0.2-percent rate of employment growth for the total manufacturing sector over the same period. Employment in this industry increased from 63,700 in 1967 to a high of 101,100 in 1979 and fell to 77,900 in 1982. Total employee hours grew at a rate of 2.1 percent, somewhat lower than the rate of employment gain. The number of production workers increased at an average rate of 1.9 percent during this period, growing from 47,500 in 1967 to a high of 74,200 in 1979 and falling to 51,600 in 1982. Nonproduction workers grew at the greater rate of 3.7 percent. The number of nonproduction workers in this industry increased significantly from 16,200 in 1967 to 26,900 in 1979 and fell slightly to 26,300 in 1982. The proportion of production workers to total employment fell from 74.6 percent in 1967 to 66.2 percent in 1982.

Average hourly earnings of production workers were significantly higher for the internal combustion engine industry than for the average of all manufacturing industries over the period measured. In 1967, these earnings were about 20 percent higher than the all-manufacturing average. By 1982, the gap had widened so that average hourly earnings were almost 40 percent higher than in manufacturing.

These higher earnings indicate that the skill levels of the workers in this industry are somewhat higher than in manufacturing as a whole. Data on occupations tend to corroborate this. Although occupational data that exactly match this industry are not available, data on occupations are available at a somewhat broader level of aggregation for the engines and turbines group.[3] Because employment in the internal combustion engine industry accounted for about two-thirds of this group in 1982, the aggregate data should be representative of the industry.

Craftworkers accounted for 21.4 percent of this group in

1982, compared with 18.6 percent in all manufacturing. Professional and technical workers made up a significantly higher proportion in this group (17.0 percent) than in total manufacturing (10.3 percent). However, although operatives accounted for a very large proportion of total employment in the engines and turbines group (36.6 percent), it was somewhat lower than the all-manufacturing average of 40.2 percent. Metalworking operatives were significantly greater at 17.8 percent for this group, compared with 6.8 percent for all manufacturing, and assemblers at 9.7 percent were higher than the all-manufacturing average of 6.9 percent. In the engine and turbine group, the professional and technical category increased from 13.0 percent in 1970[4] to 17.0 percent in 1982, while the operatives category fell from 40.6 to 36.6 percent over the same period.

Firms in the industry are large

Firms in the internal combustion engine industry tend to be large. The four biggest companies accounted for about 50 percent of the industry's value of shipments over the period studied. The average number of employees per establishment is much larger in this industry than the average for all manufacturing industries, 383 in 1977, compared with 53 for all manufacturing.

Engine manufacturers are concentrated in the north central portion of the United States, with large numbers of establishments located in Wisconsin, Illinois, and Michigan. California, however, has the most plants.

Above-average capital expenditures

The level of capital expenditures in the internal combustion engine industry has been high over the period studied. New capital expenditures per employee have been above the average for all manufacturing industries in most years from 1967 to 1981 and have never been significantly below average. In several years, new capital expenditures per employee have been significantly above the all-manufacturing average. In 1970, capital expenditures per employee were 60 percent above the manufacturing average. In 1973 and 1974, years of high output growth in the industry, capital expenditures per employee were almost double the all-manufacturing average. In 1981, capital expenditures per employee were more than 70 percent above the manufacturing average. Growth in capital expenditures has also been high. Capital expenditures per employee grew at a rate of 11.4 percent in this industry during 1967–81, compared with 10.6 percent for manufacturing as a whole. In the more recent period, 1978–81, capital expenditures per employee accelerated, growing at a rate almost twice as high as the all-manufacturing average, despite the output falloff in the industry.

Technological changes

As indicated, this industry produces many different engines ranging from very small, single-cylinder gasoline engines to very large, multicylinder diesel engines. Manufacturing techniques involve the production of engine parts and subassemblies and the assembly of parts into completed engines. Workflow, materials handling, and warehousing are critical functions in this industry. Changes in technology and innovations involve more advanced metalworking operations, introduction of new materials, combining of operations, automatic movement and positioning of work in process, and more automatic inspection of parts and testing of completed engines. As indicated by the recent acceleration in capital expenditures, many of the innovations in the industry were introduced in the more current period, in spite of the poor demand situation. This was done to increase plant efficiency, while employment was reduced, in anticipation of an expansion in demand, as well as because of increasing competition from imports.[5]

Typically, the production of engines begins by machining rough castings of engine blocks, crankshafts, gear blanks, and other parts using a wide range of metalworking techniques. The castings are in some cases produced in-house but, as with many other parts, are often purchased from outside suppliers. The finished parts, along with other vendor-supplied items, are then brought together for final assembly.

The casting of parts (either in gray iron, steel, or aluminum) ranges from highly automated to relatively labor-intensive. In plants which manufacture high volume, small horsepower engines, the casting of parts has been to a large degree automated using computer control and robots. Other establishments which produce low volume parts have not been able to automate the casting process so intensively.

After casting, many parts such as gear blanks and crankshafts are heat treated or carburized. In this process, the engine parts are baked at a high temperature in an atmosphere of carbon dioxide in order to chemically alter the metal to the desired characteristics. Because different parts require different characteristics, the process variables (that is, time, temperature, pressure of gas) are sometimes monitored by computer.

Transfer lines are commonly being used for machining large volume components in the industry. Typically, engine block machining is now done on transfer lines. The lines move the rough castings automatically to and from machining stations where, for example, cylinder walls are ground to the correct tolerances, coolant and lubrication channels are bored, and bolt holes are drilled and tapped. Workers are required at each machining station only to perform initial tool setup, monitor performance, and provide maintenance. In some cases, loading and unloading of work in process and tool changing, formerly done manually, are done automatically. In addition, automatic testing and inspection equipment has been incorporated on transfer lines, aiding product quality. The installation of automatic transfer lines for block machining has reduced the direct labor involved in these operations significantly.

An innovation that has recently been introduced for the

manufacture of parts is computer-directed flexible machining centers. Several of these flexible or multiple function machining centers can be operated under the control of a central computer. Work in process moves from machine to machine by automatic conveyor line or on dollies powered by in-floor drive systems. These machining centers are flexible enough so that if one is off-line for repair or maintenance another center can take over its functions. Typically, these machining centers have worn or broken tool alert capability and, in some cases, automatic tool change capacity. Unlike the automatic transfer lines, workers tending these flexible machining systems are required only to perform maintenance. Because of the flexibility built into these lines, changeovers to the production of different items can be expedited. Shorter production runs then become more practical because the equipment is not down for lengthy manual tool change operations.[6]

Numerically controlled machine tools are in use throughout the industry. They are utilized mainly for production of low and medium volume parts. Computerized numerical control machining centers have also recently been introduced for the production of engine components.

Computer-assisted design is being used by many firms in the industry for engine and component design as well as for making changes in engine configurations to meet customers' specifications. Computer-assisted manufacturing is in more limited use than computer-assisted design in the industry and is involved mainly in the operation of machining centers for individual components rather than control of large-scale manufacturing operations. Computer-assisted manufacturing is also used by some firms to make tools and dies required for machining operations.

The final assembly of engines in this industry tends not to be highly automated, compared with automobile engine assembly. There are automobile engine plants where complete units are built with very little direct manual labor.[7] Although there are some exceptions,[8] this is generally not the case in the industry under study. Typically, parts move by conveyor to work stations where the employees assemble the engines with the assistance of a variety of powered equipment and handtools. Assembled engines are then started in order to make final adjustments and to verify performance. Often, particularly for the larger engines, the completed units are run under load while being monitored by computer. Some of the more expensive diesel engines are partially disassembled and visually inspected after the running test.

During the last 10 years, robots have increasingly been employed in the production of engines. Their use to date has been principally limited to such applications as metal casting, heat treating, and painting operations where it was particularly desirable to remove workers from these hazardous areas. Highly repetitive jobs, such as the insertion of valve seats in engine blocks, have also been robotized. Additionally, robots have been used in the production of investment casting molds. In this application it was found that robots could more consistently produce higher quality molds than the workers they replaced.[9]

Manufacture of the very large diesel engines used for marine or power generation purposes tends to be significantly different than the manufacture of the small- and medium-sized engines. The blocks of these engines are not machined from a solid casting but rather are made from steel plates welded together. These units are built in one place and parts are brought to it, compared with assembly line manufacture of the smaller engines. Machining of very large parts to extremely close tolerances is important in the manufacture of these units. Therefore, innovations include numerically controlled flame-cutters and computer-controlled flexible machining centers to finish the flat steel shapes to the correct dimensions. Numerically controlled large machine tools and computer machining centers are important technological advances in the production of these large engines because of the small runs of complex parts such as pistons, cylinder liners, and the close tolerances required for manufacture.

An important innovation is the introduction of computerized high-rise warehouses for raw materials and incoming parts as well as for completed parts and engines. These automated warehouse systems are utilized by many firms in the industry and have resulted in significant labor savings.

Outlook

In recent years, the industry has experienced poor demand, with output in 1982 significantly below its peak in 1978. Incomplete data indicate that in 1983 demand for products using internal combustion engines was mixed and the output and productivity situation was uncertain. However, by 1984 demand began to increase from many of the industry's markets leading to anticipated gains in output and productivity.

Recently, the industry has increasingly been affected by the pressure of growing imports. This is especially true for such items as outboard motors and low horsepower gasoline engines, which have not faced significant import competition in the past. In an effort to compete with imports, firms in the industry have accelerated the introduction of new technology and have shifted attention to more efficient production operations and management techniques. New plants using the most modern production technology have been opened. Older plants have been significantly modernized. Therefore, the industry's ability to increase productivity has been enhanced. However, the impact of cyclical changes in the economy can be expected to continue to be a major determinant of demand for the industry's products, resulting in wide swings in output. In turn, productivity changes in this industry will continue to be affected by these cyclical changes. □

——*FOOTNOTES*——

[1] The internal combustion engines, n.e.c., industry is classified as SIC 3519 in the *Standard Industrial Classification Manual 1972* and its 1977 supplement, issued by the U.S. Office of Management and Budget. This industry includes establishments primarily engaged in manufacturing diesel, semidiesel, or other internal combustion engines, not elsewhere classified, for stationary, marine, traction, and other uses. Aircraft engines, automotive engines (except diesel), and engine generator sets are not included.

[2] *Construction Report, New One-Family Houses Sold and For Sale, March 1984*, U.S. Department of Commerce, c25–84–3, May 1984, p. 3.

[3] "BLS Industry–Occupational Employment Matrix, 1982, 1995 Alternatives," pp. 154–65, 373–78.

[4] *The National Industry–Occupation Employment Matrix, 1970, 1978, and Projected 1990*, Bulletin 2086 (Bureau of Labor Statistics, 1981), p. 74.

[5] Information obtained from industry representatives.

[6] See "Flexible Manufacturing Takes Shape," *Automotive Industries*, January 1983, pp. 17–20; see also "Microprocessor Controlled Engine Transfer Line," *Diesel Progress, North American*, December 1982, pp. 6–7; and "Turning Cells Boost Gear Blank Output," *Production Engineering*, August 1984, pp. 60C–60F.

[7] See Michael K. McCann, "Another Step Towards the Automated Plant," *Automotive Industries*, November 1981, pp. 61–63.

[8] See "Automatic Assembly Increases Efficiency, Output," *Manufacturing Engineering*, October 1980, p. 29.

[9] See Joseph F. Engelberger, *Robotics in Practice*, American Management Associations, 1980, pp. 181–88.

APPENDIX: Measurement techniques and limitations

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

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

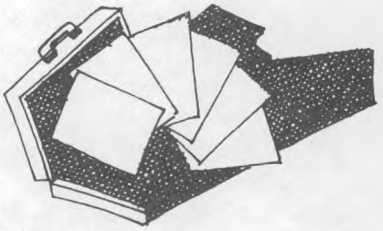
Because data on physical quantities are not reported for the entire internal combustion engine industry, real output was estimated by a deflated value technique. Changes in price levels were removed from current-dollar values of production by means of appropriate price indexes at various levels of subaggregation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

Employment and employee hour indexes were derived from data published by the Bureau of the Census. Employees and employee hours are each considered homogeneous and additive, and thus do not reflect changes in the qualitative aspects of labor such as skill and experience.

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

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

Conference Papers



The following excerpts, closely related to the work of BLS, are adapted from papers presented at the Thirty-Seventh Annual Meeting of the Industrial Relations Research Association, December 1984, in Dallas.

The full text of the papers appears in the copyrighted IRRA publication, *Proceedings of the Thirty-Seventh Annual Meetings,* available from IRRA, University of Wisconsin, Social Science Building, Madison, WI 53706.

Unemployment insurance program solvency in the 1980's

GARY BURTLESS AND WAYNE VROMAN

Over the past 4 years, unemployment benefits have been paid to an unusually small fraction of jobless workers. In all, the fraction of new job losers claiming regular unemployment insurance benefits fell by nearly a third after 1979.

Changes in the financial circumstances of individual State programs contributed to recent reductions in the availability of unemployment insurance benefits. During the 1970's, there was a loss of trust fund reserve adequacy, and many States borrowed from the Federal unemployment insurance loan fund in years of high unemployment, particularly in the 1975–77 period. Between 1972 and 1979, 25 State programs borrowed a total of $5.6 billion. States were slow to repay the loans, and by the end of 1979, $3.7 billion was still owed to the Federal Government.

A committee of the Interstate Conference of Employment Security Agencies has recommended a range from 1.5 to 3.0 as a minimum reserve ratio (trust fund reserves relative to potential demand for unemployment insurance benefits) to assure fund adequacy.[1] In 1979, at the end of a lengthy economic expansion, only two States had reserve ratios of at least 1.5, and only 11 additional State ratios fell in the range from 1.0 to 1.49.

The economic downturns in 1980 and 1981–82 placed a new and heavy burden on unemployment insurance programs which already had inadequate reserves. One consequence was a widespread resort to borrowing. Between January 1980 and September 1984, Federal lending to insolvent State programs exceeded $17 billion. Lending has been concentrated among industrial States in the North Central Region, which account for 64 percent of total borrowing, but 32 States borrowed at least once between 1980 and 1984.

In the past 4 years, the Federal Government has placed increased financial pressure on States to reduce their debts and to avoid borrowing altogether. The added pressure to raise employer payroll taxes and reduce benefit outlays occurred in a period of unprecedented postwar unemployment. Four specific developments are worth noting:

- States now have an unambiguous responsibility to repay outstanding loans. There is no longer any active discussion of proposals for cost sharing or partial debt forgiveness as were common in the 1970's.
- Since 1979, the Federal Government has demonstrated its willingness to impose penalty taxes (additions to the rate for the Federal Unemployment Tax) on employers in States with debts more than 2 years old. Although these automatic repayment provisions existed in the 1970's, their implementation was twice deferred by temporary measures enacted in 1975 and 1977.
- The cost of loans made after March 1982 was increased. Under the Omnibus Budget Resolution Act of 1981, new loans carried interest charges. With an annual interest rate of 10 percent (the maximum allowable interest charge), the cost of new debt became an important financial consideration for the States needing large loans.
- The Social Security Amendments passed in March 1983 provided States with an opportunity to reduce and defer the costs in indebtedness.

If a debtor State enacted new legislation that substantially improved net solvency, it would be able to limit future growth in Federal unemployment tax penalties, defer interest charges, and, if solvency adjustments were sufficiently large, pay an interest rate one percentage point below the rate otherwise chargeable. Improvements in net solvency could be achieved by different combinations of benefit reductions and tax increases.[2]

These developments have placed the States under increased financial pressure to improve program solvency.

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Between late 1982 and early 1984, State legislative activity was especially rapid. The eight States with the largest debts in September 1984 enacted important solvency legislation in this period, and five of them improved net solvency enough to qualify for fiscal relief under the 1983 amendments.[3]

The flurry of State legislative activity after 1982 is a dramatic illustration of the interest of States in improving the net solvency of their unemployment insurance programs. The unexpected shortfall in unemployment insurance outlays that occurred before 1982 was also largely the result of legislative and administrative actions to reduce benefits. For example, since the mid-1970's, disqualification periods for voluntary job leavers have been lengthened and the earnings requirements needed for eligibility have been increased in many States.[4] These State-level changes are a major reason for the unexpectedly low levels of insured unemployment in the 1980's and the increased gap between insured and total unemployment.

Financial pressures on State programs have not been the only factor behind the low recent levels of insured unemployment. At the Federal level, authorities required States to impose tougher qualifying provisions for unemployment insurance applicants receiving pensions or social security. In 1979, the Federal Government for the first time imposed income taxes on unemployment insurance benefits received by high income taxpayers and, in 1982, lowered the income threshold for taxability. These changes dramatically raised the number of unemployment recipients subject to taxation. In addition, the Federal Government provided strong financial incentives for States to impose a waiting period before newly unemployed workers can receive benefits. By reducing the net value of unemployment insurance, these federally imposed changes presumably reduced the incentive for jobless workers to apply for benefits.

The persistence of high joblessness has also reduced the fraction of unemployed collecting jobless benefits because it has increased the fraction of claimants who exhaust benefits. In recessions occurring since 1958, the Federal Government has offered added income protection to unemployment insurance recipients who exhaust their regular benefits. After 1980, however, several Federal actions reduced the duration of benefits available for unemployed workers. The 1981 changes in the extended benefits triggering mechanism, in combination with the large relative decline in the insured unemployment rate, have nearly eliminated the extended unemployment insurance benefit program, except during periods of exceptionally high unemployment. Long-term benefits are now paid mainly under the emergency Federal Supplemental Compensation program, which is scheduled to expire in March 1985. That program began later—and was substantially less generous—than the equivalent emergency program enacted during the 1974–76 recession. Emergency long-term benefits have been lower than those in the previous recession, even though the extended benefits program was less generous and long-term unemployment was much higher. The Federal attitude toward helping the long-term unemployed has been affected by the same trends that have influenced other social welfare spending, including Federal spending on education, means-tested transfers, and manpower programs. □

———*FOOTNOTES*———

[1] Although the Interstate Conference of Employment Security Agencies never formally adopted this as a solvency standard, it is often used by unemployment insurance practitioners in judging the adequacy of a State's fund.

[2] Improvements in net solvency are measured as the sum of two percentage changes—increases in taxes plus reductions in benefits. To defer interest on loans, a State must improve net solvency by 25, 35, and 50 percent, respectively, in the first 3 years of indebtedness. To pay lower interest rates, the respective solvency improvements must be 50, 80, and 90 percent.

[3] Wayne Vroman, *The Funding Crisis in State Unemployment Insurance* (Kalamazoo, MI, The W.E. Upjohn Institute, 1984).

[4] Gary Burtless and Daniel Saks, *The Decline in Insured Unemployment During the 1980's*, Brookings Discussion Paper in Economics (Washington, the Brookings Institution, 1984).

U.S. industrial relations in transition

THOMAS A. KOCHAN, ROBERT B. MCKERSIE, AND HARRY C. KATZ

We believe there is a central contradiction in the current operation of U.S. industrial relations. Leaders from all parts of society, including many corporate executives, are calling for an expansion of cooperative efforts at the workplace. They are asking union leaders and members to support these cooperative efforts and to continue moderating their wage demands. At the same time, the dominant trend in strategic business and industrial relations decisionmaking within firms is to shift investments and jobs to nonunionized employment settings. Moreover, because of some government policies, the labor movement cannot feel secure about its future as a viable force in American society. It is difficult to see how unions can continue to act cooperatively in an environment in which their basic security is being questioned and undermined.[1] Thus, if the environmental and strategic patterns of the past decade continue, we would expect further shrinkage of unionized employment and membership, more pressures on union leaders to withhold their support for cooperation and innovation at the workplace, and more frequent con-

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frontations between unions and companies as unions interpret their situation as one of a life and death struggle.

If private sector union membership continues to erode, we can expect a gradual weakening of the threat effects of unions on unorganized firms. As a result, we would expect a slowing of the rate of innovation in human resource management policies in nonunion firms, except in situations where the declining union threat is offset by significant pressures from labor market shortages, government regulations, or corporate executives committed to innovative policies. (Innovative nonunion policies also are more likely to continue and even expand where their economic contribution is high and creates a momentum of its own.) If there is a resurgence in demand for unionization or for some new employee representational structures within nonunion firms, it will depend on the strength of these countervailing forces.

The contradiction between cooperation and union avoidance is strongest in partially unionized firms. However, similar contradictions among the three levels of industrial relations activity may emerge in unorganized firms as their plants, business units, or industries move to advanced stages of their life cycle and experience more significant pressures for labor cost modification. To avoid these problems, unorganized firms will need to prevent the increasing rigidities in work organization that are associated with age, keep compensation costs low enough to discourage new competitors from entering their markets, and plan orderly adjustment mechanisms for their workers when economic and organizational restructuring intensifies.[2] Again, we would expect that only those firms whose top executives maintain a strong commitment to progressive human resource management values and are supported by strong human resource staff professionals will be likely to avoid the development of internal contradictions in later stages of their life cycles. Those nonunion firms whose sole competitive advantage is the payment of low wages are likely to face significant interest in unionization among their work force.

Deviating from this dominant pattern will be the variety of innovations in the most highly unionized firms where union avoidance is not a short term, viable alternative for management. The prospects in these settings depend on the ability of workers, unions, and management to integrate strategies and practices across the three levels of industrial relations. Such an integration would have to build on current efforts to introduce innovative work systems, moderate the growth in compensation (in some cases through the introduction of some form of contingent compensation), and expand high level consultations between executives, staff professionals, and union representatives over long term business, investment, and employment stabilization strategies. The success of this strategy will be greatly affected by future macroeconomic developments. At the micro level, the success of a cooperative strategy is dependent on the ability of employers to identify a market niche (or some alternative competitive strategy) so as not to have to rely on being a low cost producer.

For American unions to avoid anything but continued erosion of membership will depend on their ability to: (1) promote cooperation and innovation at the workplace where they currently represent employees, (2) link continued workplace cooperation and innovation to involvement and influence in the strategic business and government decisions that affect long run employment and membership security, and (3) pursue new organizing strategies. Although these strategies are necessary, they are unlikely to be sufficient to stimulate a resurgence of American unionism. For, if previous resurgences of the American labor movement are a guide (the 1930's for the private sector and the 1960's for the public sector), significant union growth also would require a combination of major changes in the political, economic, and social environment; new legislation that fosters new forms of representation; and the stimulus of a rival form of unionism or representation from outside the existing union structure.

WE PREDICT A CONTINUED DETERIORATION of the traditional New Deal model of industrial relations, some increased pressures on nonunion management systems as they age and mature, and intensified competition and conflict alongside efforts to sustain cooperation and innovation within both industrial relations and management systems. The new outcome can only be predicted or explained by more specific modeling of the interactions among environmental forces, values, and strategic choices. □

——FOOTNOTES——

[1] Our theoretical framework emphasizes that industrial relations outcomes are not predetermined by environmental forces, but are the product of interactions among the environment and the strategic choices of the parties. It should be kept in mind, however, that these "choices" are not made by single monolithic representatives, are not always consciously thought out or planned decisions, and are constrained by various environmental conditions. Consequently, the U.S. industrial relations system will continue to display considerable diversity in the future as it has in the past.

[2] For example, a number of high technology firms have told us that the biggest challenge they face in the next several years is continuing to deliver employment security in the face of rapid economic change and low natural attrition rates.

The future of wage indexation in collective bargaining contracts

WALLACE E. HENDRICKS AND LAWRENCE M. KAHN

In the 1970's and early 1980's, the U.S. economy underwent two episodes of rapid inflation—1973–74 and 1979–80—each associated with oil price increases. Much of the infla-

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tion during these years was not expected: the Livingston Surveys sample of economists underpredicted 1973–74 inflation by 5 to 7 percentage points and 1979–80 inflation by 2 to 6 percentage points.[1] Each episode resulted in sharp declines in average real wages—a total of 5.1 percent from 1973 to 1975 and 8.6 percent from 1978 to 1981.

In an environment of inflation uncertainty, risk-averse workers would like some mechanism to protect their living standards. One method is to shorten the period over which any contract is in force. Under shorter contracts, wages could be continually corrected for the effects of inflationary surprises, but such renegotiation is a costly process. Hence the impetus for cost-of-living escalator clauses (COLA's), which help protect workers' real wages without requiring frequent renegotiation of contracts. From management's point of view, however, COLA's may be a source of uncontrollable increases in nominal labor costs. While COLA's could theoretically stabilize firms' real profits under certain conditions, the fact that wage escalator provisions are confined to the union sector in the United States and are most prevalent among what are generally thought to be the strongest unions suggests that companies in general would prefer not to have them.[2]

The overall bargaining record with respect to COLA's suggests that the inflation of the 1970's and 1980's made quite an impression on union workers. As late as 1970, only about one quarter of workers under major agreements (those covering at least 1,000 workers) had COLA protection. This figure rose to a high of 61.2 percent in 1977 and has remained relatively stable since then. While the average worker's real wage fell during periods such as 1979–81, many workers with COLA's were able to maintain their real wage levels.[3] More generally, COLA's have been cited as helping to increase union-nonunion wage differentials during the inflationary 1970's.[4]

During the 1981–82 recession, inflation began to decelerate sharply and the extent of the deceleration was underestimated. In fact, inflation was overestimated from 1981 to 1984.[5] While overprediction of inflation has occurred before, 4 consecutive years of overprediction is a considerable departure from the norm. If inflation is indeed "licked," workers may have less desire for indexation in the future than in the recent past. On the other hand, given the virulence of inflation in the 1970's and early 1980's, workers may well be skeptical that the economy has become insulated from rapid price increases. If such is the case, then COLA's will not have outlived their usefulness.

This report examines recent collective bargaining trends in COLA's and offers predictions about the future of indexation. Despite the decline in union bargaining power and the recent stabilization of inflation, there is little indication that COLA's will wither away. It will probably take many more years of predictable, low inflation rates before unions will consider giving up this form of wage protection.

Recent developments in COLA's

To assess recent trends in COLA's, we studied provisions of a sample of 1,352 major contracts negotiated over the 1982–84 period, although very few 1984 agreements were available. (The data source was the Bureau of Labor Statistics *Current Wage Developments*.) For contracts renegotiated in 1982, COLA coverage was virtually unchanged from that in previously negotiated contracts. This outcome occurred as virtually the same percentages of workers gave up COLA's in 1982 as introduced them in that year. Further, the percentage of workers with COLA's in contracts negotiated in 1982 (57.6 percent) was about the same as the percentage of workers under existing contracts who were covered by COLA's (56.7 percent). Thus, the flow of new COLA negotiations was comparable to the stock of COLA coverage.

COLA coverage slipped somewhat in 1983. Among workers negotiating contracts in 1983, 38.8 percent had had COLA's in the previous contract, while only 31.7 percent had them in the new contract (an 18-percent decline for this group). Those workers giving up COLA's in 1983 were concentrated in airlines, communications, and merchandise and food stores. On the other hand, only about 1 percent of workers without COLA's in their previous contracts added indexation in 1983 negotiations. Thus, there was a modest trend away from COLA's in 1983, as inflation remained stable for the second consecutive year. However, the contracts negotiated in 1983 accounted for a disproportionately low share of existing COLA's; only 38.8 percent of workers had them in the expiring contract, compared to more than 60 percent in nonexpiring contracts. Therefore, the downward movement in COLA coverage in 1983 has had a smaller impact on the overall stock of COLA's than it otherwise might have.[6] Specifically, only about 5 percent of workers with COLA's on January 1, 1983, lost them during negotiations that year, in part because 58 percent of workers under major agreements did not negotiate that year.[7] It takes a major change in the flow of COLA negotiations—such as the steelworkers' abandonment of COLA's in 1962—to significantly affect the stock.

A slight trend toward increased use of caps in COLA's has become apparent. In both 1982 and 1983, currently negotiated COLA's were marginally more likely to have caps than those negotiated in earlier years. Among bargaining units that had COLA's in current and previous contracts, caps were more likely to be added than taken away. Placing limits on COLA payments may reflect union weakness or reduced uncertainty about inflation. Although the incidence of caps rose, it stayed close to the existing stock of caps: from 1979 to 1983, coverage of workers under capped COLA's as a percentage of total COLA coverage ranged between 21.6 percent and 22.6 percent. In contrast, from 1970 to 1978, the range was from 25.0 percent to 64.3 percent, with a weighted average figure of 31.2 percent.[8]

Perhaps more important than the slight increase in the incidence of caps is the introduction of clauses providing for special delays or diversions of COLA payments. One-sixth of the workers with COLA's negotiated during the 1982–84 period agreed to special delays and 6.3 percent were subject to diversions of COLA payments. (The 1983 figures are somewhat lower than those for 1982.) The delay provisions were most common in the motor vehicle industry—72 percent of workers with delays were in that industry—while diversions occurred mainly in trucking, which accounted for 70 percent of workers so affected.

COLA delays and diversions are essentially lump-sum transfers from labor to management given as union concessions. However, the COLA concept remains after the delay or diversion is accomplished. For example, among COLA's negotiated in this period with special delays, only 6.6 percent of the covered workers had provisions subject to caps; for those without special delays, 23 percent of the workers were subject to caps. Further, where COLA's specified diversions of payments, no workers in our sample had provisions for caps; among workers not subject to diversions, 21.7 percent had caps. Thus, workers appeared to be willing to pay a price in order to have uncapped COLA's. The basic point illustrated here is the resistance of workers to elimination of the COLA concept.[9]

Not surprisingly, workers with COLA's won smaller deferred increases than those without such protection. Average 1982 and 1983 percentage scheduled increases were 2.0 percent and 1.8 percent for the former group, compared with 6.6 percent and 4.2 percent for the latter. However, the differential in the raises was much smaller in 1983 (2.4 percentage points) than in 1982 (4.6 percentage points). In addition, the 1983 differential is lower than that in recent years.[10] This finding may reflect a lower anticipated inflation rate in 1983 than in previous years. Among those whose current contracts have no COLA, scheduled raises were slightly larger for those who gave up COLA's from the previous contract (4.9 percent in 1983) than for workers who had no indexation in either agreement (4.1 percent). Again, a slight compensating differential is indicated. However, in 1982, workers who added COLA's got substantially higher scheduled increases (6.5 percent) than those who kept COLA's (1.7 percent). Perhaps some catch-up phenomenon was evident there. In earlier work,[11] we found a substantially higher strike incidence in the 1970–80 period among bargaining units that added COLA's than among other units. If these strikes reflected union aggressiveness rather than management rigidity, then the results cited above are plausible.

Among currently indexed contracts, there is a consistent 3-percentage-point differential in scheduled wage increases in favor of capped over uncapped agreements. Especially for 1983, it appears that caps are expected to pose a binding constraint on COLA payments. In addition, those workers whose previously capped COLA's were negotiated to become unconstrained took an average cut (0.2 percent) in pay; those whose COLA's remained uncapped received 1.5-percent raises. Again, a price for unrestricted COLA protection is evident. However, those workers whose COLA's became capped fared slightly worse (3.2-percent raise) than those whose COLA's remained capped (3.7-percent raise). Perhaps adding a cap was part of an overall concessionary agreement, although only 26 contracts in our sample added caps to previously unrestricted COLA's. Finally, delays and diversions of COLA payments also appeared to be part of concessionary agreements (particularly in automobiles and trucking). Scheduled wage increases for workers with delays or diversions in COLA payments were lower than for other workers. However, as noted before, in virtually every case where delays or diversions were made in COLA's, the resulting clause eventually returned to unconstrained COLA protection.

The relationship between concessions and COLA's proved rather dramatic. For example, 43.6 percent of workers who retained previously won COLA's in 1982 accepted a pay cut or freeze, as did 32.8 percent in 1983. Overall, between 23 and 25 percent of workers covered by major contracts made such concessions during these years. Among those who agreed to delays in COLA payments, the majority made pay concessions—96.6 percent in 1982, and 51.5 percent the following year. Finally, 74.3 percent of workers whose COLA's became uncapped in 1982–83 and 45.4 percent of those who were able to keep their previously uncapped provisions over that period proved agreeable to concessions.

THE PICTURE THAT EMERGES is one of workers' tenacity in holding on to or establishing uncapped wage index provisions. Despite declining union bargaining power and seemingly stabilized inflation, there has been only a modest trend away from COLA's in the 1982–84 period. This trend was not strong enough to have a noticeable impact on the overall coverage of workers. It thus appears that workers are not convinced that inflation has been taken care of for good. We therefore expect the uncapped COLA to remain a stable feature of U.S. collective bargaining in the foreseeable future. □

———*FOOTNOTES*———

[1] Every 6 months since 1947, Joseph Livingston of the *Philadelphia Inquirer* has surveyed a group of economists about their inflation expectations. For further discussion of this survey, see John Carlson, "A Study of Price Forecasts," *Annals of Economic and Social Measurement*, Winter 1977, pp. 27–56.

[2] For evidence on the lack of COLA coverage for nonunion workers, see Victor J. Sheifer, "Cost-of-living adjustment: keeping up with inflation?" *Monthly Labor Review*, June 1979, pp. 14–17; and David A. Weeks, *Compensating Employees: Lessons of the 1970s* (New York, The Conference Board, Inc., 1976).

[3] This finding is obtained from the data base on COLA's constructed for use in Wallace E. Hendricks and Lawrence M. Kahn, *Wage Indexation in the United States: Cola or Uncola?* (Cambridge, MA, Ballinger, forthcoming). For example, wage levels for janitors and laborers in many steelworker contracts rose by 4 to 5 percent points *more* than the CPI during the 1979–81 period.

[4] See William S. Moore and John Raisian, "The Level and Growth of

Union/Nonunion Relative Wage Effects, 1967–1977," *Journal of Labor Research,* Winter 1983, pp. 65–79.

[5] For example, in December 1983, the Livingston Surveys sample expected an average of 5.5-percent annual inflation over the next 6 months; however, actual inflation from December 1983 to June 1984 registered a 4.3-percent annual rate of increase. See Bureau of National Affairs, *Daily Labor Report,* July 25, 1984.

[6] Although not reflected in the *Current Wage Developments* data, 1982 and 1983 had about equally heavy collective bargaining schedules in terms of percentage of workers negotiating contracts. See Douglas R. LeRoy, "Scheduled wage increases and cost-of-living provisions in 1982," *Monthly Labor Review,* January 1982, pp. 16–20; and William Davis, "Collective bargaining in 1983: a crowded agenda," January 1983, pp. 3–16.

[7] See Davis, "Collective bargaining."

[8] See Hendricks and Kahn, *Wage Indexation.*

[9] The percentage of workers with COLA's that had annual reviews rose during 1983 from 23.9 percent to 37.8 percent, while the percentage getting quarterly reviews fell from 57.0 percent to 33.3 percent. See Davis, "Collective bargaining"; and John J. Lacombe II and James R. Conley, "Collective bargaining calendar crowded again in 1984," *Monthly Labor Review,* January 1984, pp. 19–32. This lengthening of review periods is similar to the delays discussed here. Related to the issue of caps and timing is the overall yield of COLA's. Robert Flanagan, "Wage Concessions and Long-Term Union Wage Flexibility" (paper presented at the Brookings Panel on Economic Activity, April 1984) reports BLS data showing the fractions of total union wage increases attributable to first-year settlements, deferred increases, and COLA payments. The COLA component fell from 1981 to 1983, relative to the other components of wage change. However, Flanagan attributes this decline to the falling inflation rate, rather than to any fundamental change in COLA's themselves, a conclusion consistent with our own findings.

[10] For example, among agreements *expiring* in 1984, deferred increases over the life of the agreement averaged 2.8 percent per year for indexed and 7.4 percent per year for unindexed contracts. For the contracts expiring in 1983, the figures were 5.0 percent and 9.6 percent. Finally, deferred increases received in 1982 (but negotiated before 1982) averaged 3.7 percent and 9.2 percent. See Lacombe and Conley, "Collective bargaining calendar"; Davis, "Collective bargaining"; and LeRoy, "Scheduled wage increases."

[11] See Hendricks and Kahn, *Wage Indexation.*

Cost-of-living escalators became prevalent in the 1950's

SANFORD M. JACOBY

By automatically linking wages to future price changes, cost-of-living adjustments (COLA's) facilitate the use of long-duration contracts. In so doing, COLA's indirectly reduce the costs associated with labor negotiations and strike exposure. Given this feature of COLA clauses, it is surprising to discover that although long-duration contracts have been in use since the turn of the century, very few of them contained COLA clauses until the 1950's. A rapid buildup occurred during the Korean War, and at their peak in 1952, COLA clauses covered about 3.5 million workers.

Despite the turn to COLA's, unions and employers still were leery of them. During 1953 and 1954—when inflation was running under 1 percent annually—there was a sizable shift away from COLA's. By 1955, the number of covered workers had fallen by nearly 50 percent.[1] Since then, the number of workers covered by COLA's has fluctuated, but has never fallen below the nadir reached in 1955. Thus by the mid-1950's, COLA's were here to stay.[2]

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Opposition to COLA's

One does not have to search for reasons why the parties were so reluctant to adopt COLA's prior to the 1950's. First, both employers and union leaders feared the consequences—chiefly worker dissatisfaction and strikes—of a COLA-induced pay cut. These fears were justified, given that pay cuts historically had evoked strong reactions, such as occurred in printing (and elsewhere) in 1921.

Second, neither employers nor unions liked being hemmed in by nondiscretionary wage rules such as COLA formulas. Union leaders called COLA's "a substitute for bargaining," meaning that they expected to receive less credit from the rank and file when an automatic COLA adjustment was made than when a pay increase resulted from, say, bargaining during a wage reopening. Employers disliked the idea of guaranteeing real wage levels in advance without knowing whether future business conditions would warrant them.

Finally, unions were especially concerned that COLA's, as well as arbitral adjustments based on prices, would have the effect of freezing real wages at an inadequate level for the duration of the agreement, if not longer. To us this fear may seem irrational, given that unions today frequently receive intracontractual real wage increases via deferred adjustments. But historically, there were good reasons to be concerned. For example, in the 60-year period prior to the 1948 GM–UAW agreement that contained both COLA clauses and deferred wage increases, only one contract had ever been signed that included both types of clauses. Even after all the publicity received by the GM–UAW agreement, fewer than 3 percent of a group of managers surveyed in 1949 favored both types of clauses.

Reasons for the change

Given that the parties had criticized COLA's for so many years, what accounts for the rather sudden shift in COLA usage after 1950? There are a number of explanatory factors:

Inflationary expectations. Although hard evidence is not available, it is likely that long-run price expectations had changed by the early 1950's. With the exception of three slight annual dips, consumer prices increased each year between 1934 and 1950; the average annual inflation rate for the period was about 2 percent. By historical standards, this was an unusually long and strong stretch of upward price momentum. Long-run price expectations may also have been shaped by the post-1933 adoption of macroeconomic stabilization policies (for example, Keynesian demand management, unemployment insurance, and so forth)

which decreased the likelihood of deflationary price movements. The upshot was that by the 1950's, the parties had less reason than before to expect COLA-induced pay cuts. It is also possible that increased price variability led the parties to adopt COLA's because they felt less confident of their ability to correctly anticipate inflation.

Deferred adjustments. After 1950, numerous companies adopted General Motor's pioneering wage formula that combined COLA's and deferred wage adjustments. By so doing, employers eased labor's concern that accepting COLA's meant accepting a real wage freeze. Management's willingness to pay deferred adjustments stemmed from an optimistic appraisal of long-term productivity trends as well as a greater willingness to share productivity gains with employees.

Reopening costs. Management also came to prefer automatic pay mechanisms such as deferred adjustments and COLA's because of the rising cost of contract reopenings. For many years, union contracts were simple documents. But by the early 1950's, they had grown enormously—both in length and complexity—making them costlier to negotiate and renegotiate. Even a reopening limited to wages involved complicated and costly negotiations. Moreover, the increase in average contract durations in the early 1950's suggests that employers were seeking to stabilize industrial relations and minimize their strike costs. It is unclear whether this search was brought about by a rise in strike costs or simply by a changing, more "mature" perception of those costs. In either case, the effect was the same: there was a substitution of automatic pay formulas for discretionary and potentially destabilizing mechanisms such as wage reopeners.

Patterns. For many parties in the early 1950's, collective bargaining still was a new and sometimes perplexing experience. Each side searched for models to guide them, and the GM–UAW agreements were exemplars. A related phenomenon was the wave of COLA adoptions in anticipation of wartime wage controls. By the end of the war, the parties had become familiar with COLA's, and many no doubt decided that COLA's were more useful than they previously had supposed. □

FOOTNOTES

[1] Lily Mary David and Donald L. Helm, "Wage escalation—recent developments," *Monthly Labor Review*, March 1955, pp. 315–18.

[2] Post-1955 COLA coverage has fluctuated in line with inflationary expectations and also with unemployment rates. During the recessions of the early 1960's and early 1980's, employers were able to achieve the elimination or curtailment of COLA payouts. The rise and fall of COLA's in the late 1950's and early 1960's can be traced through a series of articles in the *Monthly Labor Review* entitled "Deferred wage increases and escalator clauses," January 1957, pp. 50–52; December 1958, pp. 1362–65; December 1959, pp. 1324–28; December 1960, pp. 1268–71; December 1961, pp. 1319–23; and December 1962, pp. 1343–46. Also see "The prevalence of escalator clauses and experience with them in the past 20 years," *Monthly Labor Review*, September 1966, pp. iii–iv.

Factors in the productivity of military personnel

ALAN J. MARCUS AND ALINE O. QUESTER

Since the advent of the All Volunteer Force (AVF) in 1973, the military research community has devoted much effort toward improving personnel management in the areas of accession and retention. Although not all factors have been quantified, we are able to estimate with some accuracy what draws and retains personnel of differing characteristics to the AVF. Our success in obtaining new recruits hinges largely on four factors: the ratio of military to civilian pay, the civilian unemployment rate, the number of recruiters, and the advertising budget. For reenlistment, the main determinants are military pay relative to civilian pay, and the civilian unemployment rate. With knowledge of these factors, we can provide reasonable predictions of enlistments and reenlistments.[1]

The serious gaps in military manpower research are on the demand side of the market. Whom should the military seek to recruit and retain? How do military personnel substitute for each other? What makes personnel productive?

To address these questions, we analyzed supervisors' assessments of first-term recruits. We estimated the net productivity or learning curves to attempt to explain what factors make recruits learn faster: ability, schooling, the particular job, or time on the job.

The measurement of military output

It is not surprising that the demand side of the market for military personnel has been neglected. In most cases, there is no tangible output to measure.[2] And because the military uses explicit fixed-length employment contracts, no one would suggest that a recruit's current productivity is identified by his current wage.[3]

On-the-job training in the civilian sector has often been identified with the slope of the earnings/experience profile. An explicit employment contract in the military clearly breaks the linkage between a worker's spot marginal product and his spot wage. Edward Lazear[4] and others, however, have argued that the link is broken even in the civilian sector. Implicit contracts between private-sector employees and their firms are sufficiently pervasive as to make it impossible to relate earnings profiles to the time path of productivity.[5]

With employment contracts, either explicit or implicit, how can researchers measure the productivity of employees? We offer one approach here using survey data collected by the Rand Corporation in the mid-1970's.[6] Data were collected in two surveys. First 19,000 randomly chosen first-term recruits in selected occupations were sent question-

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naires that requested the names of three immediate supervisors. Next, "net productivity" estimates were collected from these supervisors for the individual recruits at different points in time.[7] All net productivity assessments were relative, comparing the net productivity of the recruit at time t relative to the net productivity of the "average" specialist in the occupation after 4 years at the duty station. Net productivity is -100 percent if the individual requires full-time supervision by a 4-year specialist, $+100$ percent if the individual is as productive as a specialist with 4 years of experience.

Before discussing our empirical results, it is appropriate to address the problems that might be caused by the subjectivity inherent in supervisory evaluations. The most serious types of bias arise from the fact that each supervisor denominates his evaluation in his own particular currency, and uses an individual-specific notion of the mean and variance of performance. Richard Cooper and Gary Nelson call these two sources of systematic bias "location" and "scale," and point out that they do not disappear, even with large sample sizes.[8]

Our approach recognizes that supervisors have systematic differences in the scale and location of their evaluations. We control for these differences in the productivity regression equations with two variables, *DIFF* and *VAR*. These variables are constructed from supervisors' answers to questions concerning the productivity of the "typical" recruit.

