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In this issue:
Measuring productivity,
comparing international productivity,
analysis of BLS economic projections





U.S. DEPARTMENT OF LABOR
William E. Brock, Secretary

BUREAU OF LABOR STATISTICS
Janet L. Norwood, Commissioner

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Labor Month In Review



JOB SAFETY REPORT. The Bureau of Labor Statistics reported results of its survey of work-related injuries and illnesses in 1985. The report shows that job-related injuries and illnesses occurred at virtually the same rate in 1985 as in the previous year. The injury and illness rate was 7.9 per 100 full-time workers in 1985, compared with 8.0 in 1984. While the number of injuries and illnesses rose from 5.4 million in 1984 to 5.5 million in 1985, the rate remained stable because of increases in the number of employees and hours of work.

In releasing the new data, Commissioner of Labor Statistics Janet L. Norwood called the survey both comprehensive and well-designed, but expressed concern about the completeness of the recordkeeping upon which the survey is based. Norwood reported that BLS has taken the following steps to address this problem:

- BLS has revised and clarified the record-keeping guidelines to provide better explanations to employers and workers about reporting obligations under the law. Nearly 400,000 copies of revised guidelines have been distributed. The Bureau also has launched an extensive effort to increase understanding of the requirements through seminars and other training activities.
- BLS has scientifically selected a sample and is providing other technical assistance to the Occupational Safety and Health Administration for a special pilot survey involving on-site evaluation of the records in 100 establishments in each of two States. BLS will evaluate the results of the survey.
- BLS has asked the National Academy of Sciences' Committee on National Statistics to establish a panel of experts to review the entire safety and health statistics system. BLS has requested that the panel make recommendations on techniques to evaluate the accuracy of recordkeeping as well as methods to develop more comprehensive statistical estimates of occupational illnesses.

The BLS survey data show that in 1985 there were 3,750 work-related deaths in

establishments with 11 or more employees—about the same number as that in 1984. Two-thirds of all fatalities occurred in construction, manufacturing, and transportation and public utilities industries. As in previous years, the leading cause of death was over-the-road motor vehicle accidents, accounting for nearly one-third of fatalities in 1985.

Occupational injuries. Occupational injuries occurred at a rate of 7.7 per 100 full-time workers during 1985. About 46 percent of the recorded injuries were serious enough to require injured workers to take time off from work or to be restricted in work activity beyond the day of injury. While the overall injury rate was about the same in 1985 as in 1984, there was a marked decrease in injury rates in mining industries—from 9.5 in 1984 to 8.3 in 1985. In contrast, the injury rate increased in service industries—from 5.0 in 1984 to 5.3 in 1985. Injury rates varied by establishment size in 1985, as they have in previous years. Injury rates for small and large private sector establishments continued to be lower than the rate for mid-size establishments.

Occupational illnesses. The number of occupational illnesses measured by the annual survey is the number of new illness cases occurring during a year, not the prevalence of existing illnesses.

During 1985, there were about 125,000 new cases of these occupational illnesses among workers in private industry. More than two-thirds of these new cases involved skin diseases or disorders associated with repeated trauma (for example, noise-induced hearing loss and conditions due to repeated motion, pressure, or vibration). Chronic and long-term latent illnesses, which are often difficult to recognize or relate to the workplace, are included in the estimate but may be understated.

The distribution of illnesses among industries remained consistent with patterns of previous years. About 72,000 illness

cases, or about 58 percent of the total, occurred in manufacturing, more than double the ratio of manufacturing employment to private sector employment.

Background of the survey. The Annual Survey of Occupational Injuries and Illnesses is a Federal/State program in which reports are received and processed by State agencies participating with the Bureau of Labor Statistics. The 1985 survey, requiring mandatory response, involved a sample of 280,000 establishments. The estimates generated from the survey represent the work injury and illness experience of over 81 million workers in the private sector of the American economy.

Data are based on the records which employers maintain under the Occupational Safety and Health Act of 1970. Excluded from coverage under the Act are workplaces which are covered by other Federal safety and health laws. Therefore, data conforming to definitions of recordable occupational injuries and illnesses for coal, metal, and nonmetal mining and railroad activities were provided to the Bureau by the Mine Safety and Health Administration of the U.S. Department of Labor and the Federal Railroad Administration of the U.S. Department of Transportation.

Also excluded from the survey are the self-employed; farmers with fewer than 11 employees; private households; and employees in Federal, State, and local government agencies. In a separate reporting system, agencies of the Federal Government file work injury and illness reports with the Secretary of Labor.

The fatality data only represent units with 11 or more employees, while estimates for the other types of cases (injuries and illnesses) include establishments with fewer than 11 employees.

A relative standard error is calculated for each estimate generated from the Annual Survey of Occupational Injuries and Illnesses and will be published in a BLS bulletin that is in preparation. □

Problems encountered in measuring single- and multifactor productivity

Development of new data sources, better utilization of existing sources, and broader coverage are some of the ways in which BLS has improved its productivity measures; progress has been made, but inadequacies remain

JEROME A. MARK

The slowdown in productivity growth since the early 1970's in many countries has stimulated and renewed interest in the causes of productivity change. The observation that there has been a slowdown has generally centered on the traditional indicator of productivity—output per unit of labor input, or labor productivity.

Labor productivity—the relationship between output and labor input—has been the most prevalent measure of productivity for a variety of reasons. First, labor is involved in all aspects of production and generally has been the most important factor in the production process. Second, labor input is the most readily measurable of the various production factors.

Labor productivity measures are useful in that they provide quantitative indicators of the amount of change in labor expended to produce real goods and services of an enterprise, industry, or economy. Changes in output per hour, however, do not measure the specific contribution of labor or any other factor of production. Instead, they reflect the joint effects of many influences which affect the use of labor, including changes in technology, capital investment, utilization of capacity, economies of scale, energy substitution, organization of production, and managerial skills, as well as changes in the characteristics and efforts of the work force.

To provide insights into some of the factors influencing

labor productivity changes, other measures of productivity have been developed which include additional inputs, such as capital services and intermediate items (purchased materials, fuels, and business services). The difference in the movements of these multifactor productivity measures and the output per hour measures provides a look at the effect of the substitution of other factors on labor productivity movements. The multifactor measures themselves reflect changes in the use of many factors of production per unit of output over time.

The problems in developing multifactor productivity measures are much more severe than those present in deriving the traditional single-factor productivity measures. All the difficulties of defining and measuring output and labor input in the labor productivity measures are present in the development of the multifactor measures. But the additional problems of defining and quantifying the other inputs, such as capital, energy, and other intermediate inputs, are vastly more complex. This article discusses some of the problems the Bureau of Labor Statistics has encountered in developing productivity measures and explains the approaches taken to solve them.

Derivation of output

The output indexes for the measures of labor and multifactor productivity for the private business economy and its major sectors are derived from data on real gross product published in the National Income and Product Accounts (hereafter, national accounts) by the Bureau of Economic

Jerome A. Mark, Associate Commissioner for Productivity and Technology, Bureau of Labor Statistics, presented a paper on this subject at the International Productivity Symposium 2 in Munich, Germany, October 14–16, 1986. This article is based on that paper.

Analysis, U. S. Department of Commerce. Output measures for the detailed industries at the SIC (Standard Industrial Classification) two-, three-, and four-digit levels are prepared from basic data developed by various public and private agencies, using the greatest level of detail available.

Several major issues must be examined in the derivation of the output measures. These involve (1) selecting the appropriate output concept to be measured, (2) adjusting output so that it is consistent with available input measures, (3) obtaining quantity data on production, (4) developing appropriate weights for aggregating heterogeneous items into a single output measure, and (5) separating value change into price change and real output change.

The output concept used for the business and major sector measures is a net output or a value-added type of measure. The concept used for industries is a gross output measure that includes the value of purchased goods and services.

In using the national accounts data to derive the output measure for the business economy, several important exclusions from the gross national product (GNP) measures are made. These exclusions are necessary because (1) no adequate corresponding labor or capital input measure can be developed for some components of the national accounts, and (2) the gross product measures for some components are based on labor inputs implying constant output per unit of labor input.

Private business, which accounts for about 80 percent of GNP, includes the output of all activities measured in the national accounts, except for general government, paid employees of private households, nonprofit institutions, the "rest of world" sector, owner-occupied dwellings, government enterprises, and the statistical discrepancy.

General government is excluded because of the manner in which it is measured in the national accounts: The constant-dollar output of general government is derived by adjusting base-year hourly compensation for changes in the total hours of government employees. This assumes that productivity of this component remains constant. Private household employees and nonprofit institutions are also excluded for this reason.

The "rest of world" sector is excluded primarily for reasons of consistency between output and input data. The current value of output of this sector is equal to the payments to factors (labor and capital) abroad owned by U.S. residents, less payments to factors in the United States owned by foreigners. The payments to factors abroad owned by U.S. residents cannot be related to corresponding labor and capital inputs. The returns to income sent abroad to foreign owners of U.S. enterprises should be included but are not, to provide consistency between the output and input data.

Owner-occupied dwellings are also excluded for consistency purposes. In the national accounts, an estimate is made for the rental value of owner-occupied housing for inclusion in the GNP measures. The output of this service, the net rental value of owner-occupied homes, is estimated

as the amount for which owner-occupied homes could be rented, less maintenance, insurance, and like expenses. However, there is no measure available for the hours worked by homeowners.

Statistical discrepancy is the difference between GNP estimates constructed from the product (the sum of all production for consumption, investment, government, and net foreign trade) and the income (the sum of all income resulting from compensation, profits, interest, and so forth) sides of the national accounts. Given that the input data are more closely related to the income side of the accounts, measures net of statistical discrepancy are developed to provide greater consistency between the output and input data.

Government enterprises—the U.S. Postal Service, the Tennessee Valley Authority, State and local enterprises, and the like—are excluded from the multifactor productivity measures because only limited data are available on their capital input. In the national accounts, structures and durable equipment used by these enterprises are treated as final sales to general government rather than as investments of the enterprises. Government enterprises thus show no capital cost associated with plant and equipment in the national accounts. Data on labor input of these enterprises, however, are available and the output of these enterprises is included in the labor productivity measures.

The aggregate measure resulting from these adjustments covers the product of the private business sector. Included in the output measure for this sector, however, are national accounts data for some miscellaneous items still based on measures of their inputs. This results from use of hourly compensation indexes or cost indexes as a deflator in the national accounts. Use of these measures implies no productivity change for the associated components. These remaining items, however, do not constitute a serious problem because they amount to only 6 percent of the total. (See table 1.)

Specific problems. Although GNP data are adjusted to make them appropriate for the multifactor productivity series, there are still problems with the measures. Perhaps the most important is the adequacy of the price measures used to derive the constant-dollar measures. The price measures used in the national accounts to deflate the value of output and intermediate inputs are predominantly from components of the consumer and producer price indexes prepared by BLS.

In obtaining the data for these series, respondents are asked to quote prices for clearly specified items. When producers significantly alter a product, they are asked to report the changes so BLS can adjust the reported price to reflect the change in quality based on the additional cost (or saving) due to the change. However, a quality change in a product can be achieved in ways which are not captured by measuring the cost of the change, either because there is no way to identify the direct cost associated with a specific

Table 1. Relationship between gross national product and the BLS measure of private business sector gross product, 1985

Item	Amount (billions of 1982 dollars)	Percent
Gross national product (GNP)	\$3,585.2	100
Output items excluded from GNP to obtain BLS private business gross product:		
General government	355.5	10
Owner-occupied housing	209.4	6
Rest-of-the-world	37.0	1
Households and institutions	140.0	4
Government enterprises	43.9	(1)
Statistical discrepancy	-5.0	(1)
BLS private business gross product	2,804.4	78
Value of output deflated by hourly compensation or cost indexes	238.5	6
Nonresidential structures	152.2	4
Other	86.3	2
Value of output deflated by output price indexes	2,565.9	72

¹ Less than 0.5 percent.

SOURCE: *Survey of Current Business*, July 1986, supplemented by unpublished adjustments by Bureau of Economic Analysis, U.S. Department of Commerce, and Bureau of Labor Statistics.

change, or because there is no additional cost involved.

Two items have been particularly weak in the price area: the treatment of computers and the derivation of construction industry measures.

Because of the rapid changes that have been taking place and the inability to obtain reliable data in price surveys, the national accounts, for many years, assumed no change in the price of computers. It was generally believed that rapid changes in quality of the computers resulted in an upward bias in the prices and a downward bias in the resulting output and productivity measures.

To improve these measures, the Bureau of Economic Analysis, in conjunction with IBM, conducted a study in which new price measures for computers were developed.¹ This study compared two approaches: (1) a matched model index in which prices of models on the market in 2 adjacent years were used to compute a chain index over a period of years, and (2) hedonic indexes, computed using regressions showing the effects of specific computer characteristics on computer prices. A composite index was developed combining results from the two approaches. This composite index showed a substantial drop in the prices for computers and a corresponding increase in real output from that previously reported. While this measure is a considerable improvement, further development of the measurement technique for computer prices is being pursued.

In the construction area, developments have not been as fruitful. With the exception of single-family housing and highway construction, the price indexes available for construction activities are generally input price or cost indexes. (This problem is reflected in the entry for nonresidential structures in table 1.) The resultant productivity index for this industry has a bias toward no change and, to a lesser extent, this extends to the overall measure.

A hedonic price measure has been developed for single-family housing and a bid price index is used for highway construction. These price measures do reflect changes in the utilization of materials and labor per unit of output. They do not, however, represent a large proportion of total construction activities.

The output measures for the industry productivity indicators are derived independently of the national accounts. For each industry, the quantities of the various products that are produced by the industry are directly aggregated with the appropriate weights for the various products which make up the output of the industry. The appropriate weight for the direct aggregation of the products is the base-year factor input. Thus, for a labor productivity measure, the weight is the base-year hours of employees in the industry engaged in the production of each output. For a multifactor industry productivity measure, the appropriate weights for the output are the costs of the factor inputs. The resultant productivity measure is an internal mean of the productivity movements of the component elements of the industry. Thus, the labor productivity measure reflects the change in the labor expended in the production of a constant bundle of goods or services, and the multifactor measure reflects the change in all factors expended in the production of the bundle.

In some industries, however, unit employee hour information is not available for individual products. In such cases, substitute weights are used when it is believed that they are proportional to unit employee weights. These are either labor costs per unit of product, unit value added, or prices. The resultant productivity measure from any of these derivations reflects the effects of shifts in the labor cost, value added, or value per hour among the various products within the industry, as well as the change in productivity among the various products.

For some industries, data collected in the U.S. economic censuses have enabled the BLS to develop labor input weights for product classes, if not at the product level. Thus, a hybrid measure is developed which includes substitute (usually price) weights for combining specified products into product classes and labor weights beyond the product class level.

For those industries lacking quantity data, constant-dollar value of shipments data, adjusted for inventory change, are used to develop the output measure. Deflation of the value of the production of the industry by the price change of the various products is a variant of weighting the physical quantity data with unit values. The adequacy of these measures depends to a great extent on the adequacy of the price measures used to deflate the current-dollar value of output.

The problem of inadequate price deflators is more pronounced with the industry output measures. In many cases, its resolution largely determines whether a productivity measure can or cannot be derived. This has been one of the important factors determining the number of productivity measures that are available in the service sector. In recent

years, the number of producer and consumer price indexes has been increasing substantially in the service area, as has the number of productivity measures developed.

In developing the deflated value of gross output indexes for SIC two-digit industries, it is useful to remove intraindustry transactions from the output series. Data for the transactions between establishments in the same two-digit industry are difficult to obtain. However, approximations can be obtained from input-output data.² For this purpose, the amount of imported goods included in intraindustry consumption is estimated and removed. Domestic consumption of materials produced by the same domestic industry is then divided by the total domestic commodity output and multiplied by gross output to estimate intraindustry sales. These are then subtracted from the two-digit industry deflated shipment data, adjusted for inventory change, to obtain the output measure.

Determining labor input

The labor input measures for both the sector and industry productivity series are based largely on a monthly survey of establishment payroll records. This survey, the BLS Current Employment Statistics program (establishment survey), provides data on total employment (for all employees) and average weekly hours (for production and nonsupervisory workers only) in nonagricultural establishments. Because the output of the goods and services reflects the activities of all persons engaged in economic activity, it is important to develop labor input measures that include the self-employed, unpaid family workers, and, for the total business sector, labor input on farms. These data are derived, for the most part, from a household survey of the noninstitutional population, the Current Population Survey, which is conducted by the Bureau of the Census for the BLS.

Reliance on establishment survey data provides major benefits, but also presents two problems. The major benefits derive mainly from the size and coverage of the survey: Payroll data are provided each month from a nationwide sample of more than 200,000 establishments. The problems are that the establishment hours are based on an hours paid, rather than an hours worked, concept, and the data exclude average weekly hours of nonproduction and supervisory workers.

A desirable measure of productivity is one that reflects the change in labor input actually involved in the productive process. The hours paid data include paid vacations, holidays, sick leave, and other paid time off, in addition to the actual hours worked. To the extent that leave practices change, the resultant productivity measures overstate or understate the actual change in output per hour or output per unit of labor and capital combined.

To develop a better series of hours at work, the BLS has been conducting an annual survey (now in its fifth year) of some 4,000 establishments to collect data on hours at work and hours paid for all production and nonsupervisory work-

ers in the private nonagricultural business sector. From this survey, ratios are developed to adjust the hours paid measures from the establishment survey to an hours at work basis. The definition of hours at work was established, after careful study, as time on the job or at the place of work. Besides actual time at work, it includes coffee breaks, short rest periods, paid cleanup time, and other paid time at the workplace. This definition was considered to be conceptually the most acceptable one for which statistics could be extracted from establishment records. A narrower definition of hours actually worked was considered questionable and, in any case, too difficult to collect.

Although the problem of developing the appropriate hours concept for the productivity measures is being resolved at the level of the business economy and the major sectors, the current survey does not provide data in sufficient detail to enable the BLS to develop corresponding measures at the industry level.

In the absence of information from the establishment survey on the average weekly hours for nonproduction and supervisory workers, two solutions, neither entirely satisfactory, have been adopted. For average weekly hours of nonproduction workers in manufacturing, ratios of the average weekly hours of manufacturing office workers to those of nonoffice workers have been developed from surveys in the 1960's and 1970's. Estimates of average weekly hours of nonproduction workers in manufacturing are obtained by multiplying production worker hours by these ratios. In industries other than manufacturing, supervisory employees' average weekly hours are assumed to be equal to those of nonsupervisory workers.

The BLS measures of productivity based on the hours of all persons assume that workers are homogeneous with respect to skill. However, a highly skilled worker can be viewed as providing more labor services per hour than a lesser skilled worker. When skill differences are ignored, increases in skill levels are measured as increases in productivity. As a result, shifts from less skilled to more skilled labor because of increased education or on-the-job training are not reflected as an increase in the measure of labor input. For some purposes, it is useful to have a productivity measure that includes any changes in the potential productivity or quality of an input in the input measure. The problem is to construct a measure of labor input which accurately reflects changes in the skill level of the work force.

Worker characteristics weights

Previous studies have generally taken the position that relative wage or income level differentials associated with specific worker characteristics—years of schooling, age, sex, and possible industry and occupation—reflect marginal productivity of these attributes. Weighting the quality of labor (hours or employment), classified by these characteristics of the work force, by the relative wage or income differentials results in an aggregate measure of labor input

intended to reflect the composition of the work force.

While this procedure certainly is not without merit, it presents some difficulties. In particular, it is not always clear whether certain characteristics are indeed productive. For example, workers with similar characteristics have widely different earnings in different occupations. However, this correlation between occupation and earnings may be due to influences other than the productivity of the occupation *per se*. Furthermore, wages or earnings may also be an imperfect indicator of marginal product because they may vary for reasons unrelated to productivity, including regional differences in the cost of living and various institutional factors.

To address these problems, the BLS is developing new measures of labor input based solely on changes in the amount of work experience and schooling workers acquire. This methodology, which follows directly from the economic theory of human capital as developed by Jacob Mincer and Gary Becker,³ assumes that increased schooling and on-the-job training increases one's stock of skills, and thus one's productivity. Furthermore, the economic returns to higher education and additional work experience reflect the marginal productivity of these characteristics. The BLS has developed a multidimensional data base which cross-classifies the annual hours of workers grouped by schooling and experience. Simultaneously, the implicit prices of these characteristics have been calculated.