Specifically, consider an individual i with a supervisor j. Let TYP_j be supervisor j's assessment of the typical recruit at time t, and $\overline{TYP}$ be the mean assessment of supervisors in that occupation of the typical recruit at time t. Then, for each individual, the proxy for location bias is

$$DIFF_i = TYP_j\ (2\ \text{years}) - \overline{TYP}\ (2\ \text{years})$$

and the proxy for scale bias is:

$$VAR_i = \frac{TYP_j\ (1\ \text{month}) - TYP_j\ (4\ \text{years})}{\overline{TYP}\ (1\ \text{month}) - \overline{TYP}\ (4\ \text{years})}.$$

The sign on *DIFF* should be positive; supervisors who believe that the typical recruit is more productive than do their peers will also tend to rate particular individuals as more productive.

Scale bias, on the other hand, refers to perceived differences (larger or smaller) between the best and the worst performers. Individuals who have a large value of *VAR* have been evaluated by supervisors who see large differences in the growth of the typical recruit over the first 4 years at the duty station. To capture this scale effect, we enter both *VAR* and *VAR* interacted with time on the job: the sign on *VAR* should be negative, and the sign on the interaction variable *VAR*TJ* should be positive.

The learning curve regressions

We estimate the time path of net productivity for first-term recruits in 15 Navy occupations. The regressions control for time at the duty station (*TJ* and *TJSQ*), time in the Navy before the first duty station (*T*), intelligence test score (*AFQT*), high school graduation (*HSG*), and the subjective bias variables discussed above (*DIFF*, *VAR*, and *VAR*TJ*). In addition, we control for observations with missing data by means of a series of dummy variables (*AFQTFLAG*, *DIFFFLAG*, and *VARFLAG*), and for supervisors who did not understand the concept of net productivity (*TEST*).[9]

Results of the learning curve regressions for three Navy jobs are displayed in table 1. The corrections (*DIFF*, *VAR*, and *VAR*TJ*) developed to control for systematic differences across supervisors in the location and scale of their evaluations perform very well. All have the correct sign and all are significant at the 99-percent level. The variable *TEST* has the value 1 if the supervisor did not pass the quiz to determine whether he understood the net productivity concept; otherwise, it is zero. Supervisors who did not understand the concept systematically rated the productivity of recruits higher than supervisors who did.

Even a cursory inspection of the results suggests that Navy personnel take considerable time to learn their jobs and become productive. Moreover, reasonably sharp interoccupational differences in the growth of productivity emerge. In part, this is due to the length of formal training. While the average seaman (an occupation without specialized training) arrives at his first duty station after about 2.5 months in the Navy, the average nuclear electronics technician, because of extensive schooling, does not arrive at his first duty station until almost 17 months after entering the Navy. Even then, substantial on-the-job training is required.

The learning curves for nuclear submarine electronics technicians and general-duty seamen (not shown) are drawn holding all characteristics except time on the job (*TJ*) at their mean values. According to these curves, a seaman with 2 years in the Navy is almost 70 percent as effective in his job as one with 4 years of experience, but a nuclear electronics technician has only reached the zero net productivity level after 2 years. In short, the technician has reached the point at which his contributions to output just balance the output lost because others must spend time supervising him. Because the technician's training takes so long, during his entire 6-year enlistment he produces less than a third of the output that would have been produced by a specialist who initially brought 4 years of work experience to the position.

Higher *AFQT* scores and high school graduation appear to be positively related to productivity, but the magnitude and statistical significance of these effects should be interpreted cautiously. The allocation of recruits to Navy jobs is not random and, indeed, is based on many of the same characteristics that influence performance. While it is theoretically possible to obtain unbiased estimates by controlling for the occupational selection process, standard "selection bias" techniques are not appropriate here because for most Navy jobs the ability and schooling distributions are truncated on both the upper and lower tails.[10]

Table 1. Results of net productivity regressions, selected occupations

Variable	Electrician's mate (nuclear submarine)		Electronics technician (nuclear submarine)		Radioman	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Constant	.84	—	−25.38	—	17.06	—
Time at duty station (TJ)	3.30	(11.8)	3.09	(10.2)	3.67	(20.4)
Time at duty station squared (TJSQ)	−.05	(−13.7)	−.06	(−14.4)	−.06	(−23.6)
Intelligence test score (AFQT)	.19	(2.0)	.39	(4.7)	.16	(3.8)
High school graduation (HSG)	([1])	—	([1])	—	3.55	(2.3)
Time in the Navy before first duty station (T)	.95	(9.1)	1.06	(7.7)	.50	(6.9)
Subjective bias variables:						
DIFF	.35	(8.1)	.25	(5.7)	.54	(21.7)
VAR	−48.08	(−7.9)	−57.58	(−8.6)	−38.12	(−13.1)
VAR*TJ	1.29	(6.2)	2.03	(9.0)	1.46	(13.9)
Controls for missing data:						
AFQTFLAG	([2])	—	([2])	—	1.34	(.7)
DIFFFLAG	16.98	(3.0)	−9.40	(−1.9)	−3.88	(.7)
VARFLAG	−13.62	(−2.4)	10.37	(2.2)	7.55	(1.4)
Control for supervisors who did not understand the concept (TEST)	4.40	(1.9)	8.40	(2.9)	5.36	(3.7)
R^2	.54		.60		.54	
Number of observations	1,591		1,357		3,071	

[1]All personnel in this occupation are high school graduates.

[2]The *AFQT* variable was not missing for any observations for this occupation.

A KEY POLICY VARIABLE related to the growth of productivity during a career in the Navy is the mix between careerists and first-termers. The Navy and Air Force have traditionally had larger proportions of experienced personnel than have the Army and the Marine Corps. Whether the current mix of recruits and experienced personnel is optimal, however, remains an unanswered question. To address the issues of whom the military should recruit, whom it should retain, and how it should distribute these personnel, much more work on the demand side is necessary. □

FOOTNOTES

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[1]For example, see John T. Warner and Matthew S. Goldberg, *Determinants of Navy Reenlistment and Extension Rates*, Research Contribution 476 (Alexandria, Va., Center for Naval Analyses, December 1982); Glen A. Gotz, *Estimating Military Personnel Retention Rates: Theory and Statistical Method*, R–2541AF (Santa Monica, Calif., The Rand Corporation, June 1980); and Thomas V. Daula and D. Alton Smith, *Recruiting Goals, Enlistment Supply and Enlistments in the U.S. Army* (U.S. Military Academy, Office of Economic and Manpower Analysis, October 1984).

[2]The exceptions are the estimates of the effects of maintenance activities on readiness, described by Stanley Horowitz and Allen Sherman in *Crew Characteristics and Ship Condition*, Study 1090 (Alexandria, VA, Center for Naval Analyses, March 1977). Unfortunately, only a small number of military activities lend themselves to such easily identifiable output measures.

[3]Basic military pay, defined on pay tables, is determined by military rank and years of service. It rises very little over the first 4 years; in 1984, the basic pay of enlisted personnel in their fourth year of service was 138 percent of the basic pay of new recruits.

[4]Edward Lazear, "Agency, Earnings Profiles, Productivity, and Hours Restrictions," *American Economic Review*, September 1981, pp. 606–20.

[5]James L. Medoff and Katherine G. Abraham, "Are Those Paid More Really More Productive? The Case of Experience," *Journal of Human Resources*, Spring 1981, pp. 186–216.

[6]For a full description of these data, see Mark J. Albrecht, *Labor Substitution in the Military Environment: Implications for Enlisted Force Management*, R–2330–MRAL (Santa Monica, Calif., The Rand Corporation, November 1979).

[7]Net productivity is the contribution of the recruit to unit output. It is negative if the recruit and the supervisor together produce less than the supervisor would have produced without responsibility for training the individual.

[8]Richard V.L. Cooper and Gary Nelson, *Analytic Methods of Adjusting Subjective Rating Schemes*, R–1685–ARPA (Santa Monica, Calif., The Rand Corporation, June 1976).

[9]Regressions that omit observations if the supervisor did not understand the concept of net productivity are available from the authors. The results are similar to the regressions reported here. A longer version of this paper can be found in Aline Quester and Alan J. Marcus, "The Growth of Productivity in the First Term," Memorandum 82–1525.10 (Alexandria, Va., Center for Naval Analyses, October 1983).

[10]See James Heckman, "Sample Selectivity Bias as Specification Error," *Econometrica*, January 1979, pp. 153–61, for a discussion of a more straightforward problem of selection bias. Double truncation bias is considerably more difficult to deal with empirically.

Research Summaries

BLS expands collective bargaining series for State and local government

EDWARD WASILEWSKI

The Bureau of Labor Statistics has expanded the coverage of its series on negotiated wage adjustments in State and local government collective bargaining units. Beginning with 1984, the series covers all major units—those with 1,000 workers or more. The original series, started in 1979, was limited to units with 5,000 workers or more. The expanded series includes data on negotiated wage changes for 2.1 million workers (about one-half of the State and local government workers who bargain over wages) in 547 bargaining units. This is twice the number of workers and about six times the number of units covered by the original series.

The expansion especially improves the series' coverage of local government workers, who are more likely than State workers to be in smaller bargaining units. In 1984, local government accounted for 62 percent of the workers in units with 1,000 employees or more, compared with 53 percent in units with 5,000 or more. According to the 1982 Census of Governments, local government workers made up about three-fourths of all non-Federal government workers who bargain over wages.

Settlements in 1984

The expanded series shows that major collective bargaining contracts settled for State and local government workers during 1984 provided wage adjustments averaging 4.8 percent in the first year and 5.1 percent annually over the life of the contract.[1] There were 240 State and local government contracts settled, covering 722,000 workers. Local government settlements accounted for four-fifths of the contracts and two-thirds of the workers under 1984 settlements. As shown in table 1, local government settlements provided larger wage adjustments than those negotiated by State governments. First-year adjustments averaged 5.4 percent in local settlements and 3.6 percent in State government settlements. Corresponding averages over the life of the contracts were 5.9 and 3.8 percent a year. Sixty percent of the workers were employed in general government and administration, 20 percent in education institutions, and the remainder in protective services, health care, and transportation.

On average, State and local government settlements were "back-loaded"—that is, they provided smaller wage increases in the first contract year than in later years. Twenty contracts, covering 13 percent of the workers, provided for no specified wage changes in the first year but called for subsequent increases. Forty-six contracts, covering 17 percent of the workers, provided smaller increases in the first than in later years. These 66 "back-loaded" settlements provided wage adjustments averaging 3.0 percent in the first year and 5.2 percent over the life of the agreements. Masked by the averages, however, were the 62 "front-loaded" settlements, covering one-fourth of the workers. They provided wage adjustments of 5.7 percent the first year and 4.3 percent annually over the contract life. The remaining contracts were typically of 12-month duration.

Effect of series expansion. The expansion of the series to include units of 1,000 to 4,999 workers doubled its coverage of workers under 1984 settlements. (See table 1.) In 1984, local governments accounted for 47 percent of all workers under settlements for 5,000 workers or more, and 83 percent of those under settlements for 1,000 but fewer than 5,000.

State government settlements for bargaining units of 5,000 workers or more had average wage adjustments that were about the same size as those for smaller units, for both the first contract year and annually over the life of the contract. The averages ranged from 3.6 to 3.9 percent. In local government settlements for the large bargaining units as well, average adjustments were about the same as those for the small units but only for the first contract year (5.5 and 5.4 percent). Over the life of the contracts, settlements in local government units of 5,000 workers or more had average adjustments (6.8 percent) that were larger than those in units of fewer than 5,000 workers (5.4 percent).

Average wage adjustments for settlements are computed by multiplying the adjustment in each unit by the number of workers covered, and dividing the sum of the products by the total number of workers under settlements. Therefore the averages for all settlements with 1,000 workers or more reflect both the increased proportion of local government employees in the expanded series and the larger average wage adjustments negotiated by local jurisdictions.

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Table 1. Number of workers and average (mean) wage adjustments under State and local government settlements, 1984

Measure	Total	Units with 1,000 to 4,999 workers	Units with 5,000 workers or more
Number of workers:			
All settlements	722,000	359,000	363,000
State government	254,000	61,000	194,000
Local government	468,000	298,000	169,000
Average (mean) adjustments:			
First year of contract:			
All settlements	4.8	5.1	4.4
State government	3.6	3.9	3.6
Local government	5.4	5.4	5.5
Over the life of the contract:			
All settlements	5.1	5.1	5.1
State government	3.8	3.9	3.7
Local government	5.9	5.4	6.8

Compensation. The Bureau also measures compensation (wage and benefit costs) changes[2] in units of 5,000 workers or more. In 1984 settlements for such units, average compensation adjustments were larger for local than for State government workers, as the tabulation below shows. (Data exclude 59,000 workers in five units for which only wage change data were available.)

	First-year adjustment (percent)	*Annual adjustment over life of the contract (percent)*	*Number of workers (in thousands)*
Total	5.2	5.4	304
State government	4.3	4.0	140
Local government	6.0	6.6	164

Effective wage adjustments

In addition to information on new settlements, the series measures changes put into effect in 1984 as a result of both new and earlier settlements in State and local governments. Effective wage adjustments are those that result from settlements in 1984, deferred changes made under agreements negotiated earlier, and cost-of-living adjustment (COLA) provisions. Average effective wage adjustments (in percent) for State and local government agreements with 1,000 workers or more in 1984 were:

	For workers receiving changes	*For all workers (prorated)*
All adjustments	6.6	5.0
1984 settlements	6.6	1.9
Deferred adjustments	6.6	3.1
COLA	1.4	0.0

Wage changes (increases and decreases) put into effect in 1984 averaged 6.6 percent for the 1.6 million workers who received them. When prorated over the 2.1 million workers covered by major State and local government bargaining units, adjustments averaged 5.0 percent.

Only 2 percent of the State and local government workers under major agreements (all in local government, mostly transit) have COLA provisions. About 26,500 local government workers had COLA reviews in 1984. Of these, 25,000 had COLA changes in 1984 averaging 1.4 percent. Wage adjustments stemming from COLA reviews in 1984 averaged 43 percent of the change in consumer prices during the review period.

Data collection

State and local governments are asked to provide information on agreements covering 1,000 workers or more if (1) a labor organization is recognized as the bargaining agent for a group of workers, and settlements are embodied in signed, mutually binding contracts; and (2) at least wages are determined by collective bargaining. For units of 5,000 workers or more, data are collected on both wage and benefit changes. For smaller units, only data on wage changes are collected.

Comparison with private industry

The Bureau also publishes data on collective bargaining settlements in private industry.[3] However, there are major differences between bargaining in State and local government and in private industry. For example, collective bargaining in private industry is governed by the provisions of the National Labor Relations Act and the Railway Labor Act of 1926. State and local government bargaining is controlled by a variety of laws. Some laws, for example, call for binding arbitration as the final step of the negotiation process if the parties cannot agree on the size of the wage changes and other issues. Many laws prohibit strikes against the government.

In many cases, the legislature plays a significant role in the bargaining process. After an agreement is negotiated by the executive branch, it is sent to the legislature for the appropriation of funds. Because this procedure is time consuming, first-year wage increases sometimes reflect the time lag between the date of agreement and the appropriation. The "back-loading" of some contracts results from the legislative funding process; the size of the first-year adjustment may be limited by the monetary appropriation previously legislated for the fiscal year, while subsequent wage increases will be financed in future fiscal year budgets.

Because of these and other differences in bargaining practices, care should be used when comparing the size and nature of the settlements in State and local government with those in private industry. These differences are evident in the characteristics of the settlements reached. For example, cost-of-living adjustment (COLA) clauses cover only 2 percent of State and local government workers reflecting, in part, the need to have funds appropriated for wage increases. In private industry, 57 percent of workers under major agreements have COLA coverage. Agreements without COLA's tend to provide larger specified wage increases than those

with COLA's. (Settlement data include specified first-year and deferred wage changes but exclude potential wage changes resulting from COLA clauses.) Another difference is that pensions are frequently prescribed by law in State and local governments and are not subject to bargaining, but in private industry, pensions may be a bargaining issue.

State and local government settlements in 1984 were generally of shorter duration (averaging 20 months) than those negotiated in private industry (31 months). Thirty-five percent of the State and local government workers were under settlements lasting 12 months or less, compared with 9 percent in private industry.[4]

Bargaining activity, first half of 1985

Approximately 400,000 workers were under 84 contracts that expired or reopened prior to January 1, 1985, but had not been renegotiated as of December 31, 1984. In addition, 880,000 workers are under 200 agreements due to expire or reopen for wage negotiation between January and June 1985. Nearly half the workers are employed in general government and about a third in education. □

FOOTNOTES

[1] Settlement data include specified first-year and deferred wage changes but exclude potential wage changes resulting from cost-of-living adjustment clauses which are based on unknown future changes in the Consumer Price Index.

[2] Percent changes in compensation (wage and benefit costs) are calculated by dividing the newly negotiated changes in the 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.

In calculating compensation change, a value is put on the wage and benefit portions 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 will not change (for example, composition of the labor force will remain constant). The data, therefore, are measures only of negotiated change, and not of total changes in employer cost.

[3] See John J. Lacombe II and James R. Conley, "Major agreements in 1984 provide record low wage increases," *Monthly Labor Review*, April 1985, pp. 39–45.

[4] Additional data on State and local government agreements appears in the May 1985 issue of *Current Wage Developments*.

Wages at motor vehicle plants outpaced those at parts factories

HARRY B. WILLIAMS

Average wages of blue-collar workers in factories producing motor vehicles exceeded those in independent motor vehicle parts plants by 48 percent in May 1983, according to the latest occupational wage surveys of motor vehicles and motor vehicle parts. The surveys are part of the regular Industry Wage Survey program conducted by the Bureau of Labor Statistics and are the first occupational wage surveys of these industries in nearly a decade.

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At the five major producers of passenger cars and light trucks (motor vehicle manufacturers) studied, hourly earnings of production and related workers averaged $12.13, compared with $8.20 an hour for the motor vehicle parts work force. Among the jobs permitting comparison in the North Central region (the region with the largest concentration of motor vehicle manufacturing), workers in motor vehicles manufacturing consistently averaged more per hour than their counterparts making parts. The earnings edge for motor vehicle workers in maintenance and toolroom jobs typically averaged between 10 and 20 percent; in custodial and material movement jobs, between 25 and 35 percent; and for other production jobs, up to 50 percent. Earnings differences between the two industries reflect a combination of factors, including location, differences in products produced, mix of occupational classifications, and extent of labor-management agreement coverage. Virtually all workers in the auto plants studied were covered by such agreements, compared with about three-fifths of the parts production workers.

Motor vehicles

Straight-time earnings of 424,134 production and related workers in motor vehicle manufacturing averaged $12.13 an hour in May 1983.[1] Nearly nine-tenths of the work force earned between $11 and $14 an hour; one-third had earnings within a 20-cent range—$11.80 to $12.

Average earnings within individual regions were near the nationwide average, ranging from $11.84 an hour in the South to $12.33 in the Northeast. Hourly earnings of workers in Michigan, where just over two-fifths of the industry's work force was employed, averaged $12.18; in the rest of the North Central region, earnings averaged $12.08. Such differences in average pay by location reflect variations in the occupational mix within individual factories and some differences in wage scales among establishments in this highly unionized industry.

The $12.13 average for all production and related workers in May 1983 was 119 percent higher than the $5.54 average recorded in a similar study conducted in December 1973.[2] On an annual basis, the average rate of increase was 7.7 percent.

Thirty-five occupations, selected to represent the industry's wage structure, worker skills, and manufacturing operations, accounted for about two-thirds of the production work force. Nationwide, average hourly pay among these jobs ranged from $14.79 for metal and wood patternmakers and $14.70 for die sinkers (drop-forge dies) to $11.20 for janitors, porters, and cleaners. Maintenance jobs, such as carpenters, electricians, millwrights, and pipefitters, typically had averages between $13.50 and $13.75 an hour.

Table 1. Average hourly earnings[1] of production workers in selected occupations, motor vehicle and motor vehicle parts plants, May 1983

Occupation	United States		North Central[2]	
	Motor vehicles	Motor vehicle parts	Motor vehicles	Motor vehicle parts
All production workers[3]	$12.13	$8.20	$12.13	$9.01
Maintenance				
Carpenters	13.50	10.77	13.50	11.12
Electricians	13.76	11.32	13.75	12.05
Mechanics (machine repairers)	13.78	10.00	13.76	11.27
Millwrights	13.51	11.99	13.51	12.11
Pipefitters	13.52	12.74	13.50	12.86
Sheet-metal workers	13.60	12.15	13.60	12.13
Toolroom				
Die-sinkers, drop-forge dies	14.70	8.37	14.58	—
Machine-tool operators, toolroom	13.71	11.39	13.72	11.58
Patternmakers, metal and wood	14.79	9.22	14.81	9.08
Tool and die makers	13.80	11.26	13.77	11.85
Custodial and material movement				
Checkers, receiving and shipping	11.73	7.90	11.73	9.31
Janitors, porters, and cleaners	11.20	7.97	11.18	8.79
Material handling laborers	11.27	7.98	11.29	8.37
Miscellaneous plant				
Assemblers, major	11.61	—	11.58	—
Assemblers, minor	11.49	—	11.53	—
Assemblers, class A	—	8.94	—	9.26
Assemblers, class B	—	6.96	—	7.65
Assemblers, class C	—	6.33	—	6.84
General foundry laborers	11.84	7.25	11.84	—
Heat treaters	11.48	10.45	11.46	11.04
Inspectors	11.79	8.62	11.75	9.34
Machine-tool operators, production	11.67	9.45	11.65	10.28
Metal finishers	11.72	7.46	11.65	7.71
Molders, machine	12.12	7.62	12.11	8.10
Punch-press operators	11.70	8.52	11.67	8.95
Welders, hand	11.98	9.37	11.96	10.26
Welders, machine	11.69	8.50	11.61	9.13

[1]Earnings exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, if any, and cost-of-living adjustments through the end of May 1983 were included as part of the workers' regular pay.

[2]The North Central region includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

[3]Includes data for regions and occupations in addition to those shown separately. The comprehensive report on the study includes data for additional regions and occupations.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria.

Major assemblers, accounting for the most workers (71,242), averaged $11.61 an hour. Minor assemblers, who make components and subassemblies for motor vehicles, averaged $11.49.

All companies included in the study provided a variety of supplementary wage benefits, including paid holidays and vacations; hospitalization, surgical, and medical plans; life and sickness and accident insurance; retirement plans; and supplemental unemployment benefits, among others.

The survey of motor vehicle manufacturing included all automotive operations, including motor vehicle parts manufacturing, of five major producers of passenger cars and light trucks. The survey excluded divisions producing heavy trucks and steel and glass operations. Plants engaged primarily in producing tractors and industrial engines, parts depots, and separate auxiliary units, such as central offices, were also excluded.

Motor vehicle parts

Hourly earnings of production workers in motor vehicle parts manufacturing averaged $8.20 in May 1983.[3] This average was 84 percent above the $4.45 recorded in a similar study conducted in April 1974.[4] On an annual basis, the rate of increase averaged 7.1 percent.

Among the major industry branches studied separately in May 1983, average pay levels were $8.86 in miscellaneous machinery; $8.46 in parts and accessories; $7.98 in automotive stampings; $7.65 in automotive hardware; and $7.18 in engine electrical equipment. Earnings also varied by region, community and establishment size, unionization status, and occupation. (See table 2.)

Among the four regions of the country, average hourly earnings of production workers ranged from $6.58 in the South to $9.01 in the North Central—the largest in terms of employment, with 56 percent of the production workers. In the other two regions, average hourly earnings were $7.63 in the West and $8.38 in the Northeast. Averages were also developed separately for four areas of industry concentration: Toledo, $11.25; Cleveland, $9.81; Detroit, $8.43; and Chicago, $8.22.

The 33 production and related occupations selected to represent the range of skills required in the industries and the diversity of their operations accounted for two-thirds of the production work force. Nationwide, hourly earnings averages ranged from $12.74 for pipefitters to $6.79 for assemblers. With 40,231 incumbents, assembler was, by far, the largest occupation studied. Averages were $8.94 for top level work (class A), $6.96 for intermediate work (class B), and $6.33 for entry level work (class C).

Twelve office clerical jobs were also surveyed in this industry. They covered approximately 25 levels of work and accounted for one-fourth of the office workers within scope of the study. Weekly clerical pay averaged from $222.50 for entry level file clerks to $403 for top level secretaries. Averages for the remaining classifications, including accounting clerks, key entry operators, messengers, order clerks, receptionists, stenographers, and typists, typically ranged from $250 to $350 a week. Most clerical workers were scheduled to work 40 hours per week.

Paid holidays were granted to virtually all production and office workers in motor vehicle parts establishments in May 1983. For both employee groups, workers typically received at least 10 days. Provisions for office workers tended to be somewhat more liberal than for production workers.

Paid vacations, after qualifying periods of service, also were provided to virtually all production and office workers. Typical provisions for production workers were 1 week of vacation pay after 1 year of service, 2 weeks after 3 years, 3 weeks after 10 years, and at least 4 weeks after 20 years. For office workers, typical provisions were 2 weeks after 1 year, 3 weeks after 8 years, and at least 4 weeks after 15 years. Slightly more than one-half of the office workers and

Table 2. Number of production workers and average straight-time hourly earnings by selected characteristics, motor vehicle parts, United States and selected regions,[1] May 1983

Characteristic	United States		Northeast		South		North Central		West	
	Number of workers	Average hourly earnings[2]	Number of workers	Average hourly earnings[2]	Number of workers	Average hourly earnings[2]	Number of workers	Average hourly earnings[2]	Number of workers	Average hourly earnings[2]
All production workers[3]	170,825	$8.20	18,368	$8.38	48,912	$6.58	97,183	$9.01	6,362	$7.63
Men	110,963	8.94	12,950	9.12	25,915	7.09	66,408	9.73	5,690	7.77
Women	52,088	6.60	5,418	6.59	19,848	5.83	26,150	7.19	672	6.45
Size of community:										
Metropolitan areas[4]	102,664	8.65	16,659	8.68	22,063	6.8	57,823	9.44	6,119	7.68
Nonmetropolitan areas	68,161	7.52	1,709	5.46	22,849	6.39	39,360	8.38	—	—
Size of establishment:										
50–249 employees	56,280	7.33	4,511	6.40	15,456	6.38	31,854	7.73	4,459	8.65
250–499 employees	42,867	7.84	2,673	8.67	14,262	6.09	24,966	8.87	—	—
500 employees or more	71,678	9.09	11,184	9.10	19,194	7.11	40,363	10.11	—	—
Labor-management contract coverage:										
Establishments with—										
Majority of workers covered	99,755	9.16	16,166	6.76	10,160	6.89	71,985	9.54	1,444	10.74
None or minority covered	71,070	6.84	2,202	5.54	38,752	6.50	25,198	7.50	4,918	6.72
Motor vehicle parts industry branches[5]										
Parts and accessories	103,699	8.46	7,530	8.76	33,504	6.88	57,604	9.37	5,001	8.12
Automotive hardware	7,311	7.65	—	—	2,320	5.20	4,484	8.05	—	—
Automotive stampings	18,870	7.00	2,820	11.12	4,104	6.01	11,800	7.02	—	—
Engine electrical equipment	18,584	7.18	3,222	7.58	5,422	5.38	9,776	8.08	—	—
Miscellaneous machinery	14,838	8.86	—	—	—	—	10,344	9.77	—	—

[1]The regions are defined as follows: *Northeast*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *South*: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *North Central*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; and *West*: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. Alaska and Hawaii were not included in the study.

[2]Earnings exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, if any, and cost-of-living adjustments through the end of May 1983 were included as part of the workers' regular pay.

[3]Includes data for workers not identified by sex.

[4]Standard Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget through October 1979.

[5]The production worker total above includes data for workers in industry branches not shown separately.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria.

about three-tenths of the production workers could receive at least 5 weeks of vacation after 25 years of service.

Various health insurance plans—including life, hospitalization, surgical, and medical insurance—at least partly paid for by the employer, also were available to a large proportion of workers. Major exceptions were long-term disability insurance plans which covered just over one-fourth of the production workers and nearly two-thirds of the office staff. Retirement pension plans—other than Federal Social Security—applied to about seven-eighths of each group.

The 852 establishments within scope of the survey employed 170,825 production workers. Regionally, the North Central employed nearly three-fifths of the production workers and the South had nearly three-tenths. The Northeast employed one-tenth and the remaining 4 percent were located in the West. Among the four areas of industry concentration studied separately, production employment ranged from 3,276 workers in Toledo to 9,378 in Detroit. Chicago employed 5,409 workers and Cleveland, 3,453 workers.

The motor vehicle parts industry, as defined for this survey, includes establishments that manufacture a wide variety of parts and accessories for motor vehicles, and is composed of all or part of 11 separate industries, as defined in the *Standard Industrial Classification Manual*, prepared by the U.S. Office of Management and Budget. Among products included are door locks, handles, and hinges; stamped or pressed metal body parts; wheel covers; springs, pistons, piston rings, valves, and carburetors; lights and electrical and mechanical instruments; exhaust systems, gears, radiators, and shock absorbers; and electrical engine equipment such as alternators and spark plugs.

A national summary of findings for motor vehicle manufacturing and area reports for motor vehicle parts in Chicago, Cleveland, Detroit, and Toledo were issued in late 1983, and are available from the Bureau or any of its regional offices. A comprehensive report, *Industry Wage Survey: Motor Vehicles and Parts, May 1983*, Bulletin 2223 (Bureau of Labor Statistics, 1985), is for sale by the Superintendent of Documents, Washington, DC, 20402, and by the Bureau's regional offices. □

FOOTNOTES

[1]Earnings data exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, if any, and cost-of-living adjustments through the end of May 1983 are included as part of the workers' regular pay.

[2]For an account of the earlier survey, see Philip M. Doyle "Wages of auto assembly plants top those at parts factories," *Monthly Labor Review*, June 1976, pp. 45–47.

[3]Earnings data exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Also excluded were motor vehicle parts plants operated by passenger car manufacturers (which are included in the motor vehicles segment of the survey) and establishments employing fewer than 50 workers.

[4]Doyle, "Wages of auto assembly plants."

Child-care assistance as a benefit of employment

Child care is increasingly becoming a major employee concern. Rapid changes in the labor force—particularly the entrance of large numbers of female workers—have also resulted in growing *employer* awareness of the need for child-care benefits. Still, while many employers are considering such benefits, few are providing them. But the situation may be changing: the number of employers offering some child-care benefit to employees has doubled since 1982. In a recent comprehensive report, labor information specialists with The Bureau of National Affairs (BNA) examine the issues and options in the field of child-care benefits.

Highlights of the report:

- As noted, the number of employers providing a child-care benefit to workers has doubled since 1982. But only about 1,000 employers provide child-care assistance to their employees, representing only a minute fraction of all U.S. firms.
- In general, employers worry about the expense of child care, and are seeking minimal-cost approaches.
- Employer-operated, onsite child-care centers are the exception rather than the rule.
- Large employers are making increasing use of flexible benefit plans to provide child-care benefits. This approach is favored because it allows childless employees to select alternative benefits.
- Many employers are now revising their personnel practices to facilitate child care through such measures as flextime, paternity leave, and adoption leave.
- One popular approach to providing child-care assistance, the zero-balance reimbursement account, has encountered serious objections from the Internal Revenue Service.
- Labor unions generally have not pushed for child-care benefits in contract negotiations because of the cost and the relatively small number of members who would benefit.
- Little sound analysis of the costs and benefits of child-care assistance has been conducted, despite the great interest in the issue. Experts say many employers cannot correctly calculate the cost of providing the benefit because they do not know the value of space, employee time, and in-kind services that may be involved. The gains, such as improved morale and greater job satisfaction, generally have been documented subjectively. Some companies may provide benefits that do not meet their employees' needs because of inadequate needs assessment. The most popular method of determining needs, an employee survey, may be misrepresentative unless it is supplemented with other approaches.
- In general, fewer than 4 percent of an employer's work force will use child-care assistance supported by the employer.

The report also presents 10 case studies of different approaches to providing child-care benefits to employees. The approaches vary from onsite centers, to supporting a network of family child-care homes, to information and counseling services only. In addition, the study gives Internal Revenue Service rulings, State tax laws, union bargaining proposals, employer policies, a bibliography, and a directory of resource organizations.

The full BNA report, entitled *Employers and Child Care: Development of a New Employee Benefit,* is available from The Bureau of National Affairs, Inc., Customer Service, 9401 Decoverly Hall Road, Rockville, MD 20850. The cost is $25 per copy. □

A report on the status of the health care labor force

The number of health care personnel in the Nation continued to rise during the 1970–82 period, but from 1980–82, the increase eased, according to a report from the Department of Health and Human Services, Bureau of Health Professions. This report includes information on the supply, occupational and geographical distribution, and demographic characteristics of health practitioners. It also examines current educational trends among these workers, and projects relative supply and demand for health professionals through the year 2000.

The overall increase in the supply of registered nurses (83 percent), veterinarians (50 percent), and physicians (43 percent) surpassed that of other major groups of practitioners during 1970–82. These increases also outpaced the growth in the population (14 percent), resulting in higher overall provider-to-population ratios.

According to the report, the proportion of women among all medical doctors increased from 9.1 percent in 1975 to 11.6 percent in 1980 and to 12.2 percent in 1981. Women increased their number and proportion in many traditionally male-dominated occupations in the profession during 1980–82, and they are expected to continue this course into the future. Large increases were reported in the number of women who practice internal medicine, surgery, radiology, and obstetrics/gynecology.

The relatively small proportion of the health care work force composed of minorities is not expected to change greatly in the future. Asian-Pacific Islanders, the largest group of minority physicians, accounted for 10 percent of all doctors, according to the 1980 census. For the same year, the Bureau of Health Professions estimates that blacks made up about 3.4 percent of Doctors of Medicine, and

were more likely than others to set up general or family practices in urban areas.

One persistent problem has been the shortage of health care personnel in very sparsely populated areas in the Nation. However, the increase in the number of general practitioners, physician assistants, and nurses who relocate into rural areas may relieve this situation. In addition, the report speculates that the overall increase in the supply of physicians—resulting in greater competition—might further entice more of them into practicing in the rural counties.

In recent years, the number of students enrolled in some fields has declined or leveled off, but the smaller additions to the supply of health care professionals are projected to outweigh the losses through the year 2000. For most of the occupations, the supply of and demand for health care personnel will be closely balanced. However, the report projects that the demand for full-time equivalent registered nurses with baccalaureate degrees will be higher than the projected supply by 1990 and 2000.

In addition, the Bureau of Health Professions estimates that in the future the supply of physicians will be greater than the number required—35,000 or 6 percent more by 1990, and 51,800 or 7 percent more by the year 2000. The advantages of this oversupply, the Bureau predicts, might curb the number of aliens and U.S. citizens who attend foreign medical schools and come to the United States to practice, improve service, and shift more personnel into rural areas. It is also predicted to have negative effects such as increased costs and unnecessary health care.

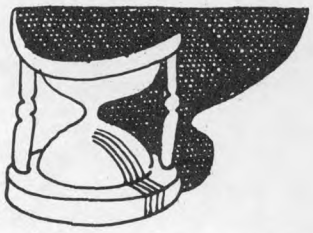
FOR A DETAILED REPORT on this occupational group, see *Report to the President and Congress on the Status of Health Personnel in the United States May 1984*, vols. 1 and 2 (U.S. Department of Health and Human Services, Bureau of Health Professions, 1984), on sale ($17.00) by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. □

Women in the labor picture

Two-thirds of labor force growth from now to 1995 will be made up of women. This increasing proportion of working-age women entering the labor force continues a dramatic shift. In 1970, women's labor force participation was 43 percent, in 1983 it was 53 percent, and in 1995 it will be 60 percent.

Women will be more likely to be single, separated, divorced, or widowed, instead of being married with a spouse present, in the years to come. Many of these single women presently face serious economic pressure to enter the labor force, and that pressure will continue. More and more women, even those with preschool-age children, are looking for work and finding jobs outside the home, and they are taking less time out of the labor force for child raising.

—MARKLEY ROBERTS
"The Future Demographics of American Unionism,"
The Annals of the American Academy of Political and Social Science,
May 1984, p. 27.



Major Agreements Expiring Next Month

This list of selected collective bargaining agreements expiring in June is based on information from the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification.

Employer and location	Private industry	Labor organization[1]	Number of workers
Associated General Contractors of America, Inc., Georgia Branch, (Atlanta, GA)	Construction	Carpenters	1,700
Associated General Contractors of America, Inc., Georgia Branch (Atlanta, GA)	Construction	Laborers	2,000
Omaha Building Contractors Employers Association (Nebraska)	Construction	Laborers	1,700
Associated General Contractors of America, Inc. and one other (San Diego, CA)	Construction	Operating Engineers	2,300
Associated General Contractors of America, Inc., Southern California Chapter and others, 2 agreements (California)	Construction	Operating Engineers; Teamsters (Ind.)	13,150
Keystone Building Contractors Association and one other (Pennsylvania)	Construction	Laborers	1,500
Associated General Contractors of America, Inc., Alaska Chapter, 3 agreements (Alaska)	Construction	Laborers; Operating Engineers; and Teamsters (Ind.)	17,050
Associated General Contractors of America, Inc. (Rhode Island)	Construction	Carpenters	1,500
Association of Contracting Plumbers of the City of New York, Inc. (New York)	Construction	Plumbers	2,000
Painting and Decorating Contractors Association (Houston, TX)	Construction	Painters	1,600
Associated General Contractors of America, Inc., and one other (Las Vegas, NV)	Construction	Carpenters	1,800
Associated General Contractors of America, Inc., and one other (Boston, MA)	Construction	Iron Workers	1,350
Mechanical Contractors Association and others (Houston, TX)	Construction	Plumbers	2,550
Painting and Decorating Contractors Association (Los Angeles, CA)	Construction	Painters	2,500
Sheet Metal and Air Conditioning Contractors National Association, Alameda and Contra Costa Counties (California)	Construction	Sheet Metal Workers	1,300
National Electrical Contractors Association (Alaska)	Construction	Electrical Workers (IBEW)	2,700
Employers associations (West Palm Beach, FL)	Construction	Plumbers	1,000
Joseph Schlitz Brewing Co. (Interstate)	Food products	Teamsters (Ind.)	1,800
Frozen Food Employers Association (California)	Food products	Teamsters (Ind.)	4,000
Dan River Inc., Danville Division (Danville, VA)	Textiles	Textile Workers	6,000
Bobbie Brooks (Interstate)	Apparel	Ladies' Garment Workers	1,000
Belt Association, Inc. and one other (New York, NY)	Apparel	Ladies' Garment Workers	4,000
Pleaters, Stitchers and Embroiderers Association, Inc. (New York, NY)	Apparel	Ladies' Garment Workers	5,000
National Hand Embroidery and Novelty Manufacturers Association (New York, NY)	Apparel	Ladies' Garment Workers	5,000
Millwork Manufacturers Association, Inc. (New York, NY)	Furniture	Carpenters	4,500
James River Co. (Berlin, NH)	Paper	Paperworkers	1,000
Georgia-Pacific Corp. (Arkansas)	Paper	Paperworkers	1,150
Printing Industries of St. Louis (Missouri)	Printing and publishing	Graphic Communications	1,700
Allied Chemical Corp., Industrial Chemical Division (Solvay, NY)	Chemicals	Steelworkers	1,100
Johnson and Johnson and Ethicon, Inc. (New Brunswick, NJ)	Chemicals	Clothing and Textile Workers	1,500
General Tire and Rubber Co. (Texas)	Rubber	Rubber Workers	1,200
Plastic and Metal Products Manufacturers (New York, NY)	Rubber	Ladies' Garment Workers	5,000
Kelly-Springfield Tire Co. (Cumberland, MD)	Rubber	Rubber Workers	1,200
Chicago Pneumatic Tool Co. (Utica, NY)	Machinery	Machinists	1,200
Copeland Corp. (Sidney, OH)	Machinery	Electrical Workers (IUE)	1,450
General Electric Co. (Interstate)	Electrical products	Various	98,000
Zenith Electronics Co. (Evansville, IN)	Electrical products	Electrical Workers (IUE)	1,000
Bath Iron Works Corp. (Bath, ME)	Transportation equipment	Marine and Shipbuilding Workers	4,500
Trico Products Corp. (Buffalo, NY)	Transportation equipment	Auto Workers	1,500
AM General Corp. (South Bend, IN)	Transportation equipment	Auto Workers	1,350
Howmet Turbine Components Corp. (Michigan)	Transportation equipment	Auto Workers	1,600
General Dynamics Corp., Pomona Division (California)	Transportation equipment	Machinists	2,200

See footnotes at end of table.

Continued—Major Agreements Expiring Next Month

Employer and location	Private industry	Labor organization[1]	Number of workers
Johnson and Johnson and Ethicon, Inc. (New Brunswick, NJ)	Instruments	Clothing and Textile Workers	1,600
National Association of Doll Manufacturers, Inc. (New York)	Miscellaneous manufacturing	Novelty and Production Workers	3,500
Stuffed Toy Manufacturers Association, Inc. (New York, NY)	Miscellaneous manufacturing	Novelty and Production Workers	1,000
Master cement and all dry bulk agreement (Interstate)	Trucking	Teamsters (Ind.)	2,000
Northwest Airlines, clerical and office (Interstate)[2]	Air transportation	Railway Clerks	3,600
Trans World Airlines, pilots (Interstate)[2]	Air transportation	Air Line Pilots	2,700
General Telephone Company of Michigan (Michigan)	Communication	Electrical Workers (IBEW)	3,100
General Telephone Company of Kentucky (Kentucky)	Communication	Communications Workers	1,450
Central Hudson Gas and Electric Corp. (New York)	Utilities	Electrical Workers (IBEW)	1,000
Arkansas Power and Light Co. (Arkansas)	Utilities	Electrical Workers (IBEW)	2,900
Georgia Power Co. (Georgia)	Utilities	Electrical Workers (IBEW)	4,400
Potomac Electric Power Co. (Washington, D.C.)	Utilities	Electrical Workers (IBEW)	3,500
East Ohio Gas Co. (Ohio)	Utilities	Service Employees	2,000
Union Electric Co. (Missouri)	Utilities	Electrical Workers (IBEW)	1,850
Union Electric Co. (Missouri)	Utilities	Operating Engineers	1,700
Union Electric Co. (Missouri)	Utilities	Electrical Workers (IBEW)	1,100
Independent Employers and Distributors Association and others (California)	Wholesale trade	Longshoremen's and Warehousemen's; Teamsters (Ind.)	25,000
Bradlees Mercantile, 2 agreements (New England)	Wholesale trade	Food and Commercial Workers	3,200
Almacs, Inc. (Rhode Island and Massachusetts)	Retail trade	Food and Commercial Workers	2,500
Chain and independent food stores (Iowa and Illinois)	Retail trade	Food and Commercial Workers	2,000
Jewel Food Stores (Illinois and Indiana)	Retail trade	Retail, Wholesale and Department Store	14,000
Chain and independent food stores (New York, NY)	Retail trade	Food and Commercial Workers	13,000
A&P Tea Co. (New England)	Retail trade	Food and Commercial Workers	1,500
Food Mart/Waldbaums (New England)	Retail trade	Food and Commercial Workers	2,300
Chain food stores (Illinois and Indiana)	Retail trade	Food and Commercial Workers	10,000
Star Markets (New England)	Retail trade	Food and Commercial Workers	1,350
Women's Apparel Chain Store Association (New York, NY)	Retail trade	Ladies' Garment Workers	6,500
Greater Milwaukee Hotel-Motel Association (Wisconsin)	Hotels	Hotel Employees and Restaurant Employees	1,700
Affiliated Hospitals of San Francisco (California)	Hospitals	California Nurses Association	2,000
Associated Hospitals of East Bay (California)	Hospitals	California Nurses Association	2,000
Swedish Hospital-Medical Center (Seattle, WA)	Hospitals	Washington Nurses Association	1,000
Group Health Cooperative (Seattle, WA)	Hospitals	Hospital and Health Care Employees	1,250
Temple University (Philadelphia, PA)	Services	Retail, Wholesale and Department Store	1,300

	Government activity	Labor organization[1]	Number of workers
California: California State University, operations support	Education	Service Employees	7,400
Los Angeles County Police Department	Police protection	Los Angeles Police Protection League (Ind.)	6,700
San Diego Board of Education, teachers	Education	Education Association (Ind.)	5,800
San Diego County general unit	General government	San Diego County Employees Association	7,200
Connecticut: State clerical employees	General government	Civil Service Employees	6,500
State blue-collar unit	General government	State, County and Municpal Employees	7,500
Florida: State human services	Social services	State, County and Municipal Employees	17,000
State professional unit	General government	State, County and Municipal Employees	15,000
State operational services unit	General government	State, County and Municipal Employees	14,000
Florida State University, faculty	Education	United Faculty of Florida (Ind.)	6,000
Dade County Board of Education, blue collar	Education	State, County and Municipal Employees	6,000
Dade County Board of Education, teachers	Education	Teachers	16,000
Hillsborough County Board of Education, teachers	Education	Hillsborough Classroom Teachers Association	6,300
Pinellas County Board of Education, teachers	Education	Education Association (Ind.)	5,500
Hawaii: State white-collar nonsupervisory unit	General government	State, County and Municipal Employees	10,000
State blue-collar unit	General government	State, County and Municipal Employees	8,000
State Board of Education, teachers	Education	Education Association (Ind.)	9,100

See footnotes at end of table.