The determination of work experience requires substantial effort. There are no large-scale surveys which directly collect data on work experience. Instead, an econometric model has been developed that estimates an individual's quarters of work experience, based on available survey data regarding other personal characteristics. This model requires that for each year, the work force be cross-classified by age, sex, education, race, marital status, and number of children. For the decennial census years, and for years after 1968 when observation data from the household survey could be used, the cross-classification of the work force is straightforward. For the remaining years (1948, 1949, 1951-59, 1961-67), a multiproportional interpolation procedure is employed.

The experience model makes use of a matched sample developed from both the household survey and Social Security records. The results have proven to be significantly better than previous estimates: They show that there is a positive correlation between education and experience which some measures of experience do not take into account and which can produce biased estimates. This positive correlation is shown by a comparison of the derived returns to education and experience using the traditional estimates of experience and the new estimates.

As mentioned earlier, it is recognized that hourly wages differ not only because of skill differences, but also because of factors unrelated to productivity. Accordingly, simple averages of hourly wage rates for each education and expe-

rience group are not necessarily appropriate measures of marginal productivity. To remove these imperfections, another econometric model has been developed which provides measures of wages dependent upon changes in education and experience, but which simultaneously controls for other types of variation.

This model measures the returns to seven different schooling levels and to quarters of work experience. It controls for differentials by full- or part-time status, regional location, and urban or rural residence of a worker. The latter two variables adjust for possible regional price variations. Proprietors and unpaid family workers are excluded from the estimating sample because their income may reflect not only labor returns, but also returns to capital. The model is designed to yield returns to education and experience adjusted for the possible effects of race and sex discrimination on wages. Initially, annual measures of these returns will be constructed for the 1948-85 period.

The construction of aggregate measures of labor input requires that all hours be cross-classified by the level of education and the amount of experience for men and women separately. The hours of each type of cross-classified labor are weighted by the corresponding hourly rental price determined from the model above to obtain a Törnqvist weighted index of labor input. Skill-adjusted labor input measures are presently being developed for the business and nonfarm business sectors.

In sum, the measurement of labor input is limited in several problem areas. One is achieving more accurate coverage of hours of all persons; another is developing hours at work measures; and another is developing weights which reflect differentials in marginal productivity. Some success in each of these areas has been achieved at the macro level with measures for the business economy and major sectors. However, problems remain with the measures for individual industries. It is difficult to see possibilities for substantial improvement in industry measures without substantial expansions in the surveys providing the basic data.

Capital input measures

Capital inputs should be measures of the flow of services from capital stocks rather than of capital stocks themselves. This is consistent with the measurement of labor and output as flows of goods and services. It is also consistent with the general observation that it is the services of a physical asset, rather than the asset itself, that enter into the production process. Further, it permits the capital input measure to differentiate between the annual contributions of a short-lived asset and a long-lived asset that yields its services at a slower annual rate relative to its value as a stock.

The BLS measures adopt the service-flow concept. The assets included are fixed business equipment and structures, inventories, and land. Structures include nonresidential structures and residential capital which is rented out by profitmaking firms or persons. Financial assets are

excluded, largely on pragmatic grounds, as are owner-occupied residential structures.

The capital input measures are constructed in two stages. First, stocks are estimated for various types of assets. The stock estimates are developed after assuming that an asset's services diminish in a fixed pattern as it ages. Second, assets are aggregated by weighting with capital income shares based on rental prices. This step requires the development of rental prices for each type of capital stock.

Exhibit 1 summarizes the methods and data sources used to construct the measures of capital input. Steps 1 through 5 correspond to the first stage and steps 6 and 7, the second.

The framework used for deriving the capital input measures is based on the concept that the stock of capital represents the amount of new investment that would be required to produce the same capital services actually produced by existing assets of all vintages. Thus, the stock measure requires historical data on real investment and assumes an age-efficiency function that describes the pattern of services that capital goods supply as they age.

The measures of investment form the initial point for deriving the capital stock measures. These are constant-dollar measures and are derived from price indexes which have limitations similar to those of indexes used in deriving the constant-dollar GNP output measures. For example, equipment is deflated principally by using the Producer Price Indexes. One part of investment equipment includes computers and, for many years, this presented a problem in measurement of this component of investment. The recently developed price measure for computers (discussed earlier) has improved the estimates for this component. Structures are deflated by indexes of residential prices, highway construction prices, and the construction cost indexes. The highway component and the tenant-occupied, single-family housing construction components are deflated by adequate price measures, but the other structures must be deflated by inadequate cost measures.

In general, the relationship between the economic efficiency of an asset and its age is very complex and depends on the particular type of asset as well as a host of other factors, such as the level of economic activity, relative input prices, interest rates, and technological developments.

Use of an efficiency function involves a strong assumption. The quantity of capital services from a particular asset is assumed to be a function of its age alone. Thus, because the pattern of diminishing services remains fixed over time, the resulting capital measure cannot respond to variations in factor demand. In view of this restrictive assumption, the validity of weighting with a function representative of age alone remains a major issue.

Several general forms have been employed, none of which is completely satisfactory. Use of the gross stock assumes that the asset exhibits no loss of services until it suddenly is discarded. Other forms are net of some loss of services during their lives. A straight-line form shows the

same loss of services each year. A concave form shows gradual losses early in the life of an asset, and more rapid losses as it ages. A convex form shows rapid early losses followed by more gradual losses of the remaining efficiency.

Several attempts have been made to address the efficiency function issue by observing used asset prices. A relationship is postulated between the efficiency of a used asset and its market price relative to that of a new asset. The most extensive empirical study of used asset prices in the United States was done by Charles Hulten and Frank Wykoff in 1981.⁴ BLS concluded that the concave deterioration pattern appeared to be consistent with the empirical data in the Hulten-Wykoff study, as well as with the reports of businesses concerning experiences with their own capital assets.⁵

Many private researchers have used alternative forms such as a gross measure with no deterioration, a geometric decay function with early rapid decline and a slackening of the rate of decline as the asset ages, other concave forms, and straight-line deterioration.⁶ To test the impact of the choice of a particular function on the final measure of multifactor productivity, BLS conducted sensitivity tests of the growth rates of multifactor productivity and of the contribution of the capital-labor ratio to the growth in labor productivity using the different age-efficiency relationships. What emerged was that the choice of function had very little effect on either the multifactor productivity growth rates or the contribution of capital services per hour to the growth rates of output per hour. The largest difference in long-term productivity growth produced by the alternative functions was 0.1 percent. (See table 2.)

Depreciable assets have finite lives; eventually they are discarded from stock. Average lives of the different asset groups are based on recently revised estimates from the Department of Commerce. Asset lives are assumed to be normally distributed with a fairly wide dispersion to take account of the range of service lives observed within each investment cohort.

The second stage in constructing measures of capital services is the aggregation of capital stocks by weighting the stocks with income shares based on rental prices. The various types of capital assets are appropriately aggregated using implicit rental prices (sometimes called user costs) for each type of asset. The rental price represents the annual costs which would be incurred by an organization that purchases an asset with the intention of renting it out.⁷ Thus, the rental prices are implicit because the owners and users of capital assets are frequently the same.

Rental prices are calculated for each type of asset. Assets with shorter lives tend to have higher depreciation rates, and therefore, higher rental prices, and are given a larger weight in capital input. This implies that assets with higher rental prices contribute more to the annual flow of output than assets with lower rental prices.

The Törnqvist method is used to combine the capital series by asset type. The change in capital input is, in effect,

Table 2. Sensitivity of private business sector multifactor productivity measure to various age-efficiency assumptions, 1949-81

[Percent change]

Period	BLS (Hyperbolic)	Hulten-Wyckoff (best geometric approximation)	Gross (one-hoss shay)	Straight line
1949.....	-1.1	-1.0	-1.0	-1.2
1950.....	7.2	7.4	7.2	7.1
1951.....	2.4	2.5	2.5	2.2
1952.....	1.8	2.0	1.8	1.8
1953.....	2.6	2.8	2.5	2.6
1954.....	-4	-3	-5	-4
1955.....	4.4	4.4	4.3	4.3
1956.....	.3	.4	.4	.2
1957.....	.9	1.0	.9	.8
1958.....	.7	.8	.5	.7
1959.....	4.0	4.1	3.9	4.1
1960.....	.6	.5	.6	.6
1961.....	2.0	1.9	1.9	1.9
1962.....	3.6	3.6	3.6	3.6
1963.....	2.9	2.8	2.9	2.8
1964.....	3.6	3.6	3.7	3.5
1965.....	3.1	3.1	3.3	3.0
1966.....	1.9	2.0	2.2	1.8
1967.....	.3	.4	.5	.2
1968.....	2.4	2.5	2.5	2.3
1969.....	-5	-4	-4	-5
1970.....	-1.2	-1.0	-1.1	-1.2
1971.....	2.2	2.3	2.1	2.2
1972.....	3.3	3.4	3.2	3.3
1973.....	2.4	2.4	2.4	2.3
1974.....	-3.8	-3.7	-3.8	-3.8
1975.....	-2	-1	-3	-2
1976.....	3.8	3.8	3.6	3.9
1977.....	3.0	3.0	2.9	3.1
1978.....	1.0	1.0	1.0	1.0
1979.....	-1.1	-1.1	-1.2	-1.2
1980.....	-2.2	-2.2	-2.3	-2.2
1981.....	1.1	1.1	1.0	1.1
1948-65.....	2.2	2.3	2.3	2.2
1965-73.....	1.3	1.4	1.4	1.3
1948-73.....	2.0	2.0	2.0	1.9
1973-81.....	.1	.2	.1	.2
1948-81.....	1.5	1.6	1.5	1.5

a weighted sum of the percentage changes in the capital inputs by asset type. The weights are developed as averages, for the current and preceding year, of the asset's capital compensation, which is the product of the asset's rental price and the quantity of its stock.

Stocks for inventories are based on average end-of-quarter real inventories as reported in the national accounts. The land stock estimate for the farm portion of private business, where land represents a large share of capital, is developed by aggregating regional acreage figures using weights reflecting regional rental values. In the nonfarm sector, the measure for land is derived by multiplying structures by a land-structures ratio.⁸

The capital input measures for the SIC two-digit industries are developed in the same manner as those for the major sectors. However, one problem is encountered at the two-digit level in implementation of the usual capital input measurement procedures. The capital rental price formulation includes the rate of return plus the rate of depreciation minus the rate of capital gains—inflation in the value of an asset—

all in nominal terms. Rental prices are used to construct weights for asset types as discussed above. Capital gains are usually computed as the year-to-year change in the deflator for new investment.

At the two-digit level, some industries have very low rates of return in some years. After capital gains are subtracted, some rental prices are volatile over time and even negative. The resulting asset weights thus lead to implausible capital aggregates. Furthermore, this volatility clearly comes from asset-specific year-to-year movements in the deflators customarily used to determine capital gains. Because the derivation of the rental price assumes perfect foresight, the usual procedure of estimating capital gains implies, incorrectly, that investors fully anticipate even erratic price movements. After careful study, BLS concluded that the usual procedure of using an annual deflator is not required by theory.⁹ A 3-year moving average of the deflator was judged superior on empirical grounds.

Intermediate inputs

Intermediate purchases include materials, fuels, and business services. Material inputs represent all commodity inputs exclusive of fuels (electricity, fuel oil, coal, natural gas, and miscellaneous fuels). Data on the total cost of materials are available from Department of Commerce annual surveys and are deflated by appropriate price indexes to obtain measures of real material inputs. Because the data are obtained on an establishment basis, products transferred between establishments in the same industry are included in the aggregate materials cost. A two-step procedure is used to determine the rate of growth in real expenditures for materials which are purchased from outside the particular industry. First, from the annual current-dollar cost of materials, an estimate of the cost of intraindustry sales and transfers is removed. Second, a materials deflator is constructed with the detailed materials price data and information on weights from input-output tables.

Data on the price and quantity of energy inputs are constructed from annual surveys. These include only the quantity and cost of fuels purchased for heat and power. However, quantity information is not available for all years, and the measures are extrapolated and interpolated using annual estimates of total cost deflated by appropriate Producer Price Indexes.

Directly collected data on purchased business services are relatively scant in the United States. Nevertheless, the inclusion of purchased services in the input measure is important because there is ample evidence of increased use by industries of such services. Also, there is evidence of increased substitution of leased capital for owned capital, and of purchased services such as accounting, legal, and technical services for services performed inhouse.

The BLS estimates these services from published input-output tables. The general approach is to take service shares in the value of production from the input-output tables at the

greatest level of detail; to obtain service costs by multiplying the shares by the value of production; and to deflate these current cost estimates by appropriate deflators. Prices for service inputs are obtained from the consumer and producer price indexes or imputed from various data sources. This is a major problem which will be alleviated by developing more extensive price measures for the service activities.

Multifactor productivity

The calculation of multifactor productivity proceeds from dividing the index of output by the derived index of combined inputs. In the net, or value-added, output framework used in developing the measures for the private business economy and the major sectors, the combined inputs are labor (hours) and capital services. The aggregate input index

Exhibit 1. Summary of methods and data sources used to measure capital and multifactor productivity

Step	Data item obtained or constructed	Method used and detail in which step is performed	Data source
1. Obtain real investment data for data for depreciable assets	Investment in: Equipment Structures Rental residential capital	20 asset types 14 asset types 9 asset types	National accounts ¹ National accounts ¹ National accounts ¹
2. Allocate investment data to major sectors	Investment by asset type by sector (farm manufacturing, nonfarm manufacturing)	Asset detail allocated using methods in step 1 Sectoral investment total proportional to national accounts Historical data cross-classified by asset detail and sector	See step 1 National accounts ¹ National accounts ¹
3. Determine age/efficiency functions for each type of asset	Weights reflecting the declining services of an asset type cohort as it ages	A hyperbolic form using: An average service life estimate Normal distribution of discards A shape determined using empirical evidence	National accounts ¹ National accounts ¹ Hulten and Wykoff ²
4. Perform vintage aggregation	Real stocks of depreciable assets by type and sector	Perpetual inventory method: Real historical investments weighted by age/efficiency functions	See steps 2 and 3
5. Measure nondepreciable assets	Stock of inventories Stock of farm land Stock of land in manufacturing and nonfarm manufacturing	By stage of processing in manufacturing Regional services weighted using rental prices Proportional to structures using benchmark land estimate	National accounts ¹ U.S. Department of Agriculture Allan ³
6. Obtain constant rental prices	Implicit rental value of the services of a unit of each type of asset in each sector	Rental price formula estimated using data on capital stocks and data on payments to capital	Christensen and Jorgenson; ⁴ steps 4 and 5; and national accounts ¹
7. Obtain aggregate assets	Measure of real capital input in each sector	Törnqvist index to asset capital stocks using rental prices to determine weights	Steps 4, 5, and 6

¹ National Income and Product Accounts, Bureau of Economic Analysis, U.S. Department of Commerce.

² Shares were reconciled to functions reported in C. R. Hulten and F. C. Wykoff, "The Measurement of Economic Depreciation," in C. R. Hulten, ed., *Depreciation, Inflation and Taxation of Income from Capital* (Washington, The Urban Institute Press, 1981), pp. 81-125; and C. R. Hulten and F. C. Wykoff, "The Estimation of Economic Depreciation Using Vintage Asset Prices," *Journal of Econometrics*, 1981, pp. 367-96.

³ Benchmarks based on estimates from Manvel D. Allan, "Trends in the Value of Real Estate and Land, 1956-1966," *Three Land Research Studies* (Washington, National Commission on Urban Problems, 1966).

⁴ Formula used to measure rental prices derived by Laurits R. Christensen and Dale W. Jorgenson, "The Measurement of U.S. Real Capital Input, 1929-1967," *Review of Income and Wealth*, December 1969, pp. 292-320.

is derived by weighting the annual growth rates of the individual components, where the weights are the income shares of each component averaged over the current and preceding year, a Törnqvist index. Within each sector, total income is equal to the sum of labor compensation of all employees (labor income), corporate property income (capital income), and proprietors' income.

The labor compensation data for employees are readily available from the national accounts. However, proprietors' income is the total return to the proprietors' own labor and capital. Because this income reflects returns to both factors of production, it is necessary to develop a method to allocate the income between the two factors.

Various assumptions can be made to do this. For example, production worker earnings can be imputed to the self-employed, but this frequently results in negative nonlabor proprietor income (which is obtained as a residual). Conversely, the rate of return on capital in the corporate sector can be applied to the proprietors' capital, but this frequently yields negative proprietors' labor income.

In the BLS measures, proprietor hours are given the same average wages received by paid employees, and capital income is measured by assigning noncorporate capital the same rate of return as corporate capital. The sum of these computed values is compared with reported noncorporate income in the national accounts, and both the derived labor and capital income are scaled to agree with the reported levels.

The combined input index, then, is derived by weighting the labor input index by the derived compensation share of total income, and the capital input index by the income share of capital.

In the derivation of the two-digit industry and the specific industry multifactor measures, the output measure is a gross output index including the value of purchased materials and services. The corresponding factor input measure reflects intermediate materials and purchased services as well as the

labor and capital inputs. These are combined with share weights also; in this case, the sum of the labor, capital, and intermediate shares will equal one.

Inadequacies remain, despite progress

Measurement of productivity change is not a simple task. Despite recent progress, it is clear that inadequacies remain in the data available for measurement of both labor and multifactor productivity. In addition, multifactor productivity measurement presents challenging problems of shaping sometimes imperfect data into empirical measures that take advantage of recent theoretical advances. While multifactor productivity measures are useful for understanding factors affecting the traditional productivity movements, and many such measures have been developed, it is important to recognize that they do not have the same degree of precision that the labor productivity measures have. In estimating them, many more assumptions have to be made, particularly with regard to measuring capital input.

Despite problems, improvements in the measures have been made and, undoubtedly, more will follow. For example, better price data for developing constant-dollar output and capital and intermediate material input measures are now available. Better estimates of rental prices for aggregating the heterogeneous capital stocks have been developed. Even the output per hour measures are being improved using more appropriate hours information and developing adjustments for changes in the composition of the work force.

Improvements in the procedures for measuring productivity must and will continue to be made. Productivity measures of high quality can shed light on policy issues of great importance, including questions on the best means of increasing the efficiency of economic resources, the ability of the economy to expand without adding to inflationary pressures, and the determinants of a country's competitive position in international markets. □

—FOOTNOTES—

¹ See David W. Cartwright, "Improved Deflation of Purchases of Computers," *Survey of Current Business*, March 1986, pp. 7-10.

² Input-output data are available for 1947, 1958, 1963, 1972, and 1977, and estimated data have been developed for the 1967-80 period.

³ See Jacob Mincer, *Schooling Experience, and Earnings* (New York and London, Columbia University Press, 1974); and Gary Becker, *Human Capital* (Chicago and London, University of Chicago, 1975).

⁴ C. R. Hulten and F. C. Wykoff, "The Estimation of Economic Depreciation Using Vintage Asset Prices," *Journal of Econometrics*, 1981, pp. 367-96.

⁵ See *Trends in Multifactor Productivity, 1948-81*, Bulletin 2178 (Bureau of Labor Statistics, 1983).

⁶ See John W. Kendrick, "Productivity Trends in the United States," in Shlomo Maital and Noah M. Meltz, eds., *Lagging Productivity Growth* (Cambridge, MA, Ballinger Publishing Co., 1980); Edward F. Denison, *Accounting for Slower Economic Growth* (Washington, The Brookings Institution, 1979); and Frank M. Gollop and Dale W. Jorgenson, "U.S. Productivity Growth by Industry, 1947-1973," in John W. Kendrick and

Beatrice N. Vaccara, eds., *New Developments in Productivity Measurement and Analysis* (Chicago, The University of Chicago Press, 1980), pp. 17-124.

⁷ The foundations for the use of rental prices in asset aggregation were set forth in Laurits R. Christensen and Dale W. Jorgenson, "The Measurement of U.S. Real Capital Input, 1929-1967," *Review of Income and Wealth*, December 1969, pp. 292-320. Their analysis proceeds from the assumption of equilibrium of supply and demand in the rental market and develops a rental price equation. Rental prices derived from this equation are assumed to reflect the stock's marginal products. The equation reflects, among the determinants of rental prices, depreciation costs, and the rate of return in the form of interest and profits. These costs are reduced by inflation in the value of the asset and adjusted for tax considerations.

⁸ Manvel D. Allan, "Trends in the Value of Real Estate and Land 1956-1966," *Three Land Research Studies* (Washington, National Commission on Urban Problems, 1966).