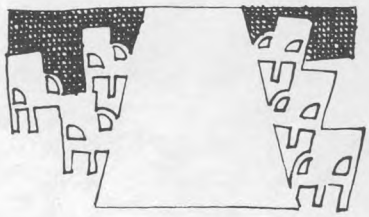
Continued—Major Agreements Expiring Next Month

Employer and location	Government activity	Labor organization[1]	Number of workers
Iowa: State employees	General government	State, County and Municipal Employees	14,000
Michigan: Detroit Board of Education, teachers	Education	Teachers	11,000
Minnesota: Multidepartments	General government	State, County and Municipal Employees	16,200
Department of Transportation, professional	Transportation	Teamsters (Ind.)	5,150
New Hampshire: State multi-unit	General government	New Hampshire State Employees Association (Ind.)	9,000
New Jersey: Newark Board of Education, teachers	Education	Teachers	5,500
New York: New York State University, professional employees	Education	University Professors (Ind.)	18,600
Oregon: State Forestry general unit	Conservation	Service Employees	17,000
State employee unit	General government	Service Employees	20,000
Pennsylvania: First-level supervisory unit	General government	State, County and Municipal Employees	5,400
Human services	Social services	State, County and Municipal Employees	15,400
Maintenance-trades	General government	State, County and Municipal Employees	10,900
Social rehabilitation services	Social services	Pennsylvania State Employees Association (Ind.)	8,900
Clerical, administrative and fiscal	General government	State, County and Municipal Employees	16,650
Wisconsin: State blue-collar unit	General government	State, County and Municipal Employees	5,000
Milwaukee Board of Education, teachers	Education	Education Association (Ind.)	5,300

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

[2]Information is from newspaper reports.

Developments in Industrial Relations



Public employees entitled to respond to dismissals

In a decision with widespread implications, the Supreme Court held that before public employees can be fired, they must be informed of the charges against them and given an opportunity to respond. Writing for the 8-member majority, Justice Byron R. White said, "[t]he due process clause [of the Constitution] provides that certain substantive rights—life, liberty and property—cannot be deprived except [under] constitutionally adequate procedures." He explained that tenured civil servants have a "property" interest in retaining their jobs and are therefore entitled to written or oral notice of the charges against them and an explanation of the employer's evidence, and must be given an opportunity to rebut the evidence.

Justice William H. Rehnquist dissented, saying that the majority used "somewhat tortured reasoning" to give public employees new rights in the cases, *Cleveland Board of Education v. Loudermill* and *Parma Board of Education v. Donnelly*.

In 1974, the Court had held that anyone who accepts a job also accepts the specified procedures for dismissal. Subsequently, the Court issued several decisions reversing that position, culminating in the current decision. Justice White said, "[i]f a clearer holding is needed, we provide it today."

The decision applied primarily to nonunion employees in State and local government because others are covered by regulations or collective bargaining provisions providing for similar dismissal protections for employees. The American Federation of State, County, and Municipal Employees (AFSCME) union estimated that the decision applies to at least 3 million workers.

Conrail employees' pay cut restored

By mid-March, 15 of 17 rail unions had signed so-called "snap back" agreements with Conrail, returning more than 30,000 workers to wage parity with the rest of the Nation's rail workers. The restoration of the 12.5-percent pay cut, which amounted to about $1.50 an hour, was retroactive to July 1, 1984. Union leaders indicated they would continue to press Conrail to make the increase retroactive to May 5, 1981, the effective date of the pay cut union members had accepted to aid the financially troubled carrier. Union leaders claimed full retroactivity was appropriate because Conrail earned profits of $500 million in 1984 and $313 million in 1983.

Conrail announced it was joining the National Railway Labor Conference, the industry's bargaining arm, and would be bound by all future national rail settlements. Since its congressionally mandated formation in 1976 from Penn Central and other bankrupt carriers, Conrail had bargained on its own with the various unions.

At the time of the Conrail wage restoration settlement, there were no indications of impending accords in the national negotiations, as nearly all of the unions were involved in mediation procedures with the carriers under provisions of the Railway Labor Act. The unions had served required termination notices on the carriers that were effective June 30, 1984, but there have been no work stoppages.

The Department of Transportation recommended to the Congress that Conrail be sold to Norfolk Southern Corp. for $1.2 billion. The choice was opposed by union leaders, who had earlier signed an agreement with Allegheny Corp. that would provide for a number of job protection measures if Allegheny was the successful bidder. (Allegheny's bid also was $1.2 billion, but its proposal differed from Norfolk Southern's in other respects.)

Contract regulating royalties replaced

In the entertainment industry, the Dramatist Guild and the League of New York Theaters settled. The Guild represents 8,000 playwrights, lyricists, composers, writers, and adapters, while the League is the association of Broadway producers and theater owners. The new Approved Production Contract replaces the Minimum Basic Production Contract which, in varying forms, had regulated minimum royalty payments to playwrights and other employees since 1926. While the new "contract" was approved by both sides, it, like the old contract, carries no force of law, leading to continuing doubts about the extent to which its major conditions will be incorporated into contracts between individual producers and individual members of the Guild.

Going into the bargaining, the producers had contended that existing royalty arrangements made it difficult to attract

"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.

financing of plays because financial backers had to wait too long to recoup their investment. In return, playwrights contended that their risks were larger than those of other parties sharing in royalties and that they were pressured to agree to unwarranted cuts in their share.

These issues were addressed in new provisions that—

- Increases certain advances to authors and establishes a guaranteed $1,000 a week royalty payment in exchange for receiving only half the usual 10-percent royalty payment until the production recoups its initial investment. Thereafter, the author receives the full 10-percent royalty.
- Gives producers a greater share of immediate income from anciliary rights, such as film and television productions. In return, the authors will receive a larger share of future returns.
- Standardizes royalty reduction plans, which had previously been negotiated between individual producers and writers.
- Expands producers' territorial rights to Australia and New Zealand, joining the United States, Canada, and Great Britain.

Both sides expressed hope that the accord will lead to further standardization of financial arrangements in the industry, but acknowledged that conformity to the contract will be difficult to attain because of wide differences in the bargaining strength of individual authors and producers.

Writers' 2-week strike ends

A 2-week strike ended when members of the Writers Guild settled with the Alliance of Motion Picture and Television Producers. The major issue in the dispute was the portion of "residual" payments the writer should receive from sales of videocassette recordings of movies. (A residual is an additional payment connected to the distribution of a movie after its initial box office release.) The writers claimed their 1973 settlement had established the rule that they receive 1.2 percent of the wholesale price of videocassettes, and had initiated arbitration proceedings to enforce this prior to the start of the strike. The producers had also initiated arbitration to back their contention that the 1.2 percent residual should apply only to the "producers' gross," which amounts to about 20 percent of the wholesale price.

Under the settlement, which covered 9,000 writers, the parties terminated the arbitration and agreed to raise the writers' share of residuals to 1.3 percent and apply it to the producers' gross. In partial exchange for dropping their $8 million claim, the producers also agreed to pay $1.2 million into the union's health fund.

Other terms included a 6-percent increase in the minimum payment writers receive for writing a script, followed by another 6-percent increase in the second year, and a 6.5-percent increase in the third and final year. Fees for writing movies longer than 2 hours and television "movies of the week" were increased 30 percent over the contract term. Under the prior contract, writers received $14,782 for a half-hour situation comedy, which included the residuals for one rerun, and $44,566 for a 2-hour movie, including a residual for a prime time rerun.

Brock nominated to be Labor Secretary

President Reagan has nominated U.S. trade representative William E. Brock to be Secretary of Labor, replacing Raymond J. Donovan, who resigned March 15.

AFL–CIO President Lane Kirkland praised Brock, saying labor has "worked with him in many areas over the years" and "while we haven't always agreed, he has earned our respect." Speaking of Brock, President Reagan said, "[a]nyone who spent four years dealing with international trade can negotiate with almost anyone."

Donovan had been Labor Secretary since 1980. He had been on unpaid leave from the Department since October 1984, defending himself against New York City charges of fraud and larceny. The allegations relate to work by his construction firm on a New York City subway project before Donovan took office.

AFL-CIO Executive Council meets

The AFL–CIO's Executive Council adopted a report detailing the problems facing the Federation and suggesting ways for attaining a "resurgence of the labor movement." The report, "The Changing Situation of Workers and Their Unions," was the culmination of 2½ years of work by the Executive Council's Committee on Evolution of Work, headed by Federation Secretary-Treasurer Thomas R. Donahue. The Committee will remain in existence to study points raised in its discussions but not included in the report and to review reactions to the report.

The report concedes that "unions find themselves behind the pace of change" in American society, but contends that organized labor can overcome its problems, just as it did in the 1920's and 1930's, when unions rebounded from a period of difficulties by changing their strategies.

The committee offered a number of recommendations for strengthening the movement, including:

- Renewed emphasis on organizing, including increased financing, greater use of modern communications methods, experimentation with new organizing techniques, and greater involvement of union leaders and members.
- Encouragement of mergers among smaller unions and development by the AFL–CIO of merger guidelines.
- Increased use of communications media to improve the public's understanding of labor.
- Experimentation with new methods of representing unions providing "far greater flexibility in the workplace, and greater reliance on mediation and arbitration."
- Consideration of new categories of union members, such as union supporters in nonunion shops.
- Expanded use of "corporate campaigns" to overcome

employer resistance to worker efforts to form unions.
- A study of proposals to provide direct services and benefits to workers outside of a collective bargaining structure.

In other actions, the Executive Council issued resolutions condemning aspects of President Reagan's proposed budget, including the freeze of social security benefits, elimination of the Job Corps, elimination of a program for providing special unemployment benefits to laid-off workers who have exhausted their regular entitlement, cuts in Federal employees' pay, and increases in defense spending.

In other actions during the meeting, the executive boards of the Paperworkers and the Oil, Chemical and Atomic Workers (OCAW) unions approved a merger proposal. If approved by the unions' conventions later in 1985, the new United Paper, Energy and Chemical Workers International Union would begin operation on January 1, 1986. It would be headed by Paperworkers President Wayne E. Glenn, with OCAW President Joseph M. Misbrener serving as senior executive vice president.

ITU merger dilemma continues

In the merger saga of the International Typographical Union (ITU) and the Graphic Communications International Union, the executive board of Graphic Communications rejected a proposal to absorb the smaller ITU. A Graphic Communications official said the rejection occurred because the executive board had insufficient time to study the proposal, and because of "other concerns."

In light of the rejection, Teamsters' President Jackie Presser said he would renew efforts to persuade ITU members to become a unit of his union.

The ITU has been seeking a merger partner for a number of years. After the termination of merger talks between the ITU and the Newspaper Guild in 1983, officers of ITU negotiated a merger document with the Teamsters. A Federal judge blocked a referendum on the proposal until an election of ITU officers was held. In the election, held in 1984, Robert S. McMichen and two other officers who favored merger with Graphic Communications were elected.

At the ITU's September 1984 convention, the delegates established a procedure and deadline for attaining a merger with an AFL affiliate, after which a referendum on the Teamsters' proposal could occur. The new ITU officers then negotiated the merger agreement with Graphic Communications within the time limit and recommended approval to its (ITU) members.

The Graphic Communications executive board's rejection of the merger proposal was a blow to AFL–CIO President Lane Kirkland, who had backed the proposal as part of a plan to consolidate all workers in the printing industry into a single strong union. It was not immediately clear what the next step in the ITU merger saga will be in view of continuing factionalism within the union. An ITU official said the union will "drop back and huddle" to decide its next move.

Mississippi teachers return to classroom

A nearly 1-month strike by Mississippi public school teachers ended when the State legislature raised teachers' pay by $2,400 a year effective immediately, and by $1,000 in both 1986 and 1987. Participation in the stoppage fluctuated, but about 9,000 of the State's 27,000 teachers were out at one time or another, idling about 175,000 students.

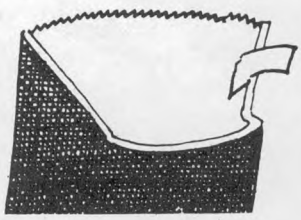
The major issue leading to the walkout was the teachers' demand for a $7,000 raise over a 2-year period. The Mississippi Association of Educators (an affiliate of the National Education Association—NEA), which represents 13,000 of the 27,000 teachers, said the raise was warranted because Mississippi teachers are the lowest paid in the Nation, averaging about $16,000, according to the NEA. The 14,000 other teachers—some of whom participated in the strike—are represented by the American Federation of Teachers or are not represented by a union.

The pay legislation also contained antistrike provisions strongly opposed by the teachers. However, the teachers backed the successful effort to override the Governor's veto of the pay bill because they believed that the punitive provisions might be removed through future legislative action. The governor had backed a single $1,500 raise, explaining that he opposed the $4,400 raise because it will raise taxes by $77.6 million, be detrimental to the citizens, and hamper efforts to attract industry.

Macy employees get 4-year contract

In the New York City area, more than 6,000 employees of the R. H. Macy & Co. department stores were covered by a 4-year contract negotiated by the Retail, Wholesale and Department Store Union. Wages were raised $20 a week retroactive to February, followed by $15 increases in February of 1986, 1987, and 1988.

The pension rate was raised to $4.75 a month for each year of service for employees retiring after 10 to 29 years of service. Those with 30 or more years will receive $10 a month (up from $8.50) for each year up to the existing limit of 40 years. Other provisions included $75,000 major medical coverage (formerly $50,000), $4,000 life insurance (formerly $3,000), and a ninth paid holiday. □



Book Reviews

Controlling immigration

The Unavoidable Issue: U.S. Immigration Policy in the 1980's. Edited by Demetrios G. Papademetriou and Mark J. Miller. Philadelphia, PA, Institute for the Study of Human Issues, 1983. 305 pp., bibliography.

Few public issues have generated as much controversy, created stranger political bedfellows, or been as bereft of any clear definition of policy goals and priorities than immigration policy. Moreover, as noted by Demetrios G. Papademetriou and Mark J. Miller, the coeditors of this collection of essays, most of the published works in the field have been "obvious products of polemists or apologists for particular points of view." Hence, this effort at a more balanced appraisal of major aspects of immigration policies is particularly timely.

The volume consists of nine separate essays, or chapters, in addition to an introductory chapter by the coeditors. Two of these essays deal specifically with the labor aspects of immigration policies. The first, by Walter Vogel, focuses on the labor market effects of recent illegal immigration. In the second, Vernon M. Briggs reviews a series of programs, such as the former "bracero" program and the current H-2 program, under which foreign workers are allowed temporary entry into the United States, under individual or group hiring arrangements. Vogel and Briggs conclude that there is no domestic labor market justification for continued illegal entrants or for any expanded contract worker programs, and that the major effects have been to depress wages and job opportunities of indigenous unskilled workers.

Most of the remaining chapters have a distinct international orientation, including separate discussions of immigration and U.S. foreign policy, the legal rights of aliens, refugee programs, and recent efforts by Western European countries to check illegal immigration. The latter chapter, by the coeditors, provides a timely review of experience under recent legislation in Western European countries imposing sanctions upon employers who hire illegal aliens. The authors conclude that "only employer sanctions with teeth—criminal penalties, heavy fines, and possible jail terms—combined with rigorous enforcement, would seem to hold out the possibility for meaningful reform of U.S. immigration policy."

The reader seeking greater understanding of the complex maze of immigration and refugee legislation can find many useful insights in this volume. But, as is typical of most such collections, the volume does not focus on the central issues of immigration policy, that is, the need to develop a cohesive, logical set of criteria for use in determining desirable levels and composition of future legal immigrant flows, combined with effective, realistic controls over illegal immigration. In this respect, unfortunately, the authors have much distinguished company, including one recent Presidential commission, one administration task force, and most of the congressional experts on this subject.

—HAROLD WOOL
Bethesda, MD

Coping with immigration

Immigration Policy and the American Labor Force. By Vernon M. Briggs, Jr. Baltimore, MD, The Johns Hopkins University Press, 1984. 294 pp. $26.50.

Vernon Briggs forcefully espouses the need for immigration reform. As suggested in the book's title, his focus is on the impact of immigration policy on American workers. Briggs states that "the efficacy of past, present, and future immigration policy will ultimately be judged in terms of how it relates to the prevailing economic conditions of the time in which it functions." He berates the fact that so little attention has been paid to the economic consequences of immigration policy, that the policymaking process has been dominated by "special political interests," and that there has been no link between immigration and human resources policy. According to Briggs, the labor market effects of enhanced foreign competition and the structural changes in the U.S. economy make it imperative that immigration policy "serve the economic welfare of the Nation."

Briggs not only reviews the evolution of immigration policy as it relates to "legal" immigrants (or, more specifically, permanent resident aliens) who may apply for citizenship after a 5-year waiting period, but also refugees and asylees; nonimmigrant workers, namely, foreign workers who do not have immigrant status but who are allowed to

work temporarily in the United States; border commuters from Mexico, that is, persons who are permanent resident aliens, but who work in the United States and reside in Mexico; "visitor-workers" from Mexico, who work in the border counties, although they legally are only allowed to visit there; and illegal immigrants who either enter the United States without appropriate documents or who have proper entry documents but then violate their terms. Briggs' fascinating history of immigration policy clarifies a very complex subject.

Briggs emphasizes the adverse labor market effects of certain types of immigration on U.S. workers, particularly lower skilled workers. For example, regarding U.S. programs for nonimmigrant workers, he discusses the experience with the bracero program (Mexican workers in agriculture in the U.S. Southwest in 1942–64), citing, among other things, the finding by President Harry S Truman's Commission on Migratory Labor that "wages by States [for agricultural workers] were inversely related to the supply of alien labor." He also refers to difficulties with other temporary worker programs in the United States and with those in the Virgin Islands and Guam. He discusses, too, the problems faced by Western Europeans with their "guest worker" programs, including the fact that many temporary workers ended up as permanent residents.

Briggs makes a considerable case against expansion of temporary worker programs, such as those proposed in the past few years by some policymakers and researchers. Still, some scholars would not agree with Briggs that " . . . there is not a modicum of empirical evidence that citizen workers will not do the work that nonimmigrants do." (Briggs feels this cannot be refuted, because millions of low wage citizens currently are working in all the industries in which employers seek nonimmigrant workers.)

Briggs adopts the "supply and demand" labor market framework which assumes that large immigration flows generally will depress wages and increase unemployment. Thus, he attributes adverse impacts to the entry of large numbers of immigrants through the "family reunification" provisions of the law. Related to that, Briggs mentions that, once admitted, a new immigrant can gain admission for all his or her immediate and more distant relatives. However, that is not the case, at least not until the immigrant becomes a citizen. Under the current system, only U.S. citizens can use their status for admission of "more distant" relatives, namely, their married sons and daughters, and brothers and sisters. (Immigrants can gain admission only for their spouses and unmarried sons and daughters.)

Briggs is especially concerned about the potential for increased refugee entry into the United States and he believes that "if U.S. immigration policy is to have any meaning at all," the law should be changed to require that increases in the numbers of refugees and asylees be matched by equivalent reductions in the numbers of permanent resident aliens. However, he later qualifies his recommendation: "If a truly extraordinary situation should develop, Congress could legislate a temporary increase in the numerical boundaries and accommodate such a circumstance."

Briggs does not qualify any of his recommendations to reduce illegal immigration, which include employer sanctions, that is, making it an illegal act to employ illegal immigrants (this was the keystone of the recent "Simpson–Mazzoli" bill as well as immigration bills proposed in the 1970's), and a national identification system along with it. Briggs emphasizes that while data on illegal immigration are very weak, data also are inadequate or do not exist in other major policy areas, and yet this has not prevented policy interventions.

Briggs' book is an important addition to the immigration literature, especially because of its emphasis on the need to look at the labor market effects of immigration policy, and to link that policy with policies for employment, training, and a strong economy. Some researchers, however, will not agree with Briggs on the extent of adverse effects of immigration. And some policymakers may feel that, in certain cases, issues other than labor market impacts are overriding.

—ELLEN SEHGAL
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Erratum

Some material was inadvertently omitted from the book review by Richard P. Shore on *Worker Participation and American Unions: Threat or Opportunity?* The book review appeared on pages 50–53 of the March issue of the *Review*. Beginning with the fourth paragraph, the passage should read:

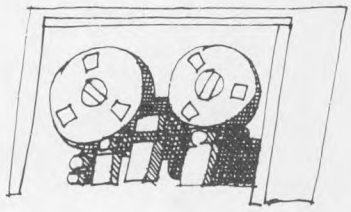
The authors of this volume are, in turn, two faculty members and a research associate in the Industrial Relations Section of MIT's Sloan School of Management. The research they report grows out of a project initiated by the AFL–CIO's Industrial Union Department and, according to a foreword by its president, Howard D. Samuel, was intended "to assess the impact on trade unions and collective bargaining of worker participation or quality of worklife programs."

While the authors describe as their primary audience "representatives of the labor movement who need to come to grips with the role of worker participation processes," they quite correctly acknowledge that "ultimately the choice over the future of these processes is not labor's alone." Hence, the data and ideas they present should be of no small interest as well to a much broader readership of management and government representatives as well as union officials.

In their introductory chapter, the authors set the stage for their research by presenting an (all too) abbreviated history of labor relations in the United States and some distinguishing features of American unions. Perhaps the most telling statement, and one that surely is critical to an understanding of labor responses to QWL, is that "American unions have never been genuinely accepted by American management as valued partners in industrial relations." Also important, however, has been the disinclination of QWL proponents to grasp the essence of the collective bargaining relationship, particularly its pivotal conflict dimension, and to regard unions as legitimate champions of worker interests. This first chapter concludes with a short but pithy theoretical statement, one that defines participation processes as developing in evolutionary fashion. Although such an evolutionary perspective may suggest to some an orderly stepwise progression, the case history material that follows fails to bear out any fixed-sequence notion. But the book's processual orientation does underscore the importance of examining, as did the authors, how participation programs unfold in juxtaposition to collective bargaining as it is practiced and it serves to caution against treating QWL and collective bargaining as distinct and noninteractive. To accept such a bifurcation would be to propagate "a myth of separate worlds" similar to the myopic view of work and family as independent domains.

The book then moves on to offer fairly complete descriptions of five participation programs in different industry and collective bargaining settings: Xerox and the Amalgamated Clothing and Textile Workers Union, GM's Packard Electronic division and the International Union of Electronic, Electrical, Technical, Salaried and Machine Workers, the Uniform Piston Co. (a fictitious name) and its unnamed local union, a Canadian grocery chain and the union representing its workers (both unnamed), and the *Minneapolis Star* and *Tribune*, whose employees are represented by the Newspaper Guild. . . .

Current Labor Statistics



NOTES ON CURRENT LABOR STATISTICS

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

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

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might otherwise mask short-term movements of the statistical series. Tables containing these data are identified as "seasonally adjusted." Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted labor force data in tables 3–8 were revised in the February 1985 issue of the *Review*, to reflect experience through 1984.

Beginning in January 1980, the BLS introduced two major modifications in the seasonal adjustment methodology for labor force data. First, the data are being seasonally adjusted with a new procedure called X–11/ARIMA, which was developed at Statistics Canada as an extension of the standard X–11 method. A detailed description of the procedure appears in *The X–11 ARIMA Seasonal Adjustment Method* by Estela Bee Dagum (Statistics Canada Catalogue No. 12–564E, January 1983). The second change is that seasonal factors are now being calculated for use during the first 6 months of the year, rather than for the entire year, and then are calculated at mid-year for the July–December period. Revisions of historical data continue to be made only at the end of each calendar year.

Annual revision of the seasonally adjusted payroll data shown in tables 11, 13, 15, and 17 were made in July 1984 using the X–11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 29 and 30 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from quarter to quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1967 = 100, the hourly rate expressed in 1967 dollars is $2 ($3/150 × 100 = $2). The resulting values are described as "real," "constant," or "1967" dollars.

Availability of information. Data that supplement the tables in this section are published by the Bureau of Labor Statistics in a variety of sources. Press releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule given below. More information from household and establishment surveys is provided in *Employment and Earnings*, a monthly publication of the Bureau. Comparable household information is published in a two-volume data book—*Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2096. Comparable establishment information appears in two data books—*Employment and Earnings, United States*, and *Employment and Earnings, States and Areas*, and their annual supplements. More detailed information on wages and other aspects of collective bargaining appears in the monthly periodical, *Current Wage Developments*. More detailed price information is published each month in the periodicals, the *CPI Detailed Report* and *Producer Prices and Price Indexes*.

Symbols

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

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

n.e.c. = not elsewhere classified.

Schedule of release dates for BLS statistical series

Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	May 3	April	June 7	May	July 5	June	1–11
Producer Price Index	May 10	April	June 14	May	July 12	June	23–27
Consumer Price Index	May 21	April	June 20	May	July 23	June	19–22
Real earnings	May 21	April	June 20	May	July 23	June	12–16
Productivity and costs:							
Nonfinancial corporations	May 29	1st quarter	.....	.....	.....	.....	29–32
Nonfarm business and manufacturing	.....	.....	.....	.....	July 25	2nd quarter	29–32
Major collective bargaining settlements	.....	.....	.....	.....	July 25	1st half	36–37
Employment Cost Index	.....	.....	.....	.....	July 30	2nd quarter	33–35

EMPLOYMENT DATA FROM THE HOUSEHOLD SURVEY

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 59,500 households selected to represent the U.S population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

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

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

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

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the preceding years. These adjustments affect the comparability of historical data presented in table 1. A description of these adjustments and their effect on the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Data in tables 2–8 are seasonally adjusted, based on the seasonal experience through December 1984.

1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950–84

[Numbers in thousands]

Year	Noninstitutional population	Labor force									Not in labor force
		Number	Percent of population	Employed						Unemployed		
				Total	Percent of population	Resident Armed Forces	Civilian			Number	Percent of labor force	
							Total	Agriculture	Nonagricultural industries			
1950	106,164	63,377	59.7	60,087	56.6	1,169	58,918	7,160	51,758	3,288	5.2	42,787
1955	111,747	67,087	60.0	64,234	57.5	2,064	62,170	6,450	55,722	2,852	4.3	44,660
1960	119,106	71,489	60.0	67,639	56.8	1,861	65,778	5,458	60,318	3,852	5.4	46,617
1965	128,459	76,401	59.5	73,034	56.9	1,946	71,088	4,361	66,726	3,366	4.4	52,058
1966	130,180	77,892	59.8	75,017	57.6	2,122	72,895	3,979	68,915	2,875	3.7	52,288
1967	132,092	79,565	60.2	76,590	58.0	2,218	74,372	3,844	70,527	2,975	3.7	52,527
1968	134,281	80,990	60.3	78,173	58.2	2,253	75,920	3,817	72,103	2,817	3.5	53,291
1969	136,573	82,972	60.8	80,140	58.7	2,238	77,902	3,606	74,296	2,832	3.4	53,602
1970	139,203	84,889	61.0	80,796	58.0	2,118	78,678	3,463	75,215	4,093	4.8	54,315
1971	142,189	86,355	60.7	81,340	57.2	1,973	79,367	3,394	75,972	5,016	5.8	55,834
1972	145,939	88,847	60.9	83,966	57.5	1,813	82,153	3,484	78,669	4,882	5.5	57,091
1973	148,870	91,203	61.3	86,838	58.3	1,774	85,064	3,470	81,594	4,355	4.8	57,667
1974	151,841	93,670	61.7	88,515	58.3	1,721	86,794	3,515	83,279	5,156	5.5	58,171
1975	154,831	95,453	61.6	87,524	56.5	1,678	85,845	3,408	82,438	7,929	8.3	59,377
1976	157,818	97,826	62.0	90,420	57.3	1,668	88,752	3,331	85,421	7,406	7.6	59,991
1977	160,689	100,665	62.6	93,673	58.3	1,656	92,017	3,283	88,734	6,991	6.9	60,025
1978	163,541	103,882	63.5	97,679	59.7	1,631	96,048	3,387	92,661	6,202	6.0	59,659
1979	166,460	106,559	64.0	100,421	60.3	1,597	98,824	3,347	95,477	6,137	5.8	59,900
1980	169,349	108,544	64.1	100,907	59.6	1,604	99,303	3,364	95,938	7,637	7.0	60,806
1981	171,775	110,315	65.2	102,042	59.4	1,645	100,397	3,368	97,030	8,273	7.5	61,460
1982	173,939	111,872	64.3	101,194	58.2	1,668	99,526	3,401	96,125	10,578	9.5	62,067
1983	175,891	113,226	64.4	102,510	58.3	1,676	100,834	3,383	97,450	10,717	9.5	62,665
1984	178,080	115,241	64.7	106,702	59.9	1,697	105,005	3,321	101,685	8,539	7.4	62,839

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

[Numbers in thousands]

Employment status and sex	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
TOTAL															
Noninstitutional population[1,2]	175,891	178,080	177,510	177,662	177,813	177,974	178,138	178,295	178,483	178,661	178,834	179,004	179,081	179,219	179,368
Labor force[2]	113,226	115,241	114,592	114,895	115,412	115,309	115,566	115,341	115,484	115,721	115,773	116,162	116,572	116,787	117,215
Participation rate[3]	64.4	64.7	64.6	64.7	64.9	64.8	64.9	64.7	64.7	64.8	64.7	64.9	65.1	65.2	65.3
Total employed[2]	102,510	106,702	105,809	106,095	106,852	107,081	107,075	106,860	107,114	107,354	107,631	107,971	108,088	108,388	108,820
Employment-population rate[4]	58.3	59.9	59.6	59.7	60.1	60.2	60.1	59.9	60.0	60.1	60.2	60.3	60.4	60.5	60.7
Resident Armed Forces[1]	1,676	1,697	1,686	1,693	1,690	1,690	1,698	1,712	1,720	1,705	1,699	1,698	1,697	1,703	1,701
Civilian employed	100,834	105,005	104,123	104,402	105,162	105,391	105,377	105,148	105,394	105,649	105,932	106,273	106,391	106,685	107,119
Agriculture	3,383	3,321	3,305	3,379	3,367	3,368	3,333	3,264	3,319	3,169	3,334	3,385	3,320	3,340	3,362
Nonagricultural industries	97,450	101,685	100,818	101,023	101,795	102,023	102,044	101,884	102,075	102,480	102,598	102,888	103,071	103,345	103,757
Unemployed	10,717	8,539	8,783	8,800	8,560	8,228	8,491	8,481	8,370	8,367	8,142	8,191	8,484	8,399	8,396
Unemployment rate[5]	9.5	7.4	7.7	7.7	7.4	7.1	7.3	7.4	7.2	7.2	7.0	7.1	7.3	7.2	7.2
Not in labor force	62,665	62,839	62,918	62,767	62,401	62,665	62,572	62,954	62,999	62,940	63,061	62,842	62,509	62,432	62,153
Men, 16 years and over															
Noninstitutional population[1,2]	84,064	85,156	84,880	84,953	85,024	85,101	85,179	85,257	85,352	85,439	85,523	85,607	85,629	85,692	85,764
Labor force[2]	64,580	65,386	65,151	65,200	65,304	65,348	65,412	65,357	65,589	65,558	65,657	65,814	65,822	65,818	65,923
Participation rate[3]	76.8	76.8	76.8	76.7	76.8	76.8	76.8	76.7	76.8	76.7	76.8	76.9	76.9	76.8	76.9
Total employed[2]	58,320	60,642	60,262	60,289	60,578	60,758	60,687	60,766	60,959	61,018	61,155	61,252	61,213	61,226	61,427
Employment-population rate[4]	69.4	71.2	71.0	71.0	71.2	71.4	71.2	71.3	71.4	71.4	71.5	71.6	71.5	71.4	71.6
Resident Armed Forces[1]	1,533	1,551	1,542	1,548	1,545	1,545	1,551	1,563	1,571	1,557	1,552	1,550	1,549	1,554	1,553
Civilian employed	56,787	59,091	58,720	58,741	59,033	59,213	59,136	59,203	59,388	59,461	59,603	59,702	59,664	59,672	59,874
Unemployed	6,260	4,744	4,889	4,911	4,726	4,590	4,725	4,591	4,630	4,540	4,502	4,562	4,609	4,592	4,495
Unemployment rate[5]	9.7	7.3	7.5	7.5	7.2	7.0	7.2	7.0	7.1	6.9	6.9	6.9	7.0	7.0	6.8
Women, 16 years and over															
Noninstitutional population[1,2]	91,827	92,924	92,630	92,709	92,789	92,873	92,958	93,039	93,132	93,222	93,311	93,397	93,452	93,527	93,603
Labor force[2]	48,646	49,855	49,441	49,695	50,108	49,961	50,154	49,984	49,895	50,163	50,116	50,348	50,750	50,970	51,293
Participation rate[3]	53.0	53.7	53.4	53.6	54.0	53.8	54.0	53.7	53.6	53.8	53.7	53.9	54.3	54.5	54.8
Total employed[2]	44,190	46,061	45,547	45,806	46,274	46,323	46,388	46,094	46,155	46,336	46,476	46,719	46,875	47,162	47,392
Employment-population rate[4]	48.1	49.6	49.2	49.4	49.9	49.9	49.9	49.5	49.6	49.7	49.8	50.0	50.2	50.4	50.6
Resident Armed Forces[1]	143	146	144	145	145	145	147	149	149	148	147	148	148	149	148
Civilian employed	44,047	45,915	45,403	45,661	46,129	46,178	46,241	45,945	46,006	46,188	46,329	46,571	46,727	47,013	47,244
Unemployed	4,457	3,794	3,894	3,889	3,834	3,638	3,766	3,890	3,740	3,827	3,640	3,629	3,875	3,807	3,900
Unemployment rate[5]	9.2	7.6	7.9	7.8	7.7	7.3	7.5	7.8	7.5	7.6	7.3	7.2	7.6	7.5	7.6

[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).

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

[Numbers in thousands]

Employment status	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
TOTAL															
Civilian noninstitutional population[1]	174,215	176,383	175,824	175,969	176,123	176,284	176,440	176,583	176,763	176,956	177,135	177,306	177,384	177,516	177,667
Civilian labor force	111,550	113,544	112,906	113,302	113,722	113,619	113,868	113,629	113,764	114,016	114,074	114,464	114,875	115,084	115,514
Participation rate	64.0	64.4	64.2	64.3	64.6	64.5	64.5	64.3	64.4	64.4	64.4	64.6	64.8	64.8	65.0
Employed	100,834	105,005	104,123	104,402	105,162	105,391	105,377	105,148	105,394	105,649	105,932	106,273	106,391	106,685	107,119
Employment-population ratio[2]	57.9	59.5	59.2	59.3	59.7	59.8	59.7	59.5	59.6	59.7	59.8	59.9	60.0	60.1	60.3
Unemployed	10,717	8,539	8,783	8,800	8,560	8,228	8,491	8,481	8,370	8,367	8,142	8,191	8,484	8,399	8,396
Unemployment rate	9.6	7.5	7.8	7.8	7.5	7.2	7.5	7.5	7.4	7.3	7.1	7.2	7.4	7.3	7.3
Not in labor force	62,665	62,839	62,918	62,667	62,401	62,665	62,572	62,954	62,999	62,940	63,061	62,842	62,509	62,432	62,153
Men, 20 years and over															
Civilian noninstitutional population[1]	74,872	76,219	75,880	75,973	76,073	76,176	76,269	76,350	76,451	76,565	76,663	76,753	76,760	76,829	76,904
Civilian labor force	58,744	59,701	59,400	59,474	59,572	59,668	59,730	59,771	59,892	59,913	59,994	60,131	60,033	60,061	60,152
Participation rate	78.5	78.3	78.3	78.3	78.3	78.3	78.3	78.3	78.3	78.3	78.3	78.3	78.2	78.2	78.2
Employed	53,487	55,769	55,352	55,387	55,663	55,861	55,846	55,935	56,075	56,182	56,269	56,372	56,234	56,287	56,421
Employment-population ratio[2]	71.4	73.2	72.9	72.9	73.2	73.3	73.2	73.3	78.3	73.4	73.4	73.4	73.3	73.3	73.4
Agriculture	2,429	2,418	2,382	2,446	2,443	2,448	2,444	2,406	2,414	2,334	2,434	2,494	2,417	2,362	2,326
Nonagricultural industries	51,058	53,351	52,970	52,941	53,220	53,413	53,402	53,529	53,661	53,848	53,835	53,878	53,817	53,926	54,095
Unemployed	5,257	3,932	4,048	4,087	3,909	3,807	3,884	3,836	3,817	3,731	3,725	3,759	3,798	3,774	3,731
Unemployment rate	8.9	6.6	6.8	6.9	6.6	6.4	6.5	6.4	6.4	6.2	6.2	6.3	6.3	6.3	6.2
Women, 20 years and over															
Civilian noninstitutional population[1]	84,069	85,429	85,064	85,168	85,272	85,380	85,488	85,581	85,688	85,793	85,897	85,995	86,015	86,086	86,181
Civilian labor force	44,636	45,900	45,482	45,685	46,130	45,958	46,131	46,092	45,950	46,264	46,279	46,463	46,771	46,894	47,193
Participation rate	53.1	53.7	53.5	53.6	54.1	53.8	54.0	53.9	53.6	53.9	53.9	54.0	54.4	54.5	54.8
Employed	41,004	42,793	42,334	42,524	43,003	42,986	43,001	42,878	42,906	43,091	43,252	43,511	43,610	43,768	44,014
Employment-population ratio[2]	48.8	50.1	49.8	49.9	50.4	50.3	50.3	50.1	50.1	50.2	50.4	50.6	50.7	50.8	51.1
Agriculture	620	595	587	613	603	611	580	573	590	569	580	595	592	614	659
Nonagricultural industries	40,384	42,198	41,747	41,911	42,400	42,375	42,421	42,305	42,316	42,522	42,672	42,916	43,018	43,153	43,355
Unemployed	3,632	3,107	3,148	3,161	3,127	2,972	3,130	3,214	3,044	3,173	3,027	2,952	3,161	3,126	3,179
Unemployment rate	8.1	6.8	6.9	6.9	6.8	6.5	6.8	7.0	6.6	6.9	6.5	6.4	6.8	6.7	6.7
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	15,274	14,735	14,880	14,828	14,778	14,728	14,683	14,653	14,624	14,598	14,575	14,557	14,610	14,600	14,582
Civilian labor force	8,171	7,943	8,024	8,043	8,020	7,993	8,007	7,766	7,922	7,839	7,801	7,870	8,072	8,129	8,169
Participation rate	53.5	53.9	53.9	54.2	54.3	54.3	54.5	53.0	54.2	53.7	53.5	54.1	55.2	55.7	56.0
Employed	6,342	6,444	6,437	6,491	6,496	6,544	6,530	6,335	6,413	6,376	6,411	6,390	6,547	6,630	6,684
Employment-population ratio[2]	41.5	43.7	43.3	43.8	44.0	44.4	44.5	43.2	43.9	43.7	44.0	43.9	44.8	45.4	45.8
Agriculture	334	309	336	320	321	309	309	285	315	266	320	296	311	364	377
Nonagricultural industries	6,008	6,135	6,101	6,171	6,175	6,235	6,221	6,050	6,098	6,110	6,091	6,094	6,236	6,266	6,307
Unemployed	1,829	1,499	1,587	1,552	1,524	1,449	1,477	1,431	1,509	1,463	1,390	1,480	1,525	1,499	1,485
Unemployment rate	22.4	18.9	19.8	19.3	19.0	18.1	18.4	18.4	19.0	18.7	17.8	18.8	18.9	18.4	18.2
White															
Civilian noninstitutional population[1]	150,805	152,347	152,285	152,178	152,229	152,295	152,286	152,402	152,471	152,605	152,659	152,734	153,103	153,191	153,296
Civilian labor force	97,021	98,492	98,343	98,419	98,749	98,690	98,627	98,223	98,426	98,631	98,630	99,005	99,496	99,711	100,035
Participation rate	64.3	64.6	64.6	64.7	64.9	64.8	64.8	64.4	64.6	64.6	64.6	64.8	65.0	65.1	65.3
Employed	88,893	92,120	91,750	91,852	92,330	92,516	92,389	91,951	92,177	92,407	92,587	92,884	93,124	93,552	93,785
Employment-population ratio[2]	58.9	60.5	60.2	60.4	60.7	60.7	60.7	60.3	60.5	60.6	60.6	60.8	60.8	61.1	61.2
Unemployed	8,128	6,372	6,593	6,567	6,419	6,174	6,238	6,272	6,249	6,224	6,043	6,121	6,372	6,159	6,250
Unemployment rate	8.4	6.5	6.7	6.7	6.5	6.3	6.3	6.4	6.3	6.3	6.1	6.2	6.4	6.2	6.2
Black															
Civilian noninstitutional population[1]	18,925	19,348	19,248	19,274	19,302	19,330	19,360	19,386	19,416	19,449	19,481	19,513	19,518	19,542	19,569
Civilian labor force	11,647	12,033	11,845	11,898	11,968	11,959	12,083	12,142	12,082	12,208	12,276	12,306	12,315	12,309	12,280
Participation rate	61.5	62.2	61.5	61.7	62.0	61.9	62.4	62.6	62.2	62.8	63.0	63.1	63.1	63.0	62.8
Employed	9,375	10,119	9,878	9,913	10,053	10,138	10,079	10,222	10,260	10,340	10,426	10,462	10,475	10,301	10,412
Employment-population ratio[2]	49.5	52.3	51.3	51.4	52.1	52.4	52.1	52.7	52.8	53.2	53.5	53.6	53.7	52.7	53.2
Unemployed	2,272	1,914	1,967	1,985	1,915	1,821	2,004	1,920	1,822	1,868	1,850	1,844	1,840	2,008	1,869
Unemployment rate	19.5	15.9	16.6	16.7	16.0	15.2	16.6	15.8	15.1	15.3	15.1	15.0	14.9	16.3	15.2
Hispanic origin															
Civilian noninstitutional population[1]	10,795	11,164	11,058	11,088	11,118	11,148	11,180	11,209	11,240	11,270	11,301	11,332	11,363	11,394	11,425
Civilian labor force	6,884	7,247	7,144	7,113	7,170	7,267	7,264	7,299	7,353	7,384	7,394	7,472	7,255	7,330	7,365
Participation rate	63.8	64.9	64.6	64.2	64.5	65.2	65.0	65.1	65.4	65.5	65.4	65.9	63.8	64.3	64.5
Employed	5,943	6,469	6,333	6,294	6,402	6,519	6,503	6,521	6,573	6,574	6,636	6,698	6,487	6,621	6,615
Employment-population ratio[2]	55.1	57.9	57.3	56.8	57.6	58.5	58.2	58.2	58.5	58.3	58.7	59.1	57.1	58.1	57.9
Unemployed	940	778	811	819	768	748	761	778	780	810	758	774	768	709	750
Unemployment rate	13.7	10.7	11.4	11.5	10.7	10.3	10.5	10.7	10.6	11.0	10.3	10.4	10.6	9.7	10.2

[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.