⁹ Michael J. Harper, Ernst R. Berndt, and David O. Wood, "Rates of Return and Capital Aggregation Using Alternative Rental Prices" (Bureau of Labor Statistics, unpublished working paper, 1986).

International trends in productivity and unit labor costs in manufacturing

U.S. output per hour exceeded the rates of gain in 8 of 11 other industrial countries in 1985, but U.S. unit labor costs rose 2.7 percent relative to the trade-weighted average of the other nations after adjustment for the dollar's appreciation

ARTHUR NEEF

Labor productivity, as measured by output per hour, rose 4.4 percent in manufacturing in the United States in 1985. This exceeded the rates of gain recorded by Canada and 7 of 9 European countries studied—France, Italy, the United Kingdom, Denmark, the Netherlands, Norway, and Sweden. However, two major trade competitors, Japan and West Germany, along with Belgium, had larger increases.

Manufacturing output rose in each country, but the increases recorded by the United States and most of the other countries were substantially less than in the preceding year and only Canada, Japan, Denmark, and Norway had increases in both employment and aggregate hours.

Unit labor costs, which reflect changes in productivity and hourly compensation costs, rose less in the United States, at 0.6 percent, than in Canada or in the seven European countries with smaller productivity gains. Germany and Belgium, however, had about equally small increases, and unit labor costs fell in Japan. The relative value of the U.S. dollar began to fall during 1985, but on an annual average basis the U.S. dollar was up by 0.4 percent over 1984 compared with the Japanese yen, by 5 percent compared with the Canadian dollar, and by 2 to 9 percent compared with the European currencies. Consequently, when measured on a U.S. dollar basis, unit labor costs declined in Belgium, Canada, Germany, Italy, and the Netherlands, as well as in Japan. Only the three Scandinavian countries had larger increases than the United States. Measured on a

national currency basis, U.S. unit labor costs fell 0.5 percent relative to a trade-weighted average of the other 11 countries; adjusted for the dollar's appreciation, U.S. relative unit labor costs rose 2.7 percent.

This article examines comparative annual average percent changes in manufacturing labor productivity and labor costs through 1985 in the United States and 11 other industrial nations.¹ The comparisons are limited to trend measures only; reliable level comparisons of manufacturing productivity and unit labor costs are not available.² The measures for 1985 are preliminary. Data for other years are also subject to some revision as countries revise the underlying statistics used to construct the measures.³ The Canadian productivity and labor cost series are in the process of being revised because of a benchmark revision of the Canadian national accounts, including a shift in the base year from 1971 to 1981 for the series at constant prices, and a major historical revision in the labor income series. The revised measures were not available for inclusion in this article.⁴

The article also provides comparisons of changes in U.S. manufacturing productivity and labor costs relative to a trade-weighted average of the 11 other countries. The relative measures were constructed by taking the ratio of the U.S. indexes to weighted geometric averages of the corresponding indexes for the other 11 countries. The weights used to combine the other 11 countries' indexes into an average "competitors" index reflect the relative importance of each country as a manufacturing trade competitor as of 1980.⁵

Arthur Neef is chief of the Division of Foreign Labor Statistics, Bureau of Labor Statistics. He was assisted by Division economists Harry Boissevain, Christopher Kask, and James Thomas.

Productivity trends

The U.S. productivity gain of about 4½ percent in 1985 was somewhat stronger than the average trade-weighted gain of 4 percent recorded by the 11 foreign competitor nations, although below the 5- to 5½-percent increases recorded by Japan and Germany. (See table 1.) In the 3 years from 1982 to 1985, the U.S. average increase of 4.7 percent was about equal to the average 5-percent increase of the 11 foreign nations, most of which had average annual gains between about 4 and 5½ percent. On the upside, Japan and the Netherlands registered nearly 6 and 7 percent and on the downside, Denmark and Norway posted 1.5 and 3 percent.

As pointed out in previous articles,⁶ all 12 countries have had productivity slowdowns since about 1973 as compared with the period 1960 to 1973. The addition of 1985 data does not change this pattern. However, the U.S. productivity gains for each of the 3 years between 1982 and 1985 exceeded the U.S. average rate of gain between 1960 and 1973. The United Kingdom was the only other country to exceed its pre-1973 rate over the 1982-85 period.

Output and labor input. U.S. manufacturing output growth slowed from 11 percent in 1984 to about 4 percent in 1985. (See table 2.) Most of the other countries also had smaller output gains in 1985 than in the preceding year. A notable exception was Germany, where output rose 5 percent—Germany's largest annual increase since 1976.

The slowdown in U.S. manufacturing output growth did not result in a lower rate of productivity growth because total worker hours, which rose 6½ percent in 1984, were reduced by 0.5 percent in 1985. (See table 3.) This has not been typical of the United States, where manufacturing output increases of 2 percent or more are normally accompanied by increases in employment and hours. It corresponds more closely to recent developments in many of the European countries, where employment and hours have frequently continued to decline even in years of relatively large output increases. In 1985, however, total manufacturing hours rose along with output in Denmark and Norway and remained about unchanged in Sweden and the United Kingdom. Employment rose strongly in Denmark and increased

in Germany, the Netherlands, Norway, and Sweden. Employment and hours also rose in Canada and Japan, but at reduced rates from 1984.

The rise in Dutch manufacturing employment was the first annual increase since 1970; the increase in Norwegian employment was the first since 1977. British employment remained nearly stable after falling in 9 of the previous 10 years. However, employment in Belgium and France continued to fall for the 11th consecutive year. The tabulation below shows the peak year for manufacturing employment in each of the 12 countries and the level of employment in 1985 relative to the peak employment year and relative to 1973. The latter was one of very large output increases in each country, but not the peak employment year for any country.

	Peak employment year	1985 index	
		Peak = 100	1973 = 100
Japan	1985	100	101
Canada	1979	95	100
United States	1979	92	96
Denmark	1965	92	94
Italy	1974	87	89
Norway	1974	85	88
Sweden	1965	84	89
Germany	1970	81	83
France	1974	81	82
Netherlands	1965	70	76
Belgium	1974	65	66
United Kingdom	1966	64	70

Hourly compensation and unit labor costs

Hourly compensation costs—which include wages and salaries, supplements, and employer payments for social security and other employee benefit plans—rose 2½ percent between 1984 and 1985 in Japan; about 5 to 6 percent in the United States, Canada, France, Germany, Belgium, Denmark, and the Netherlands; and 7 to 10 percent in Italy, the United Kingdom, Norway, and Sweden. As shown in table 4, all countries recorded slower increases in 1985 compared with their 1973-85 trend rates.

Japan, which had the largest increases in hourly compensation in the 1960's and among the largest increases in the

Table 1. Annual percent changes in manufacturing productivity, 12 countries, 1960-85

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden	Foreign countries (weighted) ¹
Output per hour:													
1960-85	2.7	3.4	8.0	5.5	4.8	5.4	3.5	6.5	4.8	6.2	3.2	4.7	5.4
1960-73	3.2	4.7	10.3	6.5	5.8	7.3	4.3	6.9	6.4	7.4	4.3	6.4	6.8
1973-85	2.2	1.9	5.6	4.4	3.7	3.5	2.7	6.0	3.0	5.0	2.1	3.0	3.9
1973-79	1.4	2.2	5.5	5.0	4.3	3.3	1.2	6.2	4.2	5.5	2.1	2.6	3.9
1979-85	3.1	1.7	5.7	3.8	3.2	3.7	4.2	5.7	1.9	4.4	2.0	3.3	3.9
1984	4.1	3.7	7.0	3.9	3.7	5.4	4.5	3.5	1.0	10.7	2.6	4.4	5.0
1985	4.4	3.2	5.0	3.3	5.6	3.1	3.4	4.6	.7	3.1	.9	2.7	4.1

¹ A trade-weighted average of the 11 foreign countries. See description of weights in text.

NOTE: Rates of change based on the compound rate method.

Table 2. Annual percent changes in manufacturing output, 12 countries, 1960-85

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden
Output:												
1960-85	3.4	4.2	9.3	4.6	3.3	4.6	1.2	4.2	3.8	3.8	2.5	3.1
1960-73	4.8	6.5	12.8	7.3	5.2	7.0	3.0	6.6	5.3	6.0	4.6	5.1
1973-85	1.9	1.7	5.6	1.7	1.3	2.0	-8	1.6	2.2	1.5	.1	1.1
1973-79	1.9	2.7	3.6	3.1	1.7	3.1	-7	1.5	1.6	1.7	.1	.5
1979-85	1.8	.6	7.5	.4	.8	1.0	-9	1.6	2.8	1.4	.1	1.6
1984	10.8	8.2	11.4	1.0	2.7	3.7	3.9	1.7	5.8	5.5	2.5	6.0
1985	3.8	4.6	6.4	.2	5.0	1.8	3.2	.9	5.3	2.1	2.4	2.0

NOTE: Rates of change based on the compound rate method.

first half of the 1970's, has had the smallest average rate of increase in the 1980's—about 4 percent. The only other countries with average gains of 6 percent or less since 1980 are the United States, Germany, and the Netherlands.

Unit labor costs, which reflect changes in both labor productivity and hourly compensation, fell for the fourth consecutive year in Japan as productivity continued to climb more than hourly compensation. Manufacturing unit labor costs were about unchanged in 1985 in Belgium. Unit labor costs rose only about 0.5 percent in the United States and Germany. In the previous 2 years, unit labor costs fell 3 percent in the United States and rose only 0.5 percent in Germany. Canada and the other European countries had 1985 increases of 2 to 7 percent.

Unit labor costs in U.S. dollars

Unit labor costs measured in U.S. dollars were signifi-

cantly influenced by 1985 changes in currency exchange rates, as they were in the previous 4 years. The value of the U.S. dollar began to fall during 1985 relative to the Japanese yen and the European currencies, but measured on an annual average basis, the U.S. dollar was largely unchanged relative to the yen and rose about 2 to 5 percent relative to the currencies of Canada and all of the European countries except Italy. The dollar rose 8 percent relative to the Italian lira. Consequently, manufacturing unit labor costs on a U.S. dollar basis declined in Canada, Germany, Italy, Belgium, and the Netherlands as well as in Japan. On a national currency basis, 8 of the 11 foreign countries had larger unit labor cost increases than the United States; on a U.S. dollar basis, only the three Scandinavian countries had larger increases.

The strong gain of the U.S. dollar relative to most other currencies began about 1980. As of 1985 (annual average),

Table 3. Annual percent changes in manufacturing employment and hours, 12 countries, 1960-85

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden
Aggregate hours:												
1960-85	0.6	0.8	1.1	-0.8	-1.5	-0.8	-2.3	-2.2	-0.9	-2.2	-0.9	-1.5
1960-73	1.6	1.8	2.3	.8	-6	-2	-1.2	-3	-1.1	-1.2	.3	-1.2
1973-85	-3	-3	-1	-2.6	-2.4	-1.4	-3.4	-4.2	-8	-3.2	-1.9	-1.8
1973-79 .....	.5	.5	-1.8	-1.9	-2.5	-2	-1.8	-4.5	-2.5	-3.6	-1.9	-2.0
1979-85	-1.2	-1.0	1.7	-3.3	-2.3	-2.6	-4.9	-3.8	.9	-2.9	-1.8	-1.6
1984	6.4	4.4	4.1	-2.8	-9	-1.6	-5	-1.8	4.7	-4.7	-2	1.5
1985	-5	1.4	1.3	-3.0	-5	-1.2	-2	-3.5	4.6	-1.0	1.4	-6
Employment:												
1960-85 .....	.6	1.0	1.7	-1	-5	.4	-1.7	-1.3	0	-1.1	.1	-5
1960-73	1.4	1.9	3.3	1.3	.4	1.6	-6	.8	.5	.1	1.3	.1
1973-85	-3	0	.1	-1.7	-1.6	-1.0	-2.9	-3.4	-5	-2.3	-1.1	-1.0
1973-79 .....	.8	.8	-1.5	-9	-1.6	.3	-1.4	-3.4	-2.0	-2.3	-2	-5
1979-85	-1.4	-8	1.7	-2.4	-1.6	-2.2	-4.4	-3.5	1.0	-2.3	-1.9	-1.5
1984	4.9	4.4	2.9	-2.9	-9	-4.0	-1.2	-1.2	5.0	-2.0	-1.3	.7
1985	-5	.7	1.9	-3.0	1.1	-2.3	-2	-6.3	6.9	1.6	1.2	.3
Average hours:												
1960-85 .....	.1	-2	-6	-7	-9	-1.1	-6	-9	-1.0	-1.2	-9	-1.1
1960-73 .....	.2	-2	-1.0	-5	-1.0	-1.8	-7	-1.1	-1.6	-1.3	-1.0	-1.3
1973-85	0	-3	-1	-1.0	-8	-5	-5	-7	-3	-1.0	-8	-8
1973-79	-2	-4	-3	-9	-9	-5	-5	-1.1	-5	-1.3	-1.7	-1.6
1979-85 .....	.2	-2	.1	-1.0	-7	-4	-5	-3	-1	-6	.1	-1
1984	1.4	-1	1.2	.1	0	2.5	.7	-6	-3	-2.8	1.2	.8
1985	-1	.7	-6	0	-1.6	1.1	0	3.0	-2.2	-2.5	.3	-9

NOTE: Rates of change based on the compound rate method.

the Japanese yen was only 5 percent below its 1980 value. However, the Canadian dollar was down to 86 percent of its 1980 value, relative to the U.S. dollar, and the European currencies ranged between about 45 and 60 percent of their 1980 values. The following tabulation shows the effect of these exchange rate changes by comparing the average annual percentage changes in each country's unit labor costs between 1980 and 1985, as measured on a national currency basis and on a U.S. dollar basis:

	National currency	U.S. dollars
United States	2.1	2.1
(Trade-weighted average, 11 countries)	3.1	-4.3
Canada	5.4	2.1
Japan	-1.2	-2.3
Norway	7.0	-4.2
Italy	11.9	-4.7
Denmark	6.2	-6.5
United Kingdom	3.9	-7.6
Germany	1.8	-7.6
France	7.4	-7.7
Sweden	5.5	-8.4
Netherlands .....	.1	-9.7
Belgium	1.2	-12.2

Expressed in national currencies, 7 of the 11 foreign countries had greater increases in unit labor costs than the United States. Taking into account the appreciation of the dollar since 1980, only one country besides the United States—

Canada—had an increase in unit labor costs.

Unadjusted for exchange rate changes, Japan improved its relative competitive position more than any of the other 11 countries, with an overall decline in unit labor costs between 1980 and 1985. However, because of the sharp relative depreciations of all of the European currencies, all nine European countries had larger declines in unit labor costs than Japan after adjustment for relative changes in exchange rates. The countries that most improved their competitive positions were those with small increases in unit labor costs in national currency terms and large relative currency depreciations, such as Belgium and the Netherlands. Table 5 shows annual percent changes in U.S. unit labor costs, average trade-weighted "competitors" unit labor costs, and the U.S. relative measures.

Recent exchange rate changes

The comparative measures in this article are based on annual average measures. Therefore, the 1985 trend measures of unit labor costs on a national currency basis have been adjusted to a U.S. dollar basis using annual average exchange rates for 1985. As noted earlier, the U.S. dollar in 1985 was largely unchanged relative to the Japanese yen on an annual average basis and rose between 2 and 9 percent relative to the currencies of the other 10 countries. However, by the end of 1985, the U.S. dollar had depreciated strongly against the yen and most European currencies and the dollar continued to depreciate during 1986. Table 6 provides a comparison of October 1986 exchange rates and

Table 4. Annual percent changes in hourly compensation and unit labor costs in manufacturing, 12 countries, 1960-85

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden	Foreign countries (weighted) ¹
Hourly compensation:													
1960-85	6.5	8.1	11.9	12.1	9.1	15.9	12.1	10.9	11.6	10.7	10.7	11.2	10.9
1960-73	5.0	6.2	15.1	10.0	10.3	13.6	9.3	11.0	12.2	12.9	10.0	10.5	10.9
1973-85	8.2	10.3	8.6	14.4	7.7	18.4	15.1	10.7	10.9	8.4	11.6	11.9	10.8
1973-79	9.5	12.2	12.8	16.3	9.5	20.6	19.2	14.0	14.0	11.6	13.4	14.2	13.8
1979-85	6.9	8.3	4.6	12.5	6.0	16.1	11.2	7.5	7.9	5.2	9.8	9.7	8.0
1984	3.6	1.5	2.9	8.8	4.8	8.4	7.1	8.3	5.6	4.8	8.5	9.5	4.7
1985	5.0	5.1	2.5	5.9	6.0	10.2	7.3	4.8	5.6	5.3	7.7	10.1	5.3
Unit labor costs:													
1960-85	3.7	4.6	3.6	6.2	4.1	9.9	8.3	4.1	6.5	4.3	7.3	6.2	5.2
1960-73	1.8	1.4	4.3	3.3	4.3	5.9	4.8	3.8	5.5	5.2	5.4	3.9	3.8
1973-85	5.8	8.2	2.8	9.5	3.9	14.3	12.1	4.5	7.6	3.3	9.3	8.7	6.7
1973-79	8.0	9.8	6.9	10.7	4.9	16.7	17.9	7.4	9.4	5.8	11.1	11.2	9.5
1979-85	3.7	6.6	-1.1	8.3	2.8	12.0	6.7	1.7	5.9	.8	7.6	6.2	4.0
1984	-5	-2.1	-3.9	4.7	1.0	2.8	2.5	4.6	4.5	-5.4	5.8	4.8	-3
1985 .....	.6	1.9	-2.5	2.5	.5	7.0	3.7	.2	4.8	2.1	6.7	7.3	1.1
Unit labor costs in U.S. dollars:													
1960-85	3.7	3.2	5.3	3.7	5.5	5.0	5.0	3.4	4.7	4.8	6.5	4.0	4.6
1960-73	1.8	1.2	6.6	4.1	8.0	6.4	3.7	5.8	6.6	7.7	7.2	5.3	5.1
1973-85	5.8	5.4	3.9	3.3	3.0	3.6	6.4	.9	2.7	1.7	5.7	2.7	4.1
1973-79	8.0	7.0	10.8	11.5	11.6	10.0	15.1	12.5	11.9	11.7	13.4	11.5	10.8
1979-85	3.7	3.9	-2.5	-4.4	-5.0	-2.5	-1.7	-9.6	-5.8	-7.3	-1.4	-5.5	-2.2
1984	-5	-6.8	-3.8	-8.7	-9.3	-11.0	-9.6	-7.4	-7.7	-15.8	-5.3	-2.8	-7.4
1985 .....	.6	-3.4	-2.9	-3	-2.8	-1.6	.7	-2.5	2.4	-1.3	1.3	3.1	-2.0

¹ A trade-weighted average of the 11 foreign countries. See description of weights in text.

NOTE: Rates of change based on the compound rate method.

Table 5. Relative annual percent changes in U.S. unit labor costs in manufacturing, 1960-85

Year	United States	11 foreign countries ¹	Relative measures ²
Unit labor costs in national currency:			
1960-85	3.7	5.2	-1.4
1960-73	1.8	3.8	-2.0
1973-85	5.8	6.7	-9
1973-79	8.0	9.5	-1.4
1979-85	3.7	4.0	.3
1980-85	2.1	3.1	-9
1981	7.3	8.2	-8
1982	6.2	5.7	.4
1983	-2.5	.9	-3.4
1984	-5	-3	-2
1985 .....	.6	1.1	-5
Unit labor costs in U.S. dollars:			
1960-85	3.7	4.6	-9
1960-73	1.8	5.1	-3.2
1973-85	5.8	4.1	1.6
1973-79	8.0	10.8	-2.5
1979-85	3.7	-2.2	6.0
1980-85	2.1	-4.3	6.7
1981	7.3	-3.1	10.7
1982	6.2	-5.5	12.3
1983	-2.5	-3.4	1.0
1984	-5	-7.4	7.4
1985 .....	.6	-2.0	2.7

¹ A trade-weighted average of the 11 foreign countries.

² Ratio of U.S. measure to the trade-weighted measure for the 11 foreign countries.

NOTE: Rates of change based on the compound rate method.

January-October 1986 exchange rates relative to annual average 1985 and 1980 exchange rates.