4. Selected employment indicators, seasonally adjusted

[In thousands]

Selected categories	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
CHARACTERISTIC															
Civilian employed, 16 years and over	100,834	105,005	104,123	104,402	105,162	105,391	105,377	105,148	105,394	105,649	105,932	106,273	106,391	106,685	107,119
Men	56,787	59,091	58,720	58,741	59,033	59,213	59,136	59,203	59,388	59,461	59,603	59,702	59,644	59,672	59,874
Women	44,047	45,915	45,403	45,661	46,129	46,178	46,241	45,945	46,006	46,188	46,329	46,571	46,727	47,013	47,244
Married men, spouse present	37,967	39,056	38,895	39,012	39,060	39,060	39,123	39,073	39,071	39,054	39,337	39,443	39,441	39,357	39,531
Married women, spouse present	24,603	25,636	25,286	25,468	25,658	25,734	25,719	25,772	25,715	25,897	25,995	26,122	25,912	26,108	26,195
Women who maintain families	5,091	5,465	5,449	5,482	5,606	5,622	5,626	5,496	5,429	5,378	5,396	5,396	5,584	5,525	5,631
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,579	1,555	1,522	1,627	1,580	1,578	1,519	1,453	1,565	1,511	1,593	1,733	1,596	1,611	1,610
Self-employed workers	1,565	1,553	1,579	1,545	1,549	1,566	1,557	1,562	1,555	1,487	1,555	1,485	1,531	1,503	1,502
Unpaid family workers	240	213	211	215	239	211	220	209	195	187	204	212	227	242	263
Nonagricultural industries:															
Wage and salary workers	89,500	93,565	92,747	92,908	93,780	93,845	93,768	93,680	94,140	94,415	94,442	94,725	95,068	95,348	95,756
Government	15,537	15,770	15,765	15,765	15,744	15,713	15,639	15,758	15,881	15,997	15,785	15,858	15,738	16,009	16,004
Private industries	73,963	77,794	76,982	77,143	78,036	78,132	78,129	77,922	78,259	78,418	78,657	78,867	79,330	79,339	79,752
Private households	1,247	1,238	1,164	1,280	1,327	1,297	1,238	1,199	1,198	1,213	1,228	1,257	1,374	1,304	1,210
Other	72,716	76,556	75,818	75,863	76,709	76,835	76,891	76,723	77,061	77,205	77,429	77,610	77,956	78,035	78,542
Self-employed workers	7,575	7,785	7,769	7,812	7,745	7,815	7,744	7,807	7,752	7,782	7,731	7,786	7,783	7,673	7,809
Unpaid family workers	376	335	332	341	323	347	318	321	318	314	357	357	343	340	320
PERSONS AT WORK PART TIME[1]															
All industries:															
Part time for economic reasons	6,266	5,744	5,619	5,758	5,625	5,831	5,759	5,582	5,690	5,710	5,623	5,814	5,628	5,335	5,664
Slack work	2,833	2,430	2,343	2,390	2,286	2,326	2,373	2,371	2,461	2,514	2,449	2,596	2,431	2,212	2,599
Could only find part-time work	3,099	2,948	3,039	3,085	3,042	2,984	2,832	2,743	2,943	2,879	2,855	2,873	2,848	2,835	2,744
Voluntary part time	12,911	13,169	13,100	13,326	13,250	13,090	13,248	13,210	13,144	13,126	13,142	13,239	13,355	13,647	13,624
Nonagricultural industries:															
Part time for economic reasons	5,997	5,512	5,465	5,520	5,377	5,549	5,482	5,384	5,449	5,483	5,413	5,596	5,389	5,077	5,400
Slack work	2,684	2,291	2,237	2,255	2,153	2,160	2,214	2,254	2,306	2,364	2,319	2,473	2,287	2,040	2,405
Could only find part-time work	2,993	2,866	2,958	2,982	2,949	2,911	2,756	2,675	2,847	2,821	2,782	2,793	2,749	2,751	2,649
Voluntary part time	12,417	12,704	12,592	12,924	12,799	12,621	12,786	12,747	12,669	12,679	12,670	12,778	12,861	13,157	13,137

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

5. Selected unemployment indicators, seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
CHARACTERISTIC															
Total, all civilian workers	9.6	7.5	7.8	7.8	7.5	7.2	7.5	7.5	7.4	7.3	7.1	7.2	7.4	7.3	7.3
Both sexes, 16 to 19 years	22.4	18.9	19.8	19.3	19.0	18.1	18.4	18.4	19.0	18.7	17.8	18.8	18.9	18.4	18.2
Men, 20 years and over	8.9	6.6	6.8	6.9	6.6	6.4	6.5	6.4	6.4	6.2	6.2	6.3	6.3	6.3	6.2
Women, 20 years and over	8.1	6.8	6.9	6.9	6.8	6.5	6.8	7.0	6.6	6.9	6.5	6.4	6.8	6.7	6.7
White, total	8.4	6.5	6.7	6.7	6.5	6.3	6.3	6.4	6.3	6.3	6.1	6.2	6.4	6.2	6.2
Both sexes, 16 to 19 years	19.3	16.0	16.9	16.2	16.2	15.8	15.2	16.0	16.3	15.9	15.1	15.9	15.8	15.2	15.1
Men, 16 to 19 years	20.2	16.8	17.3	16.8	16.9	16.6	17.4	16.7	17.0	16.6	16.2	16.2	15.9	17.0	15.2
Women, 16 to 19 years	18.3	15.2	16.4	15.7	15.5	15.1	12.9	15.4	15.5	15.2	13.9	15.5	15.8	13.4	14.9
Men, 20 years and over	7.9	5.7	5.9	5.9	5.7	5.4	5.5	5.5	5.5	5.4	5.4	5.4	5.5	5.4	5.4
Women, 20 years and over	6.9	5.8	5.9	6.0	5.8	5.6	5.8	5.9	5.7	5.8	5.5	5.5	5.9	5.6	5.9
Black, total	19.5	15.9	16.6	16.7	16.0	15.2	16.6	15.8	15.1	15.3	15.1	15.0	14.9	16.3	15.2
Both sexes, 16 to 19 years	48.5	42.7	46.6	44.3	44.4	37.1	42.3	41.3	41.9	40.2	41.2	42.1	42.1	43.1	41.9
Men, 16 to 19 years	48.8	42.7	44.3	42.9	41.4	38.2	42.3	40.5	41.0	43.8	42.0	43.8	45.3	41.1	40.9
Women, 16 to 19 years	48.2	42.6	49.4	45.9	48.1	35.8	42.2	42.2	43.0	36.2	40.2	40.1	38.5	45.3	43.1
Men, 20 years and over	18.1	14.3	15.1	15.6	14.3	14.6	15.5	14.1	13.5	13.4	12.8	13.3	12.7	14.4	13.3
Women, 20 years and over	16.5	13.5	13.8	13.6	13.7	12.6	13.8	13.8	12.6	13.4	13.5	12.7	12.8	13.9	12.9
Hispanic origin, total	13.7	10.7	11.5	10.7	10.3	10.5	10.7	10.6	11.0	10.3	10.4	10.6	9.7	9.7	10.2
Married men, spouse present	6.5	4.6	4.7	4.7	4.6	4.6	4.5	4.5	4.6	4.5	4.4	4.4	4.6	4.4	4.2
Married women, spouse present	7.0	5.7	5.8	5.8	5.8	5.7	5.8	5.8	5.7	5.7	5.4	5.4	5.7	5.4	5.9
Women who maintain families	12.2	10.3	10.8	10.5	10.0	9.8	9.8	10.3	10.1	10.4	10.8	9.6	10.0	11.0	10.2
Full-time workers	9.5	7.2	7.5	7.5	7.2	6.7	7.2	7.1	7.1	7.1	6.9	6.9	7.1	7.1	6.9
Part-time workers	10.4	9.3	9.3	9.3	9.4	10.0	9.6	9.6	9.3	9.1	8.6	8.8	9.3	8.7	9.6
Unemployed 15 weeks and over	3.8	2.4	2.6	2.5	2.5	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.0	2.1	2.1
Labor force time lost[1]	10.9	8.6	8.9	8.8	8.6	8.4	8.5	8.5	8.5	8.4	8.2	8.3	8.2	8.2	8.2
INDUSTRY															
Nonagricultural private wage and salary workers	9.9	7.4	7.7	7.7	7.3	7.0	7.4	7.4	7.3	7.2	7.2	7.2	7.3	7.3	7.2
Mining	17.0	10.0	10.8	10.1	8.8	7.5	7.7	10.2	8.6	10.5	11.7	10.7	10.1	10.9	11.0
Construction	18.4	14.3	13.6	14.4	14.7	14.6	14.6	14.1	13.9	13.7	14.2	13.7	13.4	13.4	13.3
Manufacturing	11.2	7.5	7.6	7.7	7.2	7.3	7.5	7.4	7.4	7.3	7.2	7.2	7.6	7.5	7.7
Durable goods	12.1	7.2	7.7	7.5	7.1	7.2	6.9	6.9	6.9	6.9	7.0	7.1	7.2	7.1	7.4
Nondurable goods	10.0	7.8	7.5	8.0	7.3	7.5	8.5	8.1	8.1	7.8	7.4	7.2	8.1	8.2	8.1
Transportation and public utilities	7.4	5.5	5.4	5.5	5.7	5.3	5.9	5.9	5.9	5.3	5.2	5.0	4.9	5.5	4.6
Wholesale and retail trade	10.0	8.0	8.2	8.7	8.0	7.3	7.8	7.7	8.0	7.9	7.6	7.5	7.7	7.7	7.5
Finance and service industries	7.2	5.9	6.3	6.1	5.7	5.5	5.9	6.0	5.6	5.7	5.8	5.9	5.9	5.7	5.7
Government workers	5.3	4.5	4.5	4.4	4.7	4.2	4.5	4.4	4.5	4.4	4.3	4.4	4.1	3.9	3.9
Agricultural wage and salary workers	16.0	13.5	14.6	12.7	13.8	12.3	14.3	13.1	14.7	13.7	11.2	12.2	15.5	13.6	12.2

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

6. Unemployment rates by sex and age, seasonally adjusted

[Civilian workers]

Sex and age	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Total, 16 years and over	9.6	7.5	7.8	7.8	7.5	7.2	7.5	7.5	7.4	7.3	7.1	7.2	7.4	7.3	7.3
16 to 24 years	17.2	13.9	14.4	14.5	14.1	13.2	13.6	13.9	13.9	13.5	13.2	13.5	13.6	13.7	13.5
16 to 19 years	22.4	18.9	19.8	19.3	19.0	18.1	18.4	18.4	19.0	18.7	17.8	18.8	18.9	18.4	18.2
16 to 17 years	24.5	21.2	22.7	22.1	20.6	20.1	20.7	21.2	20.9	20.2	20.0	21.0	21.2	20.0	20.9
18 to 19 years	21.1	17.4	18.1	17.6	17.9	16.8	16.7	16.7	17.7	17.8	16.8	17.7	17.4	17.4	16.5
20 to 24 years	14.5	11.5	11.7	12.1	11.6	10.8	11.2	11.7	11.4	11.0	10.9	10.9	10.9	11.2	11.1
25 years and over	7.5	5.8	6.0	6.0	5.8	5.7	5.8	5.7	5.6	5.7	5.5	5.5	5.8	5.6	5.6
25 to 54 years	8.0	6.1	6.3	6.3	6.0	5.8	6.1	6.0	5.9	5.9	5.8	5.8	6.1	5.9	5.9
55 years and over	5.3	4.5	4.4	4.3	4.5	4.5	4.5	4.5	4.5	4.7	4.4	4.1	4.2	3.9	4.0
Men, 16 years and over	9.9	7.4	7.7	7.7	7.4	7.2	7.4	7.2	7.2	7.1	7.0	7.1	7.2	7.1	7.0
16 to 24 years	18.4	14.4	14.7	14.9	14.3	13.9	14.5	14.3	14.6	13.8	13.7	14.1	13.8	14.4	13.9
16 to 19 years	23.3	19.6	20.0	19.7	19.5	18.9	20.4	18.8	19.7	19.8	18.9	19.4	19.1	19.5	18.1
16 to 17 years	25.2	21.9	23.0	23.3	21.7	22.4	22.6	22.2	21.0	21.3	20.3	19.8	21.2	20.7	22.2
18 to 19 years	22.2	18.3	18.2	17.7	18.1	17.0	18.5	16.6	18.7	18.9	18.3	19.3	18.0	18.6	15.7
20 to 24 years	15.9	11.9	12.0	12.6	11.7	11.5	11.6	12.1	12.2	10.9	11.2	11.5	11.2	11.8	11.7
25 years and over	7.8	5.7	5.9	5.9	5.7	5.5	5.6	5.5	5.5	5.4	5.4	5.4	5.5	5.4	5.3
25 to 54 years	8.2	5.9	6.1	6.2	5.9	5.7	5.8	5.7	5.6	5.6	5.6	5.6	5.8	5.6	5.6
55 years and over	5.6	4.6	4.7	4.5	4.6	4.5	4.6	4.6	4.8	4.7	4.7	4.4	4.3	4.0	3.8
Women, 16 years and over	9.2	7.6	7.9	7.8	7.7	7.3	7.5	7.8	7.5	7.7	7.3	7.2	7.7	7.5	7.6
16 to 24 years	15.8	13.3	14.1	14.0	13.9	12.5	12.7	13.5	13.2	13.2	12.6	12.8	13.3	12.9	13.2
16 to 19 years	21.3	18.0	19.6	18.8	18.4	17.3	16.4	18.1	18.3	17.4	16.6	18.1	18.6	17.3	18.2
16 to 17 years	23.7	20.4	22.3	20.8	19.4	17.6	18.7	20.3	20.9	19.0	19.7	22.3	21.2	19.4	19.5
18 to 19 years	19.9	16.6	17.9	17.6	17.7	16.5	14.7	16.7	16.6	16.5	15.1	16.0	16.7	16.2	17.4
20 to 24 years	12.9	10.9	11.2	11.4	11.5	10.0	10.8	11.1	10.5	11.1	10.7	10.2	10.5	10.6	10.5
25 years and over	7.2	6.0	6.1	6.0	5.9	5.9	6.0	6.1	5.9	6.0	5.7	5.6	6.1	5.9	6.0
25 to 54 years	7.7	6.3	6.5	6.4	6.2	6.0	6.4	6.5	6.2	6.2	6.1	6.0	6.4	6.3	6.4
55 years and over	4.7	4.2	4.0	4.0	4.3	4.5	4.2	4.3	4.0	4.8	3.9	3.7	4.2	3.8	4.2

7. Unemployed persons by reason for unemployment, seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Job losers	6,258	4,421	4,622	4,531	4,373	4,271	4,475	4,227	4,188	4,261	4,141	4,176	4,313	4,251	4,158
On layoff	1,780	1,171	1,248	1,117	1,187	1,162	1,165	1,146	1,110	1,151	1,068	1,070	1,229	1,240	1,163
Other job losers	4,478	3,250	3,374	3,414	3,186	3,109	3,310	3,081	3,078	3,110	3,073	3,106	3,084	3,011	2,995
Job leavers	830	823	777	792	812	809	850	833	841	829	869	858	884	865	848
Reentrants	2,412	2,184	2,208	2,301	2,184	1,989	2,111	2,294	2,254	2,150	2,161	2,218	2,244	2,233	2,341
New entrants	1,216	1,110	1,200	1,197	1,170	1,134	1,092	1,088	1,057	1,060	1,024	1,011	1,049	1,035	1,090
PERCENT DISTRIBUTION															
Total unemployed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Job losers	58.4	51.8	52.5	51.4	51.2	52.1	52.5	50.1	50.2	51.3	50.5	50.5	50.8	50.7	49.3
On layoff	16.6	13.7	14.2	12.7	13.9	14.2	13.7	13.6	13.3	13.9	13.0	12.9	14.5	14.8	13.8
Other job losers	41.8	38.1	38.3	38.7	37.3	37.9	38.8	36.5	36.9	37.5	37.5	37.6	36.3	35.9	35.5
Job leavers	7.7	9.6	8.8	9.0	9.5	9.9	10.0	9.9	10.1	10.0	10.6	10.4	10.4	10.3	10.0
Reentrants	22.5	25.6	25.1	26.1	25.6	24.2	24.8	27.2	27.0	25.9	26.4	26.8	26.4	26.6	27.7
New entrants	11.3	13.0	13.6	13.6	13.7	13.8	12.8	12.9	12.7	12.8	12.5	12.2	12.4	12.3	12.9
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	5.6	3.9	4.1	4.0	3.8	3.8	3.9	3.7	3.7	3.7	3.6	3.6	3.8	3.7	3.6
Job leavers	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.7	.8	.8	.7
Reentrants	2.2	1.9	2.0	2.0	1.9	1.8	1.9	2.0	2.0	1.9	1.9	1.9	2.0	1.9	2.0
New entrants	1.1	1.0	1.1	1.1	1.0	1.0	1.0	1.0	.9	.9	.9	.9	.9	.9	.9

8. Duration of unemployment, seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Less than 5 weeks	3,570	3,350	3,378	3,407	3,275	3,229	3,409	3,513	3,313	3,395	3,352	3,282	3,662	3,524	3,590
5 to 14 weeks	2,937	2,451	2,514	2,485	2,440	2,303	2,449	2,406	2,533	2,406	2,324	2,516	2,552	2,469	2,478
15 weeks and over	4,210	2,737	2,894	2,842	2,833	2,630	2,672	2,621	2,605	2,527	2,428	2,374	2,243	2,416	2,400
15 to 26 weeks	1,652	1,104	1,122	1,102	1,173	1,012	1,088	1,116	1,106	1,092	990	972	941	1,076	1,065
27 weeks and over	2,559	1,634	1,772	1,740	1,660	1,618	1,584	1,505	1,499	1,435	1,438	1,402	1,302	1,340	1,335
Mean duration in weeks	20.0	18.2	18.9	18.7	18.5	18.1	18.0	17.6	17.3	16.7	17.4	17.3	15.3	15.9	15.9
Median duration in weeks	10.1	7.9	8.4	8.1	8.3	7.5	7.6	7.6	7.6	7.3	7.3	7.4	6.7	7.2	7.1

EMPLOYMENT, HOURS, AND EARNINGS DATA FROM ESTABLISHMENT SURVEYS

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by over 200,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

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

Production workers in manufacturing include blue-collar worker supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12–16 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in transportation and public utilities; in wholesale and retail trade; in finance, insurance, and real estate; and in services industries. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

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

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

The Diffusion Index, introduced in table 17 of the May 1983 issue, represents the percent of 185 nonagricultural industries in which employment was rising over the indicated period. One-half of the industries with unchanged employment are counted as rising. In line with Bureau practice, data for the 3-, 6-, and 9-month spans are seasonally adjusted, while that for the 12-month span is unadjusted. The diffusion index is useful for measuring the dispersion of economic gains or losses and is also an economic indicator.

Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1984 data, published in the July 1984 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 1982; seasonally adjusted data have been revised back to January 1979. Unadjusted data from April 1983 forward, and seasonally adjusted data from January 1980 forward are subject to revision in future benchmarks. Earlier comparable unadjusted and seasonally adjusted data are published in a *Supplement to Employment and Earnings* (unadjusted data from April 1977 through February 1984 and seasonally adjusted data from January 1974 through February 1984) and in *Employment, Hours, and Earnings, United States, 1909–84*, BLS Bulletin 1312–12 (for prior periods).

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9–20. See also BLS *Handbook of Methods*, Bulletin 2134–1 (Bureau of Labor Statistics, 1982).

9. Employment, by industry, selected years, 1950–84

[Nonagricultural payroll data, in thousands]

Year	Total	Private sector	Goods-producing				Service-producing						Government			
			Total	Mining	Construction	Manufacturing	Total	Transportation and public utilities	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Total	Federal	State	Local
1950	45,197	39,170	18,506	901	2,364	15,241	26,691	4,034	2,635	6,751	1,888	5,357	6,026	1,928	[1]	[1]
1955	50,641	43,727	20,513	792	2,839	16,882	30,128	4,141	2,926	7,610	2,298	6,240	6,914	2,187	1,168	3,558
1960[2]	54,189	45,836	20,434	712	2,926	16,796	33,755	4,004	3,143	8,248	2,629	7,378	8,353	2,270	1,536	4,547
1964	58,283	48,686	21,005	634	3,097	17,274	37,278	3,951	3,337	8,823	2,911	8,660	9,596	2,348	1,856	5,392
1965	60,765	50,689	21,926	632	3,232	18,062	38,839	4,036	3,466	9,250	2,977	9,036	10,074	2,378	1,996	5,700
1966	63,901	53,116	23,158	627	3,317	19,214	40,743	4,158	3,597	9,648	3,058	9,498	10,784	2,564	2,141	6,080
1967	65,803	54,413	23,308	613	3,248	19,447	42,495	4,268	3,689	9,917	3,185	10,045	11,391	2,719	2,302	6,371
1968	67,897	56,058	23,737	606	3,350	19,781	44,160	4,318	3,779	10,320	3,337	10,567	11,839	2,737	2,442	6,660
1969	70,384	58,189	24,361	619	3,575	20,167	46,023	4,442	3,907	10,798	3,512	11,169	12,195	2,758	2,533	6,904
1970	70,880	58,325	23,578	623	3,588	19,367	47,302	4,515	3,993	11,047	3,645	11,548	12,554	2,731	2,664	7,158
1971	71,214	58,331	22,935	609	3,704	18,623	48,278	4,476	4,001	11,351	3,772	11,797	12,881	2,696	2,747	7,437
1972	73,675	60,341	23,668	628	3,889	19,151	50,007	4,541	4,113	11,836	3,908	12,276	13,334	2,684	2,859	7,790
1973	76,790	63,058	24,893	642	4,097	20,154	51,897	4,656	4,277	12,329	4,046	12,857	13,732	2,663	2,923	8,146
1974	78,265	64,095	24,794	697	4,020	20,077	53,471	4,725	4,433	12,554	4,148	13,441	14,170	2,724	3,039	8,407
1975	76,945	62,259	22,600	752	3,525	18,323	54,345	4,542	4,415	12,645	4,165	13,892	14,686	2,748	3,179	8,758
1976	79,382	64,511	23,352	779	3,576	18,997	56,030	4,582	4,546	13,209	4,271	14,551	14,871	2,733	3,273	8,865
1977	82,471	67,344	24,346	813	3,851	19,682	58,125	4,713	4,708	13,808	4,467	15,303	15,127	2,727	3,377	9,023
1978	86,697	71,026	25,585	851	4,229	20,505	61,113	4,923	4,969	14,573	4,724	16,252	15,672	2,753	3,474	9,446
1979	89,823	73,876	26,461	958	4,463	21,040	63,363	5,136	5,204	14,989	4,975	17,112	15,947	2,773	3,541	9,633
1980	90,406	74,166	25,658	1,027	4,346	20,285	64,748	5,146	5,275	15,035	5,160	17,890	16,241	2,866	3,610	9,765
1981	91,156	75,126	25,497	1,139	4,188	20,170	65,659	5,165	5,358	15,189	5,298	18,619	16,031	2,772	3,640	9,619
1982	89,566	73,729	23,813	1,128	3,905	18,781	65,753	5,082	5,278	15,179	5,341	19,036	15,837	2,739	3,640	9,458
1983	90,138	74,288	23,394	957	3,940	18,497	66,744	4,958	5,259	15,545	5,467	19,665	15,851	2,752	3,660	9,439
1984	94,156	78,187	24,904	998	4,316	19,590	69,254	5,170	5,526	16,261	5,665	20,662	15,969	2,783	3,702	9,483

[1] Not available.
[2] Data include Alaska and Hawaii beginning in 1959.

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

10. Employment, by State

[Nonagricultural payroll data, in thousands]

State	February 1984	January 1985	February 1985[p]	State	February 1984	January 1985	February 1985[p]
Alabama	1,354.6	1,383.0	1,383.9	Montana	270.1	278.8	278.7
Alaska	206.9	215.5	218.8	Nebraska	606.3	630.2	631.2
Arizona	1,149.9	1,225.6	1,240.2	Nevada	408.7	434.6	437.1
Arkansas	761.5	780.8	782.0	New Hampshire	420.4	451.4	449.5
California	10,305.7	10,664.8	10,709.6	New Jersey	3,207.1	3,346.3	3,337.1
Colorado	1,354.5	1,388.0	1,393.6	New Mexico	489.1	504.6	506.5
Connecticut	1,474.0	1,535,7	1,533.2	New York	7,377.8	7,522.2	7,546.0
Delaware	266.8	282.1	282.3	North Carolina	2,502.0	2,585.6	2,586.2
District of Columbia	599.5	612.5	613.0	North Dakota	245.8	249.4	249.4
Florida	4,127.8	4,364.1	4,394.7	Ohio	4,126.2	4,241.1	4,243.4
Georgia	2,356.9	2,537.9	2,539.1	Oklahoma	1,171.5	1,177.2	1,174.4
Hawaii	410.3	414.4	419.6	Oregon	985.8	1,003.1	1,003.9
Idaho	317.1	322.4	323.0	Pennsylvania	4,524.9	4,625.1	4,624.2
Illinois	4,564.2	4,593.1	4,590.9	Rhode Island	401.2	411.1	410.2
Indiana	2,058.7	2,129.8	2,131.7	South Carolina	1,224.8	1,293.5	1,298.9
Iowa	1,045.1	1,046.9	1,049.2	South Dakota	236.5	238.8	237.9
Kansas	938.6	958.5	961.7	Tennessee	1,753.0	1,810.9	1,809.3
Kentucky	1,171.2	1,218.4	1,214.7	Texas	6,337.0	6,487.4	6,513.9
Louisiana	1,568.3	1,589.3	1,582.1	Utah	579.9	610.7	611.4
Maine	425.1	434.8	436.9	Vermont	211.0	217.4	218.7
Maryland	1,736.0	1,816.7	1,818.9	Virginia	2,243.9	2,355.5	2,351.6
Massachusetts	2,755.1	2,875.1	2,889.2	Washington	1,591.7	1,636.4	1,639.1
Michigan	3,285.5	3,349.4	3,350.5	West Virginia	577.7	583.2	578.6
Minnesota	1,746.3	1,828.4	1,833.5	Wisconsin	1,873.1	1,937.4	934.9
Mississippi	806.0	831.9	834.9	Wyoming	194.5	188.6	188.2
Missouri	1,967.9	1,998.9	1,996.6				
				Virgin Islands	37.0	36.2	36.4

p = preliminary.

11. Employment, by industry, seasonally adjusted

[Nonagricultural payroll data, in thousands]

Industry division and group	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.p	Mar.p
TOTAL	90,138	94,156	93,058	93,449	93,768	94,135	94,350	94,523	94,807	95,157	95,497	95,681	96,045	96,157	96,538
PRIVATE SECTOR	74,288	78,187	77,185	77,546	77,864	78,241	78,422	78,566	78,698	79,054	79,371	79,618	79,971	80,064	80,417
GOODS-PRODUCING	23,394	24,904	24,595	24,760	24,851	24,974	25,059	25,098	25,010	25,080	25,123	25,250	25,338	25,227	25,328
Mining	957	998	978	984	995	1,002	1,007	1,017	1,020	1,012	1,009	1,000	1,000	999	997
Oil and gas extraction	600	627	607	612	619	623	629	636	642	643	648	646	641	636	633
Construction	3,940	4,316	4,151	4,246	4,286	4,343	4,356	4,356	4,374	4,382	4,396	4,457	4,530	4,489	4,618
General building contractors	1,015	1,128	1,099	1,110	1,126	1,135	1,133	1,132	1,140	1,140	1,146	1,159	1,186	1,171	1,206
Manufacturing	18,497	19,590	19,466	19,530	19,570	19,629	19,696	19,725	19,616	19,686	19,718	19,801	19,808	19,739	19,713
Production workers	12,581	13,455	13,388	13,443	13,465	13,492	13,541	13,558	13,448	13,497	13,505	13,571	13,569	13,495	13,465
Durable goods	10,774	11,635	11,513	11,551	11,598	11,652	11,702	11,758	11,696	11,752	11,776	11,834	11,844	11,797	11,779
Production workers	7,151	7,846	7,769	7,799	7,826	7,860	7,899	7,945	7,876	7,915	7,925	7,969	7,965	7,911	7,887
Lumber and wood products	658	710	712	714	711	712	708	706	703	710	713	717	715	708	709
Furniture and fixtures	447	484	483	482	482	485	485	484	481	487	492	495	497	497	499
Stone, clay, and glass products	573	605	606	604	605	605	606	603	603	606	606	612	614	608	612
Primary metal industries	838	874	877	879	887	884	880	879	865	866	865	859	860	854	848
Blast furnaces and basic steel products	343	337	347	345	347	345	342	334	324	320	320	318	319	316	314
Fabricated metal products	1,374	1,476	1,456	1,459	1,469	1,479	1,490	1,491	1,485	1,495	1,498	1,502	1,498	1,494	1,489
Machinery, except electrical	2,038	2,214	2,166	2,189	2,203	2,226	2,242	2,252	2,243	2,255	2,251	2,253	2,248	2,242	2,240
Electrical and electronic equipment	2,024	2,234	2,202	2,212	2,228	2,237	2,252	2,267	2,263	2,269	2,274	2,281	2,282	2,276	2,274
Transportation equipment	1,756	1,928	1,905	1,905	1,906	1,917	1,926	1,961	1,939	1,945	1,957	1,993	2,010	2,002	1,993
Motor vehicles and equipment	758	867	863	857	848	855	858	894	864	865	877	904	912	892	878
Instruments and related products	695	723	718	719	722	723	727	726	726	729	731	732	731	733	735
Miscellaneous manufacturing	371	387	388	388	385	384	386	389	388	390	389	390	389	383	380
Nondurable goods	7,724	7,954	7,953	7,979	7,972	7,977	7,994	7,967	7,920	7,934	7,942	7,967	7,964	7,942	7,934
Production workers	5,430	5,610	5,619	5,644	5,639	5,632	5,642	5,613	5,572	5,582	5,580	5,602	5,604	5,584	5,578
Food and kindred products	1,622	1,643	1,638	1,648	1,643	1,644	1,655	1,642	1,630	1,640	1,644	1,658	1,660	1,654	1,653
Tobacco manufactures	69	67	66	67	67	67	66	65	69	69	67	69	69	69	68
Textile mill products	744	753	769	766	762	759	755	751	744	735	731	727	728	721	715
Apparel and other textile products	1,164	1,202	1,218	1,226	1,217	1,209	1,206	1,200	1,181	1,178	1,178	1,186	1,185	1,177	1,177
Paper and allied products	662	682	680	680	681	685	687	686	680	684	683	684	684	683	683
Printing and publishing	1,296	1,361	1,339	1,348	1,356	1,362	1,368	1,371	1,375	1,380	1,386	1,386	1,390	1,392	1,396
Chemicals and allied products	1,047	1,061	1,054	1,057	1,057	1,062	1,064	1,067	1,063	1,065	1,066	1,068	1,065	1,064	1,064
Petroleum and coal products	195	188	190	189	188	188	187	187	186	185	185	184	184	183	182
Rubber and miscellaneous plastics products	718	796	790	790	795	797	801	800	798	805	810	814	812	813	810
Leather and leather products	208	202	209	208	206	204	205	198	194	193	192	191	187	186	186
SERVICE-PRODUCING	66,744	69,254	68,463	68,689	68,917	69,161	69,291	69,425	69,797	70,077	70,374	70,423	70,707	70,930	71,210
Transportation and public utilities	4,958	5,170	5,112	5,129	5,144	5,163	5,175	5,202	5,213	5,225	5,226	5,249	5,266	5,279	5,266
Transportation	2,739	2,895	2,839	2,862	2,871	2,883	2,896	2,924	2,937	2,951	2,953	2,974	2,984	3,002	2,991
Communication and public utilities	2,219	2,276	2,273	2,267	2,273	2,280	2,279	2,278	2,276	2,274	2,273	2,275	2,282	2,277	2,275
Wholesale trade	5,259	5,526	5,457	5,473	5,492	5,502	5,528	5,544	5,588	5,612	5,623	5,641	5,665	5,670	5,685
Durable goods[1]	3,064	3,254	3,205	3,215	3,235	3,249	3,268	3,278	3,293	3,301	3,317	3,328	3,340	3,348	3,355
Nondurable goods[1]	2,195	2,271	2,252	2,258	2,257	2,253	2,260	2,266	2,295	2,311	2,306	2,313	2,325	2,322	2,330
Retail trade	15,545	16,261	16,030	16,095	16,166	16,245	16,283	16,295	16,342	16,468	16,644	16,626	16,707	16,757	16,836
General merchandise stores	2,161	2,289	2,230	2,251	2,273	2,295	2,301	2,303	2,318	2,334	2,391	2,331	2,368	2,369	2,378
Food stores	2,560	2,649	2,626	2,635	2,630	2,641	2,648	2,640	2,648	2,677	2,696	2,710	2,714	2,727	2,749
Automotive dealers and service stations	1,667	1,754	1,748	1,743	1,751	1,751	1,762	1,758	1,755	1,763	1,772	1,777	1,780	1,795	1,802
Eating and drinking places	5,007	5,212	5,136	5,154	5,183	5,199	5,211	5,238	5,255	5,280	5,303	5,327	5,359	5,389	5,414
Finance, insurance, and real estate	5,467	5,665	5,613	5,640	5,662	5,676	5,676	5,679	5,684	5,705	5,725	5,749	5,764	5,800	5,828
Finance	2,740	2,850	2,831	2,851	2,863	2,854	2,854	2,850	2,856	2,865	2,874	2,886	2,900	2,922	2,940
Insurance	1,721	1,757	1,742	1,742	1,746	1,752	1,759	1,763	1,766	1,774	1,778	1,785	1,786	1,792	1,796
Real estate	1,005	1,058	1,041	1,047	1,053	1,066	1,063	1,066	1,062	1,066	1,073	1,078	1,078	1,086	1,092
Services	19,665	20,662	20,378	20,449	20,549	20,681	20,701	20,748	20,861	20,964	21,030	21,095	21,231	21,331	21,474
Business services	3,539	4,003	3,875	3,912	3,979	4,014	4,035	4,069	4,085	4,110	4,142	4,151	4,193	4,229	4,271
Health services	5,973	6,068	6,052	6,062	6,073	6,064	6,079	6,034	6,085	6,087	6,104	6,115	6,140	6,156	6,182
Government	15,851	15,969	15,873	15,903	15,904	15,894	15,928	15,957	16,109	16,103	16,126	16,063	16,074	16,093	16,121
Federal	2,752	2,783	2,770	2,771	2,767	2,777	2,779	2,785	2,804	2,793	2,809	2,809	2,807	2,805	2,811
State	3,660	3,702	3,686	3,693	3,699	3,699	3,697	3,714	3,725	3,719	3,724	3,711	3,713	3,726	3,744
Local	9,439	9,483	9,417	9,439	9,438	9,418	9,452	9,458	9,580	9,591	9,598	9,543	9,554	9,562	9,566

[1]Under Wholesale trade, data for Durable goods and Nondurable goods have been corrected in this table as of the April 1985 issue of the *Monthly Labor Review*.

p = preliminary.

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

12. Average hours and earnings, by industry 1968–84

[Production or nonsupervisory workers on nonagricultural payrolls]

Year	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings
	Private sector			Mining			Construction		
1968	37.8	$2.85	$107.73	42.6	$3.35	$142.71	37.3	$4.41	$164.49
1969	37.7	3.04	114.61	43.0	3.60	154.80	37.9	4.79	181.54
1970	37.1	3.23	119.83	42.7	3.85	164.40	37.3	5.24	195.45
1971	36.9	3.45	127.31	42.4	4.06	172.14	37.2	5.69	211.67
1972	37.0	3.70	136.90	42.6	4.44	189.14	36.5	6.06	221.19
1973	36.9	3.94	145.39	42.4	4.75	201.40	36.8	6.41	235.89
1974	36.5	4.24	154.76	41.9	5.23	219.14	36.6	6.81	249.25
1975	36.1	4.53	163.53	41.9	5.95	249.31	36.4	7.31	266.08
1976	36.1	4.86	175.45	42.4	6.46	273.90	36.8	7.71	283.73
1977	36.0	5.25	189.00	43.4	6.94	301.20	36.5	8.10	295.65
1978	35.8	5.69	203.70	43.4	7.67	332.88	36.8	8.66	318.69
1979	35.7	6.16	219.91	43.0	8.49	365.07	37.0	9.27	342.99
1980	35.3	6.66	235.10	43.3	9.17	397.06	37.0	9.94	367.78
1981	35.2	7.25	255.20	43.7	10.04	438.75	36.9	10.82	399.26
1982	34.8	7.68	267.26	42.7	10.77	459.88	36.7	11.63	426.82
1983	35.0	8.02	280.70	42.5	11.27	478.98	37.2	11.92	443.42
1984	35.3	8.33	294.05	43.4	11.58	502.57	37.8	12.03	454.73
	Manufacturing			Transportation and public utilities			Wholesale trade		
1968	40.7	$3.01	$122.51	40.6	$3.42	$138.85	40.1	$3.05	$122.31
1969	40.6	3.19	129.51	40.7	3.63	147.74	40.2	3.23	129.85
1970	39.8	3.35	133.33	40.5	3.85	155.93	39.9	3.44	137.26
1971	39.9	3.57	142.44	40.1	4.21	168.82	39.5	3.65	129.85
1972	40.5	3.82	154.71	40.4	4.65	187.86	39.4	3.85	144.18
1973	40.7	4.09	166.46	40.5	5.02	203.31	39.3	4.08	151.69
1974	40.0	4.42	176.80	40.2	5.41	217.48	38.8	4.39	160.34
1975	39.5	4.83	190.79	39.7	5.88	233.44	38.7	4.73	183.05
1976	40.1	5.22	209.32	39.8	6.45	256.71	38.7	5.03	194.66
1977	40.3	5.68	228.90	39.9	6.99	278.90	38.8	5.39	209.13
1978	40.4	6.17	249.27	40.0	7.57	302.80	38.8	5.88	228.14
1979	40.2	6.70	269.34	39.9	8.16	325.58	38.8	6.39	247.93
1980	39.7	7.27	288.62	39.6	8.87	351.25	38.5	6.96	267.96
1981	39.8	7.99	318.00	39.4	9.70	382.18	38.5	7.56	291.06
1982	38.9	8.49	330.26	39.0	10.32	402.48	38.3	8.09	309.85
1983	40.1	8.83	354.08	39.0	10.80	421.20	38.5	8.54	328.79
1984	40.7	9.17	373.22	39.4	11.15	439.31	38.6	8.94	345.08
	Retail trade			Finance, insurance, and real estate			Services		
1968	34.7	$2.16	$74.95	37.0	$2.75	$101.75	34.7	$2.42	$83.97
1969	34.2	2.30	78.66	37.1	2.93	108.70	34.7	2.61	90.57
1970	33.8	2.44	82.47	36.7	3.07	112.67	34.4	2.81	96.66
1971	33.7	2.60	87.62	36.6	3.22	117.85	33.9	3.04	103.06
1972	33.4	2.75	91.85	36.6	3.36	122.98	33.9	3.27	110.85
1973	33.1	2.91	96.32	36.6	3.53	129.20	33.8	3.47	117.29
1974	32.7	3.14	102.68	36.5	3.77	137.61	33.6	3.75	126.00
1975	32.4	3.36	108.86	36.5	4.06	148.19	33.5	4.02	134.67
1976	32.1	3.57	114.60	36.4	4.27	155.43	33.3	4.31	143.52
1977	31.6	3.85	121.66	36.4	4.54	165.26	33.0	4.65	153.45
1978	31.0	4.20	130.20	36.4	4.89	178.00	32.8	4.99	163.67
1979	30.6	4.53	138.62	36.2	5.27	190.77	32.7	5.36	175.27
1980	30.2	4.88	147.38	36.2	5.79	209.60	32.6	5.85	190.71
1981	30.1	5.25	158.03	36.3	6.31	229.05	32.6	6.41	208.97
1982	29.9	5.48	163.85	36.2	6.78	245.44	32.6	6.92	225.59
1983	29.8	5.74	171.05	36.2	7.29	263.90	32.7	7.30	238.71
1984	30.0	5.89	176.70	36.5	7.62	278.13	32.8	7.62	249.94

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

13. Average weekly hours, by industry, seasonally adjusted

[Production or nonsupervisory workers on private nonagricultural payrolls]

Industry	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.p	Mar.p
PRIVATE SECTOR	35.0	35.3	35.3	35.4	35.3	35.3	35.2	35.2	35.4	35.1	35.2	35.3	35.2	35.0	35.1
MANUFACTURING	40.1	40.7	40.7	41.1	40.6	40.6	40.5	40.5	40.6	40.4	40.5	40.7	40.6	39.9	40.4
Overtime hours	3.0	3.4	3.5	3.7	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.3	3.3	3.3
Durable goods	40.7	41.4	41.4	41.8	41.3	41.2	41.2	41.2	41.5	41.3	41.2	41.4	41.4	40.5	41.0
Overtime hours	3.0	3.6	3.7	4.0	3.5	3.5	3.5	3.4	3.5	3.5	3.6	3.6	3.6	3.6	3.5
Lumber and wood products	40.1	39.9	40.1	40.4	39.6	39.4	39.3	39.4	40.2	39.7	39.5	40.0	40.0	38.8	39.3
Furniture and fixtures	39.4	39.7	39.6	39.7	39.7	39.1	39.8	39.1	39.9	39.6	39.8	39.6	40.5	39.4	39.3
Stone, clay, and glass products	41.5	42.0	41.9	42.3	42.1	41.8	41.9	41.7	42.0	41.8	41.8	41.7	41.6	41.2	41.9
Primary metal industries	40.5	41.6	41.8	42.2	42.1	41.7	41.5	41.0	41.3	41.3	41.5	41.2	41.0	40.9	41.0
Blast furnaces and basic steel products	39.5	40.6	41.2	41.0	41.6	41.1	39.9	39.6	40.0	40.1	40.8	39.7	39.7	40.8	40.9
Fabricated metal products	40.6	41.4	41.3	41.8	41.4	41.3	41.3	41.1	41.5	40.3	41.1	41.4	41.4	40.5	41.1
Machinery, except electrical	40.5	41.9	41.9	42.3	41.9	42.0	41.8	42.0	42.0	41.9	41.7	41.8	41.7	41.0	41.4
Electrical and electronic equipment	40.5	41.0	41.0	41.3	41.0	40.8	40.8	40.9	41.2	40.9	41.0	41.0	40.8	40.0	40.6
Transportation equipment	42.1	42.7	42.9	43.5	42.4	42.3	42.2	42.4	42.8	42.4	42.4	43.0	43.3	41.7	42.6
Motor vehicles and equipment	43.3	43.7	44.4	44.8	42.9	43.1	42.4	43.3	43.9	43.3	43.4	44.4	44.6	42.1	43.9
Instruments and related products	40.4	41.3	41.1	41.4	40.7	41.3	41.3	41.1	41.5	41.2	41.5	41.8	41.2	40.5	41.0
Nondurable goods	39.4	39.6	39.8	40.2	39.6	39.6	39.4	39.5	39.4	39.3	39.4	39.6	39.5	39.1	39.5
Overtime hours	3.0	3.1	3.3	3.4	3.1	3.2	3.1	3.1	3.0	2.9	3.2	3.1	2.9	2.9	3.0
Food and kindred products	39.5	39.8	39.8	40.1	39.7	39.8	39.5	39.7	39.6	39.6	39.7	40.1	39.8	39.5	39.9
Textile mill products	40.5	39.9	40.6	41.2	40.0	40.0	39.8	39.4	39.2	38.7	39.0	39.2	39.3	38.7	39.0
Apparel and other textile products	36.2	36.4	36.7	37.4	36.5	36.4	35.8	36.0	35.9	35.9	36.0	36.4	36.2	35.6	36.0
Paper and allied products	42.6	43.1	43.0	43.2	43.1	42.9	43.3	43.1	43.1	43.0	43.2	43.1	43.1	42.7	43.1
Printing and publishing	37.6	37.9	37.9	38.2	38.0	37.7	37.7	37.8	37.9	37.8	37.9	37.7	37.9	37.7	37.7
Chemicals and allied products	41.6	41.9	42.0	42.0	41.8	41.9	41.9	42.0	41.8	41.6	41.7	41.9	42.0	41.8	42.3
Petroleum and coal products	43.9	43.7	44.7	43.7	43.5	43.1	43.2	43.9	43.1	43.5	43.5	42.9	43.4	43.4	43.9
Leather and leather products	36.8	36.8	36.7	37.5	36.5	36.7	37.0	36.0	36.5	36.4	36.4	36.9	37.0	36.5	37.4
TRANSPORTATION AND PUBLIC UTILITIES	39.0	39.4	39.2	39.5	39.4	39.6	39.8	39.4	39.8	39.1	39.4	39.2	39.2	39.4	39.4
WHOLESALE TRADE	38.5	38.6	38.5	38.7	38.6	38.6	38.6	38.7	38.8	38.6	38.6	38.6	38.6	38.5	38.7
RETAIL TRADE	29.8	30.0	30.1	30.0	30.1	30.2	29.9	29.9	30.0	29.8	29.9	30.1	29.8	29.7	29.8
SERVICES	32.7	32.8	32.8	32.8	32.7	32.7	32.7	32.6	32.8	32.7	32.7	32.8	32.7	32.7	32.7

p = preliminary.

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

14. Average hourly earnings, by industry

[Production or nonsupervisory workers on private nonagricultural payrolls]

Industry	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.p	Mar.p
PRIVATE SECTOR	$8.02	$8.33	$8.24	$8.29	$8.28	$8.29	$8.32	$8.30	$8.43	$8.40	$8.43	$8.46	$8.50	$8.52	$8.53
Seasonally adjusted	(1)	(1)	8.25	8.31	8.29	8.33	8.35	8.34	8.40	8.38	8.42	8.47	8.45	8.50	8.54
MINING	11.27	11.58	11.60	11.62	11.56	11.57	11.57	11.57	11.66	11.52	11.57	11.64	11.79	11.85	11.82
CONSTRUCTION	11.92	12.03	11.97	11.95	11.99	11.94	11.97	12.01	12.15	12.14	12.01	12.17	12.22	12.26	12.20
MANUFACTURING	8.83	9.17	9.09	9.11	9.11	9.14	9.18	9.14	9.23	9.22	9.30	9.38	9.42	9.42	9.44
Durable goods	9.38	9.72	9.66	9.67	9.66	9.69	9.70	9.68	9.77	9.76	9.82	9.94	9.97	9.97	9.99
Lumber and wood products	7.79	7.99	7.87	7.89	7.92	8.04	8.01	8.05	8.15	8.06	8.01	8.04	8.05	8.06	8.01
Furniture and fixtures	6.62	6.86	6.76	6.76	6.80	6.84	6.88	6.90	6.95	6.95	6.96	7.01	7.03	7.04	7.08
Stone, clay, and glass products	9.27	9.56	9.40	9.51	9.54	9.58	9.64	9.62	9.64	9.63	9.66	9.67	9.69	9.71	9.71
Primary metal industries	11.34	11.43	11.44	11.51	11.49	11.46	11.45	11.34	11.39	11.31	11.44	11.44	11.50	11.65	11.66
Blast furnaces and basic steel products	12.89	12.99	12.97	13.12	13.09	13.02	13.02	12.90	13.01	12.86	12.99	12.95	13.07	13.43	13.41
Fabricated metal products	9.11	9.36	9.31	9.34	9.33	9.33	9.33	9.30	9.41	9.38	9.42	9.55	9.57	9.56	9.60
Machinery, except electrical	9.55	9.96	9.90	9.91	9.90	9.93	9.96	9.92	10.01	10.01	10.06	10.16	10.12	10.13	10.15
Electrical and electronic equipment	8.65	8.99	8.88	8.89	8.89	8.91	8.95	9.00	9.08	9.09	9.15	9.27	9.28	9.27	9.34
Transportation equipment	11.66	12.19	12.12	12.06	12.04	12.14	12.13	12.13	12.23	12.29	12.42	12.59	12.64	12.59	12.57
Motor vehicles and equipment	12.12	12.69	12.62	12.56	12.51	12.67	12.61	12.59	12.69	12.81	12.96	13.21	13.35	13.29	13.27
Instruments and related products	8.46	8.81	8.71	8.73	8.71	8.78	8.83	8.85	8.92	8.89	8.91	8.99	8.96	9.06	9.08
Miscellaneous manufacturing	6.80	7.00	6.97	6.97	6.99	6.98	7.02	6.97	7.01	7.02	7.03	7.12	7.19	7.15	7.17
Nondurable goods	8.08	8.37	8.27	8.29	8.30	8.33	8.41	8.37	8.44	8.44	8.52	8.55	8.60	8.61	8.62
Food and kindred products	8.20	8.41	8.39	8.43	8.43	8.44	8.41	8.36	8.37	8.33	8.46	8.48	8.50	8.55	8.56
Tobacco manufactures	10.35	11.12	11.29	11.43	11.55	11.92	11.67	10.75	10.31	10.35	11.76	10.97	11.20	11.60	11.69
Textile mill products	6.18	6.46	6.41	6.43	6.42	6.43	6.43	6.46	6.49	6.49	6.55	6.57	6.59	6.60	6.63
Apparel and other textile products	5.37	5.53	5.48	5.49	5.48	5.50	5.51	5.53	5.61	5.59	5.59	5.65	5.70	5.68	5.71
Paper and allied products	9.94	10.44	10.25	10.29	10.34	10.42	10.56	10.50	10.55	10.56	10.67	10.69	10.67	10.73	10.69
Printing and publishing	9.11	9.39	9.29	9.29	9.31	9.30	9.36	9.42	9.51	9.48	9.54	9.56	9.57	9.59	9.61
Chemicals and allied products	10.59	11.11	10.95	10.97	11.02	11.03	11.12	11.13	11.23	11.32	11.35	11.37	11.42	11.42	11.41
Petroleum and coal products	13.29	13.45	13.44	13.44	13.32	13.33	13.27	13.32	13.54	13.52	13.67	13.63	13.97	14.00	13.96
Rubber and miscellaneous plastics products	7.99	8.27	8.20	8.25	8.20	8.23	8.30	8.28	8.31	8.31	8.39	8.43	8.50	8.47	8.48
Leather and leather products	5.54	5.70	5.68	5.68	5.68	5.67	5.70	5.67	5.72	5.72	5.76	5.80	5.82	5.79	5.79
TRANSPORTATION AND PUBLIC UTILITIES	10.80	11.15	11.02	11.07	11.03	11.07	11.18	11.17	11.27	11.23	11.29	11.32	11.31	11.32	11.29
WHOLESALE TRADE	8.54	8.94	8.79	8.89	8.86	8.90	8.97	8.95	9.05	8.99	9.06	9.18	9.14	9.17	9.16
RETAIL TRADE	5.74	5.89	5.89	5.90	5.88	5.88	5.87	5.84	5.89	5.88	5.94	5.89	5.99	6.01	6.00
FINANCE, INSURANCE, AND REAL ESTATE	7.29	7.62	7.54	7.62	7.55	7.58	7.60	7.57	7.76	7.67	7.71	7.78	7.77	7.87	7.88
SERVICES	7.30	7.62	7.54	7.60	7.55	7.53	7.56	7.53	7.69	7.69	7.74	7.82	7.82	7.84	7.85

[1] Not available.

p = preliminary.

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

15. The Hourly Earnings Index, by industry

[Production or nonsupervisory workers on private nonagricultural payrolls; 1977 = 100]

Industry	Not seasonally adjusted					Seasonally adjusted						
	Mar. 1984	Jan. 1985	Feb. 1985p	Mar. 1985p	Percent change from: Mar. 1984 to Mar. 1985	Mar 1984	Nov. 1984	Dec. 1984	Jan. 1985	Feb. 1985p	Mar. 1985p	Percent change from: Feb. 1985 to Mar. 1985
PRIVATE SECTOR (in current dollars)	158.9	163.5	164.1	164.3	3.3	159.1	162.0	163.1	162.8	163.8	164.4	.4
Mining	172.0	177.3	178.4	178.2	3.6	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Construction	145.3	148.3	148.8	148.8	2.4	146.3	146.5	147.5	148.0	149.5	149.8	.2
Manufacturing	161.1	166.6	166.8	167.2	3.8	161.2	164.5	165.1	165.9	166.6	167.3	.4
Transportation and public utilities	160.2	164.5	165.2	164.5	2.7	160.9	163.1	164.3	163.4	164.7	165.2	.3
Wholesale trade	162.7	169.0	169.5	169.5	4.1	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Retail trade	153.4	155.3	156.2	156.6	2.1	153.2	155.1	155.4	154.8	155.8	156.4	.4
Finance, insurance, and real estate	164.2	168.2	170.0	170.2	3.6	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Services	160.8	166.4	166.9	167.0	3.9	160.8	164.8	166.6	164.8	165.9	167.0	.7
PRIVATE SECTOR (in constant dollars)	95.1	95.0	94.9	(2)	(2)	95.0	c94.4	94.7	94.4	94.6	(2)	(2)

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

[2] Not available.

p = preliminary.

c = corrected.

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

16. Average weekly earnings, by industry

[Production or nonsupervisory workers on private nonagricultural payrolls]

Industry	Annual average		1984										1985		
	1983	1984	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.p	Mar.p
PRIVATE SECTOR															
Current dollars	$280.70	$294.05	$288.40	$292.64	$291.46	$294.30	$296.19	$294.65	$299.27	$295.68	$295.89	$300.33	$295.80	$295.64	$297.70
Seasonally adjusted	(1)	(1)	291.23	294.17	292.64	294.05	293.92	293.57	297.36	294.14	296.38	298.99	297.44	299.50	299.75
Constant (1977) dollars	171.37	173.48	172.59	174.71	173.18	174.45	174.85	172.31	173.99	171.91	172.23	174.61	171.78	170.99	(1)
MINING	478.98	502.57	496.48	499.66	499.39	505.61	497.51	503.30	513.04	497.66	503.30	514.49	506.97	508.37	511.81
CONSTRUCTION	443.42	454.73	439.30	448.13	458.02	460.88	462.04	462.39	467.78	461.32	449.17	457.97	444.81	446.26	455.06
MANUFACTURING															
Current dollars	354.08	373.22	369.96	372.60	369.87	372.91	369.95	369.26	375.66	373.41	378.51	386.46	379.63	373.97	380.43
Constant (1977) dollars	216.17	220.19	221.40	222.45	219.77	221.05	218.39	215.94	218.41	217.10	220.32	224.69	220.46	216.29	(1)
Durable goods	381.77	402.41	399.92	402.27	399.92	402.14	396.73	396.88	405.46	403.09	406.55	418.47	409.77	401.79	410.59
Lumber and wood products	312.38	318.80	314.01	317.18	317.59	324.01	316.40	322.00	329.26	320.79	313.99	319.99	313.15	308.70	313.19
Furniture and fixtures	260.83	272.34	267.02	267.02	268.60	270.86	269.70	273.24	278.70	279.39	279.10	284.61	276.98	271.74	277.54
Stone, clay, and glass products	384.71	401.52	389.16	401.32	404.50	407.15	406.81	405.96	408.74	405.42	405.72	403.24	392.45	391.31	401.99
Primary metal industries	459.27	475.49	480.48	488.02	481.43	480.17	472.89	462.67	472.69	462.58	473.62	475.90	471.50	476.49	480.39
Blast furnaces and basic steel products	509.16	527.39	534.36	549.73	540.62	536.42	524.71	506.97	524.30	506.68	524.80	516.71	517.57	547.94	547.13
Fabricated metal products	369.87	387.50	384.50	387.61	386.26	388.13	380.66	381.30	389.57	387.39	389.05	403.01	394.28	385.27	394.56
Machinery except electrical	386.78	417.32	415.80	417.21	413.82	417.06	411.35	411.68	420.42	417.42	422.52	434.85	422.00	415.33	421.23
Electrical and electronic equipment	350.33	368.59	364.08	364.49	363.60	365.31	361.58	366.30	374.10	371.78	376.98	387.49	377.70	369.87	379.20
Transportation equipment	490.89	520.51	521.16	523.40	514.11	519.59	508.25	504.61	517.33	521.10	530.33	552.70	543.52	522.49	538.00
Motor vehicles and equipment	524.80	554.55	560.33	563.94	546.69	557.48	537.19	532.56	548.21	554.67	562.46	593.13	590.07	555.52	582.55
Instruments and related products	341.78	363.85	358.85	358.80	354.50	362.61	361.15	362.85	371.07	365.38	371.55	380.28	357.36	366.93	373.19
Miscellaneous manufacturing	265.88	275.80	276.01	275.32	274.71	273.62	273.08	272.53	277.60	278.69	279.09	284.09	277.53	275.28	279.63
Nondurable goods	318.35	331.45	327.49	329.94	328.68	331.53	331.35	331.45	335.07	332.54	337.39	341.15	337.12	334.07	338.77
Food and kindred products	323.90	334.72	329.73	332.99	333.83	337.60	333.04	335.24	336.47	331.53	338.40	343.44	335.75	332.60	337.26
Tobacco manufactures	387.09	432.57	416.60	451.49	457.38	482.76	437.63	421.40	408.28	412.97	471.58	425.64	417.76	431.52	429.02
Textile mill products	250.29	257.75	258.96	260.42	257.44	259.77	252.70	256.46	255.71	253.11	257.42	258.86	257.01	254.10	257.24
Apparel and other textile products	194.39	201.29	201.12	202.03	200.02	202.40	198.36	200.74	201.96	201.80	201.80	205.66	203.49	201.07	204.99
Paper and allied products	423.44	449.96	437.68	442.47	443.59	449.10	456.19	451.50	457.87	455.14	462.01	468.22	457.74	452.83	457.53
Printing and publishing	342.54	355.88	353.02	353.02	351.92	349.68	351.94	357.02	362.33	358.34	363.47	367.10	358.88	358.67	363.26
Chemicals and allied products	440.54	465.51	458.81	460.74	460.64	463.26	463.70	464.12	471.66	470.91	475.57	482.09	478.50	476.21	481.50
Petroleum and coal products	583.43	587.77	585.98	590.02	580.75	579.86	579.90	584.75	598.47	590.82	597.38	584.73	597.92	593.60	597.49
Rubber and miscellaneous plastics products	329.19	344.86	341.94	347.33	341.94	344.84	341.96	342.79	344.87	344.03	349.02	354.06	351.90	343.88	350.22
Leather and leather products	203.87	209.76	205.05	210.16	209.59	213.76	212.61	206.39	208.21	207.64	210.82	215.18	211.85	209.02	213.07
TRANSPORTATION AND PUBLIC UTILITIES	421.20	439.31	429.78	435.05	432.38	440.59	447.20	443.45	449.67	440.22	445.96	447.14	439.96	442.61	442.57
WHOLESALE TRADE	328.79	345.08	336.66	342.27	342.00	344.43	348.04	347.26	351.14	347.91	350.62	357.10	350.98	350.29	352.66
RETAIL TRADE	171.05	176.70	174.34	175.82	176.40	178.75	180.21	178.70	177.29	174.64	176.42	180.23	174.31	174.89	176.40
FINANCE, INSURANCE, AND REAL ESTATE	263.90	278.13	273.70	278.13	274.07	275.15	278.92	275.55	284.02	279.96	280.64	285.53	283.61	286.47	286.83
SERVICES	238.71	249.94	245.80	248.52	246.13	247.74	250.24	248.49	252.23	250.69	252.32	256.50	254.15	254.80	255.13

[1] Not available.

p = preliminary.

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

17. Indexes of diffusion: industries in which employment increased, seasonally adjusted

[In percent]

Time span	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Over 1-month span	1983	54.3	46.5	60.8	68.9	69.5	64.6	74.3	68.6	69.5	75.4	69.7	73.8
	1984	71.1	73.2	67.0	63.8	64.1	63.0	62.4	57.6	40.8	65.7	51.9	63.5
	1985	58.4	p46.2	p54.6	....	....	....	....	....	....	....	....	....
Over 3-month span	1983	46.8	57.3	64.1	75.1	75.7	77.8	74.1	81.6	80.8	78.9	79.5	77.6
	1984	82.2	80.5	76.5	71.1	68.4	68.9	63.5	58.1	58.6	53.5	64.9	61.9
	1985	p57.0	p52.7	....	....	....	....	....	....	....	....	....	....
Over 6-month span	1983	50.8	63.0	69.2	75.1	80.0	82.4	84.1	82.4	84.6	85.9	86.8	83.8
	1984	81.9	82.7	79.7	75.4	69.2	63.2	62.4	62.7	63.5	60.5	p55.1	p60.8
Over 12-month span	1983	49.5	54.3	61.9	71.1	77.3	79.5	83.8	88.1	86.8	87.3	85.4	87.3
	1984	86.5	81.9	78.9	76.8	74.3	73.8	71.1	p63.5	p61.9	....	....	....

p = preliminary.

NOTE: Figures are the percent of industries with employment rising. (Half of the unchanged components are counted as rising.) Data are centered within the spans. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

UNEMPLOYMENT INSURANCE DATA

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

Definitions

Data for **all programs** represent an unduplicated count of insured unemployment under State programs, Unemployment Compensation for Ex-Servicemen, and Unemployment Compensation for Federal Employees, and the Railroad Insurance Act. The total may include persons receiving Federal–State Extended Benefits.

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

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

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

18. Unemployment insurance and employment service operations

[All items except average benefits amounts are in thousands]

Item	1984											1985	
	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.p	Feb.p
All programs:													
Insured unemployment	3,174	2,958	2,613	2,290	2,166	2,327	2,184	2,083	2,149	2,441	2,778	3,361	....
State unemployment insurance program:[1]													
Initial claims[2]	1,528	1,424	1,429	1,368	1,387	1,767	1,459	1,260	1,758	1,825	2,074	2,609	....
Insured unemployment (average weekly volume)	3,056	2,843	2,515	2,215	2,111	2,270	2,129	2,023	2,072	2,355	2,691	3,264	....
Rate of insured unemployment	3.6	3.3	2.9	2.6	2.5	2.6	2.5	2.3	2.4	2.7	3.1	3.7	....
Weeks of unemployment compensated	11,622	11,339	9,695	9,304	8,053	8,380	8,716	7,209	8,092	8,421	9,271	12,554	....
Average weekly benefit amount for total unemployment	$124.30	$124.67	$125.26	$123.69	$121.96	$119.83	$120.24	$122.49	$123.19	$123.95	$125.71	$127.17	....
Total benefits paid	$1,400,458	$1,369,536	$1,173,601	$1,109,268	$948,381	$974,135	$1,017,804	$853,424	$962,856	$1,005,727	$1,124,849	$1,531,974	....
State unemployment insurance program:[1] (Seasonally adjusted data)													
Initial claims[2]	1,572	1,570	1,569	1,614	1,559	1,661	1,618	1,707	1,746	1,765	1,602	1,765	....
Insured unemployment (average weekly volume)	2,428	2,470	2,507	2,300	2,356	2,457	2,355	2,567	2,461	2,551	2,541	2,532	....
Rate of insured unemployment	2.8	2.9	2.9	2.7	2.7	2.8	2.7	3.0	2.8	2.9	2.9	2.8	....
Unemployment compensation for ex-servicemen:[3]													
Initial claims[1]	13	13	12	12	12	13	14	13	15	13	12	14	....
Insured unemployment (average weekly volume)	24	22	20	18	18	18	19	20	21	22	23	24	....
Weeks of unemployment compensated	96	89	78	79	71	71	79	72	86	87	89	103	....
Total benefits paid	$12,540	$11,813	$10,349	$10,577	$9,467	$9,573	$10,715	$9,820	$11,766	$11,984	$12,072	$14,044	....
Unemployment compensation for Federal civilian employees:[4]													
Initial claims	10	9	13	9	11	12	10	9	15	12	11	14	....
Insured unemployment (average weekly volume)	31	28	23	20	19	20	19	19	21	23	24	27	....
Weeks of unemployment compensated	129	122	98	88	76	80	83	69	85	89	94	113	....
Total benefits paid	$15,003	$14,778	$11,844	$10,529	$8,994	$9,489	$9,776	$8,198	$10,088	$10,830	$11,442	$14,148	....
Railroad unemployment insurance:													
Applications	4	3	2	2	11	25	7	6	9	10	11	13	4
Insured unemployment (average weekly volume)	49	41	27	19	16	16	17	18	21	26	29	31	34
Number of payments	104	99	70	54	38	35	37	34	46	52	61	94	74
Average amount of benefit payment	$209.56	$208.96	$196.32	$188.45	$187.37	$189.06	$197.85	$196.15	$195.20	$198.85	$205.26	$206.99	$209.76
Total benefits paid	$23,228	$20,112	$13,356	$10,233	$7,039	$6,691	$6,695	$6,349	$8,596	....	....	....	....
Employment service:[5]													
New applications and renewals	....	8,231	....	....	9,517	....	....	4,132	....	....	....	....	....
Nonfarm placements	....	1,469	....	....	1,810	....	....	1,000	....	....	....	....	....

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

[2] Excludes transition claims under State programs.

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

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

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

p = preliminary.

NOTE: Data for Puerto Rico and the Virgin Islands included. Dashes indicate data not available.

PRICE DATA

PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period (1967 = 100, unless otherwise noted).

Definitions

The Consumer Price Index is a monthly statistical measure of the average change in prices in a fixed market basket of goods and services. Effective with the January 1978 index, the Bureau of Labor Statistics began publishing CPI's for two groups of the population. It introduced a CPI for All Urban Consumers, covering 80 percent of the total noninstitutional population, and revised the CPI for Urban Wage Earners and Clerical Workers, covering about half the new index population. The All Urban Consumers index covers in addition to wage earners and clerical workers, professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items is kept essentially unchanged between major revisions so that only price changes will be measured. Data are collected from more than 24,000 retail establishments and 24,000 tenants in 85 urban areas across the country. All taxes directly associated with the purchase and use of items are included in the index. Because the CPI's are based on the expenditures of two population groups in 1972–73, they may not accurately reflect the experience of individual families and single persons with different buying habits.

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

Producer Price Indexes measure average changes in prices received in primary markets of the United States by producers of commodities in all stages of processing. The sample used for calculating these indexes contains about 2,800 commodities and about 10,000 quotations per month selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The universe includes all commodities produced or imported for sale in commercial transactions in primary markets in the United States.

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

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

In calculating Producer Price Indexes, price changes for the various commodities are averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1972. The detailed data are aggregated to obtain indexes for stage of processing groupings, commodity groupings, durability of product groupings, and a number of special composite groupings.

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

Notes on the data

Regional CPI's cross classified by population size were introduced in the May 1978 *Review*. These indexes enable users in local areas for which an index is not published to get a better approximation of the CPI for their area by using the appropriate population size class measure for their region. The cross-classified indexes are published bimonthly. (See table 20.)

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

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

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

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

19. Consumer Price Index for Urban Wage Earners and Clerical Workers, annual averages and changes, 1967–84

[1967 = 100]

Year	All items		Food and beverages		Housing		Apparel and upkeep		Transportation		Medical care		Entertainment		Other goods and services	
	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change
1967	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .
1968	104.2	4.2	103.6	3.6	104.0	4.0	105.4	5.4	103.2	3.2	106.1	6.1	105.7	5.7	105.2	5.2
1969	109.8	5.4	108.8	5.0	110.4	6.2	111.5	5.8	107.2	3.9	113.4	6.9	111.0	5.0	110.4	4.9
1970	116.3	5.9	114.7	5.4	118.2	7.1	116.1	4.1	112.7	5.1	120.6	6.3	116.7	5.1	115.8	5.8
1971	121.3	4.3	118.3	3.1	123.4	4.4	119.8	3.3	118.6	5.2	128.4	6.5	122.9	5.3	122.4	4.8
1972	125.3	3.3	123.2	4.1	128.1	3.8	122.3	2.1	119.9	1.1	132.5	3.2	126.5	2.9	127.5	4.2
1973	133.1	6.2	139.5	13.2	133.7	4.4	126.8	3.7	123.8	3.3	137.7	3.9	130.0	2.8	132.5	3.9
1974	147.7	11.0	158.7	13.8	148.8	11.3	136.2	7.4	137.7	11.2	150.5	9.3	139.8	7.5	142.0	7.2
1975	161.2	9.1	172.1	8.4	164.5	10.6	142.3	4.5	150.6	9.4	168.6	12.0	152.2	8.9	153.9	8.4
1976	170.5	5.8	177.4	3.1	174.6	6.1	147.6	3.7	165.5	9.9	184.7	9.5	159.8	5.0	162.7	5.7
1977	181.5	6.5	188.0	8.0	186.5	6.8	154.2	4.5	177.2	7.1	202.4	9.6	167.7	4.9	172.2	5.8
1978	195.3	7.6	206.2	9.7	202.6	8.6	159.5	3.4	185.8	4.9	219.4	8.4	176.2	5.1	183.2	6.4
1979	217.7	11.5	228.7	10.9	227.5	12.3	166.4	4.3	212.8	14.5	240.1	9.4	187.6	6.5	196.3	7.2
1980	247.0	13.5	248.7	8.7	263.2	15.7	177.4	6.6	250.5	17.7	287.2	11.3	203.7	8.5	213.6	8.8
1981	272.3	10.2	267.8	7.7	293.2	11.4	186.6	5.2	281.3	12.3	295.1	10.4	219.0	7.5	233.3	9.2
1982	288.6	6.0	278.5	4.0	314.7	7.3	190.9	2.3	293.1	4.2	326.9	10.8	232.4	6.1	257.0	10.2
1983	297.4	3.0	284.7	2.2	322.0	2.3	195.6	2.5	300.0	2.4	355.1	8.6	242.4	4.3	286.3	11.4
1984	307.6	3.4	295.2	3.7	329.2	2.2	199.1	1.8	313.9	4.6	377.7	6.4	251.2	3.6	304.9	6.5

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
All items	306.6	314.5	315.3	315.3	315.5	316.1	317.4	303.3	312.1	312.2	311.9	312.2	312.6	313.9
Food and beverages	294.2	296.4	296.6	296.3	297.2	299.3	301.4	294.4	296.3	296.5	296.2	297.1	299.1	301.2
Housing	331.0	341.4	341.2	340.9	341.2	342.0	343.3	324.2	336.8	335.5	334.4	335.0	335.7	337.2
Apparel and upkeep	196.2	204.2	205.7	205.2	203.2	199.8	201.8	195.4	203.3	204.8	204.2	202.1	198.5	200.7
Transportation	305.8	313.7	315.5	316.1	315.8	314.7	314.3	307.7	316.0	317.8	318.3	317.9	316.7	316.3
Medical care	373.2	383.1	385.5	387.5	388.5	391.1	393.8	371.3	381.2	383.7	385.6	386.7	389.3	392.0
Entertainment	251.5	257.3	258.3	259.0	260.1	261.0	261.3	247.7	253.4	254.2	254.8	255.8	256.6	256.9
Other goods and services	301.5	314.6	315.8	316.5	316.7	319.1	320.5	299.2	310.9	311.9	312.6	312.8	315.6	317.1
Commodities	278.3	282.3	283.1	283.0	282.8	282.7	284.0	278.0	282.5	283.1	282.8	282.7	282.5	283.5
Commodities less food and beverages	266.0	271.0	272.1	272.2	271.4	270.0	270.7	266.4	271.8	272.5	272.3	271.8	270.3	271.1
Nondurables less food and beverages	274.0	277.2	278.6	278.2	277.0	274.4	274.7	276.1	279.0	280.3	279.9	278.7	275.8	276.2
Durables	260.9	268.7	269.3	270.0	269.8	270.2	271.4	257.1	264.4	264.6	264.5	264.6	264.9	266.2
Services	355.3	368.9	369.7	369.9	370.6	372.1	373.5	350.1	366.8	366.3	365.9	366.8	368.3	369.6
Rent, residential	243.6	252.4	253.8	254.8	256.1	257.1	258.4	242.9	251.7	253.1	254.0	255.3	256.3	257.5
Household services less rent of shelter (12/82 = 100)	105.7	111.0	109.9	108.8	108.5	108.9	108.9	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Transportation services	314.4	324.6	327.5	328.9	330.1	331.8	332.2	310.6	320.7	323.7	325.1	326.1	327.7	328.1
Medical care services	404.4	413.9	416.5	418.5	419.3	422.4	425.3	401.8	411.5	414.1	416.1	417.0	420.1	423.1
Other services	289.1	302.5	304.2	305.2	306.1	307.1	307.8	286.1	299.0	300.6	301.5	302.3	303.5	304.2
Special indexes:														
All items less food	305.9	315.2	316.1	316.2	316.2	316.3	317.4	302.4	312.7	312.9	312.6	312.7	312.7	313.7
All items less homeowners' costs	104.8	107.4	107.6	107.6	107.6	107.8	108.2	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
All items less mortgage interest costs	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	290.9	297.9	298.4	298.2	298.3	. . . .	. . . .
Commodities less food	263.8	268.8	269.8	269.9	269.2	267.8	268.6	264.1	269.6	270.3	270.1	269.6	268.2	269.0
Nondurables less food	269.1	272.3	273.6	273.3	272.2	269.7	270.2	271.1	274.1	275.4	275.0	273.9	271.2	271.7
Nondurables less food and apparel	311.2	312.3	313.5	313.4	312.8	310.9	310.8	312.4	313.5	314.8	314.5	313.8	311.8	311.5
Nondurables	285.3	288.0	288.8	288.5	288.3	288.0	289.6	286.3	288.8	289.5	289.2	289.0	288.6	289.8
Services less rent of shelter (12/82 = 100)	106.3	110.5	110.6	110.5	110.6	111.1	111.3	. . . .	. . . .	. . . .	. . . .	. . . .	100.5	100.7
Services less medical care	347.8	361.7	362.3	362.3	363.0	364.3	365.5	342.4	359.6	358.9	358.2	359.2	360.4	361.6
Domestically produced farm foods	280.7	280.0	279.7	278.8	279.9	282.1	284.8	279.4	278.3	278.0	277.2	278.2	280.4	282.9
Selected beef cuts	280.8	271.5	271.0	271.6	276.0	276.2	275.2	282.1	273.2	272.2	273.0	277.4	277.5	276.5
Energy	420.2	429.0	426.7	421.8	418.9	414.5	411.4	420.2	428.3	426.1	421.5	418.5	413.8	410.6
Energy commodities	414.5	405.4	408.2	407.2	404.1	395.7	391.3	246.6	406.3	408.9	407.8	404.7	396.2	391.8
All items less energy	298.2	306.1	307.1	307.7	308.2	309.2	310.9	293.8	302.7	303.1	303.2	303.8	304.7	306.4
All items less food and energy	295.5	304.9	306.1	306.9	307.3	307.9	309.5	290.4	301.0	301.5	301.6	302.1	302.7	304.3
Commodities less food and energy	248.5	256.0	256.8	257.0	256.7	256.5	258.1	264.1	253.8	254.3	254.2	254.0	253.8	255.5
Services less energy	349.5	361.0	362.7	364.0	365.0	366.4	368.0	343.6	358.4	358.9	359.4	360.7	362.0	363.6
Purchasing power of the consumer dollar, 1967 = $1	$0.326	$0.318	$0.317	$0.317	$0.317	$0.316	$0.315	$0.330	$0.320	$0.320	$0.321	$0.320	$0.320	$0.319

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
FOOD AND BEVERAGES	294.2	296.4	296.6	296.3	297.2	299.3	301.4	294.4	296.3	296.5	296.2	297.1	299.1	301.2
Food	302.1	304.2	304.4	304.1	305.1	307.3	309.5	302.1	303.8	304.0	303.7	304.7	306.9	309.0
Food at home	293.6	293.4	293.4	292.4	293.2	296.1	298.6	291.9	291.9	291.8	290.9	291.7	294.5	297.0
Cereals and bakery products	300.3	307.9	308.7	309.0	310.7	312.4	313.7	300.0	306.3	307.1	307.4	309.0	310.7	311.9
Cereals and cereal products (12/77 = 100)	160.3	164.5	163.6	163.8	164.2	165.6	167.0	162.6	165.1	164.3	164.4	164.7	166.2	167.5
Flour and prepared flour mixes (12/77 = 100)	143.4	146.3	145.2	143.9	143.4	146.6	148.2	145.1	146.6	145.6	144.4	143.6	146.8	148.4
Cereal (12/77 = 100)	180.4	186.1	186.2	186.7	187.6	189.4	191.9	182.5	188.3	188.4	189.0	189.8	191.7	194.1
Rice, pasta, and cornmeal (12/77 = 100)	147.2	150.4	148.5	149.3	149.9	149.3	149.0	148.4	151.5	149.7	150.5	151.0	150.3	150.2
Bakery products (12/77 = 100)	158.5	162.4	163.3	163.4	164.5	165.2	165.6	157.2	161.1	161.9	162.1	163.1	163.8	164.2
White bread	257.3	263.2	264.3	265.8	265.4	267.2	267.1	253.0	258.8	260.1	261.3	261.0	263.0	262.8
Other breads (12/77 = 100)	153.9	155.8	155.7	155.4	156.2	156.0	158.1	156.0	158.0	158.0	157.6	158.4	158.1	160.5
Fresh biscuits, rolls, and muffins (12/77 = 100)	158.7	159.7	160.7	161.1	161.9	161.8	164.1	154.7	155.6	156.4	157.0	157.5	157.6	159.7
Fresh cakes and cupcakes (12/77 = 100)	160.4	165.9	167.4	166.4	169.6	169.6	168.9	158.6	163.6	165.0	164.1	167.3	167.3	166.8
Cookies (12/77 = 100)	162.6	167.3	168.3	168.5	170.9	171.3	171.5	163.4	168.3	169.5	169.6	171.9	172.3	172.5
Crackers, bread, and cracker products (12/77 = 100)	152.3	161.7	162.7	160.9	164.3	166.3	167.9	153.6	163.0	164.2	162.4	166.0	167.8	169.2
Fresh sweetrolls, coffeecake, and donuts (12/77 = 100)	160.4	162.9	163.8	163.9	164.1	164.9	165.0	163.2	165.9	166.6	166.7	166.9	167.7	167.7
Frozen and refrigerated bakery products and fresh pies, tarts, and turnovers (12/77 = 100)	163.9	169.3	170.0	171.1	171.7	172.9	172.4	157.1	162.0	162.7	163.8	164.3	165.5	164.9
Meats, poultry, fish, and eggs	273.0	264.5	263.5	262.4	265.9	266.6	267.0	272.4	264.1	262.9	261.8	265.3	266.0	266.3
Meats, poultry, and fish	273.9	271.6	270.4	269.4	272.5	275.0	274.8	273.2	271.0	269.7	268.7	271.7	274.2	274.0
Meats	270.0	268.0	267.1	266.1	269.6	270.8	270.6	269.4	267.7	266.6	265.5	268.9	270.2	270.0
Beef and veal	280.9	271.9	271.3	271.9	276.2	276.4	275.6	281.6	272.8	271.9	272.5	276.9	277.0	276.2
Ground beef other than canned	261.1	252.9	252.4	254.3	257.2	256.0	256.5	261.9	254.4	253.5	255.7	258.2	257.0	257.7
Chuck roast	293.1	271.8	276.6	280.9	286.1	281.5	284.7	302.0	280.6	285.1	289.9	294.7	290.6	293.9
Round roast	253.5	234.3	236.5	234.1	239.0	240.7	239.2	257.3	237.8	240.3	237.9	242.3	244.3	242.2
Round steak	264.5	252.4	251.3	248.4	255.7	258.8	258.4	264.0	251.4	248.3	246.4	253.6	256.3	256.4
Sirloin steak	274.6	286.1	273.9	271.6	276.2	272.7	272.6	276.5	288.7	275.3	273.6	279.1	274.5	273.7
Other beef and veal (12/77 = 100)	172.3	169.0	168.5	168.8	171.2	172.6	170.9	170.8	167.8	167.2	167.3	170.0	171.2	169.5
Pork	250.6	257.5	255.0	251.2	254.6	258.5	258.9	250.1	257.0	254.3	250.3	253.7	257.6	258.0
Bacon	267.9	270.3	271.1	266.5	270.5	276.9	278.9	271.6	274.2	275.0	270.4	274.1	280.9	282.6
Chops	230.7	242.3	235.9	232.7	234.1	236.3	240.5	228.7	240.6	234.0	230.4	232.1	234.2	238.5
Ham other than canned (12/77 = 100)	109.8	116.8	117.2	115.6	120.9	120.0	118.0	107.0	113.6	113.8	112.5	117.7	116.7	114.9
Sausage	320.0	321.2	319.0	315.3	316.6	324.5	321.9	321.1	322.7	319.6	315.5	316.7	325.0	322.1
Canned ham	251.1	251.4	252.6	246.8	248.8	255.3	258.2	255.7	256.0	258.4	250.4	253.9	259.2	262.9
Other pork (12/77 = 100)	139.3	142.5	139.0	137.0	137.3	140.4	139.8	138.7	141.7	138.5	136.4	136.7	139.8	139.1
Other meats	265.0	268.7	270.0	269.4	270.2	269.8	270.5	269.4	268.2	269.5	268.6	269.4	269.2	269.6
Frankfurters	263.5	267.6	269.6	265.0	266.6	267.6	269.2	262.0	266.1	268.0	263.3	265.1	266.6	268.0
Bologna, liverwurst, and salami (12/77 = 100)	152.4	155.6	156.2	155.8	156.2	155.6	156.8	152.3	155.4	156.0	155.7	156.1	155.6	156.6
Other lunchmeats (12/77 = 100)	136.2	138.8	139.4	138.6	139.2	138.2	138.2	134.2	137.0	137.5	136.7	137.3	136.2	136.2
Lamb and organ meats (12/77 = 100)	138.2	137.3	138.2	141.1	140.8	141.5	141.1	141.6	140.1	141.0	143.9	143.4	144.4	143.6
Poultry	225.5	217.2	214.0	213.1	213.8	217.4	219.5	223.5	214.7	211.6	210.9	211.3	215.1	217.0
Fresh whole chicken	235.9	220.2	213.8	215.4	210.4	214.3	216.5	233.4	217.5	211.4	213.0	208.0	212.0	214.0
Fresh and frozen chicken parts (12/77 = 100)	152.2	144.7	141.4	140.4	140.4	141.7	143.3	150.2	142.4	139.2	138.4	138.2	139.5	141.3
Other poultry (12/77 = 100)	128.5	132.7	135.1	132.6	138.9	142.4	143.2	127.9	131.8	134.3	131.9	138.0	141.8	142.3
Fish and seafood	386.2	390.6	390.6	389.2	392.2	406.1	401.4	384.6	389.1	389.1	388.2	391.4	405.3	401.2
Canned fish and seafood	132.9	133.7	132.9	133.0	133.4	134.4	133.5	132.4	133.2	132.5	132.5	132.9	134.0	133.2
Fresh and frozen fish and seafood (12/77 = 100)	155.5	157.7	158.2	157.3	158.9	166.7	164.3	155.2	157.5	157.9	157.3	159.1	166.9	164.9
Eggs	270.3	178.6	177.8	175.6	185.7	161.3	169.7	271.8	179.7	178.7	176.4	186.5	162.0	170.2
Dairy products	250.9	254.9	256.1	257.2	258.4	258.8	259.2	250.1	253.8	255.1	256.2	257.3	257.8	258.3
Fresh milk and cream (12/77 = 100)	136.6	137.7	138.7	139.8	140.4	140.4	140.7	136.0	136.9	137.9	139.1	139.6	139.7	140.0
Fresh whole milk	223.3	224.7	226.8	228.7	229.6	229.6	229.8	222.3	223.5	225.6	227.5	228.4	228.4	228.7
Other fresh milk and cream (12/77 = 100)	137.0	138.7	139.0	140.0	140.7	141.0	141.5	136.4	138.0	138.3	139.3	139.9	140.3	140.8
Processed dairy products	149.3	153.1	153.3	153.3	154.1	154.5	154.8	149.5	153.4	153.7	153.6	154.4	154.8	155.1
Butter	253.4	266.0	268.8	268.7	269.4	266.4	264.9	255.9	268.6	271.4	271.5	272.3	269.1	267.6
Cheese (12/77 = 100)	146.8	149.1	149.5	150.1	150.1	150.3	150.8	147.1	149.4	149.9	150.5	150.5	150.6	151.3
Ice cream and related products (12/77 = 100)	155.6	160.9	160.0	158.1	160.1	162.3	162.6	154.4	159.9	159.0	157.1	159.0	161.3	161.7
Other dairy products (12/77 = 100)	146.2	149.9	150.0	150.9	152.5	153.0	153.0	146.7	150.4	150.4	151.3	152.8	153.3	153.4
Fruits and vegetables	321.0	319.7	318.4	314.8	309.7	320.8	333.0	317.2	313.6	312.3	308.9	303.9	314.9	327.1
Fresh fruits and vegetables	342.8	332.5	329.3	323.4	312.6	332.7	354.1	337.4	323.0	319.9	314.6	303.9	323.6	344.9
Fresh fruits	296.0	364.8	354.3	343.9	331.6	341.5	362.6	286.2	349.6	337.4	329.3	317.6	326.1	347.0
Apples	287.9	337.9	298.0	302.8	297.5	304.1	318.5	289.3	339.6	299.9	304.5	299.3	304.9	319.5
Bananas	263.2	249.9	242.1	234.9	225.2	248.6	268.9	260.7	248.4	240.6	232.7	224.0	246.7	267.9
Oranges	303.0	553.6	538.4	473.6	428.0	429.7	448.6	276.2	507.1	489.1	434.1	390.2	388.9	408.7
Other fresh fruits (12/77 = 100)	158.2	170.4	172.7	175.3	174.3	180.0	193.0	152.6	163.6	165.2	168.1	167.0	172.0	184.6
Fresh vegetables	386.6	302.3	306.0	304.4	294.8	324.5	346.3	383.8	299.2	304.2	301.5	291.6	321.5	343.2
Potatoes	359.6	354.1	324.3	313.1	327.3	331.5	335.7	353.2	344.5	318.4	305.1	320.4	323.5	327.5
Lettuce	378.5	337.8	363.6	350.5	276.0	385.6	339.7	280.2	338.0	365.1	349.2	274.4	386.6	341.7
Tomatoes	232.8	252.9	255.1	245.3	232.4	238.0	282.4	337.6	256.2	259.9	249.7	236.0	240.6	285.6
Other fresh vegetables (12/77 = 100)	252.1	152.1	158.7	164.3	167.4	177.3	205.0	249.7	150.2	157.0	162.6	165.2	175.2	202.8
Processed fruits and vegetables	299.9	308.4	309.2	308.0	309.3	310.6	312.7	297.4	305.6	306.5	305.2	306.5	307.9	309.9
Processed fruits (12/77 = 100)	156.8	163.1	164.5	163.5	164.5	165.2	166.9	156.3	162.6	164.0	162.9	164.0	164.7	166.4
Frozen fruit and fruit juices (12/77 = 100)	154.9	165.2	166.3	165.0	166.6	167.4	170.0	154.0	164.5	165.6	164.2	166.0	166.7	169.3
Fruit juices other than frozen (12/77 = 100)	158.4	165.1	168.0	166.8	168.3	168.1	170.1	157.3	163.9	167.1	165.7	167.3	167.1	169.1
Canned and dried fruits (12/77 = 100)	144.6	159.3	159.2	158.7	158.7	160.3	160.9	157.1	159.5	159.3	158.8	158.7	160.5	161.1