As the table shows, while the Canadian dollar continued to depreciate slightly, the Japanese yen as of October 1986 had risen 52 percent in value relative to the U.S. dollar over the annual average of 1985 and the European currencies

were up 10 to 46 percent. Whether U.S. relative unit labor costs will fall in 1986 in line with the depreciation of the U.S. dollar will, of course, depend on comparative 1986 developments in productivity and hourly compensation costs. As of the first three quarters of 1986, U.S. manufacturing unit labor costs were up only 0.3 percent over the first three quarters of 1985.

While the relative values of the Japanese yen and the European currencies rose strongly in 1986, only the Japanese yen has increased in value over 1980. The relative values of the European currencies, which in 1985 ranged between 45 and 60 percent of their 1980 values, ranged between 60 and 90 percent of their 1980 values as of October 1986.

Exchange rates and trade. Because of the 1985-86 depreciation of the U.S. dollar, many commentators have expected significant improvement in the U.S. trade balance. However, two important facts are often overlooked. The U.S. dollar has not depreciated against the Canadian dollar, and Canada accounted for 20 percent of U.S. manufactured imports, for 25 percent of U.S. manufactured exports, and for 12 percent of the U.S. trade deficit in manufactured products in 1985. Of possibly greater significance, the U.S. dollar has not depreciated against the currencies of most of the Asian and Latin American countries or areas that are frequently referred to as the newly industrializing countries—such as Hong Kong, Singapore, South Korea, Taiwan, Brazil, and Mexico. Table 6 also shows exchange rate indexes for these 6 countries and areas, along with 1985 U.S. trade weights (percent of U.S. imports and exports of manufactured goods) and percent of the U.S. trade deficit in manufactured goods for the 6 and for the 11 foreign coun-

Table 6. Exchange rate indexes, 18 countries or areas, 1980-86

[Value of foreign currency relative to the U.S. dollar]

Country	Index: 1985 = 100			Index: 1980 = 100			Trade weights ¹ (percent)	U.S. trade deficit ² (percent)
	1985	Jan.-Oct. 1986	October 1986	1980	1985	Jan.-Oct. 1986			October 1986
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	—
Canada	100.0	98.2	98.4	100.0	85.6	84.1	84.2	21.7
Japan	100.0	141.5	152.4	100.0	95.0	134.4	144.8	18.3
France	100.0	128.5	136.8	100.0	47.0	60.5	64.4	3.1
Germany	100.0	133.9	146.7	100.0	61.8	82.8	90.6	5.9
Italy	100.0	126.7	137.6	100.0	44.9	56.8	61.7	2.8
United Kingdom	100.0	113.6	109.9	100.0	55.8	63.4	61.3	4.5
Belgium	100.0	131.5	142.5	100.0	49.3	64.8	70.2	1.6
Denmark	100.0	129.5	140.2	100.0	53.2	68.9	74.5	.4
Netherlands	100.0	134.0	146.4	100.0	59.9	80.2	87.7	2.0
Norway	100.0	116.6	116.7	100.0	57.5	67.0	67.1	.2
Sweden	100.0	120.1	124.9	100.0	49.2	59.1	61.4	1.2
Brazil	100.0	46.1	44.4	100.0	(³)	(³)	(³)	1.9
Hong Kong	100.0	99.8	99.9	100.0	63.9	63.8	63.8	2.3
Mexico	100.0	48.0	33.0	100.0	(³)	(³)	(³)	4.7
Singapore	100.0	101.2	101.1	100.0	97.3	98.5	98.3	1.6
South Korea	100.0	97.1	98.0	100.0	70.5	68.5	69.1	3.1
Taiwan	100.0	104.5	108.8	100.0	90.3	94.3	98.3	4.2

¹ Percent of total U.S. imports and exports of manufactured goods in 1985, excluding special category exports (military goods sent out under Department of Defense contracts). Weight for Belgium is Belgium-Luxembourg combined.

² Percent of U.S. trade deficit in manufactured goods in 1985. See footnote 1.

³ Not relevant unless adjusted for inflation.

tries covered by the comparative unit labor cost measures.

The six newly industrializing countries and areas accounted for 18 percent of U.S. trade in manufactured goods in 1985 and for 25 percent of the trade deficit in manufactured products. For comparison, the nine European countries covered by this article accounted for 22 percent of U.S. trade and 20 percent of the deficit. As of October 1986, the relative value of the Taiwan dollar was up moderately against the U.S. dollar but the Hong Kong and Singapore dollars and the South Korean won were little changed from their 1985 values. The relative values of the currencies of Brazil and Mexico were only about half of their average 1985 values as of October 1986, but, in large part, this reflects sharply higher prices. A more meaningful comparison among countries with markedly different price developments is a real exchange rate index, that is, one adjusted for relative differences in inflation. Inflation-adjusted exchange rate indexes for Brazil and Mexico (1985=100) were, respectively, 108 and 82 in the first half of 1986.

The principal trade-weighted dollar exchange rate indexes

are those published by the Board of Governors of the Federal Reserve System, the Department of the Treasury, the International Monetary Fund, and the Morgan Guaranty Trust Co. of New York. All of these indexes show a sharp depreciation of the U.S. dollar since early 1985, but, while all four indexes include Canada, they all exclude the six newly industrializing countries and areas of Asia and Latin America. An exchange rate index including these countries was recently developed by senior economist W. Michael Cox of the Federal Reserve Bank of Dallas.⁷ His index, which covers 131 U.S. trading partners, shows only a 6-percent depreciation of the U.S. dollar between March 1985 and May 1986, while the other four indexes show depreciations ranging from about 18 percent up to 34 percent.⁸ The differentials between the Cox index and the other four would probably be less on an inflation-adjusted basis. An inflation-adjusted index computed by Cox shows a 7-percent depreciation of the U.S. dollar between the first and fourth quarters of 1985, compared with a nominal 2-percent depreciation over the same period.⁹ □

—FOOTNOTES—

¹ The data relate to all employed persons, including the self-employed, in the United States and Canada, and to all wage and salary employees in the other countries. Hours refer to hours paid in the United States and to hours worked in the other countries.

² The Bureau does not prepare level comparisons of manufacturing productivity and unit labor costs because of data limitations and technical problems in comparing the levels of manufacturing output among countries. Each country measures total manufacturing output in its own currency units. To compare outputs among countries, a common unit of measure—such as the U.S. dollar—is needed. However, satisfactory conversion factors are not available for the manufacturing sector. Market exchange rates are not suitable as a basis for comparing output levels. What are needed are purchasing-power-parity (PPP) exchange rates, that is, the number of foreign currency units required to buy goods and services equivalent to what can be bought with one unit of U.S. currency. Reasonably reliable PPP exchange rates are available for total gross domestic product (GDP) and are used by the Bureau for comparing levels of total GDP. See Michael Ward, *Purchasing Power Parities and Real Expenditures in the OECD* (Paris, Organization for Economic Cooperation and Development (OECD), 1985); and Peter Hill, *International Price Levels and Purchasing Power Parities*, OECD Economic Studies No. 6 (Paris, OECD, Spring 1986). However, these PPP exchange rates are derived from the expenditure side of the national accounts (consumer, business, and government final expenditures for goods and services) and not from the output side of the accounts (gross product originating by industry). Therefore, they do not provide PPP exchange rates by industry. Some researchers have published level comparisons of manufacturing productivity using either the PPP exchange rate for total GDP or a constructed PPP exchange rate based on selected final expenditures by consumers and businesses. However, there are large differences in PPP exchange rates for different categories of final expenditure and the author is not aware of any satisfactory justification for the use of either procedure for comparing manufacturing output levels, although a constructed PPP exchange rate that excludes government consumption expenditures and consumer expenditures on services should provide a better approximation of a PPP exchange rate for the manufacturing sector than the PPP for total GDP.

³ This article includes revised statistics which have not yet been incorporated in "Current Labor Statistics," table 47, this issue.

⁴ The output figures from 1981 forward will be based on 1981 price weights. The figures for earlier years will continue to be based on 1961 and 1971 price weights, although they will be expressed in 1981 constant dollar levels. This contrasts with the U.S. method; when the U.S. national ac-

counts were rebased to 1982, the entire constant dollar series was revised.

⁵ The trade weights were adapted from weights developed by the International Monetary Fund (IMF). The original IMF weights cover 17 countries; the 11 foreign countries covered by this article account for 94 percent of the IMF 16 U.S. competitors' total trade weight. For more information on the relative indexes, see Patricia Capdevielle, Donato Alvarez, and Brian Cooper, "International trends in productivity and labor costs," *Monthly Labor Review*, December 1982, pp. 3-14.

⁶ For example, see Edwin Dean, Harry Boissevain, and James Thomas, "Productivity and labor cost trends in manufacturing, 12 countries," *Monthly Labor Review*, March 1986, pp. 3-10.

⁷ See W. Michael Cox, "A New Alternative Trade-Weighted Dollar Exchange Rate Index," *Economic Review*, Federal Reserve Bank of Dallas, September 1986, pp. 20-28. In addition to introducing the new index, the article provides a comparison with the four principal indexes. Cox's index differs from the other four primarily by its much broader coverage—131 countries versus 10 to 22 countries. It also differs in that he uses annually moving rather than constant trade weights. Both the 1985 and 1986 indexes are based on 1985 weights, but the 1986 indexes will be revised when full-year 1986 trade data become available. During the period when the dollar was appreciating strongly, the five indexes show more similar results—a U.S. dollar appreciation between January 1980 and March 1985 ranging from 42 percent up to Cox's 65.5 percent.

For another recently compiled trade-weighted dollar exchange rate index that includes the major newly industrializing countries and areas, see Irwin L. Kellner "Why Our Trade Gap Persists," *Manufacturers Hanover Economic Report*, September 1986. Kellner's index covers the 17 largest U.S. trading partners and uses 1985 weights. It shows only about a 4-percent trade-weighted depreciation of the U.S. dollar between February 1985 and August 1986.

⁸ March 1985 to April 1986 for the Treasury index. All of the other four indexes include Canada, but with very different weights. As reported in Cox, the weights given to Canada are 9 percent in the Board of Governors index, 30 percent in the Morgan Guaranty Trust index, and 21 percent in the International Monetary Fund and his own index (1985 weight).

⁹ Information provided directly to the author by W. Michael Cox. Cox's article did not include an inflation-adjusted index.

The Morgan Guaranty Trust Co. publishes both nominal and real effective U.S. dollar exchange rates. They show virtually the same U.S. dollar depreciation—24.0 and 24.7 percent, respectively, between March 1985 and July 1986.

U.S. productivity growth since 1982: the post-recession experience

Gains in productivity during recoveries typically are greater than the long-term trend; increases for the current upturn are more modest than those recorded for similar postwar periods, although the manufacturing sector is performing well

LAWRENCE J. FULCO

Productivity in the business sector has grown at an average annual rate of 2.3 percent since 1947.¹ Growth was more rapid before 1973 (3.0 percent) than after (0.9 percent), but throughout the postwar period, the business cycle has had pronounced effects on the rate of change in productivity. Table 1 shows these effects on productivity growth in the business, nonfarm business, and manufacturing sectors.

There have been eight business cycle troughs since the end of World War II, the most recent of which occurred in the fourth quarter of 1982.² (See exhibit 1.) The business cycle exerts an accelerating influence on productivity growth during recoveries and retards it during contractions. Since the 1982 trough, the BLS has analyzed movements in labor productivity—output per hour of all persons—for purposes of comparing this recovery with similar periods in the past.

The cycle's effect on productivity is often explained in terms of the fixed nature of some inputs in the short run. Because the stocks of capital plant and equipment and the number of available skilled employees are not instantaneously adjustable, they remain to some extent fixed over the course of the cycle. Thus, when product demand increases after a trough, firms are able to increase output more rapidly than capital and labor inputs, thereby inducing a swift rise in productivity. During a contraction the opposite occurs, giving rise to a procyclical pattern in productivity.

Lawrence J. Fulco is a supervisory economist in the Office of Productivity and Technology, Bureau of Labor Statistics.

Productivity in the business sector³ has risen more rapidly during postwar recoveries (2.6 percent per year) than over the entire 1947–85 period (2.3 percent). The same is true for the more narrowly defined nonfarm business and manufacturing sectors. However, since the beginning of the productivity slowdown in 1973, the contrast between productivity advances during recoveries and the long-term trend in productivity increase has become greater. Since 1973, the growth rate during recoveries has been more than 0.6 percent higher than the long-term rate for business and nonfarm business, and 1.1 percent higher for manufacturing. In manufacturing, the post-1973 slowdown has been smaller than in the more comprehensive business and nonfarm business sectors. (Manufacturing accounts for about one-fourth of the business sector output.)

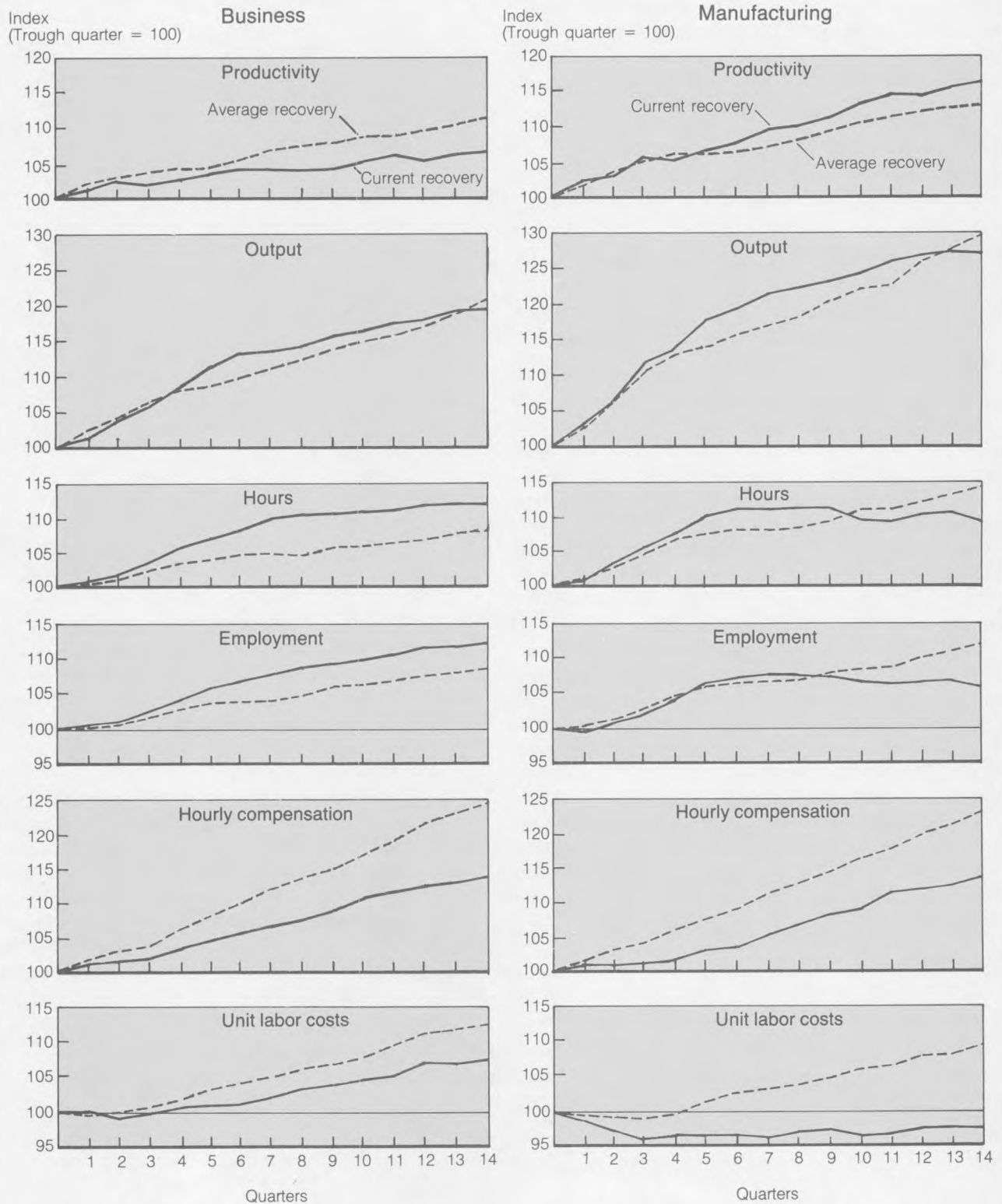
The current recovery

The eight postwar recoveries are dissimilar, ranging in length from 4 to 35 quarters, trough to peak:

Trough	Quarters, trough to peak
October 1949	15
May 1954	13
April 1958	8
February 1961	35
November 1970	12
March 1975	20
July 1980	4
Mean	15

By the second quarter of 1986, the current recovery had lasted 14 quarters, longer than all but three of the others.

Chart 1. Productivity and related measures 14 quarters after the trough of the business cycle in the business and manufacturing sectors, current recovery versus average postwar recovery



Because recoveries have differed so widely, it is not possible to draw any conclusions regarding the underlying growth rate of productivity based on experience during this part of the cycle. (For similar reasons, projections of the future course of productivity change are quite unreliable.) However, a comparison of the ongoing recovery with others which have also lasted at least 14 quarters reveals the following:

- Productivity gains in the business sector have been the lowest of any similar recovery period.
- In manufacturing, productivity gains have been much better than in the total business sector and higher than previous experience.
- Increases in hourly compensation have lagged considerably behind past gains.
- As a result, unit labor costs (compensation per unit of output) have grown quite slowly by historical standards.

For the other recoveries, the average annual rate of business productivity growth for the first 14 quarters was 3.1 percent; during the current recovery, productivity increased at only a 1.8-percent annual rate over the same time span. In manufacturing, the average 14-quarter recovery showed a 3.6-percent annual rate of growth; during this recovery, the rate of increase has been 4.4 percent. Chart 1 compares productivity and related measures for the average recovery and for the current upturn in business and manufacturing.

Hourly compensation gains have been modest during the current upturn in all major sectors of the economy, and among both union and nonunion employees. Givebacks, smaller benefits packages, and two-tier pay plans, combined with slower growth in consumer prices, have been reflected in current-dollar hourly compensation growth of less than 4 percent during the last 14 quarters; the average annual increase for previous recoveries was about 6.5 percent in both business and manufacturing.

Taken together, these trends have resulted in slow gains in compensation per unit of output during the current upturn. In fact, unit labor costs in manufacturing were actually somewhat lower in the second quarter of 1986 than in the third quarter of 1980.

Second-quarter results

During the second quarter of 1986, productivity in the business and nonfarm business sectors showed slight in-

Exhibit 1. Troughs and peaks of the eight postwar business cycles

Trough		Peak	
—		November 1948	
October 1949		July 1953	
May 1954		August 1957	
April 1958		April 1960	
February 1961		December 1969	
November 1970		November 1973	
March 1975		January 1980	
July 1980		July 1981	
November 1982		—	

creases, while manufacturing productivity rose more rapidly. The following tabulation presents annualized percent changes in productivity, output, and hours in the second quarter for major divisions of the economy. (Additional information appears in tables 42-44 of the Current Labor Statistics section of this issue.)

Sector	Productivity	Output	Hours
Business	0.5	0.3	-0.2
Nonfarm business .....	.5	.6	.1
Manufacturing	3.2	-4	-3.5
Durable goods	1.0	-3.8	-4.8
Nondurable goods	7.0	5.3	-1.6
Nonfinancial corporations ...	-3	-1.1	-8

Business sector. Business sector productivity rose at a 0.5-percent annual rate during the second quarter of 1986, and hours declined for the first time since the recovery-expansion phase of the business cycle began 14 quarters earlier. The business sector is the broadest sector for which productivity is measured, accounting for about four-fifths of gross national product (GNP).

Hourly compensation rose moderately during the second quarter, but after adjustment for changes in the Consumer Price Index for All Urban Consumers (CPI-U),⁴ a strong increase occurred. With this increase, real hourly compensation stood at its highest level since 1979. Real hourly compensation had advanced in every year but one from 1947 to 1978, but three consecutive years of declines occurred beginning with 1979. Growth resumed in 1982, but even so, real hourly compensation in the second quarter of 1986 remained somewhat lower than in 1978. Hourly compensa-

Table 1. Compound annual rates of change in productivity for selected sectors, trend versus recovery and contraction phases, 1947-85

Period	Number of cycles	Trend			Contraction			Recovery		
		Business	Nonfarm business	Manufacturing	Business	Nonfarm business	Manufacturing	Business	Nonfarm business	Manufacturing
1947-1985	8	2.3	1.9	2.7	.6	.4	-.1	2.6	2.1	3.3
1947-1973	5	3.0	2.5	2.9	1.3	1.1	-.2	3.1	2.6	3.3
1973-1985	3	.9	.7	2.2	-.7	-.7	.0	1.7	1.3	3.3

tion includes wages and salaries, supplements, and employer payments to employee benefit plans, and measures employer costs rather than employee income. Adjustment with the CPI-U translates these costs into real terms, by taking into account changes in the prices of consumption goods. The decline in the CPI-U was quite unusual in itself; over the past 25 years, there has only been one other quarter during which the CPI-U fell—the second quarter of 1961, for which a 0.1-percent drop was recorded.