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Fruits and vegetables—Continued														
Processed vegetables (12/77 = 100)	144.6	146.9	146.5	146.1	146.5	147.1	147.5	143.6	145.7	145.3	145.0	145.3	146.0	146.4
Frozen vegetables (12/77 = 100)	154.2	156.2	157.1	156.9	156.9	158.9	159.6	155.2	157.7	158.9	158.7	158.7	160.9	161.6
Cut corn and canned beans except lima (12/77 = 100)	146.2	150.9	149.8	149.7	150.8	150.7	150.0	145.5	148.3	147.2	147.1	148.0	148.0	147.4
Other canned and dried vegetables (12/77 = 100)	138.8	140.2	139.4	138.9	139.0	139.3	140.1	137.1	138.6	137.8	137.3	137.4	137.8	138.5
Other foods at home	348.4	355.1	356.1	355.0	354.6	358.0	359.8	349.1	355.4	356.5	355.3	354.9	358.3	360.2
Sugar and sweets	381.2	393.7	393.3	390.9	391.7	394.5	394.8	380.7	393.1	392.8	390.5	391.4	394.0	394.4
Candy and chewing gum (12/77 = 100)	154.5	162.1	161.3	161.6	162.3	162.8	162.9	154.3	161.8	161.2	161.5	162.2	162.6	162.7
Sugar and artificial sweeteners (12/77 = 100)	171.8	172.3	172.5	170.3	169.4	171.9	171.5	173.0	173.5	173.7	171.7	170.7	173.2	172.8
Other sweets (12/77 = 100)	154.0	159.7	160.2	158.0	159.1	160.0	160.9	151.7	157.2	157.7	155.5	156.7	157.5	158.4
Fats and oils (12/77 = 100)	281.1	295.1	294.9	293.0	293.7	295.9	295.1	280.9	294.6	294.4	292.5	293.1	295.3	294.7
Margarine	280.5	296.6	297.5	292.9	295.6	298.2	296.8	278.8	294.3	295.0	290.6	292.6	295.5	294.0
Nondairy substitutes and peanut butter (12/77 = 100)	153.9	156.3	157.5	157.3	158.7	160.2	159.7	151.9	154.2	155.3	155.3	156.6	158.1	157.6
Other fats, oils, and salad dressings (12/77 = 100)	145.5	154.2	153.3	152.7	152.1	153.1	152.8	146.1	154.7	153.8	153.2	152.8	153.6	153.5
Nonalcoholic beverages	441.8	444.0	446.8	445.5	443.4	449.4	452.7	443.5	445.2	448.2	446.7	444.7	450.9	454.2
Cola drinks, excluding diet cola	318.3	316.8	319.8	317.3	316.4	324.3	325.9	315.8	314.1	317.0	314.4	313.9	321.6	323.2
Carbonated drinks, including diet cola (12/77 = 100)	152.6	149.4	149.9	148.8	146.8	147.9	149.8	150.3	147.1	147.7	146.6	144.3	145.4	147.4
Roasted coffee	364.3	376.3	377.7	376.0	376.7	376.2	379.5	358.9	370.2	371.5	369.8	370.3	369.9	373.3
Freeze dried and instant coffee	357.2	369.2	371.9	372.7	373.8	373.7	375.5	356.5	368.2	371.2	371.9	372.9	372.9	374.5
Other noncarbonated drinks (12/77 = 100)	144.5	148.3	148.9	150.5	149.7	151.3	152.4	144.8	148.7	149.3	150.8	150.1	151.5	152.7
Other prepared foods	281.4	287.3	287.8	287.5	287.7	289.6	291.5	283.0	288.7	289.3	288.8	289.1	290.9	292.9
Canned and packaged soup (12/77 = 100)	143.2	146.4	146.5	148.1	148.7	149.9	150.7	145.2	148.2	148.3	149.8	150.4	151.6	152.5
Frozen prepared foods (12/77 = 100)	156.8	161.6	162.9	162.6	162.2	163.6	165.3	156.1	160.4	162.0	161.5	160.9	162.2	164.0
Snacks (12/77 = 100)	162.8	166.9	167.8	167.4	166.4	167.6	169.5	164.9	169.2	170.0	169.7	168.7	169.9	172.0
Seasonings, olives, pickles, and relish (12/77 = 100)	162.3	165.6	166.2	164.9	165.9	167.6	168.1	161.4	164.7	165.2	164.0	164.8	166.6	167.1
Other condiments (12/77 = 100)	156.6	159.5	159.3	158.8	159.9	160.9	161.1	158.4	161.4	161.2	160.7	161.8	162.8	162.9
Miscellaneous prepared foods (12/77 = 100)	154.6	155.9	155.9	155.6	155.4	156.3	157.1	154.8	155.9	156.0	155.6	155.4	156.3	157.1
Other canned and packaged prepared foods (12/77 = 100)	149.7	152.8	151.9	152.1	152.7	152.8	153.6	150.9	153.9	153.0	153.1	153.8	154.0	154.9
Food away from home	328.5	335.8	336.6	337.7	339.2	339.9	341.4	331.7	339.0	339.8	340.9	342.3	343.0	344.6
Lunch (12/77 = 100)	158.5	162.4	162.8	163.2	163.8	164.4	164.9	160.1	163.9	164.3	164.7	165.3	165.8	166.5
Dinner (12/77 = 100)	158.1	161.8	162.2	162.8	163.6	163.8	164.7	159.9	163.6	163.9	164.6	165.4	165.6	166.6
Other meals and snacks (12/77 = 100)	162.9	165.7	166.0	166.5	167.3	167.5	168.1	163.4	166.3	166.6	167.1	167.8	168.0	168.6
Alcoholic beverages	219.9	223.1	224.2	223.8	223.9	224.3	225.8	223.0	226.4	227.5	227.1	227.2	227.6	229.1
Alcoholic beverages at home (12/77 = 100)	141.5	142.8	143.7	143.2	143.2	143.5	144.3	143.6	145.1	145.8	145.4	145.4	145.7	146.5
Beer and ale	227.7	231.5	232.7	231.9	232.5	232.9	234.5	226.8	230.5	231.7	230.7	231.6	232.0	233.4
Whiskey	153.2	153.8	154.6	154.3	154.0	154.1	154.8	153.5	154.1	154.9	154.6	154.1	154.1	154.7
Wine	232.4	231.8	234.8	233.0	232.2	233.3	234.4	239.8	239.5	242.5	241.3	239.7	241.0	242.0
Other alcoholic beverages (12/77 = 100)	122.8	123.4	123.2	123.5	122.8	123.2	124.3	122.6	123.2	122.9	123.3	122.5	122.9	123.7
Alcoholic beverages away from home (12/77 = 100)	152.0	157.2	157.7	158.2	158.5	158.6	160.2	153.2	158.6	159.1	159.5	159.8	159.9	161.5
HOUSING	331.0	341.4	341.2	340.9	341.2	342.0	343.6	324.2	336.8	335.5	334.4	335.0	335.7	337.2
Shelter (CPI–U)	354.0	366.5	367.8	368.9	370.1	371.2	373.3	....	....	....	....	....	....	....
Renters' costs	106.0	110.2	110.7	110.9	111.3	111.8	112.4	....	....	....	....	....	....	....
Rent, residential	243.6	252.4	253.8	254.8	256.1	257.1	258.4	....	....	....	....	....	....	....
Other renters' costs	362.5	384.3	382.6	379.1	375.1	378.5	381.9	....	....	....	....	....	....	....
Homeowners' costs	105.1	108.7	109.1	109.4	109.8	110.0	110.7	....	....	....	....	....	....	....
Owners' equivalent rent	105.1	108.7	109.1	109.4	109.8	110.0	110.7	....	....	....	....	....	....	....
Household insurance	107.1	108.6	108.7	108.8	108.9	109.0	109.5	....	....	....	....	....	....	....
Maintenance and repairs	353.5	362.7	361.6	362.9	364.4	366.0	366.8	....	....	....	....	....	....	....
Maintenance and repair services	400.9	414.3	414.4	412.6	414.2	414.7	415.8	....	....	....	....	....	....	....
Maintenance and repair commodities	260.4	264.8	262.9	266.5	267.7	269.9	270.5	....	....	....	....	....	....	....
Shelter (CPI–W)	....	....	....	....	....	....	....	343.7	359.3	358.3	357.7	359.0	360.0	362.0
Rent, residential	....	....	....	....	....	....	....	242.9	251.7	253.1	254.0	255.3	256.3	257.5
Other renters' costs	....	....	....	....	....	....	....	360.9	383.6	381.9	378.7	374.6	377.8	380.8
Lodging while out of town	....	....	....	....	....	....	....	377.9	404.8	399.8	394.8	388.3	393.4	397.8
Tenants' insurance (12/77 = 100)	....	....	....	....	....	....	....	166.1	163.4	163.4	163.3	163.5	163.5	164.2
Homeownership	....	....	....	....	....	....	....	379.4	397.2	395.5	394.4	395.9	....	....
Home purchase	....	....	....	....	....	....	....	294.4	302.5	302.4	301.0	301.4	....	....
Financing, taxes, and insurance	....	....	....	....	....	....	....	490.5	524.9	520.5	519.5	522.4	....	....
Property insurance	....	....	....	....	....	....	....	439.3	442.4	443.2	446.6	447.6	....	....
Property taxes	....	....	....	....	....	....	....	243.2	251.4	252.2	252.9	254.4	....	....
Contracted mortgage interest costs	....	....	....	....	....	....	....	617.2	666.4	659.3	657.1	661.0	....	....
Mortgage interest rates	....	....	....	....	....	....	....	207.7	218.6	216.8	216.9	217.6	....	....
Maintenance and repairs	....	....	....	....	....	....	....	351.9	359.4	358.9	358.5	359.8	360.9	361.5
Maintenance and repair services	....	....	....	....	....	....	....	396.8	407.9	408.1	406.6	407.7	407.8	408.8
Maintenance and repair commodities	....	....	....	....	....	....	....	257.4	258.1	256.2	257.8	259.3	260.8	261.1
Paint and wallpaper, supplies, tools, and equipment (12/77 = 100)	....	....	....	....	....	....	....	147.6	147.8	147.0	149.1	151.0	152.5	152.2
Lumber, awnings, glass, and masonry (12/77 = 100)	....	....	....	....	....	....	....	125.6	123.5	123.1	122.4	122.5	128.4	127.8
Plumbing, electrical, heating, and cooling supplies (12/77 = 100)	....	....	....	....	....	....	....	139.4	142.7	141.5	142.0	142.0	141.0	143.5
Miscellaneous supplies and equipment (12/77 = 100)	....	....	....	....	....	....	....	144.3	146.7	144.0	145.5	145.2	144.8	145.2

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Fuel and other utilities	383.0	397.0	392.4	387.5	386.0	387.2	386.5	384.2	398.4	393.6	388.7	387.1	388.3	387.5
Fuels	479.6	500.1	492.1	482.6	480.2	481.2	480.8	479.1	499.8	491.4	482.1	479.7	480.7	480.3
Fuel oil, coal, and bottled gas	688.6	622.1	626.8	626.9	625.9	621.6	623.4	691.4	624.5	629.4	629.3	628.4	623.9	625.7
Fuel oil	705.0	628.4	633.6	633.0	631.5	626.5	628.4	707.6	630.8	636.3	635.6	634.0	628.8	631.3
Other fuels (6/78 = 100)	197.4	193.1	193.7	194.9	195.6	195.6	194.9	198.1	193.6	194.3	195.4	196.2	196.1	195.5
Gas (piped) and electricity	429.0	466.4	456.0	444.7	442.2	444.1	443.3	427.9	465.5	454.7	443.7	441.0	443.2	442.3
Electricity	334.2	374.9	361.0	350.9	348.2	351.0	352.6	333.3	375.5	360.8	350.5	347.3	350.1	351.7
Utility (piped) gas	573.6	598.4	597.1	584.9	583.0	582.9	576.8	570.1	593.2	592.1	580.9	579.7	580.2	574.3
Other utilities and public services	228.0	232.7	232.9	234.4	234.1	235.3	234.3	229.2	233.7	233.9	235.3	235.0	236.3	235.1
Telephone services	186.8	189.8	190.0	191.1	190.4	190.8	189.1	187.5	190.4	190.5	191.6	190.9	191.3	189.5
Local charges (12/77 = 100)	159.0	165.3	165.5	166.9	166.5	167.1	164.6	159.6	166.0	166.1	167.4	167.0	167.6	164.9
Interstate toll calls (12/77 = 100)	122.4	116.1	116.3	116.2	116.2	116.2	116.2	122.8	116.5	116.6	116.6	116.5	116.5	116.6
Intrastate toll calls (12/77 = 100)	122.1	124.8	124.8	125.4	124.1	124.0	123.9	122.1	124.6	124.6	125.2	124.0	123.9	123.9
Water and sewerage maintenance	369.0	380.2	380.5	382.8	384.4	389.6	391.3	373.2	384.5	384.8	386.8	388.3	393.3	395.0
Household furnishings and operations	240.4	244.1	244.3	244.2	244.2	244.2	246.2	237.4	240.6	240.7	240.6	240.5	240.4	242.6
Housefurnishings	197.6	200.6	200.5	200.2	199.7	198.8	200.7	196.0	198.3	198.2	197.6	197.3	196.3	198.3
Textile housefurnishings	232.0	245.6	242.7	240.5	239.9	237.1	244.5	235.5	249.9	247.1	244.6	244.1	240.5	247.9
Household linens (12/77 = 100)	137.4	146.8	147.1	145.2	141.6	138.9	146.6	138.5	148.1	148.8	146.6	143.0	140.2	147.9
Curtains, drapes, slipcovers, and sewing materials (12/77 = 100)	152.3	159.8	155.8	154.9	158.0	157.3	158.6	156.6	164.8	160.2	159.4	162.9	161.3	162.3
Furniture and bedding	216.7	225.5	228.2	227.4	225.6	224.1	225.0	213.7	222.2	224.5	223.4	222.5	220.4	221.5
Bedroom furniture (12/77 = 100)	148.7	156.6	160.2	160.7	160.1	154.1	154.7	145.3	153.5	155.9	156.3	156.4	150.5	151.2
Sofas (12/77 = 100)	118.5	121.7	121.6	122.2	122.3	121.6	121.3	118.3	121.6	121.8	122.0	121.9	121.2	120.7
Living room chairs and tables (12/77 = 100)	124.5	126.8	128.1	127.5	125.8	125.7	125.9	125.7	127.8	129.0	127.9	126.4	126.2	126.9
Other furniture (12/77 = 100)	139.7	146.9	148.1	145.9	143.9	147.2	148.5	135.9	142.1	143.5	141.4	140.4	142.9	144.6
Appliances including TV and sound equipment	151.1	147.7	147.1	146.0	145.2	145.2	145.8	152.2	149.4	148.8	148.0	147.3	147.1	147.9
Television and sound equipment	104.5	100.8	100.4	99.9	99.2	99.1	99.7	103.5	99.8	99.5	98.9	98.2	98.1	98.6
Television	98.1	93.5	92.5	92.1	92.5	92.0	91.9	96.7	92.2	91.1	90.7	91.3	90.7	90.5
Sound equipment (12/77 = 100)	111.2	108.3	108.4	107.7	106.1	106.4	107.6	110.2	107.2	107.4	106.6	105.0	105.2	106.4
Household appliances	190.7	189.4	188.4	186.7	185.9	186.0	186.5	192.1	190.9	190.2	189.2	188.6	188.5	189.2
Refrigerators and home freezers	196.2	196.8	197.6	197.3	197.5	197.1	197.2	201.9	202.6	203.5	203.2	203.8	203.5	203.3
Laundry equipment	145.9	146.9	147.7	148.1	147.6	146.8	147.1	147.1	147.6	148.0	149.1	148.9	147.8	147.9
Other household appliances (12/77 = 100)	126.4	124.8	123.5	121.8	121.0	121.3	121.8	125.3	123.2	121.7	119.9	118.9	119.1	119.8
Stoves, dishwashers, vacuums, and sewing machines (12/77 = 100)	127.2	127.5	124.4	122.4	121.8	121.5	122.4	126.4	125.5	122.6	120.6	120.2	119.5	120.7
Office machines, small electric appliances, and air conditioners (12/77 = 100)	126.1	122.8	122.9	121.5	120.5	121.4	121.4	124.0	121.5	122.3	119.0	117.4	118.4	118.7
Other household equipment (12/77 = 100)	141.7	141.9	141.2	142.8	143.9	143.6	145.1	139.5	139.1	138.5	139.8	140.7	141.0	142.6
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment (12/77 = 100)	145.9	146.7	147.9	148.4	152.0	150.9	153.0	137.6	136.2	138.2	137.8	141.9	140.5	142.4
Clocks, lamps, and decor items (12/77 = 100)	132.0	137.1	135.6	137.4	137.2	135.2	137.3	128.1	132.8	130.8	132.6	132.5	131.0	133.2
Tableware, serving pieces, and nonelectric kitchenware (12/77 = 100)	148.2	145.5	143.5	147.6	145.5	146.0	147.0	144.1	141.5	139.8	143.4	140.9	142.8	142.4
Lawn equipment, power tools, and other hardware (12/77 = 100)	136.1	135.5	135.5	134.8	139.1	140.0	141.2	141.0	141.4	141.1	140.2	144.3	144.6	146.0
Housekeeping supplies	300.0	304.9	305.4	306.2	307.5	309.9	311.5	296.9	302.0	302.5	303.5	304.6	306.9	308.5
Soaps and detergents	296.5	299.1	299.9	302.3	305.7	308.0	309.1	292.3	294.8	295.4	297.6	301.1	303.3	304.3
Other laundry and cleaning products (12/77 = 100)	154.5	155.8	156.6	157.1	157.1	158.4	158.8	153.2	154.3	155.1	155.7	155.7	156.9	157.2
Cleansing and toilet tissue, paper towels and napkins (12/77 = 100)	148.8	155.2	156.5	156.1	155.8	156.6	158.7	149.0	155.2	156.4	155.8	155.6	156.4	158.4
Stationery, stationery supplies, and gift wrap (12/77 = 100)	141.9	144.2	144.8	145.5	145.2	145.4	145.3	145.0	147.9	148.4	149.1	148.8	149.1	149.0
Miscellaneous household products (12/77 = 100)	158.3	162.2	161.7	162.1	161.5	163.5	163.9	152.8	156.7	156.2	156.7	156.0	158.0	158.4
Lawn and garden supplies (12/77 = 100)	145.2	144.8	143.5	143.4	146.3	147.9	149.8	138.3	138.3	137.1	137.5	140.3	141.6	143.9
Housekeeping services	324.8	329.4	330.2	330.3	330.6	331.3	333.9	325.3	330.0	330.8	330.9	331.1	331.8	334.9
Postage	337.5	337.5	337.5	337.5	337.5	337.5	349.4	337.5	337.5	337.5	337.5	337.5	337.5	349.8
Moving, storage, freight, household laundry, and drycleaning services (12/77 = 100)	171.7	175.9	176.3	176.0	176.6	177.9	180.2	171.9	176.4	176.8	176.4	176.9	178.2	180.9
Appliance and furniture repair (12/77 = 100)	148.3	153.4	154.7	155.4	155.3	155.0	155.8	146.5	151.0	152.2	152.9	152.8	152.6	153.4
APPAREL AND UPKEEP	196.2	204.2	205.7	205.2	203.2	199.8	201.8	195.4	203.3	204.8	204.2	202.1	198.5	200.7
Apparel commodities	183.2	191.2	192.6	191.9	189.6	185.7	187.5	183.0	190.9	192.3	191.6	189.2	185.1	187.2
Apparel commodities less footwear	179.3	187.8	189.2	188.3	185.9	181.9	183.7	178.9	187.3	188.7	187.8	185.3	180.9	183.1
Men's and boys'	187.9	195.6	197.6	197.8	196.0	193.2	192.8	188.7	196.2	198.1	198.6	196.8	193.6	193.1
Men's (12/77 = 100)	118.1	123.2	124.3	124.5	123.2	121.7	121.6	118.9	123.9	125.0	125.4	124.1	122.5	122.2
Suits, sport coats, and jackets (12/77 = 100)	107.6	115.6	116.4	115.7	113.3	112.3	112.2	101.2	108.9	109.7	109.2	106.8	105.6	105.5
Coats and jackets	98.1	105.7	107.9	106.6	105.6	101.5	100.9	101.3	109.0	111.1	109.9	108.8	104.4	103.3
Furnishings and special clothing (12/77 = 100)	145.2	150.9	151.8	152.0	151.7	149.1	149.0	141.2	146.6	147.7	147.8	147.6	145.2	144.8
Shirts (12/77 = 100)	125.7	128.2	129.5	129.4	128.3	127.4	128.0	128.8	131.0	132.1	132.2	130.7	129.9	130.5
Dungarees, jeans, and trousers (12/77 = 100)	112.1	114.5	115.5	117.6	116.6	116.0	115.4	117.8	120.9	122.0	124.3	123.1	122.4	121.6
Boys' (12/77 = 100)	123.1	126.9	128.6	128.5	128.1	125.0	124.4	121.7	125.7	127.2	127.1	126.5	123.2	122.8
Coats, jackets, sweaters, and shirts (12/77 = 100)	118.4	127.0	126.8	125.9	123.9	117.1	116.2	120.7	129.8	129.2	128.3	125.6	118.0	117.3
Furnishings (12/77 = 100)	136.2	135.8	136.8	138.9	139.2	138.1	138.9	131.9	131.8	132.7	134.4	134.7	133.9	134.5
Suits, trousers, sport coats, and jackets (12/77 = 100)	121.6	123.3	126.7	126.4	126.9	126.0	125.1	119.0	120.4	123.8	123.7	124.2	123.4	122.8

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Women's and girls'	159.0	170.5	172.2	170.4	167.2	161.3	164.1	160.7	172.1	173.8	171.9	168.6	162.1	165.8
Women's (12/77 = 100)	105.6	114.4	115.0	113.4	111.3	107.3	109.3	107.2	115.8	116.4	114.9	112.6	108.3	110.9
Coats and jackets	162.9	181.1	181.7	181.9	175.0	161.7	161.0	166.9	185.2	186.3	186.0	178.2	164.6	166.3
Dresses	166.5	178.3	179.9	175.8	174.3	168.1	172.3	153.7	165.5	165.8	162.4	160.7	154.8	159.7
Separates and sportswear (12/77 = 100)	93.0	102.5	104.3	103.6	100.8	96.1	98.6	93.3	102.9	104.7	104.1	101.5	96.5	98.7
Underwear, nightwear, and hosiery (12/77 = 100)	135.5	139.4	138.5	138.5	138.8	137.9	139.0	135.2	138.9	138.0	138.1	138.3	137.3	138.5
Suits (12/77 = 100)	75.2	93.5	94.1	87.6	81.6	76.8	80.9	95.0	112.1	114.0	106.6	99.9	93.0	100.2
Girls' (12/77 = 100)	106.4	108.6	112.3	112.7	110.9	106.9	108.3	105.6	108.6	112.0	111.8	109.9	105.9	107.7
Coats, jackets, dresses, and suits (12/77 = 100)	98.9	98.6	106.2	106.8	104.0	96.2	100.3	96.6	98.3	105.0	105.8	101.8	94.8	100.1
Separates and sportswear (12/77 = 100)	102.2	106.7	108.2	107.7	106.2	104.1	103.4	102.7	107.5	108.9	106.9	106.3	103.1	102.3
Underwear, nightwear, hosiery, and accessories (12/77 = 100)	126.3	128.3	130.0	131.6	130.9	129.8	130.5	125.2	127.0	128.7	130.2	129.6	128.6	129.5
Infants' and toddlers'	286.2	291.3	291.6	290.2	291.9	290.3	298.8	297.0	303.2	302.5	302.1	302.9	299.7	310.1
Other apparel commodities	216.1	216.5	216.0	215.4	213.3	212.2	215.5	204.4	205.0	204.0	203.1	201.0	199.9	203.0
Sewing materials and notions (12/77 = 100)	122.4	122.8	120.6	120.1	121.9	120.9	122.0	121.1	121.5	119.0	118.4	120.5	119.1	119.5
Jewelry and luggage (12/77 = 100)	147.0	147.3	147.7	147.4	144.7	144.1	146.6	137.2	137.6	137.8	137.2	134.3	133.9	136.7
Footwear	206.4	211.1	212.9	212.9	211.4	208.6	210.1	207.0	211.6	213.2	213.1	211.7	209.5	210.8
Men's (12/77 = 100)	135.0	138.0	138.3	138.4	137.1	136.5	136.5	136.9	139.8	140.1	140.2	138.9	138.5	138.5
Boys' and girls' (12/77 = 100)	131.4	133.5	136.0	136.3	135.3	135.3	136.9	133.9	136.3	138.7	139.0	138.3	138.4	139.7
Women's (12/77 = 100)	123.5	127.0	128.0	127.6	127.0	123.2	124.6	120.3	123.3	124.1	123.6	122.9	119.5	120.8
Apparel services	299.7	307.6	309.5	310.8	311.5	312.5	316.0	297.6	305.6	307.4	308.8	309.3	310.2	313.6
Laundry and drycleaning other than coin operated (12/77 = 100)	180.2	184.3	185.5	186.3	186.9	187.2	189.3	178.5	182.6	183.8	184.4	184.9	185.3	187.3
Other apparel services (12/77 = 100)	154.4	159.7	160.4	161.1	161.2	162.3	163.9	155.5	161.0	161.7	162.5	162.6	163.5	165.2
TRANSPORTATION	305.8	313.7	315.5	316.1	315.8	314.7	314.3	307.7	316.0	317.8	318.3	317.9	316.7	316.3
Private	300.8	308.4	310.2	310.8	310.4	309.1	308.7	303.9	312.1	313.9	314.4	313.9	312.6	312.2
New cars	207.2	208.2	209.6	211.4	212.0	213.1	213.9	206.7	207.6	209.0	210.8	211.3	212.0	213.1
Used cars	357.2	384.2	384.6	383.6	382.7	382.8	384.6	357.2	384.2	384.6	383.6	382.6	382.8	384.6
Gasoline	368.8	368.8	370.3	369.2	365.7	356.8	351.6	370.7	369.4	371.7	370.5	367.1	358.2	353.2
Automobile maintenance and repair	337.4	344.2	345.3	345.8	346.2	346.9	348.2	338.1	344.9	346.2	346.7	347.1	347.9	349.2
Body work (12/77 = 100)	170.3	174.7	175.6	175.8	176.1	176.9	178.4	169.0	173.1	174.1	174.3	174.7	175.5	177.0
Automobile drive train, brake, and miscellaneous mechanical repair (12/77 = 100)	164.4	168.1	169.2	169.6	169.7	170.0	170.2	168.4	172.2	173.4	173.8	174.0	174.2	174.5
Maintenance and servicing (12/77 = 100)	153.5	156.3	156.5	156.8	157.0	157.1	157.4	152.8	155.5	155.8	156.1	156.3	156.6	156.8
Power plant repair (12/77 = 100)	161.8	164.7	164.9	164.9	165.1	165.7	166.6	161.6	164.3	164.6	164.6	164.8	165.4	166.4
Other private transportation	267.7	275.9	278.7	280.7	282.3	283.9	284.4	268.5	277.0	279.8	281.9	283.3	284.7	285.2
Other private transportation commodities	202.8	201.2	199.0	201.0	202.2	202.0	203.8	205.2	203.4	201.0	203.5	204.7	204.2	206.1
Motor oil, coolant, and other products (12/77 = 100)	153.8	155.1	153.2	155.3	156.2	155.7	156.0	152.7	154.5	152.6	154.4	155.2	154.5	155.2
Automobile parts and equipment (12/77 = 100)	127.8	126.5	125.1	126.4	127.1	127.0	128.3	129.6	128.0	126.5	128.1	128.9	128.6	129.9
Tires	174.2	170.9	168.3	170.2	171.4	171.4	174.0	177.9	174.2	171.5	174.0	175.1	174.9	177.7
Other parts and equipment (12/77 = 100)	133.2	133.3	133.2	134.1	134.5	134.2	133.9	131.8	132.7	132.5	133.5	134.0	133.6	133.2
Other private transportation services	288.7	298.4	302.5	304.6	306.2	308.3	308.5	287.7	299.1	303.3	305.3	306.7	308.6	308.7
Automobile insurance	319.8	326.9	332.3	335.9	340.0	345.1	346.3	318.9	325.9	331.3	334.9	338.9	343.9	345.2
Automobile finance charges (12/77 = 100)	159.3	169.9	172.0	172.2	170.9	169.6	168.1	158.7	169.5	171.7	171.9	170.5	169.2	167.7
Automobile rental, registration, and other fees (12/77 = 100)	149.1	156.4	157.6	158.0	158.4	158.5	159.1	150.1	157.7	158.9	159.2	159.6	159.8	160.4
State registration	195.1	212.2	213.5	213.5	213.5	213.6	213.6	195.0	211.7	212.9	212.9	212.9	213.1	213.1
Drivers' licenses (12/77 = 100)	158.0	163.7	163.7	163.7	163.7	164.6	164.6	158.3	164.1	164.1	164.1	164.1	164.9	164.9
Vehicle inspection (12/77 = 100)	139.2	139.9	140.0	142.2	142.2	142.2	142.2	139.9	140.5	140.5	142.3	142.3	142.3	142.3
Other vehicle-related fees (12/77 = 100)	163.9	166.4	168.3	169.1	170.1	170.3	171.8	171.1	173.8	176.0	176.7	177.8	178.0	180.0
Public	377.4	389.5	391.1	391.8	392.8	394.5	394.4	370.1	380.4	381.6	382.4	382.8	384.2	384.2
Airline fare	429.5	450.1	453.5	455.4	456.2	458.9	468.7	425.5	445.4	448.8	450.6	451.1	454.1	453.8
Intercity bus fare	428.2	442.2	445.3	447.0	455.4	459.6	456.5	427.1	442.6	445.4	447.8	455.4	459.3	455.2
Intracity mass transit	341.4	346.5	346.6	345.9	346.7	347.0	347.0	341.3	346.5	346.6	345.9	346.5	346.7	346.8
Taxi fare	308.3	310.8	311.1	311.3	311.3	313.4	315.0	317.5	319.8	320.0	320.1	320.3	322.4	324.1
Intercity train fare	373.5	381.9	382.0	383.5	388.2	390.2	390.3	373.8	382.2	382.2	383.8	388.7	390.7	390.7
MEDICAL CARE	373.2	383.1	385.5	387.5	388.5	391.1	393.8	371.3	381.2	383.7	385.6	386.7	389.3	392.0
Medical care commodities	232.9	242.4	244.1	245.6	247.3	248.2	249.8	233.2	242.3	244.1	245.6	247.2	248.0	249.6
Prescription drugs	226.4	238.0	240.2	242.2	244.4	245.4	247.6	227.9	239.4	241.7	243.8	245.9	247.0	249.2
Anti-infective drugs (12/77 = 100)	163.4	168.4	170.5	171.0	171.8	171.5	171.9	165.8	171.0	173.3	173.8	174.6	174.3	174.7
Tranquilizers and sedatives (12/77 = 100)	193.0	208.7	212.7	216.2	218.8	220.1	223.2	192.9	208.6	212.7	216.3	218.9	220.2	223.1
Circulatories and diuretics (12/77 = 100)	164.7	171.7	172.8	174.4	174.9	176.0	178.5	164.4	170.9	172.1	173.7	174.2	175.3	177.8
Hormones, diabetic drugs, biologicals, and prescription medical supplies (12/77 = 100)	207.2	220.7	222.3	223.8	228.3	228.9	229.6	209.4	223.2	224.7	226.1	230.7	231.2	232.2
Pain and symptom control drugs (12/77 = 100)	183.8	192.0	192.7	194.4	198.2	196.6	198.1	185.9	193.8	194.7	196.3	197.2	198.7	200.3
Supplements, cough and cold preparations, and respiratory agents (12/77 = 100)	169.8	176.1	176.9	178.3	179.1	180.6	183.2	170.4	176.9	177.7	179.0	179.7	181.2	184.0
Nonprescription drugs and medical supplies (12/77 = 100)	159.6	164.5	165.4	166.0	166.8	167.3	168.0	160.6	165.3	166.3	166.9	167.8	168.2	168.9
Eyeglasses (12/77 = 100)	138.0	141.4	141.9	142.2	141.9	142.5	144.0	137.0	140.4	140.8	141.2	140.9	141.4	143.0
Internal and respiratory over-the-counter drugs	260.1	269.5	271.3	271.5	273.7	274.7	275.1	261.4	270.5	272.4	272.7	275.0	275.8	276.2
Nonprescription medical equipment and supplies (12/77 = 100)	154.0	157.1	157.7	159.8	160.3	160.2	161.2	155.7	158.6	159.1	161.5	161.9	161.6	162.8

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

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Medical care services	404.4	413.9	416.5	418.5	419.3	422.4	425.3	401.8	411.5	414.1	416.1	417.0	420.1	423.1
Professional services	339.8	349.8	351.8	353.1	354.0	356.8	359.3	340.3	350.1	352.1	353.4	354.4	357.2	359.7
Physicians' services	370.4	380.8	382.2	383.0	383.8	386.1	389.6	374.4	384.8	386.2	387.0	387.9	390.2	393.9
Dental services	319.8	331.9	334.8	336.6	337.7	339.7	340.4	317.8	329.5	332.4	334.3	335.3	337.2	338.0
Other professional services (12/77 = 100)	158.7	160.0	160.8	161.5	166.1	165.9	168.0	155.0	156.2	157.1	157.8	158.4	162.3	164.3
Other medical care services	482.5	491.5	494.7	497.7	498.2	501.7	505.2	479.0	488.4	491.7	494.6	495.3	498.8	502.3
Hospital and other medical services (12/77 = 100)	206.4	213.0	215.0	217.2	217.6	219.4	220.6	204.0	210.9	212.9	214.7	215.1	216.9	218.1
Hospital room	657.9	679.5	687.1	691.3	690.8	697.7	700.7	650.4	670.8	677.3	680.8	680.9	687.0	690.3
Other hospital and medical care services (12/77 = 100)	202.7	209.1	210.7	213.6	214.4	216.0	217.3	201.0	207.4	209.3	211.7	212.5	214.2	215.5
ENTERTAINMENT	251.5	257.3	258.3	259.0	260.1	261.0	266.3	247.7	253.4	254.2	254.8	255.8	256.6	256.9
Entertainment commodities	250.7	254.8	255.9	256.0	256.8	257.1	257.9	245.3	249.2	249.6	250.2	250.9	251.1	251.9
Reading materials (12/77 = 100)	164.1	166.3	167.7	167.8	168.8	169.6	171.5	163.4	165.6	167.0	167.2	168.2	168.8	170.7
Newspapers	310.2	315.4	317.5	319.2	320.1	320.7	323.2	310.4	315.6	317.7	319.4	320.4	321.0	323.5
Magazines, periodicals, and books (12/77 = 100)	171.2	173.0	174.7	174.1	175.6	176.9	179.6	171.3	172.8	174.6	173.7	175.4	176.6	179.4
Sporting goods and equipment (12/77 = 100)	135.9	138.7	138.8	140.0	139.6	140.2	139.9	130.3	132.3	132.2	133.6	133.0	133.9	133.7
Sport vehicles (12/77 = 100)	139.5	144.4	144.5	146.0	145.9	146.9	146.7	130.7	134.0	133.9	135.8	135.4	136.8	136.6
Indoor and warm weather sport equipment (12/77 = 100)	117.4	117.3	117.2	118.2	118.0	117.3	117.6	115.3	115.5	115.3	116.4	116.1	115.5	115.8
Bicycles	201.5	198.9	198.8	198.1	198.4	198.4	199.5	202.4	200.3	200.0	199.1	199.5	199.8	200.9
Other sporting goods and equipment (12/77 = 100)	134.6	135.5	135.6	137.3	134.4	135.1	133.2	134.2	135.0	135.1	136.5	134.0	134.3	132.9
Toys, hobbies, and other entertainment (12/77 = 100)	139.6	142.0	141.9	141.8	142.5	142.1	142.2	138.7	141.1	263.4	140.9	141.5	141.0	141.1
Toys, hobbies, and music equipment (12/77 = 100)	137.3	138.3	138.2	138.1	139.1	137.7	137.8	133.8	135.1	165.0	134.8	135.6	134.1	134.3
Photographic supplies and equipment (12/77 = 100)	131.9	135.2	135.1	134.9	135.1	134.9	135.1	133.0	136.4	156.1	136.2	136.4	136.1	136.3
Pet supplies and expenses (12/77 = 100)	149.9	153.7	153.5	153.4	154.0	155.2	155.2	150.9	153.6	154.7	154.5	155.3	156.3	156.3
Entertainment services	253.1	261.3	262.8	263.8	265.5	267.0	266.7	253.2	262.0	263.4	264.0	265.6	267.4	266.8
Fees for participant sports (12/77 = 100)	158.6	162.3	163.6	165.1	165.9	166.5	166.5	159.5	163.2	165.0	166.2	166.8	167.6	167.5
Admissions (12/77 = 100)	148.3	156.9	157.2	156.8	158.2	160.3	159.4	147.2	155.7	156.1	155.6	156.9	159.1	158.1
Other entertainment services (12/77 = 100)	133.4	136.2	137.0	136.7	138.0	137.9	138.2	134.9	137.1	137.6	137.0	138.5	138.4	138.6
OTHER GOODS AND SERVICES	301.5	314.6	315.8	316.5	316.7	319.1	320.5	299.2	310.9	311.9	312.6	312.8	315.6	317.1
Tobacco products	305.4	314.1	314.6	314.7	314.6	321.0	323.2	305.1	313.7	314.2	314.3	314.2	320.8	323.0
Cigarettes	313.8	322.8	323.3	323.4	323.2	330.3	332.5	312.7	321.7	322.2	322.2	322.1	329.2	331.4
Other tobacco products and smoking accessories (12/77 = 100)	156.1	159.9	160.0	160.6	161.0	161.6	163.1	156.0	159.9	160.1	160.6	161.0	161.5	163.0
Personal care	267.9	273.6	274.7	276.3	276.6	277.2	278.2	266.1	271.6	272.4	274.0	274.4	274.9	275.9
Toilet goods and personal care appliances	267.9	271.6	272.0	273.4	273.5	274.0	275.4	268.7	272.5	272.6	274.0	274.2	274.6	275.9
Products for the hair, hairpieces, and wigs (12/77 = 100)	154.7	156.1	155.9	156.9	156.5	156.4	152.0	153.8	155.3	155.0	156.2	155.8	155.6	156.1
Dental and shaving products (12/77 = 100)	168.1	167.9	168.2	170.9	172.1	173.5	175.8	175.8	166.3	166.0	168.9	170.0	171.4	173.5
Cosmetics, bath and nail preparations, manicure and eye makeup implements (12/77 = 100)	150.1	154.5	154.9	154.9	155.3	155.3	155.6	151.7	155.9	155.9	155.8	156.3	156.3	156.8
Other toilet goods and small personal care appliances (12/77 = 100)	152.4	155.0	155.4	155.5	154.7	154.8	155.3	156.2	158.7	159.0	159.1	158.3	158.5	158.9
Personal care services	269.0	276.4	278.0	279.9	280.4	281.1	281.7	264.0	271.1	272.6	274.4	275.0	275.7	276.3
Beauty parlor services for women	272.3	279.2	281.2	283.1	283.8	283.9	284.3	265.7	272.0	274.0	275.8	276.6	276.7	277.1
Haircuts and other barber shop services for men (12/77 = 100)	148.7	153.6	154.0	155.0	155.1	156.2	156.8	147.5	152.4	152.8	153.8	153.8	154.9	155.5
Personal and educational expenses	354.4	381.9	384.0	384.1	384.3	385.6	386.9	356.4	384.1	386.0	386.2	386.4	387.9	389.3
Schoolbooks and supplies	317.2	331.5	333.7	333.8	334.0	340.7	343.8	321.7	336.4	338.6	338.7	338.9	345.5	348.7
Personal and educational services	363.3	393.1	295.2	395.4	395.5	395.9	396.9	365.2	395.6	397.4	397.6	397.8	398.3	399.4
Tuition and other school fees	183.2	200.7	201.3	201.3	201.3	201.2	201.4	183.5	201.4	202.3	202.3	202.3	202.3	202.5
College tuition (12/77 = 100)	183.0	200.1	201.4	201.4	201.3	201.3	201.5	182.9	201.1	202.3	202.3	202.2	202.2	202.5
Elementary and high school tuition (12/77 = 100)	183.9	201.1	201.3	201.3	201.4	201.4	206.4	184.9	202.6	202.8	202.8	202.9	202.9	202.9
Personal expenses (12/77 = 100)	199.6	207.3	208.5	208.9	209.5	210.7	212.6	200.2	207.9	208.8	209.2	209.7	211.0	212.7
Special indexes:														
Gasoline, motor oil, coolant, and other products	365.1	364.3	366.6	365.6	362.3	353.8	348.7	366.8	365.7	367.9	366.8	363.6	355.0	350.2
Insurance and finance	....	....	....	....	....	....	....	415.7	441.6	440.3	440.4	442.8	....	....
Utilities and public transportation	346.6	367.0	362.8	358.5	357.5	359.1	358.3	345.5	366.1	361.5	357.1	355.9	357.6	356.7
Housekeeping and home maintenance services	366.9	373.0	373.7	373.7	374.1	374.9	377.6	373.8	382.3	382.7	381.9	382.7	383.3	386.6

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

[December 1977 = 100]