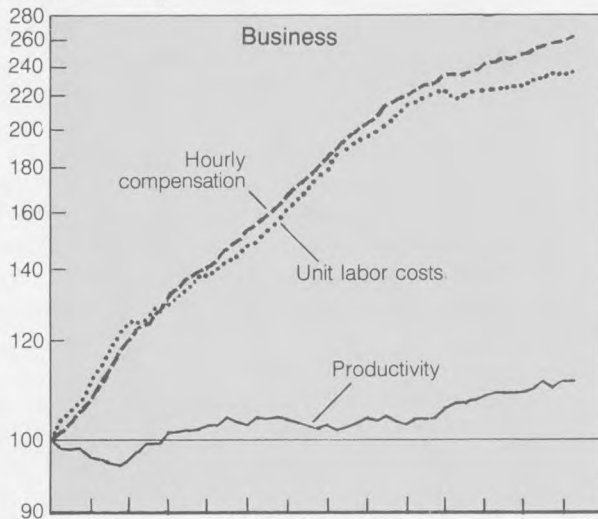
Unit labor costs are compensation expenses per unit of output, and thus are influenced by changes in both hourly compensation and productivity. In the second quarter of

1986, these important costs rose at an annual rate of only 2.3 percent. This small increase reflects the slow gains in hourly compensation which have characterized the entire recovery period and the small productivity gain in the second quarter, as shown in chart 2.

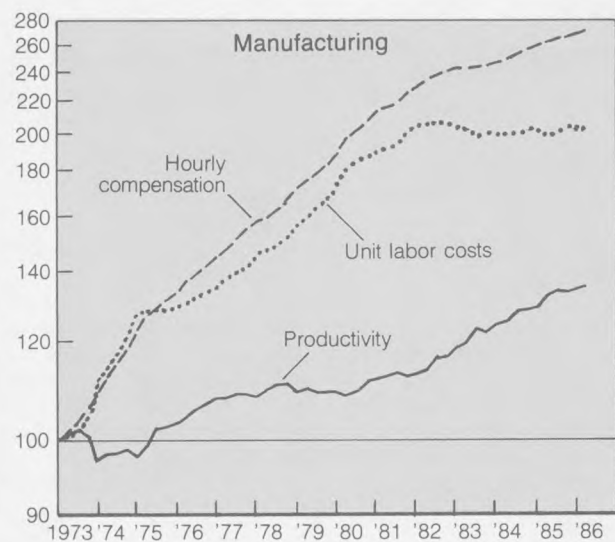
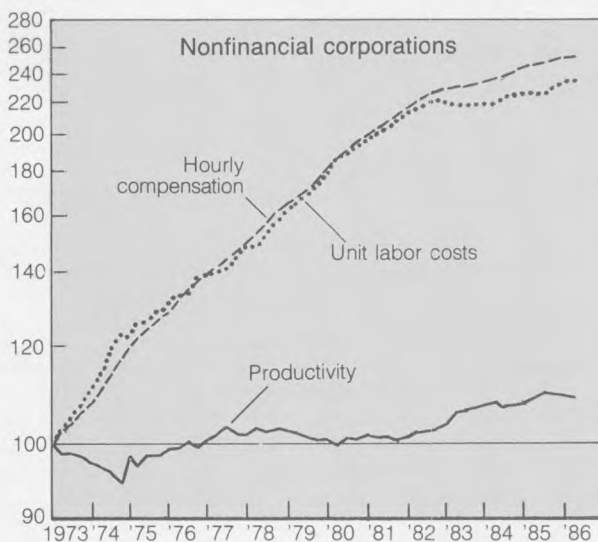
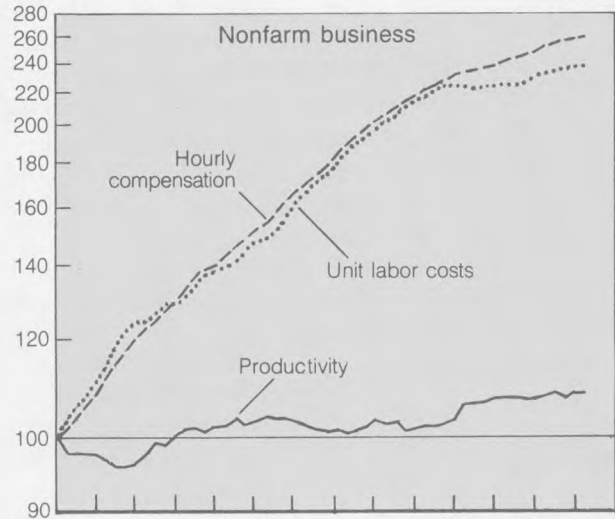
Business employment continued to grow during the second quarter of 1986, but the pace was slower than was typical for earlier quarters of the recovery. In all, over 9.5 million jobs have been added to business payrolls since the expansion phase of the business cycle began early in 1983. At 88.4 million, the business sector accounts for about 77 percent of U.S. employment.

Chart 2. Productivity and related measures in four major sectors of the economy, 1973–second quarter 1986

Ratio scale
(1st quarter = 100)



Ratio scale
(1st quarter = 100)



Nonfarm business. Productivity movements in nonfarm business are, of course, not affected by developments on farms, which are included in the more comprehensive business measure. Nonfarm productivity showed the same increase as the business measure in the second quarter. Output rose more than in the business sector, and hours posted a small rise. These were the smallest increases in nonfarm output and hours during the current expansion.

Hourly compensation increases in nonfarm business were modest in the second quarter, but the declining CPI-U resulted in the largest quarterly gain in real hourly compensation since 1983. Unit labor costs rose 1.8 percent, reflecting the small rise in productivity and moderate increase in hourly compensation.

Manufacturing. Although discussions of productivity often conjure up images of assembly-line production, manufacturing has long accounted for a small part of all business hours. Manufacturing hours—employment times average weekly hours—have declined from about one-third of business hours in the late 1960's to less than one-fourth presently. Over the same period, manufacturing output has fallen relatively little as a portion of business output—from 29 percent in 1969 to 27 percent in 1986—reflecting the relatively faster rate of productivity growth in manufacturing industries.

During the second quarter of 1986, the productivity advance that occurred in manufacturing resulted mainly from a decrease in hours. Paid hours of all persons engaged in both durable and nondurable goods manufacturing declined. Output was cut back by a smaller amount overall, so productivity rose. This was the first time that both manufacturing output and hours have declined since the recovery began.

Hourly compensation in manufacturing increased at a very modest 2.7-percent annual rate during second-quarter 1986. However, the decline in the CPI-U resulted in an increase in real hourly compensation that was larger than any

since 1982. Unit labor costs declined 0.5 percent in the second quarter.

The decline in manufacturing hours was accomplished through cutbacks in both employment and average weekly hours. Employment, which stood at 19.5 million in the second quarter, had grown by about 1.3 million jobs in the first eight quarters of the recovery, but then declined by about 300,000 over the next six quarters.

Nonfinancial corporations. Nonfinancial corporations experienced the third consecutive quarterly decrease in output per hour of all employees during the second quarter of 1986. This was also the first period since the fourth quarter of 1982 during which both output and hours declined. Hourly compensation increased only 1.6 percent, and this is reflected in the moderate 1.9-percent rise in unit labor costs during the period. Unit nonlabor costs—capital consumption allowances, interest, rental income of persons, and indirect business taxes—fell 2.7 percent, and unit profits rose at a 2.0-percent annual rate. The implicit price deflator, which reflects price movements in these costs and profits, rose 0.7 percent in the second quarter, the smallest increase since 1972.

The nonfinancial corporate sector includes all corporations doing business in the United States with the exception of banks, insurance companies, stock and commodities brokers, and finance and credit agencies. About 62 million jobs were provided by these corporations during the second quarter of 1986, 7.7 million more than at the start of the recovery.

Labor input trends. Payroll hours in the business sector have increased at a surprisingly rapid pace during the present recovery. But in manufacturing, growth in paid hours during the last 14 quarters has been slower than during previous long recoveries. This implies that nonmanufacturing firms have experienced very large hours increases during the period. □

—FOOTNOTES—

¹ The BLS labor productivity measures use labor input statistics derived primarily from two monthly BLS surveys, the Current Employment Statistics survey and the Current Population Survey. Output and compensation measures are based on quarterly data prepared by the Bureau of Economic Analysis, U.S. Department of Commerce, as part of the National Income and Product Accounts. For the most recent quarters, the manufacturing output measure reflects movements in the monthly index of industrial production for durable and nondurable manufactures prepared by the Board of Governors of the Federal Reserve System. Further information on the computation of BLS productivity and cost measures can be found in Chapter 13 of the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982).

² Business cycles are designated by the National Bureau of Economic

Research, a private economic research organization based in Cambridge, MA.

³ The business sector excludes only those components of gross national product (GNP) for which independent measures of output and labor input are unavailable and components of GNP for which no corresponding labor input measure is available. These are: general government, nonprofit institutions, paid employees of private households, the rental value of owner-occupied housing, the rest-of-the-world sector, and the statistical discrepancy in preparing the National Income and Product Accounts.

The nonfarm business sector is the business sector less farms. The farm sector currently accounts for about 3 percent of business hours.

⁴ Hourly compensation measures are divided by the seasonally-adjusted quarterly average of the monthly Consumer Price Index for All Urban Consumers.

Sensitivity of BLS economic projections to exogenous variables

The 1995 macroeconomic model has been most responsive to changes in fiscal spending and to changes in foreign economic activity; assumptions regarding energy have had little effect on the estimates

NORMAN C. SAUNDERS

The Bureau of Labor Statistics conducts a comprehensive program of aggregate and industry-level employment projections on a biennial basis.¹ Users of the projections should keep in mind that BLS (or others preparing similar projections) must make many assumptions regarding the behavior of factors which affect the future course of the U.S. economy. In addition, judgments are made about the response of the projections to these primary assumptions. In short, although projections preparation and the use of models in preparing the projections may appear precise and scientific, developing economic projections is very much an art filled with uncertainty.

The assumptions made by BLS cover a broad range, from those about which we may be reasonably certain to those which are not at all predictable. The role of the analyst in preparing projections is to exercise judgment with regard to reasonable expectations for the assumptions, particularly where alternate values may have significant impacts. That is, if a particular assumption is highly uncertain, yet has little impact on the outcome of the projections, it is important that the analysts make that known to the users. Conversely, if the projections are particularly sensitive to specific assumptions, more care must be taken in their preparation.

This article examines the assumptions which affect the aggregate economic projections and illustrates the degree of

sensitivity of the projections to possible errors in those assumptions.

Two types of assumptions are required to develop a set of aggregate economic projections. First, values must be assigned to all variables which are exogenous to the aggregate projections model, that is, variables that are not determined by the model but are required to generate a solution. They include such items as real defense expenditures, Social Security benefit payments, and the U.S. currency exchange rate. The second type of assumptions concern the validity of the model structure itself, as these are reflected in changes to that structure in the form of excluded variables, constant adjustments, and modifications to behavioral coefficients.

By their very nature, the first type of assumptions—exogenous variable specification—are the most visible inputs to the model and, also, the most amenable to sensitivity testing. The second type of assumptions are generally less visible, given that they (and their ultimate impact on the projections) are more a function of the projections preparation process. They include explicit assumptions such as expected structural shifts in the economy, the timing of the business cycle, and expectations for productivity growth. This type of assumption is far more difficult to assess for sensitivity purposes.

This article focuses primarily on the sensitivity of the macroeconomic projections (and, to a certain extent, industry-level employment measures) to changes in the aggregate model's exogenous inputs. First, the flow of information into and out of the macroeconomic model is outlined, fol-

Norman C. Saunders is an economist in the Office of Economic Growth and Employment Projections, Bureau of Labor Statistics.

lowed by a discussion of the results of the error analysis and an examination of the effects of large, sustained errors in the growth rates of selected exogenous assumptions on the aggregate and industry projections. Finally, the constant adjustments imposed on the model's behavioral relationships are discussed.

The flow of information

The projections process begins with the constrained extrapolation of age-, sex-, and race-specific labor force participation rates.² Applying the extrapolated participation rates to the Bureau of the Census projected population levels³ yields an estimate of the civilian labor force which is used in the aggregate model.

Next, exogenous assumptions are applied to the aggregate model. These assumptions include true policy variables (for example, benefit payments under various Federal transfer programs, the response of the monetary authority to growth in the economy, and the level of the Armed Forces), and variables for which other reliable and generally accepted projections are available, such as the population projections developed by the Bureau of the Census. Exogenous variables also include items which are outside the scope of the model, such as economic growth and inflation rates in the economies of the major trading partners of the United States, the long-term behavior of the U.S. dollar's exchange value, and energy prices.

The aggregate model is then used as a framework for the preparation of the projection of total U.S. economic activity.⁴ BLS analysts review the aggregate results for reasonableness, checking for internal consistency and continuity with past trends and comparing the results with projections made by others. Their review focuses on such aggregate measures of economic activity as GNP, unemployment, and productivity, but the model's framework ensures that other important measures of economic performance are not overlooked.

As for industry and occupational projections, the level and distribution of real GNP and employment, as well as several other aggregate variables, are the controlling factors from the aggregate projections model. Following is a summary of major inputs to and outputs from the aggregate projections model:

- Variables incorporated from earlier projection stages
 - Level of the Armed Forces
 - Labor force, age 16 and over, by sex
 - Resident population, all age groups, by sex
- Variables incorporated as part of the macroeconomic stage of the projections
 - Fiscal policy assumptions
 - Monetary policy assumptions
 - Foreign economic activity assumptions
 - Energy price and availability assumptions

- Variables passed from the macroeconomic model to later stages of the projections
 - Gross National Product
 - Personal Consumption Expenditures
 - Gross Private Domestic Investment
 - Exports
 - Imports
 - Government
 - Employment
 - Miscellaneous

The flow of information in the early stages of projection development is from the more aggregate to the more detailed. In the later stages, a less formal, but no less important, feedback occurs from the industry and occupational projections to the more aggregate level. Because of the review and feedback process, BLS projections converge to an internally consistent set of solutions at all levels of the estimation process.

Error analysis

The macroeconomic model used by BLS requires the values for 849 exogenous variables to generate a solution. Following is a breakdown by type of all variables and of the subset of those variables included in the subsequent analysis:

	<i>Total</i>	<i>Included in analysis</i>
Total	849	373
Fiscal	29	26
Income	40	40
Financial	18	18
Tax-related	161	146
Foreign activity	11	11
Demand-related	37	37
Energy	136	36
Technical input/output	170	0
Demographic	46	46
Miscellaneous	13	13
Model switches	188	0

Variables were excluded from consideration if they controlled program flow (model switches), accounted for extraordinary variability in historical data series (dummy variables), or were of a highly detailed industry-specific nature. A separate run of the model was performed for each of the 373 exogenous variables used.

The assumption was made that the underlying trend of each variable was correct for the 1985-95 period, but that the initial period estimate was in error by 10 percent. Thus, the exogenous value was increased by 10 percent in each year of the period, a model solution was generated, and the results were compared with the results of the base projection. Comparisons were made of those variables which are used at later stages of the projections—GNP and major demand components, employment, the unemployment rate,

Table 1. Difference between selected exogenous variables used to generate 1995 projections values as published and as generated by a 10-percent error
[In percent]

Exogenous variable	GNP, 1972 dollars	GNP, current dollars	Employment	Unemployment rate	Large time deposit rate
Fiscal:					
Defense purchases of goods and services, 1972 dollars	1.4	1.5	1.6	-1.4	-
Nondefense purchases, 1972 dollars	.4	.5	.5	-.5	-
Federal nondefense employment	-	.1	.1	-.1	-
Federal compensation/employee, 1972 dollars	-2	-2	-6	.5	-
Transfers, food stamps, 1972 dollars	-	-	-	-.1	-
Transfers, military retirement, 1972 dollars	.1	.2	.2	-.2	-
Transfers, medicare, 1972 dollars	.3	.5	.5	-.4	-
Transfers, Social Security, 1972 dollars	.8	.9	.9	-.9	.1
Transfers, all other, 1972 dollars	.2	.3	.3	-.2	-
State and local:					
Education purchases, 1972 dollars	.8	.9	1.1	-1.0	.1
Health, labor and welfare, 1972 dollars	.4	.4	.6	-.5	-
Civilian safety, 1972 dollars	.2	.2	.3	-.2	-
Other purchases, 1972 dollars	.7	.8	.9	-.8	.1
Education employment	-	.2	.3	-.2	-
Civilian safety employment	-	-	.1	-	-
Other employment	-	-	.2	-.2	-
Compensation/employee, 1972 dollars	-2	-1	-1.0	.9	-
Transfers to persons, 1972 dollars	.2	.3	.3	-.3	-
Foreign economic activity:					
World gross domestic product less U.S. and centrally-planned, 1972 dollars	1.4	1.1	1.4	-1.2	-.7
Major trading partner gross domestic product deflator	.1	.6	-.1	.1	.5
Major trading partner export deflator	1.5	2.0	1.6	-1.4	-.6
Major trading partner exchange rate index	1.5	2.9	1.6	-1.4	-.1
Energy-related:					
Domestic well-head price, lower 48 crude	-.1	.4	-.1	.1	-.3
Domestic well-head price, natural gas	-.1	.3	-	-	-.1
Barrel price, imported crude petroleum	-	.1	-	-	.1
Miscellaneous income:					
Depreciation rate, commercial and other	-2	.2	.9	-1.0	.3
Depreciation rate, food and kindred products	-	-	-	-.1	.3
Depreciation rate, mining	-	-	-	-.1	-
Depreciation rate, communications	-.4	-.2	-	-	-.6
Ratio, non-OASDHI contributions to personal income less transfers	-.2	-	-.2	.2	-.1
Percent of private earnings covered by Social Security	-1.0	.1	-1.2	1.2	-.2
Ratio, employee social insurance contributions to total contributions	-.1	-1.5	-.2	1.5	-.1
Business transfer payments, current dollars	-	-	-	-.1	-
Miscellaneous demand-related:					
Capacity value, new housing units	-	-.2	-	-	.2
Discard rate, residential one-unit structures	-	.1	-	-.1	.1
Ratio, purchases of new cars to total PCE	-.1	-.1	-.1	.1	-.1
Gasoline pump price, 1972 dollars/gallon	-	.2	-	-	-.2
Exports, factor income, 1972 dollars	.3	.6	.2	-.1	.1
Imports, factor income, 1972 dollars	-.3	-.5	-.1	.1	-
Demographic:					
Male labor force, age 16 and over	.9	1.1	1.2	3.8	-
Female labor force, age 16 and over	.7	.9	.9	3.2	-
Tax-related:					
Ratio, personal income of States with an income tax to total income	-.5	-.7	-.7	.6	-.1
Value of a standard deduction, average	.2	.3	.3	-.3	-
Value of an individual exemption	.2	.2	.2	-.2	-
Maximum taxable salary, OASDHI	-.1	-	-.1	.1	-
Indirect business tax rate	-.3	1.2	-.3	.2	-.1
Effective corporate tax rate	-.3	-.3	-.3	.2	-.2
Effective State personal income tax rate	-.5	-.7	-.7	.6	-.1
Combined OASDHI tax rate	-1.0	.1	-1.2	1.2	-.2
Personal tax alternatives:					
No indexation of rates (versus full indexing)	-8.8	-4.0	-3.5	3.3	-2.4
10-percent tax cut (across the board)	1.9	2.4	2.3	-2.1	.4
10-percent tax increase (across the board)	-1.7	-2.2	-2.2	2.0	-.1

GNP per labor hour, the inflation rate (as measured by the rate of change in the implicit price deflator for GNP), and the interest rate on large time deposits (the key interest rate in the macroeconomic model).

Table 1 shows the percent difference between the published moderate-growth projection values and those generated by the alternative solution. Also included is the absolute difference in the unemployment rate between the two

model solutions and the impact on the interest rate on large time deposits. Exogenous variables having insignificant impacts on these specific variables were not included in the table.

The macroeconomic model appears to be most sensitive to changes in fiscal policy assumptions, both revenues and expenditures, and to assumptions concerning foreign economic activity. Changes in assumptions regarding the en-

ergy sector, especially the barrel price of imported crude petroleum, have very little impact on the macroeconomic estimates passed along to later stages of the projections process.

To better analyze the effects of fiscal expenditure shifts on projections, the immediate and long-term multipliers for selected Federal and State and local government expenditure categories are shown in the following tabulation:

	<i>Immediate effect</i>	<i>11-year effect</i>
Federal:		
Defense spending	1.83	2.36
Nondefense spending	1.94	2.51
Military retirement	.71	1.83
Medicare benefits	1.56	1.97
Social Security benefits	.73	1.81
Other Federal transfers	.72	1.77
State and local:		
Education purchases	1.82	1.95
Health and welfare purchases	1.72	1.91
Civilian safety purchases	1.78	1.90
Other State and local purchases	1.76	1.89
Transfer payments	.72	1.53

Table 2 presents the absolute differences in the percent shares of GNP accounted for by the major demand components of GNP. As with the level of GNP and employment, the

significant impacts appear to be related primarily to fiscal policy and foreign economic activity assumption changes.

The macroeconomic model includes two types of monetary policy assumptions. The first includes many of the small components of the various definitions of the money supply. These assumptions affect only the determination of M1 (the narrow definition of the money supply) and M3 (the broadest definition of the money supply) and have no impact whatsoever on other sectors of the model.

The second type of monetary policy assumption is the "decision rule" used by the Federal Reserve Board to determine the optimal rate of growth of M2. In the macroeconomic model used by BLS, the decision rule is formulated as the willingness of the monetary authority to accommodate current levels of inflation and real growth in the current period. Choices range from fully accommodative (easy money) to the least accommodative (tight money).

Accommodation policies affect real and nominal GNP growth, employment and inflation growth, the interest rate on large time deposits, and the unemployment rate. The impacts are quite small, which is not particularly surprising in a model of this type. Monetary control, by its very nature, is a short-term phenomenon which depends on the dynamics of a detailed financial sector specification normally found only in the many short-term forecasting models available for the U.S. economy. Long-run determinants of potential

Table 2. Difference between the distribution of GNP in the 1995 projections values as published and as generated by alternate assumptions for exogenous variables

[In percent]

Exogenous variable	Personal Consumption Expenditures (PCE)			Investment			Foreign trade		Government	
	Durables	Nondurables	Services	Non-residential	Residential	Inventory change	Exports	Imports	Federal	State and local
Fiscal:										
Defense purchases, 1972 dollars	.16	-.09	-.22	.03	-.03	-.01	-.15	-.02	.47	-.14
Nondefense purchases, 1972 dollars	.05	-.02	-.06	-	-.01	-.01	-.04	-	.14	-.04
Medicare transfers, 1972 dollars	.02	-.01	.10	-	-.01	-	-.04	-	-.03	-.03
Social Security, 1972 dollars	.15	.09	.02	.03	-.01	-.01	-.09	-.05	-.06	-.08
State and local:										
Education, 1972 dollars	.10	-.07	-.14	-.02	-.02	-.01	-.09	-.01	-.06	.31
Health, 1972 dollars	.04	-.04	-.08	-	-.01	-.01	-.04	-	-.03	.16
Other, 1972 dollars	.08	-.06	-.12	-.02	-.02	-.01	-.08	-.01	-.05	.28
Compensation per employee, 1972 dollars	-.05	.01	.03	-.10	.03	.01	.01	.04	.01	.02
Foreign economic activity:										
World gross domestic product	.05	-.26	-.40	.14	-.05	-.01	.74	.02	-.10	-.14
Foreign export deflator	.06	-.27	-.39	.12	-.02	-.01	.37	.41	-.11	-.15
Exchange rate	.04	-.28	-.37	.07	-.02	-.01	.40	.44	-.11	-.16
Miscellaneous income:										
Social Security coverage	-.16	.07	.05	-.06	.04	.01	.04	-.02	.08	.11
Employee contribution rate	-.06	-.08	-.08	.02	-.03	-	.10	.10	.01	.01
Miscellaneous demand:										
Financial services, 1972 dollars	-.03	-.04	.07	-	-	-	-	-	-	-
Auto share of PCE	.29	-.11	-.09	-.03	-.01	-.01	.01	-.06	.01	.01
Gasoline pump price	-.03	.07	-.03	-	-	-.01	-.01	-.02	-	-.01
Factor income, exports	-	-.06	-.08	-.03	-.01	-.01	.22	-	-.02	-.03
Factor income, imports	-	.04	.07	.02	-	-	.03	-.21	.02	.03
Tax-related:										
State coverage ratio	-.10	-.07	-.01	-.02	-	-	.06	.04	.04	.06
Indirect business tax rate	-.03	.01	.08	-.04	.03	.01	-.03	-.07	.02	.03
Corporate tax rate	-.04	-	.03	-.10	.01	-	.03	.02	.02	.03
State tax rate	-.10	-.07	-.01	-.02	-	-	.06	.04	.04	.06
Combined OASDI rate	-.16	-.07	.05	-.06	.04	.01	.04	-.02	.08	.11

growth are generally understood to be more related to those factors which affect the trend path of demand growth, such as demographic factors and patterns in income growth. Thus, the monetary policy instruments, while useful in influencing the short-run behavior of the macroeconomic model, generally do not affect projections which focus on long-term growth.

Growth-rate shift analysis

The error analysis tests for the relative sensitivity of the macroeconomic model to sustained level shifts or errors in a specific exogenous variable. Some of the key assumptions, however, are subject to wide, relatively unpredictable fluctuations. To test the sensitivity of the model and projection results to unexpected fluctuations in the growth rates of selected exogenous variables, six exogenous variables were selected and two solutions were prepared for each, as follows:

- Defense purchases of goods and services (1972 dollars):
Variable unchanged, 1985–95 (no real growth).
Annual real growth of 5 percent.
- Federal nondefense purchases of goods and services (1972 dollars):
Variable unchanged, 1985–95 (no real growth).
Annual real growth of 5 percent.
- Federal transfer payments, Social Security benefits (1972 dollars):
Real average annual decline of 5 percent.
Real average annual increase of 5 percent.
- Gross domestic product, our major trading partners (1972 dollars):
Annual real growth of 1 percent.
Annual real growth of 5 percent.
- Average exchange rate index, our major trading partners:
No change, 1985–95 (value of the dollar remains constant over the period).
Annual growth of 8 percent (value of the dollar falls smoothly over the entire period).
- Price of imported crude petroleum:
Price declines to \$18 per barrel by 1988 and remains at that level thereafter.
Price declines to \$26 per barrel in 1986 then begins to increase again, reaching \$60 per barrel by 1995.

Table 3 shows the percent difference for each of the six exogenous variables and the associated impact on the major results of the aggregate model solutions.

The major demand components, for each of the 12 aggregate solutions, were allocated by producing sectors using the distributions implicit in the published BLS base projections. The resulting final demand bills of goods were applied to the 1995 input-output table from the same published projections to arrive at detailed estimates of industry total output necessary to produce the aggregate GNP. Finally, the industry output estimates were translated to employment

requirements using the employment/output ratios from the published base projections. The resulting percent changes in employment between the two alternative solutions for each of the selected exogenous variables are presented, at the sector level, in table 3.

The implications are that, at least for the selected variables, large errors in specification could lead to significantly altered results, at both the aggregate and industry levels of detail. In subsequent projections preparation, it would be worthwhile to develop such "single-variable" alternatives.

Add-factor analysis

For each behavioral relationship in the macroeconomic model, the analyst may specify adjustments to the constant term of the equation. These are called add-factors because they displace the result of the equation up or down by an additive amount. Constant adjustments may be applied in one or more years of the solution interval, may be constant, declining, or increasing over time, and, in short, allow for tremendous control by the analyst over the solution path and results of the model.

Normally, constant adjustments are initially specified for virtually every behavioral equation in a complex model to smooth the vagaries of individual equations and to force the model to reproduce the last few years of available historical data. These add-factors would then be tapered smoothly to a zero value at some point in the solution interval. Indeed, without this initial step, large economic models will generally be unable to converge on a solution at all.

Finally, to derive an acceptable solution, the analyst introduces modifications to exogenous values and further changes to the constant adjustment factors. In some cases, where the dynamics of the model make the effects of changes to constant adjustments unpredictable, the analyst may elect to exclude certain behavioral relationships. That is, the equation is "turned off" and exogenously specified values are supplied in place of the equation results. Once an acceptable solution has been derived, all of the add-factors are recomputed so that previously excluded variables may be included again in the solution set.

From the foregoing discussion, it is clear that an econometric model provides a convenient framework for a set of economic projections. However, the way that framework is fleshed out is, to a great extent, a reflection of the experiential judgments of the analysts preparing the projection. In fact, it has been estimated that as much as 70 percent of the content of a particular projection set is attributable to the judgments of the analyst and the remaining 30 percent to the formal structure of the econometric model.

The BLS 1995 projections process was begun with the Wharton control forecast of June 1984 as the starting point. Thus, the preliminary step of calibrating the constant adjustments had already been performed. However, to derive a reasonable trend projection of growth, BLS had to replace the Wharton exogenous variables with its own estimates, and, more importantly, to disentangle the Wharton constant ad-

justments which had been overlaid on the calibrating adjustments. One of the primary features of the Wharton forecast was that it contained a strong cyclical component, and many of the initial changes to the Wharton add-factors were necessitated by BLS' goal of a cycle-free trend projection.

A comparison of the Wharton constant adjustments was made with those of BLS for 106 behavioral relations in the model: 71 demand categories (all behaviorally determined components of real GNP), 33 employment levels (all behaviorally determined sectoral employment), and the male and female civilian labor force. Following is the number of behavioral relations where the constant adjustment as a proportion of the determined variable increased or decreased over time:

Equation	Increased	Decreased
Demand:		
BLS	37	34
Wharton	35	36
Employment:		
BLS	18	15
Wharton	10	23
Labor force:		
BLS	2	0
Wharton	2	0

The relation of the BLS constant adjustment to that in the Wharton control is shown below:

Equation	Larger	Smaller	Identical
Demand	39	21	11
Employment	24	4	5
Labor force	0	2	0

Exactly how one should interpret these comparisons is moot. Generally, the BLS add-factors are larger than those of Wharton. This may reflect a greater propensity on the part of BLS analysts to experiment with the structure of the model, or it may reflect the smoothing that BLS imposed on the macroeconomic results.

Recall that the BLS macroeconomic projections do not stand completely on their own merits. Where detailed results at lower levels of the projection process contradict the aggregate results, the aggregate projections are often modified to take into account these contradictions. This factor alone accounts for BLS' apparent tendency to more heavily add-factor the employment equations than does Wharton.

Conclusions and recommendations

The key results of the macroeconomic model are more heavily influenced by some exogenous assumptions than by others. These include Federal spending and tax policy and the assumptions relating to foreign economic activity. Perhaps far more important, but much less straightforward to quantify, are the impacts of model structure modifications, in the form of constant adjustments, on projection results.

Table 3. Effects of large changes in selected exogenous variables on major projected variables and sectoral employment as compared to those published for 1995
[In percent]

Item	Defense purchases	Nondefense purchases	Social Security benefits	Foreign gross domestic product	Exchange rate	Import oil price
Major projected variable						
Exogenous variable difference	62.9	62.9	172.1	37.8	115.9	233.3
Real GNP	6.5	2.3	5.3	5.4	12.6	-.7
1985-95 growth rate difference .....	.6	.2	.5	.5	1.1	.0
GNP deflator .....	.7	.4	.9	-.7	9.1	1.3
1985-95 growth rate difference .....	.1	.0	.1	.0	.8	.1
Employment	6.5	2.5	5.3	4.2	10.0	-.6
1985-95 growth rate difference .....	.6	.2	.5	.4	.9	.0
Unemployment rate difference	-5.6	-2.2	-4.7	-3.6	-8.5	.5
Large time deposit rate difference .....	.36	.16	.36	.06	1.99	.16
GNP per worker, 1985-95 rate difference .....	.0	.0	.0	.0	.2	.0
Sectoral employment						
Total establishment employment	6.3	2.0	6.7	5.2	12.0	-.6
Agriculture, forestry, and fisheries	2.6	1.2	4.2	8.3	18.5	-.3
Mining	5.8	1.5	4.2	9.9	42.4	-1.8
Maintenance and repair construction	5.6	1.4	3.5	3.1	8.2	-.4
Manufacturing	9.7	2.1	6.2	9.5	25.7	-.8
Transportation	7.7	1.9	6.4	7.0	15.7	-.8
Communications	5.7	1.8	6.5	5.1	11.0	-.5
Public utilities	6.8	2.2	8.6	4.8	13.6	-.1
Wholesale and retail trade	6.4	2.2	8.7	4.6	7.7	-.7
Finance, insurance, and real estate	3.8	1.5	6.0	2.8	7.1	-.3
Other services	5.1	2.1	6.0	3.2	7.8	-.3
Government enterprises	5.7	1.7	6.7	4.1	9.7	-.8
Special industries	3.9	1.8	5.2	2.5	5.9	-.8

BLS' current methodology is to prepare a base projection and several alternative projections. The purpose of the alternative projections has been primarily to put confidence intervals around the base projection. This approach should continue, with special focus on those variables most heavily add-factored in the preparation of the base projection.

What BLS methodology has been lacking, however, is the identification and exploration of alternatives around those exogenous assumptions which most heavily impact the key

macroeconomic results. Therefore, in addition to the alternative projections mentioned above, the foregoing results should be used to identify those specific exogenous assumptions for which alternative scenarios should be developed. Such "single-variable" alternatives would be relatively inexpensive to generate (relative to "whole-model" alternatives) and would add greatly to the usefulness of the BLS projections, in that they would assist users in identifying results which are most likely to be affected by unexpected developments in key assumptions. □

—FOOTNOTES—

¹ The BLS projections are initially published in the *Monthly Labor Review*. The latest series of projections articles, appearing in the November 1985 *Review*, include: Betty W. Su, "The economic outlook to 1995: new assumptions and projections," pp. 3-16; Howard N Fullerton, Jr., "The 1995 labor force: BLS' latest projections," pp. 17-25; Valerie A. Personick, "A second look at industry output and employment trends through 1995," pp. 26-41; and George T. Silvestri and John M. Lukasiewicz, "Occupational employment projections: the 1984-95 outlook," pp. 42-57.

² A comprehensive methodological description, along with reprints of the latest projection articles and more detailed projection results, appears in *Employment Projections for 1995: Data and Methods*, Bulletin 2253

(Bureau of Labor Statistics, 1986).

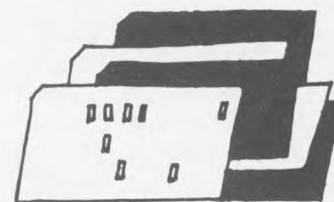
³ *Projections of the Population of the United States: 1983 to 2080, Current Population Reports, Series P-25, No. 952* (Bureau of the Census, 1984).

⁴ The aggregate economic model currently in use by the BLS was acquired as the result of a competitive procurement process. It is the Long-Term Model of the U.S. Economy developed by the Wharton Econometric Associates, Inc., version LTM0684S. The general structure of the model is fully outlined in *Long-Term Model Structure and Specification* (Wharton Econometrics, 1982).

A note on communications

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

Research Summaries



Women veterans total 1 million in first half of 1986

MARIA L. ROCA

A large portion of our male population has served in the Armed Forces of the United States, and there has long been a demand for information on their post-service adjustment to the civilian labor market. Data on male veterans of World War II, for example, were published regularly by BLS in the 1940's and 1950's,¹ and population and labor force data on those who served during the Vietnam era have been published monthly since 1971. By contrast, women did not begin to serve in the Armed Forces to a significant degree until the mid-1970's. With this rise in service participation, there has been an increase in the number of women joining the veteran ranks. Beginning in January 1986, data on female veterans first became available from the Current Population Survey (CPS). This report discusses the current role of women in the military services and provides a summary of the new CPS data.

Women in the military. Women began active participation in the military during the early part of this century, with the establishment of the Army Nurse Corps in 1901 and the Navy Nurse Corps 7 years later. But, while they were recognized as military personnel, these women were denied equal rank, comparable pay, and veteran status.² It was not until the second half of the century that they began to be recruited in large numbers for a wider range of jobs providing equal pay and full veterans' benefits.

Women in the military today find a broad range of job opportunities available to them. Though many continue to serve in such traditional specialties as health and administration, others work in such diverse fields as sonar and aircraft equipment repair, radio and air traffic control, law enforcement, and meteorology. While each service has its own regulations, the only occupational restrictions women generally encounter in the military are those associated with direct combat, and so very few serve in the infantry, on gun crews, and on combat ships.³

In March 1986, the Department of Defense reported that

Maria L. Roca is an economist in the Division of Employment and Unemployment Analysis, Office of Employment and Unemployment Statistics, Bureau of Labor Statistics.

there were 215,000 women in the military, comprising approximately 10 percent of the total Armed Forces. In the post-Vietnam era (since 1975), the number of enlisted women has increased by 100,150 and the number of female officers by 17,200—or by 120 and 126 percent, respectively.⁴ Over this same period, the size of the total Armed Forces has changed little.

The new data. Given the small sample of female veterans in the CPS, the new data allow for little analysis of such issues as post-service employment and unemployment experience. Nevertheless, the accompanying tables provide limited labor force and population data for the average of the first 6 months of 1986; 6-month averages were used because they are somewhat more reliable than data for an individual month.

During the first half of 1986, the female veteran population averaged 1,030,000. (See table 1.) About 55 percent of these women participated in the labor force, the same proportion as for female nonveterans. The majority of female veterans served during a designated wartime period: almost 250,000 were Vietnam-era veterans, 70 percent of whom were between the ages of 30 and 39. (See table 2.) The labor force participation rate for these veterans, almost 80 percent, was higher than that of any age group of female nonveterans. The unemployed among this group averaged only 9,000 persons, yielding a jobless rate of about 5 percent. However, the sample on which such estimates are based is so small that any interpretation of these data is problematic.

About 450,000 women were veterans of other wars. These women were primarily involved in World War II and the Korean conflict and thus were mainly between the ages of 60 and 69. Because of this concentration in the older age

Table 1. Labor force status of women 18 years and over by veteran status, January-June 1986 averages

[Numbers in thousands]

Veteran status	Civilian noninstitutional population	Civilian labor force	Labor force participation rate
Total veterans	1,027	562	54.7
Vietnam-era veterans	245	193	78.8
Other war veterans	452	135	29.9
Peacetime veterans	330	234	71.0
Nonveterans	93,504	51,244	54.8

Table 2. Age distribution of the female population 18 years and over by veteran status, January-June 1986 averages

Age	Veterans			Non-veterans
	Vietnam-era veterans	Other war veterans	Peace-time veterans	
Total (in thousands)	245	452	330	93,504
Total (in percent)	100.0	100.0	100.0	100.0
18 to 29 years	4.5	—	52.7	26.2
30 to 39 years	69.7	—	22.1	20.7
40 to 49 years	20.0	0.9	16.4	14.1
50 to 59 years	3.3	20.4	5.2	12.2
60 to 69 years	1.2	63.1	1.2	11.5
70 years and over	1.2	15.9	2.4	11.5

groups, the labor force participation rate for "other" war veterans is relatively low, about 30 percent.

The last group identified through the survey was peacetime veterans, generally those who served between World War II and the Korean conflict, between the Korean conflict and Vietnam, and during the post-Vietnam era. In early 1986, there were 330,000 peacetime veterans, 71 percent of whom were labor force participants.

The Bureau of Labor Statistics will make the data on female veterans available upon request. □

—FOOTNOTES—

¹ See, for example, *Labor Force and Employment in 1959*, Special Labor Force Report No. 4 (Bureau of Labor Statistics, 1960), p. A-11.

² *Survey of Female Veterans* (Veterans' Administration, September 1985), p. 1.

³ *Military Women in the Department of Defense* (U.S. Department of Defense, April 1985), p. 47.

⁴ Data are from the U.S. Department of Defense, Defense Manpower Data Center.