Category and group	Size class A (1.25 million or more)			Size class B (385,000–1,250 million)			Size class C (75,000–385,000)			Size class D (75,000 or less)		
	1984			1984			1984			1984		
	Oct.	Dec.	Feb.	Oct.	Dec.	Feb.	Oct.	Dec.	Feb.	Oct.	Dec.	Feb.
	Northeast											
EXPENDITURE CATEGORY												
All items	163.5	164.3	165.5	170.0	169.9	171.5	175.3	174.4	175.8	169.8	169.7	170.3
Food and beverages	153.7	154.1	157.0	152.6	152.3	156.0	156.1	155.8	158.3	152.0	151.4	153.6
Housing	168.2	169.7	170.5	180.9	181.2	184.3	190.1	187.5	189.9	177.4	176.9	177.4
Apparel and upkeep	128.2	125.5	124.9	129.0	126.7	121.3	139.0	138.2	134.2	141.4	138.7	137.7
Transportation	172.0	173.0	173.0	176.9	176.8	176.4	176.3	176.3	176.3	176.2	176.9	175.5
Medical care	178.3	181.4	184.5	182.7	183.5	185.2	182.7	184.1	185.5	188.7	192.8	194.0
Entertainment	150.9	151.3	151.8	149.9	149.8	146.8	155.3	155.4	157.1	154.8	156.5	158.2
Other goods and services	178.1	178.9	180.7	177.4	177.4	179.8	180.7	181.5	184.5	181.1	180.9	182.7
COMMODITY AND SERVICE GROUP												
Commodities	155.3	155.1	156.7	161.0	161.0	161.7	160.9	160.6	161.3	159.1	159.0	159.6
Commodities less food and beverages	156.1	155.4	156.0	164.7	164.9	163.6	162.8	162.7	162.2	162.2	162.3	161.9
Services	173.4	175.3	176.2	183.3	183.1	186.1	198.0	196.1	198.7	185.2	185.3	185.8
	North Central Region											
EXPENDITURE CATEGORY												
All items	173.4	173.2	174.3	168.9	169.2	169.7	167.2	166.4	166.7	167.5	167.6	168.2
Food and beverages	150.0	150.4	152.5	149.2	149.6	151.3	150.2	149.9	151.7	157.8	158.5	158.9
Housing	192.2	191.8	193.6	178.1	178.3	178.5	175.8	174.0	173.3	171.3	171.0	172.1
Apparel and upkeep	122.9	120.8	120.1	134.4	132.5	132.9	132.0	129.3	131.3	128.7	128.0	126.5
Transportation	174.0	173.7	172.8	173.9	174.3	172.7	176.7	176.7	175.6	175.1	174.9	173.7
Medical care	181.5	182.1	184.6	183.0	184.6	188.2	175.6	176.3	178.3	185.6	186.2	189.4
Entertainment	148.3	148.4	150.2	140.3	139.9	142.2	153.4	154.2	155.6	143.3	146.4	147.3
Other goods and services	172.9	173.0	175.7	184.7	186.1	188.7	169.4	169.6	170.8	181.4	181.8	184.9
COMMODITY AND SERVICE GROUP												
Commodities	159.4	159.0	159.7	157.7	157.8	158.1	156.4	155.9	156.1	156.4	156.7	156.2
Commodities less food and beverages	164.0	163.1	162.8	161.1	161.0	160.6	159.1	158.5	157.9	155.7	155.8	154.8
Services	193.7	193.7	195.5	186.7	187.2	188.0	184.3	183.1	183.4	184.7	184.8	186.8
	South											
EXPENDITURE CATEGORY												
All items	170.2	170.3	171.0	171.9	172.0	173.0	169.5	170.2	171.2	170.1	170.4	170.1
Food and beverages	157.2	157.8	160.0	157.5	157.4	159.5	153.9	153.8	156.3	158.3	158.1	160.0
Housing	176.9	176.1	177.2	177.0	177.2	178.2	174.2	175.6	177.1	177.1	178.2	176.7
Apparel and upkeep	137.6	137.0	135.3	132.8	132.0	130.8	131.5	130.7	129.5	117.4	117.8	114.9
Transportation	176.7	176.8	175.5	180.2	180.7	180.2	179.0	179.0	178.2	174.8	174.1	173.1
Medical care	182.2	184.2	185.6	184.9	185.3	187.9	191.0	193.1	195.8	197.7	199.0	199.9
Entertainment	148.7	151.8	153.1	162.7	162.6	163.8	154.1	156.2	154.9	152.8	152.7	153.4
Other goods and services	176.7	177.2	178.4	179.9	180.6	182.5	177.6	178.7	181.1	174.5	173.9	176.0
COMMODITY AND SERVICE GROUP												
Commodities	160.7	160.8	160.9	162.6	162.3	163.0	160.0	160.0	160.6	159.8	159.3	159.6
Commodities less food and beverages	162.2	162.0	160.8	164.5	164.1	163.8	162.9	162.8	162.3	160.2	159.5	158.9
Services	183.1	183.1	184.5	185.5	186.2	187.5	184.2	185.9	187.5	185.6	186.9	185.7
	West											
EXPENDITURE CATEGORY												
All items	172.2	172.1	173.5	170.6	170.9	172.0	162.7	162.9	164.2	170.1	170.1	170.0
Food and beverages	156.8	157.6	158.9	159.7	161.5	163.1	155.8	155.2	158.2	164.2	164.3	166.2
Housing	180.5	179.8	182.2	175.0	174.1	176.2	161.1	160.9	161.9	172.2	171.2	171.6
Apparel and upkeep	129.3	126.7	127.8	131.2	131.8	131.0	127.7	125.6	126.8	147.1	146.1	146.6
Transportation	181.0	181.2	180.1	181.2	181.8	180.3	176.3	177.0	176.0	172.7	173.4	172.5
Medical care	188.0	187.9	191.8	183.6	184.5	186.8	190.5	193.5	196.0	188.7	189.9	192.5
Entertainment	145.7	146.9	147.9	152.6	154.6	155.5	154.0	158.0	162.6	165.9	169.3	157.1
Other goods and services	182.7	183.0	185.7	179.3	179.8	181.7	174.4	175.0	176.9	179.3	180.3	182.0
COMMODITY AND SERVICE GROUP												
Commodities	158.0	157.8	158.3	160.3	161.4	161.8	158.2	157.9	158.5	158.7	159.0	158.6
Commodities less food and beverages	158.7	157.9	157.8	160.4	161.0	160.7	158.6	158.6	157.8	155.8	156.3	154.5
Services	190.1	190.0	192.4	184.2	183.7	185.4	168.0	168.7	170.8	186.7	186.3	186.5

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

[1967 = 100 unless otherwise specified]

Area[1]	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1984					1985		1984					1985	
	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Feb.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
U.S. city average[2]	306.6	314.5	315.3	315.3	315.5	316.1	317.4	303.3	312.1	312.2	311.9	312.2	312.6	313.9
Anchorage, Alaska (10/67 = 100)	. . .	277.9	. . .	303.2	. . .	278.3	. . .	. . .	270.9	. . .	270.9	. . .	271.7	. . .
Atlanta, Ga.	309.3	. . .	317.8	. . .	318.2	. . .	322.6	309.6	. . .	318.2	. . .	316.0	. . .	320.3
Baltimore, Md.	. . .	316.4	. . .	315.3	. . .	315.2	. . .	. . .	316.4	. . .	315.1	. . .	315.1	. . .
Boston, Mass.	. . .	307.4	. . .	307.8	. . .	309.4	. . .	. . .	305.3	. . .	306.5	. . .	307.8	. . .
Buffalo, N.Y.	290.5	. . .	296.1	. . .	303.4	. . .	301.3	285.9	. . .	292.0	. . .	289.8	. . .	288.1
Chicago, Ill.–Northwestern Ind.	305.0	315.1	314.1	313.9	314.0	315.1	316.7	296.9	304.3	301.8	302.6	301.7	302.5	304.0
Cincinnati, Ohio—Ky.—Ind.	. . .	325.2	. . .	325.4	. . .	325.1	. . .	. . .	320.9	. . .	319.3	. . .	318.9	. . .
Cleveland, Ohio	331.1	. . .	340.1	. . .	339.7	. . .	340.4	318.2	. . .	324.4	. . .	318.6	. . .	319.8
Dallas–Ft. Worth, Tex.	322.7	. . .	333.7	. . .	330.7	. . .	333.2	317.7	. . .	328.2	. . .	325.0	. . .	329.9
Denver–Boulder, Colo.	. . .	351.3	. . .	349.4	. . .	350.6	. . .	. . .	346.1	. . .	345.1	. . .	346.2	. . .
Detroit, Mich.	303.1	311.6	311.9	308.7	309.1	310.9	313.7	304.7	301.3	302.9	299.8	300.0	301.2	304.0
Honolulu, Hawaii	280.7	. . .	287.4	. . .	289.8	. . .	292.6	284.3	. . .	294.5	. . .	297.6	. . .	300.3
Houston, Tex.	323.6	. . .	334.4	. . .	333.4	. . .	333.6	323.5	. . .	334.4	. . .	330.9	. . .	331.1
Kansas City, Mo.—Kansas	306.4	. . .	314.1	. . .	313.7	. . .	314.6	296.6	. . .	307.7	. . .	304.0	. . .	304.4
Los Angeles–Long Beach, Anaheim, Calif.	300.2	310.2	311.9	311.8	311.1	313.0	314.1	299.0	304.2	302.6	304.3	306.5	308.1	309.1
Miami, Fla. (11/77 = 100)	. . .	167.9	. . .	168.3	. . .	168.6	. . .	. . .	169.7	. . .	169.6	. . .	169.8	. . .
Milwaukee, Wis.	. . .	324.0	. . .	324.3	. . .	324.6	. . .	. . .	347.9	. . .	342.7	. . .	343.4	. . .
Minneapolis–St. Paul, Minn.—Wis.	319.6	. . .	328.0	. . .	327.9	. . .	330.4	318.6	. . .	327.0	. . .	323.8	. . .	306.0
New York, N.Y.–Northeastern N.J.	299.0	306.9	306.6	308.0	308.0	308.4	310.2	290.5	299.9	300.4	301.2	301.6	302.0	303.6
Northeast, Pa. (Scranton)	. . .	298.2	. . .	301.1	. . .	301.5	. . .	. . .	297.7	. . .	300.6	. . .	301.0	. . .
Philadelphia, Pa.—N.J.	296.4	303.9	303.7	306.0	305.1	306.3	309.2	298.5	308.5	308.7	309.2	307.9	309.4	312.4
Pittsburgh, Pa.	315.5	. . .	321.1	. . .	322.1	. . .	323.8	299.6	. . .	304.2	. . .	304.6	. . .	306.0
Portland, Oreg.—Wash.	. . .	302.5	. . .	304.8	. . .	306.8	. . .	. . .	293.7	. . .	295.7	. . .	297.4	. . .
St. Louis, Mo.—Ill.	. . .	311.4	. . .	309.1	. . .	313.3	. . .	. . .	308.0	. . .	307.1	. . .	310.4	. . .
San Diego, Calif.	. . .	357.1	. . .	363.7	. . .	364.1	. . .	. . .	330.7	. . .	328.8	. . .	329.1	. . .
San Francisco–Oakland, Calif.	311.7	. . .	327.5	. . .	325.8	. . .	328.7	308.7	. . .	319.3	. . .	321.5	. . .	324.2
Seattle–Everett, Wash.	. . .	316.5	. . .	318.1	. . .	319.5	. . .	. . .	305.3	. . .	305.5	. . .	306.7	. . .
Washington, D.C.—Md.—Va.	. . .	313.0	. . .	315.8	. . .	314.6	. . .	. . .	317.9	. . .	319.8	. . .	317.7	. . .

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

[2]Average of 85 cities.

23. Producer Price Indexes, by stage of processing

[1967 = 100]

Commodity grouping	Annual average 1984	1984										1985		
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	Dec.	Jan.	Feb.	Mar.
FINISHED GOODS														
Finished goods	291.2	291.4	291.2	291.1	290.9	292.3	291.3	289.5	291.5	292.3	292.4	292.7	292.5	292.4
Finished consumer goods	290.4	291.1	290.3	290.3	290.1	291.6	290.4	288.7	290.3	r291.2	291.3	291.1	290.7	290.4
Finished consumer foods	273.5	276.6	274.3	271.7	270.8	275.3	274.0	273.0	271.1	r272.0	274.4	279.2	275.5	274.2
Crude	283.9	323.7	299.0	270.7	258.9	270.8	274.6	270.3	269.5	r257.6	270.8	263.1	287.1	283.9
Processed	270.3	270.2	269.9	269.6	269.7	273.4	271.7	271.1	269.1	r271.0	272.5	273.0	272.2	271.1
Nondurable goods less foods	337.4	336.7	336.4	338.9	339.2	339.2	336.9	336.2	337.8	r338.9	337.2	335.6	332.8	333.4
Durable goods	236.6	236.6	236.7	236.6	236.4	236.6	236.7	233.0	238.3	r239.0	238.8	240.5	241.1	240.8
Consumer nondurable goods less food and energy	239.1	237.1	237.9	238.7	238.7	240.1	240.1	240.8	240.6	r241.1	241.1	243.3	243.7	244.1
Capital equipment	294.1	292.3	294.5	293.9	293.9	294.6	294.6	292.5	295.9	r296.5	296.4	298.1	299.1	299.5
INTERMEDIATE MATERIALS														
Intermediate materials, supplies, and components	320.0	319.7	320.3	320.9	321.6	321.7	321.1	320.3	320.1	r320.4	319.8	319.6	318.6	318.6
Materials and components for manufacturing	301.8	301.8	302.9	303.3	303.4	303.2	302.5	301.9	301.4	r301.7	301.1	300.7	300.5	300.1
Materials for food manufacturing	271.7	269.6	271.4	276.0	275.2	276.4	272.4	270.0	267.6	r269.5	268.4	264.9	264.1	263.5
Materials for nondurable manufacturing	290.5	290.3	291.8	292.8	292.8	292.7	291.3	290.9	290.4	r289.8	289.3	289.2	288.2	287.3
Materials for durable manufacturing	325.1	328.2	329.1	327.2	326.9	325.4	325.1	323.5	322.3	r323.1	321.8	320.5	320.9	320.2
Components for manufacturing	287.5	285.6	286.2	287.0	287.5	287.9	288.4	288.9	289.4	r289.7	289.7	290.5	290.6	291.0
Materials and components for construction	310.3	309.6	310.5	309.8	310.3	310.9	312.0	311.7	311.8	r311.8	312.3	313.2	313.0	313.1
Processed fuels and lubricants	566.3	567.8	562.9	567.2	575.2	576.6	569.2	565.3	564.1	r566.6	561.1	556.9	546.5	548.2
Manufacturing industries	483.8	483.4	480.6	485.5	490.4	491.4	484.7	481.8	483.4	r486.1	482.9	479.7	470.2	472.3
Nonmanufacturing industries	638.2	641.4	634.5	638.2	649.1	650.9	643.0	638.1	634.3	r636.5	628.9	623.8	612.6	614.0
Containers	302.1	297.3	299.4	300.9	301.8	303.0	304.1	305.2	308.8	r310.1	309.3	309.9	311.9	312.4
Supplies	283.3	283.0	284.2	284.3	283.9	283.2	284.1	283.6	283.2	r282.9	283.1	284.0	283.8	283.8
Manufacturing industries	279.0	276.4	277.8	278.4	279.0	279.2	280.9	280.7	281.5	r281.7	282.2	283.3	283.8	284.2
Nonmanufacturing industries	285.9	286.7	287.8	287.6	286.7	285.6	286.0	285.3	284.4	r283.8	283.8	284.6	284.1	283.8
Feeds	215.8	232.2	233.5	229.2	221.6	211.7	208.3	203.0	195.4	r192.4	191.1	189.9	185.6	180.4
Other supplies	300.6	298.4	299.5	300.0	300.5	301.0	302.2	302.3	302.7	r302.6	302.8	304.0	304.2	304.8
CRUDE MATERIALS														
Crude materials for further processing	331.0	338.8	339.4	338.0	333.0	334.1	328.9	326.2	319.6	r323.2	323.1	319.4	318.3	312.9
Foodstuffs and feedstuffs	259.7	269.9	269.7	266.4	260.3	263.6	256.5	252.7	244.9	r252.8	253.7	251.3	250.7	243.6
Nonfood materials	484.7	487.5	490.1	492.3	489.6	486.4	485.0	484.6	480.3	r475.2	473.0	466.1	464.2	462.2
Nonfood materials except fuel	380.6	387.8	388.8	389.9	386.1	380.9	376.8	379.3	374.7	r369.2	367.2	361.7	356.9	358.3
Manufacturing industries	390.2	398.8	399.5	400.2	395.7	390.1	386.1	388.5	383.9	r377.6	375.4	368.8	362.7	364.1
Construction	278.7	276.5	279.2	282.7	283.5	282.0	277.6	279.9	276.3	r276.3	276.2	278.6	283.6	284.4
Crude fuel	931.4	910.6	920.8	928.4	932.6	940.2	953.1	937.6	935.9	r934.0	930.9	918.6	931.7	913.0
Manufacturing industries	1,092.4	1,064.8	1,079.6	1,088.1	1,094.5	1,103.5	1,120.1	1,100.0	1,097.6	r1,095.1	1,091.1	1,074.2	1,091.8	1,067.3
Nonmanufacturing industries	818.1	802.6	809.1	816.1	818.4	825.1	835.1	823.3	822.1	r820.7	818.3	809.6	819.2	804.9
SPECIAL GROUPINGS														
Finished goods excluding foods	294.8	294.0	294.6	295.3	295.4	295.7	294.8	292.7	296.1	r296.9	296.1	296.6	295.9	296.2
Finished consumer goods excluding foods	294.1	293.6	293.5	294.9	294.9	295.0	293.8	291.7	295.0	r295.9	294.9	294.8	293.6	293.7
Finished consumer goods less energy	257.9	258.2	257.8	257.1	256.7	258.9	258.5	257.2	258.2	r258.9	259.6	261.0	261.7	261.3
Intermediate materials less foods and feeds	325.0	324.4	325.0	325.4	326.4	326.7	326.3	325.7	325.8	326.1	325.5	325.4	324.6	324.7
Intermediate materials less energy	303.7	303.3	304.4	304.6	304.7	304.7	304.7	304.2	304.1	304.3	304.0	304.2	304.1	303.9
Intermediate foods and feeds	253.1	257.5	259.1	260.8	257.8	255.3	251.4	248.1	244.0	r244.3	243.1	240.4	238.4	236.3
Crude materials less agricultural products	547.2	550.0	553.0	554.0	552.5	549.8	548.8	546.6	542.4	r535.9	533.4	525.6	525.8	521.6
Crude materials less energy	255.6	265.1	265.4	263.3	257.6	258.5	251.9	249.9	242.6	r248.0	248.3	246.6	245.9	240.9

[1]Data for November 1984 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

24. Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1984	1984										1985		
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	Dec.	Jan.	Feb.	Mar.
	All commodities	310.3	311.0	311.3	311.5	311.3	311.9	310.7	309.3	309.4	r310.3	309.9	309.8	309.2	308.7
	All commodities (1957–59 = 100)	329.3	330.0	330.3	330.5	330.3	330.9	329.7	328.2	328.3	r329.2	328.8	328.7	328.1	327.5
	Farm products and processed foods and feeds	262.6	267.9	267.3	265.8	262.8	264.9	261.4	259.4	255.3	r258.1	259.2	258.0	257.8	255.0
	Industrial commodities	322.6	321.9	322.6	323.2	323.8	323.9	323.3	322.3	323.4	r323.8	323.0	323.2	322.5	322.6
	FARM PRODUCTS AND PROCESSED FOODS AND FEEDS														
01	Farm products	255.7	267.4	265.4	260.8	257.1	258.7	253.3	249.8	240.2	r245.7	245.7	243.2	244.6	238.7
01–1	Fresh and dried fruits and vegetables	278.0	308.0	263.8	251.9	273.7	281.9	293.7	290.1	267.3	r251.2	251.7	258.6	289.2	277.7
01–2	Grains	239.7	250.9	262.1	256.2	257.8	248.9	236.9	231.4	219.0	219.7	212.5	217.5	217.2	216.1
01–3	Livestock	251.8	260.8	260.8	254.8	250.0	260.1	253.7	244.9	233.9	247.7	252.3	247.4	249.7	236.6
01–4	Live poultry	240.6	258.4	240.8	240.6	227.7	259.2	218.6	239.7	219.2	247.1	231.7	232.7	222.4	215.5
01–5	Plant and animal fibers	228.4	250.3	252.3	259.1	252.7	235.8	211.3	210.3	202.8	201.4	203.0	204.5	200.6	200.4
01–6	Fluid milk	278.3	274.2	272.7	271.7	271.8	273.9	276.8	282.1	286.7	287.6	287.5	284.6	281.0	278.4
01–7	Eggs	210.8	(2)	264.4	201.0	177.9	184.9	181.2	177.6	179.9	176.0	187.5	141.9	161.5	167.6
01–8	Hay, hayseeds, and oilseeds	256.3	281.4	282.1	297.0	272.4	245.8	242.6	228.4	219.1	227.3	227.4	226.2	214.6	212.0
01–9	Other farm products	285.4	277.7	279.7	288.2	279.1	277.4	284.3	296.5	294.0	r297.9	293.8	289.4	275.0	285.8
02	Processed foods and feeds	265.3	267.1	267.2	267.5	264.8	267.3	264.8	263.6	262.6	r263.8	265.5	265.1	263.9	262.9
02–1	Cereal and bakery products	270.4	267.4	268.3	268.7	271.4	272.3	271.7	271.9	272.7	r273.7	273.7	276.1	278.2	277.8
02–2	Meats, poultry, and fish	255.1	264.4	261.7	257.1	247.4	258.7	252.2	249.5	245.5	r250.4	258.8	259.1	255.9	252.1
02–3	Dairy products	251.7	248.8	248.9	248.9	249.6	251.4	251.2	255.0	256.4	r257.3	255.9	255.4	254.1	253.4
02–4	Processed fruits and vegetables	294.2	295.4	295.1	297.7	298.2	296.2	295.7	291.8	295.8	r292.3	292.6	296.7	295.4	300.2
02–5	Sugar and confectionery	301.4	301.1	301.9	303.8	304.1	305.0	303.7	302.4	299.8	r297.0	296.3	293.1	290.4	291.6
02–6	Beverages and beverage materials	273.2	269.9	271.4	273.5	272.8	273.9	274.6	274.6	276.1	r276.0	275.9	276.2	277.6	277.6
02–7	Fats and oils	301.2	286.2	293.4	328.5	328.1	312.7	305.9	298.5	301.6	r311.9	297.6	280.4	286.0	290.7
02–8	Miscellaneous processed foods	278.2	275.2	276.3	276.2	279.9	281.3	280.4	281.1	281.2	r280.9	282.2	281.9	280.7	281.0
02–9	Prepared animal feeds	220.5	235.3	236.3	232.3	225.5	216.7	213.9	209.2	202.4	199.7	198.8	197.8	193.7	189.3
	INDUSTRIAL COMMODITIES														
03	Textile products and apparel	209.9	209.9	209.9	210.5	210.2	210.5	210.1	210.7	210.4	r210.2	209.8	210.4	210.6	210.4
03–1	Synthetic fibers (12/75 = 100)	159.6	160.7	160.7	160.6	160.5	160.1	159.9	159.2	158.2	157.5	157.4	157.6	157.7	156.6
03–2	Processed yarns and threads (12/75 = 100)	142.7	144.0	143.6	144.3	143.8	143.7	142.1	142.2	141.4	r140.8	140.7	141.2	141.9	141.4
03–3	Gray fabrics (12/75 = 100)	153.7	153.2	153.0	153.7	154.3	154.5	154.4	154.6	154.8	r153.7	153.7	153.2	153.1	152.5
03–4	Finished fabrics (12/75 = 100)	126.5	127.0	126.9	127.3	127.1	126.9	127.1	127.3	126.9	r126.6	125.8	126.5	126.9	127.1
03–81	Apparel	201.1	200.7	200.7	201.3	200.8	201.6	201.0	202.2	201.9	r202.2	201.8	202.6	202.8	203.2
03–82	Textile housefurnishings	239.2	237.6	238.1	238.8	239.0	239.1	240.0	240.5	241.3	241.4	241.3	242.2	243.1	240.6
04	Hides, skins, leather, and related products	286.5	286.7	286.8	288.5	290.1	288.9	298.7	288.7	287.7	r283.8	282.9	284.3	284.8	283.1
04–2	Leather	372.3	378.0	386.7	390.7	387.8	383.2	378.1	371.4	369.3	r359.8	353.1	357.7	351.9	348.5
04–3	Footwear	251.2	253.5	251.6	251.5	250.5	250.1	250.9	252.0	252.1	r252.4	249.6	252.4	256.6	255.5
04–4	Other leather and related products	265.0	257.3	258.1	259.8	267.9	267.2	267.7	267.6	268.1	r267.9	271.0	273.3	273.5	274.5
05	Fuels and related products and power	657.0	658.7	654.7	660.6	665.9	665.0	657.9	652.3	654.4	655.3	648.9	637.6	625.9	625.8
05–1	Coal	546.0	546.2	542.0	547.4	544.3	548.1	550.0	549.1	548.9	r548.6	548.2	550.5	550.1	549.3
05–2	Coke	436.4	438.9	442.8	441.6	442.9	441.9	437.3	435.7	432.4	432.8	435.0	439.7	439.8	433.6
05–3	Gas fuels[3]	1,109.9	1,091.0	1,102.1	1,104.1	1,109.1	1,110.8	1,116.9	1,104.6	1,112.5	r1,113.4	1,101.8	1,075.5	1,068.7	1,046.8
05–4	Electric power	440.0	426.7	431.5	433.1	446.7	453.5	456.7	456.4	445.4	r443.0	441.2	446.4	446.4	448.0
05–61	Crude petroleum[4]	670.5	675.6	673.9	673.9	673.3	672.6	671.1	670.6	669.8	r655.8	652.6	631.1	616.0	615.4
05–7	Petroleum products, refined[5]	665.3	680.2	667.0	677.6	679.7	673.3	654.8	646.5	655.5	r661.5	652.5	636.2	615.9	620.7
06	Chemicals and allied products	300.9	300.1	302.0	302.7	302.2	302.6	301.1	300.9	301.3	301.6	301.0	301.7	302.2	302.8
06–1	Industrial chemicals[6]	341.4	344.7	345.4	345.3	345.4	345.6	340.9	337.7	335.9	334.7	335.2	337.7	336.4	336.8
06–21	Prepared paint	272.5	267.3	268.7	270.0	270.9	274.0	276.4	277.0	277.8	r277.1	277.3	278.2	279.0	279.7
06–22	Paint materials	329.7	317.9	328.7	337.6	337.4	334.8	334.3	333.0	332.5	r334.3	334.6	332.0	332.9	334.2
06–3	Drugs and pharmaceuticals	240.4	237.6	239.8	240.1	237.3	240.5	240.7	239.7	244.7	r246.9	245.4	248.0	251.5	253.2
06–4	Fats and oils, inedible	371.3	366.7	383.2	399.2	414.3	378.8	350.1	359.4	365.1	r380.1	376.2	356.6	342.5	343.1
06–5	Agricultural chemicals and chemical products	284.7	288.1	288.4	286.8	286.5	285.0	283.0	285.0	285.5	r282.5	282.6	282.3	281.6	282.6
06–6	Plastic resins and materials	308.6	306.2	307.8	310.6	311.1	310.6	310.3	311.8	309.4	r309.0	307.2	302.9	306.8	305.5
06–7	Other chemicals and allied products	277.3	275.2	277.0	277.2	275.9	277.3	278.3	279.6	279.7	r281.3	280.4	281.7	282.0	282.4
07	Rubber plastic products	247.2	246.4	247.3	247.5	247.6	247.5	247.7	248.3	246.6	r246.1	247.5	248.4	246.7	246.6
07–1	Rubber and rubber products	266.9	265.5	267.2	266.3	266.5	266.5	267.6	268.1	264.8	r263.9	267.1	268.0	265.7	265.7
07–11	Crude rubber	276.8	283.0	282.3	277.7	277.2	275.6	273.0	273.9	271.2	r270.4	272.2	275.5	273.4	270.7
07–12	Tires and tubes	243.7	241.7	243.5	243.2	243.0	243.5	243.7	244.2	239.2	r238.3	243.7	245.1	240.8	241.2
07–13	Miscellaneous rubber products	290.5	287.4	289.8	289.3	290.5	290.0	293.7	294.0	292.9	r291.8	292.7	292.1	292.3	292.6
07–2	Plastic products (6/78 = 100)	139.5	139.4	139.4	140.2	140.2	140.2	139.7	140.1	140.1	r140.0	139.8	140.4	139.6	139.5
08	Lumber and wood products	307.5	316.8	315.1	308.5	307.1	304.4	304.7	303.3	300.3	r301.0	303.3	304.3	303.3	303.4
08–1	Lumber	349.8	370.5	369.4	355.6	350.5	342.6	342.3	338.2	334.3	r336.6	339.6	343.2	342.9	345.0
08–2	Millwork	307.8	309.9	307.2	304.2	305.3	306.8	307.2	307.4	307.0	r309.5	312.5	312.4	311.5	309.9
08–3	Plywood	241.6	248.6	243.6	235.4	236.3	237.2	245.9	243.4	240.1	r234.9	235.8	234.0	226.6	223.7
08–4	Other wood products	234.6	231.8	233.3	234.7	235.0	235.2	236.5	235.9	236.6	r236.5	238.8	238.2	236.6	238.8

See footnotes at end of table.

24. Continued—Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1984	1984										1985		
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	Dec.	Jan.	Feb.	Mar.
	INDUSTRIAL COMMODITIES—Continued														
09	Pulp, paper, and allied products	318.3	314.0	316.3	317.7	318.4	319.8	321.3	322.0	323.1	r324.1	323.2	326.6	326.9	327.0
09–1	Pulp, paper,and products,excluding building paper and board	293.1	288.3	291.5	292.7	293.3	295.7	296.3	297.5	299.3	r299.7	298.4	297.8	297.4	295.4
09–11	Woodpulp	396.6	378.6	401.1	407.9	410.3	410.6	410.2	409.1	408.2	r397.3	392.7	383.5	368.4	353.9
09–12	Wastepaper	240.1	242.9	258.8	259.3	257.3	254.7	254.5	249.6	235.6	221.4	206.0	190.8	192.6	170.2
09–13	Paper	303.2	299.8	300.4	301.3	301.6	307.7	307.0	306.7	306.7	r306.9	307.1	307.0	304.7	303.7
09–14	Paperboard	281.1	275.6	277.1	277.8	279.1	279.1	285.1	288.6	293.7	r294.3	292.4	288.9	287.8	285.7
09–15	Converted paper and paperboard products	280.9	276.5	279.1	280.1	280.6	282.1	282.4	284.4	286.9	r289.0	288.0	289.0	291.0	290.4
09–2	Building paper and board	258.9	258.6	263.8	265.2	265.1	262.9	259.8	259.4	257.7	r253.7	253.6	255.2	256.2	256.3
10	Metals and metal products	316.0	316.8	317.9	317.4	317.3	316.1	316.2	315.6	316.0	r316.4	315.3	314.8	315.6	315.4
10–1	Iron and steel	357.0	356.5	356.5	357.3	357.0	357.4	357.4	357.9	358.4	357.7	357.4	357.4	357.7	358.2
10–17	Steel mill products	366.0	363.6	364.2	364.7	365.4	367.6	368.1	368.1	368.6	r368.0	368.0	367.4	367.2	367.1
10–2	Nonferrous metals	277.0	286.1	289.1	284.1	282.8	277.0	275.3	271.8	266.8	r269.4	265.6	262.8	265.2	262.9
10–3	Metal containers	350.1	345.4	345.3	348.0	348.0	348.0	352.0	352.3	357.4	r357.4	357.5	357.6	358.3	357.5
10–4	Hardware	296.5	294.4	294.6	295.3	296.2	297.1	298.0	299.0	299.9	r299.9	300.2	301.9	302.5	304.0
10–5	Plumbing fixtures and brass fittings	300.6	299.9	301.5	301.6	302.4	302.8	304.6	304.4	306.2	r309.2	302.7	306.4	307.1	307.9
10–6	Heating equipment	253.2	248.5	250.3	252.4	252.7	255.2	255.5	255.7	256.1	r256.0	256.4	256.6	257.4	257.3
10–7	Fabricated structural metal products	310.8	308.3	309.3	310.6	311.2	311.7	312.3	312.1	313.8	r312.7	313.2	312.8	313.3	314.3
10–8	Miscellaneous metal products	295.0	292.1	293.1	293.4	294.3	294.1	295.0	295.8	301.5	r301.6	301.6	301.8	301.9	301.9
11	Machinery and equipment	293.1	291.0	292.2	292.6	293.1	294.0	294.1	294.3	294.8	r295.3	295.6	296.7	297.4	298.0
11–1	Agricultural machinery and equipment	336.2	332.9	335.5	338.2	337.8	338.6	338.8	337.2	337.3	r337.0	337.6	338.5	338.3	339.0
11–2	Construction machinery and equipment	357.5	355.3	357.5	357.8	358.1	358.3	356.9	357.2	357.5	r357.6	358.2	360.4	361.7	361.8
11–3	Metalworking machinery and equipment	333.8	330.6	332.6	333.5	333.4	334.2	334.7	335.6	337.1	r338.1	338.2	338.0	339.4	340.6
11–4	General purpose machinery and equipment	314.1	311.7	313.1	313.2	314.0	315.2	315.5	315.9	316.0	316.5	316.5	318.0	318.5	319.9
11–6	Special industry machinery and equipment	348.5	344.6	346.8	348.2	348.6	351.9	352.8	351.1	351.5	r351.8	351.8	355.6	356.9	357.2
11–7	Electrical machinery and equipment	248.6	246.7	247.7	248.1	249.1	249.4	249.4	249.8	250.8	r251.5	251.5	252.2	253.0	253.3
11–9	Miscellaneous machinery	275.0	274.5	274.6	273.7	273.9	274.2	274.1	274.5	274.4	r274.8	275.7	276.2	276.7	277.0
12	Furniture and household durables	218.6	217.4	218.2	219.1	219.1	219.2	219.2	219.0	219.2	r220.0	219.7	220.3	220.7	221.1
12–1	Household furniture	242.0	240.0	240.8	241.5	242.3	242.2	242.7	243.4	244.3	r245.1	245.4	247.1	247.4	247.7
12–2	Commercial furniture	297.3	294.7	296.1	297.4	297.0	298.1	298.4	297.5	297.3	r300.7	299.8	300.1	302.3	303.5
12–3	Floor coverings	190.5	188.3	188.2	191.7	192.7	192.7	192.6	192.5	193.0	r192.9	189.3	192.7	191.1	192.1
12–4	Household appliances	211.3	210.9	210.9	210.8	211.1	211.5	211.9	211.6	211.1	r210.9	212.0	211.3	211.2	211.1
12–5	Home electronic equipment	83.7	84.0	84.9	84.5	83.9	84.2	83.8	83.1	83.1	83.1	82.7	80.9	81.8	81.9
12–6	Other household durable goods	318.3	316.7	319.1	321.6	319.9	318.6	316.8	316.8	317.7	r320.5	320.1	323.1	323.6	324.5
13	Nonmetallic mineral products	337.3	333.4	335.8	337.6	338.3	339.8	340.8	340.5	340.0	r339.6	339.9	342.3	342.7	343.6
13–11	Flat glass	224.0	229.1	230.2	226.1	226.3	226.3	219.6	219.7	219.9	r218.5	218.1	221.0	220.9	221.2
13–2	Concrete ingredients	325.8	324.2	324.3	328.0	326.7	327.1	328.4	328.2	327.6	r328.5	329.3	331.4	334.1	335.8
13–3	Concrete products	309.5	306.3	308.8	309.4	310.0	310.6	311.3	311.7	312.0	r311.8	312.1	314.8	314.3	315.0
13–4	Structural clay products, excluding refractories	286.6	284.3	285.0	285.6	286.2	286.4	288.2	289.4	289.5	r289.6	289.0	290.7	291.0	291.8
13–5	Refractories	361.5	361.1	361.8	361.8	361.8	361.8	361.6	361.6	361.6	r365.6	366.6	367.0	367.0	368.0
13–6	Asphalt roofing	399.5	385.6	396.2	398.7	394.2	394.5	408.4	408.0	409.1	r410.1	412.0	409.9	408.3	404.6
13–7	Gypsum products	346.5	339.6	353.0	360.9	360.3	359.7	359.5	355.4	339.0	r334.4	329.3	328.5	330.2	320.9
13–8	Glass containers	360.7	351.6	358.0	361.9	365.0	366.3	366.1	364.6	364.9	r364.2	364.1	363.7	364.2	370.7
13–9	Other nonmetallic minerals	500.0	490.8	491.3	494.9	499.2	507.1	511.4	509.8	508.9	r505.8	507.2	513.3	513.3	513.9
14	Transportation equipment (12/68 = 100)	262.6	262.4	263.4	262.5	262.2	262.5	262.3	257.8	265.0	r265.7	265.4	267.9	268.1	268.0
14–1	Motor vehicles and equipment	261.3	261.5	261.9	261.5	261.1	261.4	261.1	255.2	263.8	r264.3	263.9	266.6	266.7	266.6
14–4	Railroad equipment	356.6	352.0	380.8	354.4	354.4	356.5	357.7	357.6	358.8	r358.9	358.8	358.9	361.7	362.7
15	Miscellaneous products	296.0	294.9	294.6	294.3	295.7	297.3	298.2	296.7	296.5	r296.5	297.1	299.9	300.7	300.5
15–1	Toys, sporting goods, small arms, ammunition	227.1	227.6	226.5	226.8	226.5	226.5	226.5	227.0	227.4	r227.6	227.5	228.8	231.8	231.3
15–2	Tobacco products	399.5	390.4	390.4	390.6	400.2	408.7	406.7	406.7	402.3	r402.7	406.9	423.8	420.4	420.6
15–3	Notions	283.2	282.2	283.0	283.9	283.9	283.9	283.9	283.9	283.5	283.5	283.6	283.6	284.1	284.1
15–4	Photographic equipment and supplies	214.5	212.7	213.6	213.6	213.6	213.8	215.5	215.5	215.6	r212.9	212.9	213.8	213.9	215.9
15–5	Mobile homes (12/74 = 100)	163.3	162.5	163.8	163.7	162.7	162.9	163.2	163.6	163.6	r164.4	164.7	164.7	164.4	164.4
15–9	Other miscellaneous products	350.4	354.2	351.9	350.4	350.0	350.1	353.2	346.9	348.5	r349.6	349.3	346.5	350.0	347.7

[1] Data for November 1984 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

[2] Not available.

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

[4] Includes only domestic production.

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

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

r = revised.

25. Producer Price Indexes, for special commodity groupings

[1967 = 100 unless otherwise specified]

Commodity grouping	Annual average 1984	1984										1985		
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	Dec.	Jan.	Feb.	Mar.
All commodities—less farm products	313.8	313.6	314.2	314.7	314.8	315.3	314.4	313.3	314.2	314.7	314.3	314.4	313.6	313.5
All foods	269.4	272.9	270.6	268.9	267.5	271.7	269.6	268.6	266.6	r267.3	269.5	268.5	269.6	268.4
Processed foods	270.0	271.2	270.9	271.4	269.0	272.8	270.0	269.1	268.3	r270.3	272.4	272.0	270.7	269.9
Industrial commodities less fuels	287.6	286.7	287.8	287.8	288.0	288.2	288.3	287.6	288.7	289.1	288.9	290.2	290.6	290.7
Selected textile mill products (Dec. 1975 = 100)	142.0	141.7	141.7	142.7	142.7	142.7	142.9	143.0	142.9	r142.8	141.7	142.7	143.0	142.6
Hosiery	147.6	147.4	147.4	147.4	147.4	147.9	148.0	148.0	148.1	148.1	147.9	148.4	148.6	148.6
Underwear and nightwear	229.9	r230.9	229.8	230.9	228.8	230.2	230.3	230.6	230.6	r230.5	230.5	232.6	231.9	232.3
Chemicals and allied products, including synthetic rubber and fibers and yarns	289.7	289.1	290.6	291.1	290.5	291.3	290.2	289.9	290.0	290.0	289.6	290.6	291.2	291.5
Pharmaceutical preparations	243.3	238.8	241.5	241.9	240.6	244.6	245.1	243.9	249.7	r251.9	250.8	254.0	257.3	259.5
Lumber and wood products, excluding millwork	318.5	334.9	332.5	320.4	317.2	312.2	315.0	311.4	307.6	r307.4	309.7	311.5	308.8	309.2
Steel mill products, including fabricated wire products	363.7	361.2	361.8	362.4	363.1	365.2	365.8	365.9	366.5	r365.9	365.8	365.3	365.1	365.1
Finished steel mill products, excluding fabricated wire products	365.5	363.1	363.6	364.1	364.8	367.0	367.5	367.5	368.1	r367.5	367.4	366.9	366.7	366.6
Finished steel mill products, including fabricated wire products	363.0	360.5	361.0	361.6	362.4	364.4	365.0	365.1	365.7	r365.2	365.1	364.6	364.4	364.3
Special metals and metal products	299.9	300.3	301.2	300.8	300.6	300.0	299.9	297.2	301.0	r301.3	300.6	301.4	301.9	301.8
Fabricated metal products	303.9	301.1	301.9	302.9	303.6	303.9	305.0	305.4	308.7	r308.5	308.5	308.8	309.2	309.6
Copper and copper products	185.8	192.9	199.4	191.8	189.5	184.4	183.3	182.5	178.1	r183.0	179.3	178.4	184.9	182.2
Machinery and motive products	286.3	285.0	286.2	285.9	286.1	286.8	286.8	284.8	288.4	r289.0	289.0	290.8	291.3	291.6
Machinery and equipment, except electrical	319.4	317.1	318.5	318.8	319.2	320.3	320.6	320.6	320.9	r321.3	321.7	323.0	323.8	324.5
Agricultural machinery, including tractors	353.8	349.3	352.9	357.0	356.5	357.2	357.5	355.2	354.8	r354.0	354.7	356.1	355.5	356.5
Metalworking machinery	364.9	361.6	363.0	363.2	363.3	364.6	365.1	366.6	368.8	r370.4	371.4	370.1	371.9	374.9
Total tractors	382.4	376.1	384.1	386.8	386.7	386.9	385.7	382.6	381.0	r379.5	379.7	384.7	383.8	384.2
Agricultural machinery and equipment less parts	341.1	337.4	340.4	343.6	343.0	344.0	344.3	342.3	342.0	r341.5	342.1	343.4	343.1	343.9
Farm and garden tractors less parts	361.0	355.1	362.1	365.8	365.7	366.0	367.0	362.3	359.9	357.6	358.0	360.5	359.0	359.6
Agricultural machinery, excluding tractors less parts	348.2	344.9	345.7	350.1	349.2	350.4	350.1	349.8	350.8	r351.3	352.2	352.8	353.0	354.2
Construction materials	306.3	306.6	307.1	306.2	306.3	306.7	307.6	307.2	307.2	r307.0	307.3	308.5	308.1	308.1

[1]Data for November 1984 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

26. Producer Price Indexes, by durability of product

[1967 = 100]

Commodity grouping	Annual average 1984	1984										1985		
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	Dec.	Jan.	Feb.	Mar.
Total durable goods	293.5	293.2	294.2	293.8	293.8	293.8	293.9	292.7	294.4	r294.9	294.8	295.7	296.3	296.4
Total nondurable goods	323.3	324.8	324.7	325.3	324.9	326.0	323.7	322.3	320.9	r322.1	321.5	320.5	318.9	317.9
Total manufactures	302.9	302.8	303.2	303.8	303.9	304.3	303.3	302.2	303.2	303.9	303.5	303.9	303.2	303.3
Durable	293.9	293.3	294.3	293.9	294.0	294.2	294.5	293.2	295.1	r295.6	295.5	296.4	296.9	297.0
Nondurable	312.3	312.7	312.5	314.1	314.2	314.8	312.6	311.7	311.6	312.5	311.8	311.6	309.6	309.8
Total raw or slightly processed goods	347.0	352.4	352.4	350.1	348.0	349.6	346.9	344.4	339.1	r341.0	340.7	337.7	337.4	333.3
Durable	266.7	278.7	280.6	277.9	273.3	264.5	259.6	260.6	255.9	r254.2	252.1	255.8	259.6	261.1
Nondurable	351.7	356.7	356.5	354.3	352.3	354.7	352.2	349.4	344.2	r346.3	346.1	342.6	342.0	337.5

[1]Data for November 1984 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

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

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1984	1984									1985		
			Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	Dec.	Jan.	Feb.	Mar.
	MINING														
1092	Mercury ores (12/75 = 100)	264.3	250.0	267.9	273.7	271.6	264.6	249.1	257.1	271.6	276.6	267.9	264.1	262.1	262.1
1311	Crude petroleum and natural gas	914.3	902.7	909.2	914.1	918.4	921.6	928.3	918.2	916.2	r906.2	904.4	880.8	879.2	866.8
	MANUFACTURING														
2074	Cottonseed oil mills	209.2	212.7	222.6	245.3	243.1	223.2	210.2	205.0	172.9	166.9	177.7	166.4	169.1	163.2
2083	Malt	240.4	241.6	241.6	241.6	241.6	241.6	241.6	241.6	241.6	234.5	234.5	226.5	226.5	226.5
2098	Macaroni and spaghetti	261.6	261.9	261.9	261.9	261.9	261.9	261.9	261.9	261.9	261.9	258.6	258.6	258.6	258.6
2298	Cordage and twine (12/77 = 100)	138.7	139.2	139.3	139.4	139.4	138.6	138.5	138.5	138.5	r138.5	138.6	138.5	138.5	138.5
2381	Fabric dress and work gloves	310.5	302.3	304.8	315.6	315.6	315.6	315.6	315.6	315.6	315.6	315.6	313.5	314.9	314.9
2394	Canvas and related products (12/77 = 100)	151.4	150.6	150.6	150.6	150.6	150.6	150.6	152.1	152.1	r152.1	152.9	152.9	152.9	152.9
2448	Wood pallets and skids (12/75 = 100)	163.9	157.9	161.6	165.1	165.4	168.6	168.6	168.7	168.3	168.2	168.5	169.0	169.3	169.4
2521	Wood office furniture	290.8	289.1	289.2	289.2	289.2	289.1	289.2	291.1	291.2	r295.1	299.8	301.0	301.0	301.0
2654	Sanitary food containers	279.7	278.4	280.6	280.6	280.7	280.6	280.7	281.3	281.4	r281.5	283.1	285.6	288.3	289.7
2655	Fiber cans, drums, and similar products (12/75 = 100)	193.7	191.4	193.1	193.1	193.1	194.7	194.7	194.7	194.8	197.8	197.7	199.1	200.0	200.0
2911	Petroleum refining (6/76 = 100)	244.2	249.8	244.9	248.1	248.8	246.5	240.1	237.5	240.9	r242.7	239.4	233.4	225.4	226.7
3253	Ceramic wall and floor tile (12/75 = 100)	150.2	149.6	149.6	149.6	149.6	149.6	153.4	153.4	153.4	r153.4	150.5	150.5	150.5	150.5
3255	Clay refractories	372.5	369.3	371.5	371.5	371.7	371.6	371.4	371.4	371.4	r378.8	380.8	381.4	381.5	383.3
3259	Structural clay products, n.e.c.	232.8	232.4	232.4	232.4	232.4	232.4	232.3	232.4	232.4	r232.4	233.0	237.7	237.6	237.5
3261	Vitreous plumbing fixtures	292.7	290.1	290.4	290.8	292.5	293.1	293.9	295.6	297.7	r297.6	298.0	297.9	298.8	298.1
3263	Fine earthenware food utensils	377.1	375.9	382.6	376.5	372.1	373.3	374.0	374.8	375.9	r378.2	380.9	391.7	395.2	385.5
3269	Pottery products, n.e.c. (12/75 = 100)	191.4	191.9	192.2	192.2	186.3	187.6	187.6	197.7	195.2	195.3	195.4	199.2	199.4	199.4
3274	Lime (12/75 = 100)	183.0	183.9	184.1	184.2	183.3	180.3	179.6	187.2	180.5	r182.1	183.1	187.5	185.2	185.2
3297	Nonclay refractories (12/74 = 100)	219.2	220.6	220.1	220.1	220.1	219.9	219.9	220.3	219.9	220.2	220.3	220.5	220.4	220.4
3482	Small arms ammunition (12/75 = 100)	192.4	190.3	190.3	190.3	190.3	190.3	190.3	190.3	190.3	r190.3	196.6	202.5	205.5	205.5
3648	Lighting equipment, n.e.c. (12/75 = 100)	186.6	184.9	185.0	185.6	185.7	186.3	188.1	188.2	194.4	196.9	196.9	196.9	197.4	196.1
3671	Electron tubes, receiving type	497.2	490.8	490.9	490.9	491.3	491.6	491.6	491.8	492.0	527.2	527.2	546.7	547.0	547.0
3942	Dolls (12/75 = 100)	134.3	137.7	131.6	133.4	133.6	133.6	133.6	133.6	133.6	r133.6	133.3	134.3	134.4	134.5
3944	Games, toys, and children's vehicles	238.0	240.1	239.7	239.1	239.2	239.2	239.1	239.3	239.4	r239.4	234.9	236.7	241.6	243.1
3955	Carbon paper and inked ribbons (12/75 = 100)	145.7	149.0	149.1	149.1	149.1	146.7	146.7	146.7	139.7	139.7	139.7	139.7	139.4	129.5
3996	Hard surface floor coverings (12/75 = 100)	167.5	165.2	166.3	166.4	166.4	168.7	168.8	168.8	169.7	169.7	169.7	171.4	171.4	172.1

[1]Data for November 1984 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

NOTE: Indexes which were deleted in the March issue may now be found in Table 4 of the BLS monthly report, *Producer Prices and Price Indexes*.