Military and civilian wives: update on the labor force gap

HOWARD V. HAYGHE

In an era when wives' earnings are a major component of family income, many military wives experience labor market difficulties which can have a serious impact on the economic well-being of their families. This, in turn, can affect the ability of today's all-volunteer Armed Forces to retain the highly skilled, experienced personnel that are vital to its mission.

This report updates a 1981 *Monthly Labor Review* article

Howard V. Hayghe is an economist in the Division of Employment and Unemployment Analysis, Office of Employment and Unemployment Statistics, Bureau of Labor Statistics.

comparing the labor force patterns of military and civilian wives.¹ The recent situation is described first and is followed by a review of trends since 1970.

Status in March 1986

About 846,000 women in the United States were living on or off military posts with husbands who were members of the Armed Forces in March 1986. An additional 50,000 women were separated from their spouses because the men had been assigned to ships, overseas duty, or other posts where the family could not accompany them.²

Of the women living with their husbands 52 percent were working or looking for work, compared with 55 percent of civilian wives. However, this similarity is misleading. When the age difference between military and civilian wives is taken into account, military wives are substantially less likely to be in the labor force.

The age distribution of military wives can be estimated from that of their husbands. We know that, in general, women tend to marry men who are about 2 to 3 years older than themselves. In 1986, for example, the median age for married women, husband present, was 42.1 years, compared with a median of 44.8 years for husbands. As shown in the percent distribution below, husbands in military services are a great deal younger than their civilian counterparts.

Age	Military husbands	Civilian husbands	All wives
Total	100	100	100
16 to 19	2	—	—
20 to 24	17	4	7
25 to 34	49	23	26
35 to 44	26	23	23
45 and over	6	50	44

Thus, it can be expected that as a group, military wives are also considerably younger than all civilian wives. Indeed, virtually all are probably under 45 years of age. For the sake of consistency, labor force comparisons for military wives will be made with all wives 16 to 44 years old. (The proportion of military wives is only about 2.9 percent of all married women these ages, so their effect on labor force data pertaining to all 16- to 44-year-old wives is clearly negligible. Thus, all wives in the age group can be considered as the civilian counterparts of military wives.)

Overall, the labor force participation rate of military wives (52 percent) was nearly 15 percentage points lower than that of their civilian counterparts. Moreover, whatever their race or motherhood status, military wives were less likely than the 16- to 44-year-olds to be labor force participants. (See table 1.) For instance, white military wives had a participation rate in 1986 that was 18 percentage points lower than the rate for their civilian counterparts. Among blacks, the difference was about 11 percentage points. The presence of preschool children appeared to limit military wives' labor force activity more sharply than that of the

Table 1. Population and labor force participation rates of military and civilian wives by race and presence and age of children, March 1986
[Numbers in thousands]

Characteristic	Military wives, 16 years and older	Civilian wives, 16 years and older	All wives, 16 to 44 years old
Population			
Total	846	50,132	29,228
White	669	45,285	25,967
Black	138	3,570	2,213
With no children under age 18 ..	221	26,100	7,079
With children under age 18	625	24,032	22,150
Children ages 6 to 17 only	216	12,499	10,027
Children under age 6	409	11,533	12,123
Labor force participation rate¹			
Total	52.1	54.6	66.9
White	48.1	53.6	66.1
Black	65.9	64.3	77.1
With no children under age 18 ..	68.3	48.0	82.6
With children under age 18	46.4	61.8	61.8
Children ages 6 to 17 only	66.2	68.5	71.4
Children under age 6	35.7	54.5	53.9

¹ Labor force as a percent of population.
NOTE: Because of rounding, sums of individual cells may not equal totals.

other group of wives with children that age, but the difference narrowed for those with school-age children. However, even when there were no children in the family, the military wives' participation rate was lower.

Unemployment rates were higher across the board for military wives than for the other wives—10.7 versus 6.0 percent. This is partly a function of the black-white mix as well as greater family mobility; black wives constituted 16 percent of the total, versus 8 percent of all civilian wives.

When employed, military wives are more concentrated in sales and service occupations than civilian wives. About 35 percent of military wives held such jobs in March 1986, compared with 27 percent of civilian wives. At the same time, military wives were less likely to be in professional specialty jobs—12 versus 16 percent. Service and sales jobs frequently offer the flexibility of part-time employment, do not necessarily require specialized training, and are often typified by high employee turnover. Hence, even though they are characterized by low earnings,³ they are probably easier for military wives to obtain than other jobs, for which longer-term commitments are often expected.

Trends

The relatively low labor force participation rates of military wives are not a new development. In 1970, shortly after the Bureau of Labor Statistics first tabulated data for this group, 31 percent of military wives were working or looking for work. In contrast, 44 percent of their civilian counterparts were in the labor force. Since then, the rates for both groups have increased by a little more than 20 percentage points. Thus, by 1986, the rates were 52 percent for military wives and 67 percent for the other wives—practically the same difference as in 1970.

While the participation rates for civilian wives advanced steadily over the period, the trend for military wives was erratic. In addition to the demographic, economic, and social factors that influence the labor force activity of both civilian and military wives,⁴ the rates for military wives are also likely to be affected by changes in the flows of enlistments, transfers, and discharges of their husbands. This may also partly account for the erratic movements in military wives' unemployment rates.

Table 2. Labor force and unemployment rates of military and civilian wives, March 1970 to March 1986

Year	Labor force participation rate ¹			Unemployment rate ²		
	Military wives, 16 years and older	Civilian wives, 16 years and older	All wives, 16 to 44 years old	Military wives, 16 years and older	Civilian wives, 16 years and older	All wives, 16 to 44 years old
1970	30.5	41.2	43.7	13.0	4.5	5.7
1971	27.2	41.1	44.0	10.4	5.7	7.3
1972	26.8	41.9	45.3	10.0	5.2	6.4
1973	33.3	42.5	47.5	13.1	4.4	5.3
1974	36.3	43.3	48.9	12.4	4.5	5.8
1975	39.3	44.6	51.1	16.3	8.3	10.0
1976	38.0	45.3	52.1	12.7	7.0	8.4
1977	38.2	46.8	54.7	18.0	6.6	7.8
1978	46.6	47.7	56.3	16.5	4.9	6.2
1979	50.2	49.4	58.7	11.8	4.9	5.9
1980	50.6	50.2	60.3	10.9	5.1	6.2
1981	50.7	51.1	61.6	8.0	5.6	6.8
1982	51.9	51.3	62.4	13.5	6.9	8.1
1983	47.6	51.9	63.4	17.2	6.9	8.2
1984	50.6	53.0	64.5	16.9	5.4	6.7
1985	52.1	54.4	66.3	17.8	5.5	6.3
1986	52.1	54.6	66.9	10.7	5.2	6.0

¹ Labor force as percent of population.
² Unemployed as percent of labor force.
NOTE: Data are not seasonally adjusted.

Clearly, military wives have made considerable progress in the labor market. But a number of articles and studies indicate that frequent transfers of their husbands place many military wives at a labor market disadvantage. It has long been known that high mobility means frequent breaks in the wife's employment or education and training.⁵ One result is that her opportunities to develop a marketable career are disrupted; another is that she must search for jobs in unfamiliar geographic areas. Moreover, the concomitant lack of experience, training, and seniority may result in lower earnings for military wives.⁶ They may also experience some job discrimination because of the likelihood that they will not remain with an employer for very long.⁷ But, whatever the cause, or causes, of military wives' labor market problems, these problems continue to be a source of concern not only to the families themselves, but also to the Armed Services as a whole. □

—FOOTNOTES—

¹ See Allyson Sherman Grossman, "The employment situation for military wives," *Monthly Labor Review*, February 1981, pp. 60–64.

² The information in this research summary is based on data collected in the Current Population Survey in March 1986 and in March of prior years. The Current Population Survey is a monthly survey with a sample that presently includes about 59,500 households in the 50 States and the District of Columbia. The survey is conducted for the Bureau of Labor Statistics by the Bureau of the Census and provides comprehensive data on the labor force by a wide variety of demographic characteristics, including family status. For further information, see *BLS Handbook of Methods, Volume I*, Bulletin 2134–1, pp. 3–12.

³ See, for example, "Weekly Earnings of Wage and Salary Workers: Third Quarter," BLS News Release, Oct. 1985, table 3.

⁴ See Hilda Kahne and Andrew Kohen, "Economic Perspectives on the Roles of Women in the American Economy," *Journal of Economic Literature*, December 1975, pp. 1249–92.

⁵ See Ruth Chaskel, "Effect of Mobility on Family Life," *Social Work*, vol. 9, October 1964, pp. 83–91; Elizabeth Finlayson, "A Study of the Wife of the Army Officer: Her Academic and Career Preparation, Her Current Employment and Volunteer Services," in McCubbin and others, eds., *Families in the Military* (Beverly Hills, CA, Sage Publications, 1976), ch. 1.; Judy Pearson, *Testimony on Transferability of GI Bill* (Arlington, VA, Military Wives Association, October 1981).

⁶ See "Relative Spouse Earnings," *Pay Adequacy Study* (Department of Defense, 1979), appendix C.

⁷ See Helga M. Parks, "Survey of Job Discrimination Against Military Wives," unpublished manuscript (Springfield, VA, Military Family Resource Center, February 1983).

Occupational pay in textile dyeing and finishing plants

Production and related workers in the textile dyeing and finishing industry averaged \$6.67 an hour in June 1985, according to a study by the Bureau of Labor Statistics.¹ Regionally, average hourly earnings were highest in New

England (\$7.67) and lowest in the Southeast (\$6.42), where three-fourths of the 36,300 production workers were employed. The Middle Atlantic States, employing one-tenth of the workers, recorded \$7.27 an hour. (See table 1.)

Wages in mills processing textiles for their own account averaged virtually the same as mills processing materials for customers on a commission basis (textiles owned by others), \$6.67 and \$6.68, respectively. Employment was equally divided between these two types of finishers.

Pay in mills primarily processing manmade textiles—seven-tenths of the work force—averaged \$6.83 an hour, 6 percent more than the \$6.42 recorded among cotton textile processors. Within both of these groups, pay nearly always averaged more per hour in fabric mills than in yarn or thread mills.

Pay levels also were compared by type of area, size of establishment, and labor-management contract coverage. Average hourly earnings were 11 percent higher in metropolitan areas² than in nonmetropolitan areas (\$7.10 versus \$6.39). Pay in plants with at least 500 employees averaged \$6.84 an hour, the same as in plants with 250 to 499 employees, but was higher than in plants with 50–249 employees (\$6.45 an hour). In establishments where a majority of the workers were covered by labor-management agreements, pay averaged \$7.57 an hour, 19 percent more than the \$6.35 in nonunion establishments. Regionally, the pay advantage for production workers in union establishments was 5 percent in the Southeast, 15 percent in New England, and 48 percent in the Middle Atlantic region.

Forty occupations, accounting for nearly three-fifths of the production workers, were selected to represent the industry's wage structure, workers' skills and manufacturing operations. Pay levels among these jobs ranged from \$5.63 an hour for janitors, porters, and cleaners, to \$9.71 for machine printers. Tenders of cloth-dyeing machines, numerically the largest job studied separately, averaged \$6.92 an hour. Occupational pay levels varied by pay determining characteristics such as region, type of textile processed, size of establishment, and union contract status; the interrelationships among these factors, however, were not taken into account when tabulating the data.

Virtually all production workers were in establishments providing paid holidays, paid vacations, and at least part of the cost of various health and insurance plans. Seven to 10 holidays annually were typical, as were 1 to 4 weeks of vacation pay, depending on years of service.

Retirement pension plans (in addition to Social Security) covered approximately three-fourths of the work force, while retirement severance plans applied to nearly one-tenth. Employers typically paid the entire cost of these retirement plans.

One-fourth of the workers were employed in establishments having collective bargaining agreements covering a majority of the production workers. Regionally, the proportions were one-tenth in the Southeast, seven-tenths in the

Table 1. Average hourly earnings¹ in textile dyeing and finishing plants, United States and selected regions,² June 1985

Characteristic	United States ³	New England	Middle Atlantic	Southeast
All production workers	\$6.67	\$7.67	\$7.27	\$ 6.42
Type of finisher:				
Commission mill	6.68	7.58	7.54	6.00
For own account	6.67	8.03	5.31	6.65
Type of textile:				
Cotton ³	6.42	7.71	6.35	6.18
Broadwoven	6.44	7.37	6.86	6.19
Yarn or thread	6.11	—	—	6.11
Manmade ³	6.83	7.66	7.85	6.56
Broadwoven	6.92	7.66	8.10	6.62
Yarn or thread	5.51	—	—	5.47
Type of area:				
Metropolitan areas ⁴	7.10	7.67	7.40	6.55
Nonmetropolitan areas	6.39	—	—	6.39
Size of establishment:				
50-249 workers	6.45	7.55	7.26	5.69
250-499 workers	6.84	7.95	—	6.65
500 workers or more	6.84	—	—	6.84
Labor-management contracts:				
Establishments with—				
Majority of workers covered	7.57	7.87	8.06	6.74
None or minority of workers covered	6.35	6.87	5.43	6.39
Selected production occupations:				
Color mixers	7.12	7.79	8.44	6.74
Dyeing-machine tenders, cloth	6.92	7.40	7.85	6.32
Finishing-range operators	6.61	7.70	6.32	6.31
Inspectors, cloth, machine	6.44	6.71	7.89	6.29
Janitors, porters, and cleaners	5.63	6.71	7.75	5.26
Mechanics (machinery), maintenance	8.32	8.39	9.73	8.25
Power-truck operators	6.07	7.09	—	5.97
Printers, machine	9.71	—	7.37	10.50
Tenter-frame tenders	6.88	6.90	7.76	6.27
Winders, yarn	5.66	—	5.12	5.73

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, such as those resulting from piecework or production bonus systems, and cost-of-living pay increases (but not bonuses) were included as part of the workers' regular pay. Excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or yearend bonuses, and other nonproduction bonuses.

² The regions used in this study include: *New England*—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; *Middle Atlantic*—New Jersey, New York, and Penn-

sylvania; and *Southeast*—Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

³ Includes data for subclassifications in addition to those shown separately.

⁴ Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget through June 1983.

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

Middle Atlantic, and four-fifths in New England. The major union in the industry was the Amalgamated Clothing and Textile Workers Union (AFL-CIO).

A comprehensive bulletin on the study, *Industry Wage Survey: Textile Dyeing and Finishing, June 1985*, BLS Bulletin 2260, may be purchased from the Bureau of Labor Statistics Publication Sales Center, P.O. Box 2145, Chicago, IL 60690, or the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. The bulletin provides additional information on occupational pay and on the incidence of employee benefits. The study covered 223 establishments primarily engaged in dye-

ing and finishing nonwool yarn, thread, cloth, or other textile products and employing 50 workers or more. □

— FOOTNOTES —

¹ Wage data are straight-time earnings which exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, such as those resulting from piecework or production bonus systems, and cost-of-living pay increases (but not bonuses) were included as part of the workers' regular pay. Excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or yearend bonuses, and other nonproduction bonuses.

² Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget through June 1983.

Major Agreements Expiring Next Month

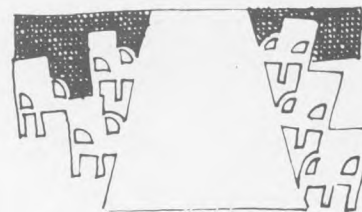


This list of selected collective bargaining agreements expiring in January is based on information collected by the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification.

Industry or activity	Employer and location	Labor organization ¹	Number of workers
Private			
Construction	National Electrical Contractors Association, Northwest Line Constructors (Interstate)	Electrical Workers (IBEW)	1,200
	Associated General Contractors, Cincinnati Division Ohio Building Chapter and one other (Ohio)	Carpenters	2,800
Food products	Wholesale, retail bread and cake bakeries (New York, NY)	Bakery, Confectionery and Tobacco Workers	3,000
	Chef Boy-Ar-Dee, division of American Home Foods (Milton, PA)	Food and Commercial Workers	1,350
	Bryan Foods Inc. (West Point, MS)	Food and Commercial Workers	1,200
	Del Monte Corp., Midwest Division (Illinois)	Retail, Wholesale and Department Store	1,200
Textiles	Erwin Mills (Erwin, NC)	Clothing and Textile Workers	1,150
Stone, clay, and glass products	Corning Glass Works (Corning, NY)	Flint Glass Workers	3,500
Primary metals	Blaw Knox Foundry & Mill Machinery, Inc. (Interstate)	Steelworkers	1,500
Electrical products	Litton Industries, Inc. (Sioux Falls, SD)	Electrical Workers (UE-Ind.)	2,100
Transportation equipment	United Technologies Corp. (West Palm Beach, FL)	Machinists	1,300
	Dana Corp., Spicer Axle Division (Ft. Wayne, IN)	Industrial Workers	1,650
Air transportation	Western Airlines, flight attendants (Interstate)	Flight Attendants	2,300
	Western Airlines, clerks and agents (Interstate)	Air Transport Employees	4,500
	Western Airlines, ground service (Interstate)	Teamsters (Ind.)	1,600
Communication	General Telephone Co. of Wisconsin (Wisconsin)	Communications Workers	1,250
Utilities	Boston Gas Co. (Boston, MA)	Steelworkers	1,000
	Utah Power & Light Co. (Interstate)	Electrical Workers (IBEW)	3,800
Wholesale trade	Associated Produce Dealers & Brokers of Los Angeles (California)	Teamsters (Ind.)	1,900
Retail trade	Acme Markets, Inc. (Philadelphia, PA)	Food and Commercial Workers	5,000
	Acme Markets, Inc. (New Jersey)	Food and Commercial Workers	2,700
	Acme Markets, Inc. (Delaware)	Food and Commercial Workers	1,250
Real estate	Midtown Realty Owners Association, Inc.	Service Employees	2,500
Public			
Education	Michigan: Detroit Board of Education, office	Educational Office Employees	1,800
	Detroit Board of Education, maintenance, custodial, transportation	State, County and Municipal Employees	2,400
	Detroit Board of Education, paraprofessional	Detroit Association of Educational Employees	1,400

¹ Affiliated with AFL-CIO except where noted as Independent (Ind.).

Developments in Industrial Relations



Health insurance extended to the unemployed

Employees and their dependents gained additional health insurance protection in 1986 under provisions of the Consolidated Omnibus Budget Reconciliation Act of 1985 (Public Law 99-272). Under the Act, employers with more than 20 employees who offer group health insurance must continue coverage for up to 18 months for workers who are laid off or quit, and for up to 36 months for widows and divorced spouses and their dependents. Employers generally criticized the provisions, even though the cost of the mandated coverage, and a 2-percent administration fee, must be borne by the beneficiaries.

The employers contend that it will be difficult and expensive to keep track of former employees, particularly in high turnover industries. They also maintain that premiums will be driven up because persons with chronic medical problems will tend to retain coverage. Another problem, according to critics, is that some people will not continue coverage, but will initiate coverage if they suffer a health problem. The law provides for retroactive coverage if the employer receives the first premium within 105 days after an applicant indicates he or she intends to join the plan.

Proponents of the coverage extension say it is vital to help reduce the number of people not protected by health insurance, estimated to be between 30 and 37 million.

NLRB upholds safety complaint ruling

In a 3-0 decision, the National Labor Relations Board affirmed its 1984 ruling that an employer was justified in firing an employee who acted alone in refusing to drive a company truck he deemed unsafe. In its 1986 opinion, the Board said the employee's action would have been warranted if it was "concerted" or "engaged in with or on the authority of other employees, and not solely by and on behalf of the employee himself."

In the 1984 decision, the Board had reversed the precedent it had established in a 1975 case in which it had expanded the definition of "concerted activity" by ordering the reinstatement of a maintenance worker who was fired after he acted alone in filing a safety complaint with a State

agency. On appeal, a Federal district court had reversed the 1984 decision and returned it to the Board for reconsideration. In its finding, the district court said that the Board had "misconstrued the bounds of the law," which is intended to protect workers who act to protect themselves on the job.

The attorney for Kenneth Prill, the fired truck driver, said the Board's 1986 decision would be appealed. The employer involved is Meyers Industries, a boat manufacturer located in Tecumseh, MI.

Boston University faculty cannot bargain

The National Labor Relations Board upheld a hearing examiner's finding that department heads and full-time faculty at Boston University are managerial employees and therefore not entitled to bargain collectively. In its 4-0 ruling, the Board said "the faculty has absolute authority over such matters as grading, teaching methods, graduation requirements and student discipline." The Board also said that the teachers also play "an effective and determinative role" in recommending faculty hiring, tenure, promotions, and reappointments. The ruling was based on a 1980 Supreme Court decision that full-time faculty members at Yeshiva University were not covered by the National Labor Relations Act because they had managerial duties.