PRODUCTIVITY DATA

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

Definitions

Output is the constant dollar gross product produced by the particular sector. **Output per hour of all persons** (labor productivity) measures the value of goods and services in constant prices produced per hour of labor. **Output per unit of capital services** (capital productivity) measures the value of goods and services in constant dollars per unit of capital services input.

Multifactor productivity measures the output per unit of combined labor and capital input. The traditional measure of output per hour reflects changes in capital per hour and a combination of other factors—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. The multifactor productivity measure differs from the familiar BLS measure of output per hour of all persons in that it excludes the effects of the substitution of capital for labor.

Compensation per hour includes wages and salaries of employees plus employers' contributions for social insurance and private benefit plans. The data also include an estimate of wages, salaries, and supplementary payments for the self-employed, except for nonfinancial corporations, in which there are no self-employed. **Real compensation per hour** is compensation per hour adjusted by the Consumer Price Index for All Urban Consumers.

Unit labor costs measure the labor compensation costs required to produce a unit of output and is derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current dollar gross product and dividing by output. **Unit nonlabor costs** contain all the components of unit nonlabor payments except unit profits. **Unit profits** include corporate profits and the value of inventory adjustments per unit of output.

The **implicit price deflator** is the price index for the gross product of the sector reported. It is derived by dividing the current dollar gross product by the constant dollar figures.

Hours of all persons measures the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all employee hour** describes labor productivity in nonfinancial corporations where there are no self-employed. The **capital services** input index used in the multifactor productivity computation is developed by BLS from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset. **Combined units of labor and capital input** are computed 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

In the business sector and the nonfarm business sector, the output measure employed in the computation of output per hour is constructed from Gross Domestic Product rather than Gross National Product. Multifactor productivity measures (table 28) for the *private* business and *private* nonfarm business sectors differ from the business and nonfarm business sector measures used in the traditional labor productivity indexes (tables 29–32) in that they exclude the activities of government enterprises. There is no difference in the sector definition for manufacturing.

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

The productivity and associated cost measures in the tables 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. For a more complete description of the methodology underlying the multifactor productivity measures, see Bulletin 2178, "Trends in Multifactor Productivity, 1948–81" (September 1983).

28. Annual indexes of multifactor productivity and related measures, selected years, 1950–83

[1977 = 100]

Item	1950	1960	1970	1973	1974	1975	1976	1978	1979	1980	1981	1982	1983
PRIVATE BUSINESS SECTOR													
Productivity:													
Output per hour of all persons	49.7	64.8	86.1	94.8	92.5	94.5	97.6	100.5	99.3	98.7	100.6	100.8	103.7
Output per unit of capital services	98.6	98.5	98.5	103.0	96.5	92.0	96.1	101.8	100.3	95.6	94.1	89.6	92.3
Multifactor productivity	63.6	75.4	90.2	97.5	93.8	93.6	97.1	101.0	99.7	97.6	98.3	96.8	99.6
Output	39.5	53.3	78.3	91.8	89.9	88.0	93.7	105.5	107.9	106.4	109.2	106.3	111.1
Inputs:													
Hours of all persons	79.4	82.2	90.8	96.8	97.2	93.1	95.9	105.0	108.6	107.8	108.5	105.4	107.2
Capital services	40.1	54.1	79.4	89.1	93.1	95.7	97.5	103.6	107.5	111.4	116.0	118.7	120.3
Combined units of labor and capital input	62.1	70.7	86.7	94.1	95.8	94.0	96.5	104.5	108.2	109.0	111.0	109.8	111.5
Capital per hour of all persons	50.4	65.8	87.4	92.0	95.9	102.8	101.6	98.7	98.9	103.3	106.9	112.6	112.3
PRIVATE NONFARM BUSINESS SECTOR													
Productivity:													
Output per hour of all persons	55.6	68.0	86.8	95.3	92.9	94.8	97.8	100.6	99.0	98.2	99.6	99.9	103.5
Output per unit of capital services	98.2	98.4	98.6	103.2	96.5	91.7	96.1	101.9	100.1	95.2	93.2	88.7	91.9
Multifactor productivity	68.1	77.6	90.7	97.9	94.1	93.6	97.2	101.0	99.4	97.2	97.4	95.9	99.3
Output	38.3	52.3	77.8	91.7	89.7	87.6	93.6	105.7	108.0	106.4	108.7	105.9	111.3
Inputs:													
Hours of all persons	69.0	77.0	89.7	96.2	96.5	92.4	95.7	105.1	109.1	108.4	109.1	106.0	107.6
Capital services	39.0	53.2	78.9	88.8	93.0	95.6	97.4	103.7	107.9	111.7	116.6	119.4	121.2
Combined units of labor and capital input	56.2	67.4	85.9	93.6	95.3	93.5	96.3	104.6	108.7	109.5	111.6	110.4	112.0
Capital per hour of all persons	56.6	69.1	88.0	92.4	96.3	103.4	101.8	98.7	98.9	103.1	106.8	112.6	112.6
MANUFACTURING													
Productivity:													
Output per hour of all persons	49.4	60.0	79.2	93.0	90.8	93.4	97.6	100.9	101.6	101.7	104.9	107.1	111.6
Output per unit of capital services	94.5	88.0	91.8	108.2	99.6	89.4	96.1	101.5	99.5	90.7	89.9	82.9	87.6
Multifactor productivity	59.9	67.0	82.3	96.8	93.1	92.2	97.1	101.1	101.0	98.8	100.8	100.3	104.9
Output	38.6	50.7	77.0	95.9	91.9	85.4	93.6	105.3	108.2	103.5	106.1	99.3	104.4
Inputs:													
Hours of all persons	78.2	84.4	97.3	103.1	101.2	91.4	95.9	104.4	106.5	101.7	101.1	92.7	93.5
Capital services	40.9	57.5	83.9	88.6	92.2	95.5	97.4	103.8	108.8	114.1	118.0	119.8	119.2
Combined units of labor and capital input	64.5	75.6	93.5	99.0	98.7	92.6	96.3	104.2	107.1	104.8	105.2	99.0	99.5
Capital per hour of all persons	52.3	68.2	86.2	85.9	91.1	104.5	101.6	99.4	102.1	112.2	116.7	129.2	127.5

29. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years, 1950–84

[1977 = 100]

Item	1950	1955	1960	1965	1970	1975	1978	1979	1980	1981	1982	1983	1984
Business sector:													
Output per hour of all persons	50.4	58.3	65.2	78.3	86.2	94.6	100.5	99.3	98.8	100.7	100.9	103.7	107.0
Compensation per hour	20.0	26.4	33.9	41.7	58.2	85.6	108.5	118.7	131.1	143.4	155.0	161.7	168.6
Real compensation per hour	50.5	59.7	69.5	80.1	90.8	96.4	100.8	99.1	96.4	95.5	97.3	98.4	98.4
Unit labor costs	39.8	45.2	52.1	53.3	67.5	90.5	108.0	119.5	132.6	142.4	153.6	156.0	157.5
Unit nonlabor payments	43.4	47.6	50.6	57.6	63.2	90.4	106.7	112.8	119.3	136.7	136.8	145.5	157.1
Implicit price deflator	41.0	46.0	51.6	54.7	66.0	90.4	107.5	117.2	128.1	140.4	147.9	152.4	157.4
Nonfarm business sector:													
Output per hour of all persons	56.3	62.8	68.3	80.5	86.8	94.8	100.6	99.0	98.3	99.8	100.0	103.4	106.3
Compensation per hour	21.9	28.3	35.7	42.8	58.7	86.1	108.6	118.4	130.6	143.1	154.5	162.0	168.7
Real compensation per hour	55.1	64.0	73.1	82.3	91.5	96.9	100.8	98.8	96.0	95.3	97.0	98.6	98.4
Unit labor costs	38.8	45.1	52.3	53.2	67.6	90.8	108.0	119.5	132.8	143.5	154.5	156.6	158.8
Unit nonlabor payments	42.7	47.8	50.4	58.0	63.8	88.5	105.3	110.4	118.6	135.0	136.9	147.0	157.1
Implicit price deflator	40.1	46.0	51.6	54.8	66.3	90.0	107.1	116.5	128.1	140.6	148.6	153.4	158.2
Nonfinancial corporations:													
Output per hour of all persons	([1])	([1])	68.0	82.0	87.4	95.5	100.8	100.6	99.7	101.6	102.6	106.1	108.5
Compensation per hour	([1])	([1])	37.0	43.9	59.4	86.1	108.4	118.6	130.8	143.1	154.6	161.0	166.6
Real compensation per hour	([1])	([1])	75.8	84.3	92.7	97.0	100.7	99.0	96.2	95.3	97.0	97.9	97.2
Unit labor costs	([1])	([1])	54.4	53.5	68.0	90.2	107.5	117.8	131.2	140.9	150.6	151.8	153.6
Unit nonlabor payments	([1])	([1])	54.6	60.8	63.1	90.8	104.2	106.9	117.4	135.1	138.1	149.1	158.9
Implicit price deflator	([1])	([1])	54.5	56.1	66.3	90.4	106.4	114.1	126.4	138.9	146.3	150.9	155.4
Manufacturing:													
Output per hour of all persons	49.4	56.4	60.0	74.6	79.2	93.4	100.9	101.6	101.7	104.9	107.1	111.6	116.8
Compensation per hour	21.5	28.8	36.7	42.8	57.6	85.5	108.3	118.8	132.7	145.2	158.0	163.4	169.4
Real compensation per hour	54.0	65.1	75.1	82.3	89.8	96.2	100.6	99.2	97.6	96.8	99.2	99.4	98.8
Unit labor costs	43.4	51.0	61.1	57.5	72.7	91.5	107.3	117.0	130.5	138.4	147.6	146.4	145.0
Unit nonlabor payments	54.3	58.6	61.1	69.4	65.1	87.3	102.7	99.9	97.9	111.6	110.5	128.8	([1])
Implicit price deflator	46.6	53.2	61.1	61.0	70.5	90.3	106.0	112.0	120.9	130.6	136.7	141.2	([1])

[1] Not available.

30. Annual changes in productivity, hourly compensation, unit costs, and prices, 1974–84

Item	Year											Annual rate of change	
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1950–84	1974–84
Business sector:													
Output per hour of all persons	−2.4	2.2	3.3	2.4	0.5	−1.2	−0.5	1.9	0.2	2.7	3.2	2.2	1.5
Compensation per hour	9.4	9.6	8.5	7.7	8.5	9.4	10.4	9.4	8.1	4.3	4.2	6.5	8.1
Real compensation per hour	−1.4	0.5	2.6	1.2	0.8	−1.7	−2.7	−0.9	1.9	1.1	0.0	2.0	0.3
Unit labor costs	12.1	7.3	5.1	5.1	8.0	10.7	11.0	7.3	7.9	1.6	1.0	4.1	6.4
Unit nonlabor payments	4.4	15.1	4.0	6.4	6.7	5.8	5.7	14.6	0.1	6.3	8.0	3.9	7.2
Implicit price deflator	9.5	9.8	4.7	5.6	7.5	9.0	9.3	9.6	5.3	3.0	3.2	4.0	6.7
Nonfarm business sector:													
Output per hour of all persons	−2.5	2.0	3.2	2.2	0.6	−1.5	−0.7	1.5	0.2	3.5	2.7	1.9	1.4
Compensation per hour	9.4	9.6	8.1	7.5	8.6	9.0	10.3	9.6	8.0	4.9	4.1	6.2	8.0
Real compensation per hour	−1.4	0.4	2.2	1.0	0.8	−2.0	−2.8	−0.7	1.7	1.6	−0.1	1.7	0.2
Unit labor costs	12.2	7.5	4.7	5.2	8.0	10.7	11.1	8.0	7.7	1.4	1.4	4.2	6.5
Unit nonlabor payments	5.9	16.7	5.7	6.9	5.3	4.8	7.4	13.8	1.4	7.4	6.8	3.9	7.6
Implicit price deflator	10.2	10.3	5.1	5.7	7.1	8.8	10.0	9.8	5.7	3.2	3.1	4.1	6.8
Nonfinancial corporations:													
Output per hour of all employees	−3.7	2.9	2.9	1.8	0.8	−0.2	−0.9	1.9	1.0	3.3	2.3	(1)	1.5
Compensation per hour	9.4	9.6	7.9	7.6	8.4	9.4	10.3	9.4	8.0	4.2	3.4	(1)	8.9
Real compensation per hour	−1.5	0.4	2.0	1.1	0.7	−1.7	−2.8	−0.9	1.8	0.9	−0.8	(1)	0.2
Unit labor costs	13.6	6.5	4.9	5.7	7.5	9.6	11.3	7.4	6.9	0.8	1.1	(1)	6.7
Unit nonlabor payments	7.1	20.1	4.6	5.3	4.2	2.6	9.8	15.1	2.3	7.9	6.6	(1)	7.8
Implicit price deflator	11.4	10.9	4.8	5.6	6.4	7.2	10.8	9.8	5.3	3.1	3.0	(1)	7.1
Manufacturing:													
Output per hour of all persons	−2.4	2.9	4.5	2.5	0.9	0.7	0.2	3.1	2.1	4.3	4.6	2.6	2.6
Compensation per hour	10.6	11.9	8.0	8.3	8.3	9.7	11.7	9.4	8.8	3.4	3.6	6.3	8.3
Real compensation per hour	−0.3	2.5	2.1	1.8	0.6	−1.4	−1.6	−0.9	2.5	0.2	−0.6	1.8	0.5
Unit labor costs	13.3	8.8	3.4	5.7	7.3	9.0	11.5	6.1	6.6	−0.8	−1.0	3.6	5.6
Unit nonlabor payments	−1.8	25.9	7.5	6.5	2.7	−2.6	−2.1	14.1	−1.0	16.5	(1)	2.6	7.1
Implicit price deflator	9.0	13.1	4.6	6.0	6.0	5.7	7.9	8.0	4.7	3.3	(1)	3.4	6.6

[1] Not available.

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

[1977 = 100]

Item	Annual average		Quarterly indexes										
			1982			1983				1984			
	1983	1984	II	III	IV	I	II	III	IV	I	II	III	IV
Business sector:													
Output per hour of all persons	103.7	107.0	100.3	100.9	101.6	102.2	103.6	104.3	104.7	105.7	107.0	107.2	108.2
Compensation per hour	161.7	168.6	153.9	156.7	158.4	160.2	161.0	161.8	164.2	166.7	167.5	169.3	171.1
Real compensation per hour	98.4	98.4	97.2	97.3	98.0	99.0	98.5	98.0	98.4	98.6	98.2	98.3	98.5
Unit labor costs	156.0	157.5	153.4	155.3	155.9	156.8	155.4	155.1	156.8	157.7	156.5	158.0	158.2
Unit nonlabor payments	145.5	157.1	137.0	135.8	136.5	139.8	144.6	147.9	149.1	151.6	157.2	158.5	160.6
Implicit price deflator	152.4	157.4	147.9	148.7	149.3	151.0	151.7	152.7	154.2	155.6	156.7	158.1	159.0
Nonfarm business sector:													
Output per hour of all persons	103.4	106.3	99.4	100.3	100.5	101.6	103.6	104.1	104.4	105.2	106.6	106.3	107.0
Compensation per hour	162.0	168.7	153.2	156.0	157.9	160.1	161.5	162.4	164.0	166.5	168.0	169.5	171.0
Real compensation per hour	98.6	98.4	96.8	96.9	97.7	99.0	98.8	98.3	98.3	r98.4	98.4	98.4	98.5
Unit labor costs	156.6	158.8	154.2	155.6	157.1	157.6	155.9	155.9	157.1	158.3	157.6	159.5	159.8
Unit nonlabor payments	147.0	157.1	137.5	136.8	136.4	140.6	146.4	149.4	151.4	152.2	156.8	158.0	160.8
Implicit price deflator	153.4	158.2	148.6	149.3	150.2	151.9	152.7	153.8	155.2	156.3	157.3	159.0	160.1
Nonfinancial corporations:													
Output per hour of all employees	106.1	108.5	102.1	103.3	103.2	104.0	105.8	107.2	107.2	108.1	108.9	108.2	(1)
Compensation per hour	161.0	166.6	153.5	156.2	157.7	159.2	160.6	161.8	162.6	164.8	165.8	167.1	(1)
Real compensation per hour	97.9	97.2	97.0	97.0	97.5	98.4	98.2	r97.9	97.4	97.5	97.2	97.1	(1)
Total unit costs	155.2	156.4	154.0	154.7	157.0	156.7	155.2	154.4	154.7	155.0	155.0	157.5	(1)
Unit labor costs	151.8	153.6	150.3	151.3	152.9	153.1	151.7	150.9	151.7	152.5	152.3	154.5	(1)
Unit nonlabor costs	164.9	164.4	164.3	164.4	168.8	167.0	165.1	164.4	163.3	162.0	162.8	165.9	(1)
Unit profits	117.2	148.0	86.8	86.6	75.6	92.5	111.8	126.6	135.9	143.2	151.1	145.3	(1)
Implicit price deflator	150.9	155.4	146.3	146.9	147.7	149.4	150.2	151.2	152.6	153.6	154.6	156.1	(1)
Manufacturing:													
Output per hour of all persons	111.6	116.8	106.3	108.8	107.8	109.1	110.8	113.4	113.1	114.2	115.3	117.4	117.1
Compensation per hour	163.4	169.4	157.2	159.8	161.0	162.7	163.0	163.5	164.6	167.1	168.3	169.9	172.1
Real compensation per hour	99.4	98.8	99.4	99.2	99.6	100.6	99.6	98.9	98.6	98.8	98.6	98.6	99.1
Unit labor costs	146.4	145.0	148.0	146.9	149.3	149.1	147.0	144.1	145.5	146.4	146.0	144.7	146.9

[1] Not available.

r = revised.

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

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	II 1983 to III 1983	III 1983 to IV 1983	IV 1983 to I 1984	I 1984 to II 1984	II 1984 to III 1984	III 1984 to IV 1984	III 1982 to III 1983	IV 1982 to IV 1983	I 1983 to I 1984	II 1983 to II 1984	III 1983 to III 1984	IV 1983 to IV 1984
Business sector:												
Output per hour of all persons	2.8	1.4	4.0	4.9	0.6	3.8	3.4	3.1	3.5	3.3	2.7	3.3
Compensation per hour	2.0	6.1	6.2	1.9	4.4	4.4	3.3	3.7	4.1	4.0	4.6	4.2
Real compensation per hour	−2.2	1.9	0.8	−1.8	0.7	0.8	0.6	0.4	−0.4	−0.3	0.4	0.1
Unit labor costs	−0.8	4.6	2.1	−2.9	3.7	0.6	−0.1	0.6	0.6	0.7	1.9	0.8
Unit nonlabor payments	9.5	3.1	7.0	15.4	3.4	5.5	8.9	9.2	8.4	8.7	7.1	7.8
Implicit price deflator	2.5	4.1	3.7	2.9	3.6	2.2	2.7	3.3	3.0	3.3	3.6	3.1
Nonfarm business sector:												
Output per hour of all persons	2.1	1.0	2.9	5.5	−1.1	2.9	3.9	3.9	3.5	2.9	2.1	2.5
Compensation per hour	2.2	4.1	6.1	3.7	3.6	3.7	4.1	3.9	4.0	4.0	4.4	4.3
Real compensation per hour	−2.0	−0.0	0.7	0.0	0.1	0.2	1.5	0.6	−0.5	−0.3	0.2	0.2
Unit labor costs	0.1	3.0	3.1	−1.7	4.7	0.8	0.2	0.0	0.4	1.1	2.3	1.7
Unit nonlabor payments	8.4	5.3	2.3	12.5	3.1	7.3	9.2	10.9	8.3	7.1	5.7	6.2
Implicit price deflator	2.7	3.7	2.8	2.8	4.2	2.9	3.0	3.3	2.9	3.0	3.4	3.2
Nonfinancial corporations:												
Output per hour of all employees	5.3	−0.2	3.6	2.8	−2.5	([1])	3.8	3.9	4.0	2.9	0.9	([1])
Compensation per hour	3.1	2.0	5.7	2.4	3.2	([1])	3.6	3.1	3.6	3.3	3.3	([1])
Real compensation per hour	r−1.1	−2.1	0.4	−1.3	−0.4	([1])	1.0	−0.1	−0.9	−1.0	−0.9	([1])
Total units costs	−2.0	0.8	0.6	0.2	6.5	([1])	−0.2	−1.5	−1.1	−0.1	2.0	([1])
Unit labor costs	−2.1	2.1	2.0	−0.4	5.9	([1])	−0.2	−0.8	−0.4	0.4	2.4	([1])
Unit nonlabor costs	−1.7	−2.6	−3.2	2.0	8.0	([1])	0.0	−3.2	−3.0	−1.4	0.9	([1])
Unit profits	64.8	32.6	23.4	23.8	−14.5	([1])	46.3	79.8	54.8	35.2	14.7	([1])
Implicit price deflator	2.8	3.6	2.7	2.6	3.9	([1])	3.0	3.3	2.8	2.9	3.2	([1])
Manufacturing:												
Output per hour of all persons	9.7	−1.0	3.7	4.0	7.4	−0.9	4.3	4.9	4.7	4.1	3.5	3.5
Compensation per hour	1.3	2.9	6.2	2.9	3.7	5.2	2.3	2.2	2.7	3.3	3.9	4.5
Real compensation per hour	r−2.9	−1.2	0.8	−0.8	0.1	1.6	−0.3	−1.0	−1.7	−1.0	r−0.3	0.4
Unit labor costs	−7.7	3.9	2.3	−1.1	−3.4	6.2	−1.9	−2.6	−1.9	−0.7	0.4	0.9

[1]Not available.

r = revised.

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

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

Definitions

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

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

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

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

Notes on the data

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

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

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

For a more detailed discussion of the ECI, see chapter 11, "The Employment Cost Index," of the *BLS Handbook of Methods* (Bulletin 2134–1), and the *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor,'" July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; and "The Employment Cost Index: recent trends and expansion," May 1982.

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

33. Employment Cost Index, by occupation and industry group

[June 1981 = 100]

Series	1982	1983				1984				Percent change	
										3 months ended	12 months ended
	Dec.	March	June	Sept.	Dec.	March	June	Sept.	Dec.	December 1984	
Civilian workers[1]	111.4	113.2	114.5	116.5	117.8	119.8	120.8	122.4	123.9	1.2	5.2
Workers, by occupational group											
White-collar workers	111.9	113.7	114.9	117.6	118.9	120.9	122.1	124.0	125.5	1.2	5.6
Blue-collar workers	110.5	112.3	113.6	114.8	115.8	117.7	118.6	119.6	120.9	1.1	4.4
Service workers	112.4	114.3	115.1	116.7	119.1	122.0	122.1	124.6	126.8	1.8	6.5
Workers, by industry division											
Manufacturing	110.4	112.5	113.5	115.0	116.0	117.9	119.1	120.4	122.0	1.3	5.2
Nonmanufacturing	111.8	113.5	114.9	117.2	118.6	120.7	121.6	123.3	124.8	1.2	5.2
Services	115.0	116.6	117.1	121.1	122.6	125.0	125.5	128.8	130.9	1.6	6.8
Public administration[2]	113.6	116.2	117.0	119.8	121.4	122.9	123.7	126.9	128.6	1.3	5.9
Private industry workers	110.7	112.6	113.9	115.6	117.0	119.0	120.1	121.1	122.7	1.3	4.9
Workers, by occupational group											
White-collar workers	110.8	112.8	114.2	116.5	117.9	119.9	121.4	122.4	123.9	1.2	5.1
Blue-collar workers	110.3	112.1	113.5	114.6	115.7	117.5	118.4	119.3	120.6	1.1	4.2
Service workers	111.8	113.8	114.6	115.1	117.9	121.5	121.2	123.2	125.7	2.0	6.6
Workers, by industry division											
Manufacturing	110.4	112.5	113.5	115.0	116.0	117.9	119.1	120.4	122.0	1.3	5.2
Nonmanufacturing	110.8	112.6	114.2	116.0	117.5	119.6	120.7	121.6	123.1	1.2	4.8
State and local government workers	115.1	116.5	117.1	120.8	122.0	123.9	124.4	128.8	130.1	1.0	6.6
Workers, by occupational group											
White-collar workers	115.8	117.0	117.5	121.5	122.6	124.5	125.0	129.7	131.1	1.1	6.9
Blue-collar workers	113.0	114.9	115.8	118.0	119.2	121.9	122.3	125.0	125.9	0.7	5.6
Workers, by industry division											
Services	115.9	116.8	117.4	121.7	122.6	124.5	125.0	129.9	131.3	1.1	7.1
Schools	115.8	116.6	116.9	121.9	122.6	124.5	124.7	130.6	132.0	1.1	7.7
Elementary and secondary	116.6	117.2	117.4	123.3	123.9	125.4	125.7	132.1	133.5	1.1	7.7
Hospitals and other services[3]	116.0	117.5	118.8	121.1	122.6	124.4	125.7	127.9	129.2	1.0	5.4
Public administration[2]	113.6	116.2	117.0	119.8	121.4	122.9	123.7	126.9	128.6	1.3	5.9

[1] Excludes farm, household, and Federal workers.

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

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

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

[June 1981 = 100]

Series	1982	1983				1984				Percent change	
										3 months ended	12 months ended
	Dec.	March	June	Sept.	Dec.	March	June	Sept.	Dec.	December 1984	
Civilian workers[1]	110.9	112.2	113.4	115.3	116.5	117.9	118.8	120.3	121.7	1.2	4.5
Workers, by occupational group											
White-collar workers	111.4	113.0	114.2	116.7	117.9	119.3	120.4	122.2	123.5	1.1	4.7
Blue-collar workers	109.8	110.8	112.0	113.1	114.0	115.3	116.1	117.0	118.2	1.0	3.7
Service workers	111.8	113.2	113.9	115.1	117.4	120.0	119.8	122.3	124.3	1.6	5.9
Workers, by industry division											
Manufacturing	109.8	111.0	112.0	113.3	114.5	115.7	116.8	118.0	119.5	1.3	4.4
Nonmanufacturing	111.3	112.7	114.0	116.1	117.4	118.9	119.7	121.3	122.6	1.1	4.4
Services	114.4	115.8	116.3	120.1	121.3	123.3	123.8	127.2	128.9	1.3	6.3
Public administration[2]	112.6	114.6	115.4	118.2	119.4	120.4	121.3	124.4	125.7	1.0	5.3
Private industry workers	110.3	111.6	112.9	114.5	115.8	117.2	118.2	119.2	120.6	1.2	4.1
Workers, by occupational group											
White-collar workers	110.6	112.2	113.6	115.9	117.2	118.5	119.9	120.9	122.3	1.2	4.4
Professional and technical workers	112.9	114.8	115.9	119.9	120.4	122.2	123.8	125.2	127.3	1.7	5.7
Managers and administrators	109.3	112.0	114.0	114.8	115.7	118.0	119.2	121.0	122.2	1.0	5.6
Salesworkers	106.2	105.7	107.1	108.4	111.2	110.2	111.9	110.5	111.6	1.0	.4
Clerical workers	111.6	113.4	114.6	116.7	118.3	119.8	120.7	122.0	122.9	.7	3.9
Blue-collar workers	109.7	110.7	111.9	112.9	113.9	115.1	115.9	116.7	118.0	1.1	3.6
Craft and kindred workers	111.2	112.2	113.4	114.3	115.4	116.5	117.3	118.0	119.4	1.2	3.5
Operatives, except transport	109.3	110.0	111.1	112.3	113.6	114.9	115.8	116.6	117.9	1.1	3.8
Transport equipment operatives	106.9	108.0	110.3	110.7	110.2	111.7	112.7	113.4	114.0	.5	3.4
Nonfarm laborers	107.8	109.0	109.8	110.8	112.1	112.9	114.1	114.7	115.9	1.0	3.4
Service workers	111.4	112.9	113.5	113.7	116.5	119.8	119.3	121.2	123.7	2.1	6.2
Workers, by industry division											
Manufacturing	109.8	111.0	112.0	113.3	114.5	115.7	116.8	118.0	119.5	1.3	4.4
Durables	110.3	111.1	111.8	112.9	114.4	115.7	116.6	117.7	119.1	1.2	4.1
Nondurables	109.1	110.9	112.3	113.9	114.6	115.8	117.1	118.6	120.2	1.3	4.9
Nonmanufacturing	110.5	112.0	113.4	115.2	116.5	118.0	119.0	119.9	121.2	1.1	4.0
Construction	109.7	110.4	112.1	112.2	112.9	113.3	114.0	114.3	114.4	.1	1.3
Transportation and public utilities	111.1	112.9	114.7	115.7	116.8	118.5	119.3	119.9	120.7	.7	3.3
Wholesale and retail trade	107.2	108.5	110.8	111.5	112.3	114.3	116.0	116.5	118.1	1.4	5.2
Wholesale trade	109.8	111.8	114.1	115.7	116.5	118.2	120.0	120.7	122.9	1.8	5.5
Retail trade	106.1	107.2	109.4	109.9	110.6	112.8	114.4	114.9	116.2	1.1	5.1
Finance, insurance, and real estate	109.0	110.6	111.1	113.5	116.9	116.1	116.9	115.3	115.8	.4	−.9
Services	114.3	116.0	116.6	120.4	121.9	124.2	124.7	127.1	129.5	1.9	6.2
State and local government workers	114.0	115.1	115.7	119.2	120.0	121.6	122.0	126.1	127.1	.8	5.9
Workers, by occupational group											
White-collar workers	114.6	115.6	116.1	119.8	120.6	122.2	122.5	127.1	128.0	.7	6.1
Blue-collar workers	112.0	113.3	114.3	116.4	116.9	119.1	119.6	121.9	122.5	.5	4.8
Workers, by industry division											
Services	114.6	115.5	115.9	119.8	120.6	122.2	122.5	127.2	128.1	.7	6.2
Schools	114.5	115.2	115.4	119.9	120.6	122.2	122.3	127.8	128.7	.7	6.7
Elementary and secondary	115.1	115.6	115.8	121.1	121.7	122.9	123.0	129.3	130.2	.7	7.0
Hospitals and other services[3]	114.9	116.5	117.7	119.7	120.6	121.9	123.1	125.1	125.9	.6	4.4
Public administration[2]	112.6	114.6	115.4	118.2	119.4	120.4	121.3	124.4	125.7	1.0	5.3

[1] Excludes farm, household, and Federal workers.

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

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

35. Employment Cost Index, private industry workers, by bargaining status, region, and area size

[June 1981 = 100]

Series	1982	1983				1984				Percent change	
										3 months ended	12 months ended
	Dec.	March	June	Sept.	Dec.	March	June	Sept.	Dec.	December 1984	
COMPENSATION											
Workers, by bargaining status[1]											
Union	112.3	114.5	116.0	117.8	118.8	120.6	121.7	122.6	123.9	1.1	4.3
Manufacturing	111.8	114.0	114.8	116.3	117.2	119.3	120.5	121.6	123.2	1.3	5.1
Nonmanufacturing	112.8	114.9	117.1	119.2	120.4	121.9	122.8	123.6	124.5	0.7	3.4
Nonunion	109.7	111.5	112.8	114.4	115.9	118.0	119.2	120.3	121.9	1.3	5.2
Manufacturing	109.2	111.2	112.3	113.8	114.9	116.6	117.9	119.3	120.8	1.3	5.1
Nonmanufacturing	109.9	111.6	113.0	114.7	116.4	118.6	119.8	120.7	122.4	1.4	5.2
Workers, by region[1]											
Northeast	111.7	112.6	114.3	116.0	117.5	118.9	120.7	122.4	123.8	1.1	5.4
South	110.6	112.5	113.5	115.6	117.1	119.7	120.7	120.7	122.2	1.2	4.4
North Central	108.6	110.9	112.5	113.9	114.7	117.2	117.9	119.7	120.8	.9	5.3
West	112.9	115.4	116.6	118.0	120.0	121.0	122.2	122.5	124.9	2.0	4.1
Workers, by area size[1]											
Metropolitan areas	110.9	112.9	114.2	116.0	117.4	119.4	120.6	121.5	123.2	1.4	4.9
Other areas	109.1	110.8	112.3	113.4	114.5	116.7	117.4	119.0	119.8	.7	4.6
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	111.8	112.9	114.2	116.0	116.9	118.1	119.0	119.8	120.9	.9	3.4
Manufacturing	110.8	111.4	112.3	113.7	114.8	116.1	117.1	118.1	119.5	1.2	4.1
Nonmanufacturing	112.7	114.3	116.0	118.3	118.9	120.1	120.7	121.3	122.1	.7	2.7
Nonunion	109.5	110.9	112.2	113.7	115.2	116.7	117.8	118.8	120.4	1.3	4.5
Manufacturing	109.1	110.7	111.8	113.0	114.2	115.4	116.5	117.9	119.5	1.4	4.6
Nonmanufacturing	109.6	111.0	112.4	114.0	115.6	117.2	118.3	119.2	120.7	1.3	4.4
Workers, by region[1]											
Northeast	111.5	112.0	113.6	115.3	116.6	117.4	118.9	120.5	121.9	1.2	4.5
South	109.8	111.4	112.5	114.3	115.7	117.9	119.0	119.0	120.2	1.0	3.9
North Central	108.6	110.1	111.5	112.8	113.6	115.5	116.0	117.8	118.7	.8	4.5
West	112.0	114.1	114.9	116.5	118.5	118.8	119.6	120.0	122.5	2.1	3.4
Workers, by area size[1]											
Metropolitan areas	110.5	111.9	113.2	114.9	116.2	117.6	118.6	119.5	121.0	1.3	4.1
Other areas	108.8	110.1	111.4	112.3	113.4	115.1	116.0	117.5	118.3	.7	4.3

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

36. Wage and compensation change, major collective bargaining settlements, 1980 to date

[In percent]

Measure	Annual average					Quarterly average								
						1982	1983				1984			
	1980	1981	1982	1983	1984	IV	I	II	III	IV	I	II	III	IV
Total compensation changes, covering 5,000 workers or more, all industries:														
First year of contract	10.4	10.2	3.2	3.4	3.6	3.3	−1.6	4.4	5.0	4.9	5.1	3.5	2.7	3.7
Annual rate over life of contract	7.1	8.3	2.8	3.0	2.8	4.8	1.4	3.6	4.3	3.1	4.7	3.2	3.1	2.0
Wage rate changes covering at least 1,000 workers, all industries:														
First year of contract	9.5	9.8	3.8	2.6	2.4	3.8	−1.2	2.7	3.7	4.2	2.8	2.6	2.1	2.3
Annual rate over life of contract	7.1	7.9	3.6	2.8	2.4	4.8	2.2	2.8	3.6	2.8	3.3	2.7	2.6	1.5
Manufacturing:														
First year of contract	7.4	7.2	2.8	0.4	2.3	4.1	−3.4	1.3	3.4	2.9	2.5	2.6	2.3	2.2
Annual rate over life of contract	5.4	6.1	2.6	2.1	1.5	3.9	4.5	.9	3.5	3.1	2.5	2.8	2.5	1.0
Nonmanufacturing (excluding construction):														
First year of contract	9.5	9.8	4.3	5.0	3.4	3.6	3.3	5.9	5.8	4.8	4.2	4.3	2.0	3.9
Annual rate over life of contract	6.6	7.3	4.1	3.7	3.8	5.2	5.3	5.2	4.3	2.7	4.8	4.2	2.8	3.8
Construction:														
First year of contract	13.6	13.5	6.5	1.5	.5	3.4	.7	1.7	1.5	1.1	−3.6	1.1	2.0	−2.8
Annual rate over life of contract	11.5	11.3	6.3	2.4	1.0	2.9	2.4	2.1	2.9	2.6	−2.8	1.4	2.1	−.8

37. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1980 to date

Measure	Year					Year and quarter								
						1982	1983				1984			
	1980	1981	1982	1983	1984	IV	I	II	III	IV	I	II	III	IV
Average percent adjustment (including no change):														
All industries	9.9	9.5	6.8	4.0	3.7	1.3	0.3	1.3	1.2	1.1	0.9	0.9	1.2	0.7
Manufacturing	10.2	9.4	5.2	2.7	4.3	1.5	−.5	1.1	1.2	.9	1.2	1.0	1.0	1.1
Nonmanufacturing	9.7	9.5	7.9	4.8	3.3	1.2	.9	1.5	1.2	1.2	.7	.9	1.3	.4
From settlements reached in period	3.6	2.5	1.7	.8	.8	.6	−.2	.3	.2	.6	.1	.1	.2	.3
Deferred from settlements reached in earlier period	3.5	3.8	3.6	2.5	2.0	.4	.4	1.0	.8	.3	.4	.7	.7	.2
From cost-of-living clauses	2.8	3.2	1.4	.6	.9	.3	.1	.1	.2	.2	.3	.2	.3	.2
Total number of workers receiving wage change (in thousands)[1]	—	8,648	7,852	6,530	6,195	3,441	2,875	3,061	3,025	2,887	2,694	2,482	2,386	1,850
From settlements reached in period	—	2,270	1,907	2,327	1,851	825	448	561	599	996	295	355	406	911
Deferred from settlements reached in earlier period	—	6,267	4,846	3,260	3,668	860	812	1,405	1,317	669	984	1,148	1,581	443
From cost-of-living clauses	—	4,593	3,830	2,327	2,518	1,970	1,938	1,299	1,218	1,290	1,459	1,151	1,215	1,070
Number of workers receiving no adjustments (in thousands)	—	145	483	1,187	1,123	4,895	4,842	4,656	4,693	4,830	4,624	4,835	4,932	5,467

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

WORK STOPPAGE DATA

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

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

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

Month and year	Number of stoppages		Workers involved		Days idle	
	Beginning in month or year	In effect during month	Beginning in month or year (in thousands)	In effect during month (in thousands)	Number (in thousands)	Percent of estimated working time
1947	270		1,629		25,720	—
1948	245		1,435		26,127	.22
1949	262		2,537		43,420	.38
1950	424		1,698		30,390	.26
1951	415		1,462		15,070	.12
1952	470		2,746		48,820	.38
1953	437		1,623		18,130	.14
1954	265		1,075		16,630	.13
1955	363		2,055		21,180	.16
1956	287		1,370		26,840	.20
1957	279		887		10,340	.07
1958	332		1,587		17,900	.13
1959	245		1,381		60,850	.43
1960	222		896		13,260	.09
1961	195		1,031		10,140	.07
1962	211		793		11,760	.08
1963	181		512		10,020	.07
1964	246		1,183		16,220	.11
1965	268		999		15,140	.10
1966	321		1,300		16,000	.10
1967	381		2,192		31,320	.18
1968	392		1,855		35,567	.20
1969	412		1,576		29,397	.16
1970	381		2,468		52,761	.29
1971	298		2,516		35,538	.19
1972	250		975		16,764	.09
1973	317		1,400		16,260	.08
1974	424		1,796		31,809	.16
1975	235		965		17,563	.09
1976	231		1,519		23,962	.12
1977	298		1,212		21,258	.10
1978	219		1,006		23,774	.11
1979	235		1,021		20,409	.09
1980	187		795		20,844	.09
1981	145		729		16,908	.07
1982	96		656		9,061	.04
1983	81		909		17,461	.08
1984	62		376		8,499	.04
1984 January	6	12	28.0	42.9	505.3	.03
February	3	13	9.4	42.4	379.5	.02
March	2	10	3.0	16.5	296.3	.01
April	7	13	28.5	38.4	657.3	.03
May	5	15	8.1	39.2	587.6	.03
June	5	14	23.7	45.9	761.1	.04
July	8	20	70.8	106.4	1,228.0	.06
August	5	19	24.2	103.9	1,634.5	.07
September	10	18	107.9	122.9	731.0	.04
October	4	16	18.0	39.6	562.1	.03
November	4	15	12.0	32.3	500.1	.03
December	3	13	42.5	59.0	655.8	.04
1985[p] January	2	9	4.7	16.0	278.3	.01
February	4	13	29.3	43.9	259.3	.01

p = preliminary.

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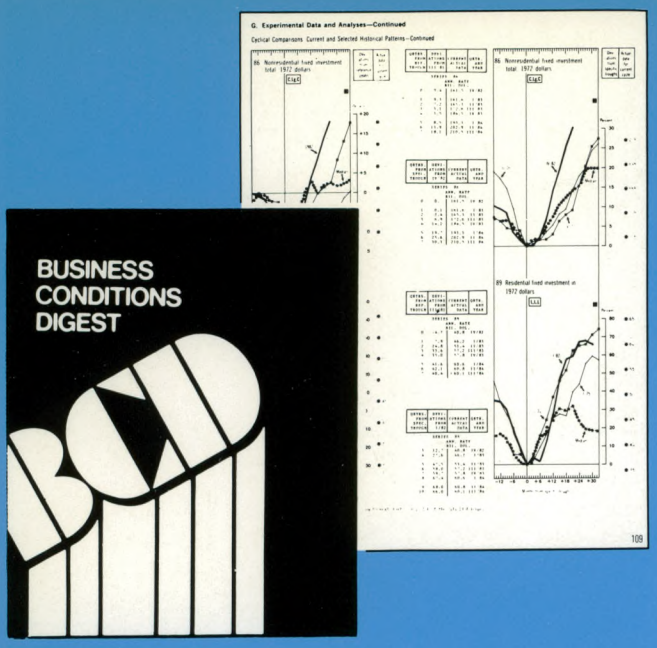

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