Ann Franke, associate counsel of the American Association of University Professors, called the decision "another precedent that administrations will find extremely useful in justifying a refusal to bargain." She said the Association was considering an appeal of the decision and that future rulings in such cases will hinge on the extent of faculty involvement in school management. The decision does not prohibit faculty members from joining unions or associations such as the American Association of University Professors, which has had a chapter at Boston University since 1975.

Catfish processors vote for union representation

The Food and Commercial Workers claimed a major victory in its 7-year organizing campaign in Mississippi after winning a representation election at Delta Catfish Processors' plant in Indianola. About 925 of the company's 1,050 employees were eligible to vote in the National Labor Relations Board election. The tally was 489-349 in favor of the union. More than 2,000 workers in the State are employed in the catfish processing industry, of which Delta is the largest employer.

"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.

At the time of the election, the union was negotiating with Farm Fresh Catfish in Hollandale on an initial contract for 200 workers it organized in 1985.

The organizing drive, which has also included other types of industries in the State, has also encountered some setbacks. The latest came in August, when workers at Con-Agra's catfish plant in Isola rejected union representation by a 162-to-119 vote.

During the representation drive at Delta Catfish, the Food and Commercial Workers contended that the employees were underpaid, averaging \$3.90 an hour, did not have paid sick leave or adequate health insurance, and were subject to excessive discipline. The company maintained that the employees did not "need a third party to speak for them because our company and our employees will work out any problems we might have."

Winery workers accept previously rejected pact

A 7-week strike against 11 of California's largest wineries ended when the employers threatened to hire permanent replacements for the 2,200 striking workers. The strike occurred during the critical grape-crushing season, but the wineries maintained normal production using supervisory employees, temporary replacements, and some returning strikers, according to an official of the California Winery Employers Association.

George J. Orlando, President of the Distillery, Wine and Allied Workers union, said that employee acceptance of the "final offer" they had turned down 5 days earlier resulted from "the understandable fear that remaining on the picket line would result in the loss of their jobs."

The settlement provided for an immediate cut of 50 cents an hour in pay, which ranged from \$6.34 to \$15.54 according to the Association, and averaged \$10.75 according to the union. There also was a 25-cent-an-hour cut in the employers' financing of pensions, and an increase in the annual individual deductible under the health insurance plan.

In another important change, the agreement will run to March 31, 1991, diminishing the impact of a possible strike because it will occur prior to the grape-crushing period. The previous contract expired on July 31, 1986.

The Association said the compensation cuts accepted by the employees were needed to help the wineries compete with increased imports and with a growing number of nonunion lower cost producers.

Timken steelworkers take pay cut

A recent United Steelworkers settlement providing for cuts in compensation involved 6,000 employees of Timken Co. plants in Canton, Columbus, and Wooster, OH. Timken, which makes roller bearings as well as steel, had traditionally followed the settlement pattern set by the other companies bargaining as the Coordinating Committee Steel Com-

panies. This was not possible in 1986 because the breakup of the bargaining association resulted in wide variations in settlement terms at the various companies. The companies contended that such variations in terms were necessary because of differences in their financial condition.

The Timken accord, which was preceded by a 1-month strike, provides for a 45-cent-an-hour pay cut, which will be restored in 15-cent increments at the end of each contract year. Immediately after the cut, average pay was \$10.95 according to the union, and \$11.84 according to the company.

The automatic cost-of-living pay allowance formula was modified to provide quarterly adjustments of 1 cent an hour for each 0.3-point rise in the BLS Consumer Price Index for Urban Wage Earners and Clerical Workers (1967=100). The provision becomes operative in the second year and reflects only possible CPI movement between 4 and 6 percent in that year and between 1.5 and 6 percent in the third year (previously, there was no 6-percent annual cap).

Pension rates were raised by \$1.50 a month for each year of credited service, bringing the range of rates to \$19-\$22. Also, employees age 60 with 30 years of service were given two opportunities (during the last months of both 1986 and 1987) to retire with a \$400 special pension supplement continuing to age 62.

In contrast with other 1986 settlements in the steel industry, Empire-Detroit Steel Co. and United Steelworkers Local 169 negotiated a 3-year contract that does not call for a cut in employee compensation. Company President John Frecka said, "We're profitable. I saw no reason to insist upon concessions." The contract does provide for possible annual performance awards of \$150, \$300, or \$450, based on the company's financial results during the preceding 12 months. The accord, covering 1,100 workers in Mansfield, OH, also provides for a reopening of negotiations if the company encounters unexpected difficulties.

Paperworkers approve 'flexible' work assignments

In Rumford, ME, a 2½-month strike against Boise Cascade Corp.'s largest paper mill ended when members of the United Paperworkers union approved a 3-year contract that included a "flexible work assignment" plan the company had been seeking since 1980. In 1984, Boise Cascade unilaterally introduced part of the plan by consolidating 12 job classifications into seven. In response to a complaint filed by the union, an arbitrator later overturned the company move. Nevertheless, the company claimed that the job consolidation improved productivity and morale during the 18 months it was in effect.

Under the bargained approach, Boise Cascade can shift production workers into other jobs, and have nonbargaining unit employees perform duties that had previously been generally restricted to bargaining unit workers. Another aspect of the plan permits management to train machine oper-

ators to perform routine maintenance and minor repairs, cutting the down time that had resulted when the operators waited for regular maintenance workers to do the work. There also was a change in duties of maintenance workers, as 12 job classifications were reduced to two: machinists and instrument machinists.

Wage provisions included a 50-cent-an-hour immediate increase, followed by 3-percent increases in the second and third years. According to a company official, the initial increase brought the average pay rate to \$13.58 and the maximum for some machine tenders to more than \$18. All employees on the payroll at the time of the contract signing also received a \$1,000 lump-sum payment.

Boise-Cascade also achieved a cost saving under a new stretched pay progression schedule. New employees will be paid 80 percent (\$7.77) of top base pay during their first 6 months, and full base pay thereafter.

The contract also provided for other cost reduction provisions, including time-and-one-half pay for all overtime work (previously, double time and, on occasion, quadruple time pay applied to some overtime work); elimination of some restrictions on operating the mill on Independence Day and Christmas; and adoption of a cost-containment plan for health insurance, including an 80-percent/20-percent coinsurance instead of the previous "first-dollar" coverage.

John Hancock provides 'cafeteria' benefits

The flexible or "cafeteria" approach to employee benefits is illustrated in a settlement between John Hancock Mutual Life Insurance Co. and the Teamsters union for nearly 300 claims processors in Dearborn, MI. All of the employees have "core" coverage consisting of a major medical plan with a \$350 annual deductible and life insurance equal to each employee's annual compensation. Each employee also receives a number of weekly credits which can be used for alternate or additional benefits, such as a major medical plan with a \$175 annual deductible, additional life insurance, dependent life insurance, a survivor's income plan, dental coverage, and vision coverage. Employees are permitted to select coverage in excess of their available credits if they assume the additional cost.

In addition to pension improvements, the 3-year contract provided for 5-percent annual pay increases and a lump-sum payment at the end of the first contract year equal to 7 percent of earnings during that year, followed by a 5-percent payment at the end of the second year and a 4-percent payment at the end of the final year.

Machinery workers take \$1 hourly pay cut

Employees of Harnischfeger Corp., a machinery manufacturer, have agreed to a \$1 an hour pay cut and other cost reduction changes in return for a possible share of profits and a company commitment to modernize the plants, located in the Milwaukee, WI, area. If the company meets the

specified profit objective during the fiscal year beginning November 1, 1986, the 1,250 employees will receive \$1.20 for each hour worked during the period. If the profit exceeds the objective, the distribution will be larger. If the company's profit level is "on target" after the first 6 months, the employees will then receive 25 percent of the expected full-year total payout.

Other terms of the 3-year contract negotiated by United Steelworkers Local 1114 included a suspension of automatic cost-of-living adjustments during the first 2 years and a 15-cent limit on adjustments during the final year; adoption of a two-tier compensation system providing for lower pay and benefit levels for new employees; lower vacation pay; and employee payment of a larger share of health insurance costs.

Harnischfeger's obligation for plant modernization was set at a minimum of \$4.5 million over the contract term. Of that amount, the union will have a voice in spending \$250,000 a year. The company also agreed to establish a job training fund of \$30,000 a year to be administered by a joint committee.

Hospitals, nursing homes in New York settle

In New York City, 40,000 employees were covered by a settlement between the League of Voluntary Hospitals and Nursing Homes and Local 1199, Drug, Hospital and Health Care Employees Union. The League comprises 40 nonprofit hospitals and 9 nonprofit nursing homes. Earlier, five other nonprofit hospitals had settled on terms that were reportedly slightly more favorable to their 6,500 employees represented by Local 1199, which is part of the Retail, Wholesale and Department Store Union.

The League contract provides for an initial wage increase of 5 percent, retroactive to the August 28, 1984, ending date of the 47-day strike that preceded the 1984 settlement. This amount, to be paid in two lump-sums, represents a 5-percent increase scheduled under the 1984 accord but never implemented because of a dispute over the legality of the contract. (The 1984 settlement called for an additional 5-percent increase which went into effect as scheduled.)

The 3-year 1986 contract also calls for wage increases of 4 percent on November 1, 1986, and July 1, 1987, and 5 percent on July 1, 1988, all calculated on pay rates at the time of settlement, rather than being compounded. According to the union, average pay at the time of settlement was \$370 a week for nurses, nurses' aides, housekeeping and laboratory personnel, social workers, and clerical workers.

The union agreed to several changes intended to moderate the cost of the settlement. One was that entry pay rates were only increased 9 percent over the term, instead of 13 percent. Also, new employees will be paid 4 percent less than normal pay rates during their first year. In the benefits area, employers' financing of pensions was changed to an amount equal to 7 percent of each employee's base pay, from 8 percent of gross pay. (Despite this reduction, an existing

surplus enabled the parties to request that the plan trustees raise benefits by 10 percent for current retirees, retroactive to January 1, 1985, and by the same amount for future retirees.) Health insurance benefits were not changed, but the parties did adopt a cost-containment plan calling for such measures as a second opinion requirement before non-emergency surgery.

Food stores settlements

In Washington, DC, and nearby Maryland and Virginia, 18,500 employees of Safeway Stores Inc. and Giant Food Inc. were covered by a 3-year contract negotiated by Local 400 of the United Food and Commercial Workers. Similar terms also were negotiated by Local 27 for 7,000 employees in the Baltimore, MD, area.

Under the Local 400 settlement, employees hired prior to the October 1983 effective date of the prior contract did not receive wage increases. However, they will receive six semiannual lump-sum payments, each ranging from \$175 to \$500, depending on their assignment and number of hours worked. Workers hired after October 1983 will receive wage increases of \$1.30 an hour, narrowing the differential with the longer service employees that resulted from adoption of a two-tier pay system in 1983.

The negotiators eliminated two-tier insurance benefits by adopting a uniform program for full-time employees and another less generous program for part-time employees.

Pension rates for employees hired prior to October 1983 were increased to \$32 a month (from \$20) for each year of credited future service for full-time employees, and to \$20 (from \$16) for part-timers. For employees hired later, the rates were increased to \$13.20 for full-time workers and to \$6.60 for part-timers. All of the 2,300 employees who retired prior to January 1, 1986, will receive 3-percent increases in their benefits on January 1 of 1987, 1988, and 1989.

Elsewhere in the industry, 650 members of United Food and Commercial Workers Local 23 agreed to pay cuts ranging from 24 cents to \$1.15 an hour in a settlement with 12 Kroger Co. stores in eastern Ohio and nearby West Virginia. According to a company official, the pay cuts and other negotiated labor-cost savings could lead to expansion of operations in the Ohio Valley area, despite intense competition from nonunion stores.

The impact of the pay cut will be reduced by a provision for one-time lump-sum payments in late 1986 equal to the individual's cut in hourly pay multiplied by the number of hours worked between October 1985 and October 1986. There will not be any other such payments under the 5-year contract, but a new profit-sharing plan provides for possible annual distributions beginning in March 1988. Each worker's share of any distribution will be proportional to earnings lost as a result of the pay cut. In each of the last 2 years of the contracts, full-time employees will be guaran-

teed minimum payments of \$300 and part-timers will be guaranteed \$150.

Other changes that will reduce labor costs include a "buy out" offer under which top-scale full-time employees will receive \$8,000 for resigning and top-scale part-timers will receive \$4,000; 5 weeks maximum paid vacation, instead of 6 weeks; two paid personal leave days per year, instead of five; a \$19.88 reduction in Kroger's \$247.88 a month financing of insurance benefits; and expanded duties for meat clerks. Kroger estimated that all of the contract changes would result in a cost savings of about \$2 an hour.

Hotel employees settle

More than 20,000 members of the Hotel Employees and Restaurant Employees were covered by settlements in three cities.

In Atlantic City, NJ, workers settled with seven casino hotels, ending a 1-day strike. The settlement covered 13,000 people, including employees of three operations that were not struck in return for assurances that they would accept the same terms as the other casino hotels. The settlement, reached under a contract reopening provision, extended the contract by 1 year, and provides for 10- to 20-cent-an-hour pay increases in 1986 and 1987.

In Washington, DC, Local 25 negotiated a 3-year contract that covered more than 6,000 employees of 17 hotels in the employers' bargaining association and 11 other hotels that accepted the same terms. The accord provides for 5-percent pay increases in each year, bringing the average pay of housekeepers, dishwashers, and food service workers to \$8 an hour.

In San Francisco, Local 2 settled for 2,150 employees of six large hotels and was pressing 32 hotels to accept the same terms. During the 3-year contract term, employees will receive annual pay increases of 15 cents an hour for those who receive tips and 35 cents for those who do not, as well as improvements in overtime pay, sick leave, and medical and pension benefits.

Home work proposed in producing ladies apparel

In a move that drew criticism and vows of legal action from organized labor, the Department of Labor proposed regulations to allow employees in six industries to work in their homes, as long as their employers get a Government certificate. Secretary of Labor William Brock said that "because of the nationwide interest in home work employment," the period for public comment on the proposal would be 60 days.

The industries that would be affected are the production of women's apparel, jewelry, gloves and mittens, buttons and buckles, handkerchiefs, and embroidery. The proposal came after an 18-month study of the effectiveness of the certification plan that was instituted in the knitted outerwear

industry in December 1984. In that industry, home work is permitted after employers register with the Department of Labor so that their adherence to minimum wage, child labor, and other laws can be monitored.

Jay Mazur, President of the Ladies Garment Workers, said the proposed rules give "the green light to thousands of sweatshop operators throughout this country who exploit our most vulnerable workers." He predicted that thousands of factory workers in the six industries would lose their jobs or suffer a decline in their "already modest standard of living due to competition with sweatshop wages."

Stephen Goodrick, executive director of the Center on National Labor Policy, a lobbying and legal advocacy group, said the rule change will "liberate this section of the economy for entrepreneurial growth and productivity." He also said that 70,000 people are already engaged in illegal commercial work in the home and that legalizing the practice would raise government tax revenue by \$50 million a year.

Glass container workers restore forgone pay

In the glass container industry, 17,000 workers negotiated restoration of a 31-cent-an-hour scheduled wage increase they had given up in 1985 when the employers were experiencing financial problems. The 1985 settlements had also extended the existing agreement by 1 year, to March 31, 1987. Under the 1986 settlement, which came during a period of improved employer profits, the contract was extended to March 31, 1990, with provision for a 21-cent wage increase in April 1987, 26 cents in April 1988, and 31 cents in April 1989. Prior to the settlement, the average wage was \$9.40.

Pensions were increased effective in April 1988 for all employees who retire after April 1986. The employees' cost for health insurance was increased, but the companies did agree to pay more into a trust fund for retirees' health coverage. They also agreed to assume the workers' 50-percent share of a 10-cent-an-hour payment into an industry promotion fund.

The companies that settled with the Glass, Pottery, Plastic and Allied Workers were Brockway Inc., for 6,500 workers; Anchor-Hocking Corp. (4,300); Foster Forbes Glass Co. (3,000); Incon Packaging Inc. (2,100); and Ball Corp. (1,100). Negotiations were continuing with Owens Illinois Inc. for 12,000 workers and with Diamond-Bathurst for 5,000.

Teachers' agreements

Members of the Portland (OR) Association of Teachers negotiated a 3-year contract that calls for wage increases of 5 percent in the first year and 4.5 percent in the second year.

In the third year, the 3,200 teachers will receive an increase of at least 3.5 percent but not more than 6.5 percent, depending on the movement of the Portland area Consumer Price Index. After the first-year increase, salaries ranged from \$17,732 for starting teachers to \$33,240 for teachers with a master's degree plus 45 credit hours of academic training and 18 years of experience.

Other terms included a doubling of college tuition reimbursement, to six credit hours per year.

In Little Rock, AR, 1,100 teachers received two payments totaling \$520 to \$971 by agreeing to add $6\frac{1}{4}$ days to the 1985-86 school year. The payment resulted when the school district received a Federal grant for magnet schools, permitting the district to distribute to teachers \$1.6 million it had budgeted from its own funds for the project.

Early in 1986, the district gave each teacher \$475 and was planning to distribute the balance of the \$1.6 million in the same way, but the State Board of Education ruled that this could be done only if the school year was extended, leading to the $6\frac{1}{4}$ -day extension and an additional \$45 to \$496 payment, varying according to each teacher's salary scale.

The payments did not become part of the teachers' contractual salary scale for the school year, which was raised 1.61 percent on September 9, 1985, under the contract negotiated then. This brought the salary range to \$14,098 to \$26,308 a year, depending on education and length of service.

Ohio State workers get initial contract

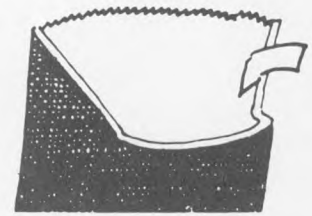
About 35,000 State employees were covered by an initial contract negotiated by the Ohio Civil Service Employees Association, which affiliated with the State, County and Municipal Employees union in 1984. Ohio State employees gained the right to bargain on wages and benefits under 1984 legislation.

Wage provisions included an immediate increase of 58 cents an hour or 7 percent (whichever is greater) and a \$450 bonus for those on the payroll before April 1, 1986; an increase of 44 cents or 5 percent, in the second year; and 65 cents or 7 percent in the third year, plus a \$300 bonus on November 1, 1988, for those on the payroll on October 15, 1988.

Prior to the initial pay increase, average hourly rates for the eight units of workers involved ranged from \$6.63 for food service, custodial, and laundry workers to \$11.64 for engineers, biologists, and geologists.

Benefit changes included an eleventh paid holiday; 10 annual sick leave days payable at 100 percent, instead of 7 days payable at 90 percent; three personal leave days and prorated paid vacation for part-time employees; and adoption of a program to aid corrections officers suffering after-effects of being taken hostage. □

Book Reviews



Managerial discretion in the workplace

Management Rights: A Legal and Arbitral Analysis. By Marvin Hill, Jr. and Anthony V. Sinicropi. Washington, The Bureau of National Affairs, Inc., 1986. 560 pp. \$40.

Source books that deal with questions of legal rights for practitioners usually face the kind of dilemma that confronts do-it-yourself guides to medicine: offer summary descriptions and readers may not be able to tell when they have a problem, but present a detailed discussion and they may start to think that they can cut the doctor out of the process. Marvin Hill, Jr. and Anthony V. Sinicropi have avoided that dilemma by writing a book that is not for practitioners in the usual sense but for the labor relations "doctors"—arbitrators and those who present arbitration cases.

The book focuses on the issue of management rights under collective bargaining agreements—situations where the agreements do not clearly specify the rights of the parties. In fact, the book's theme is much broader than what many arbitrators will think of as management rights issues, in that it goes beyond such common problems as technological change and job assignment to consider virtually every set of circumstances where contracts may be silent. This broad coverage has the great advantage of presenting a single source for all such issues. However, some issues, such as employee discipline and discharge and seniority decisions, have already been discussed in depth elsewhere, and readers may want to consult the existing literature.

The book traces the evolution of management rights primarily through a detailed analysis of arbitration decisions, although rulings of the National Labor Relations Board, case law, and legislation are also considered. It begins by discussing some general issues, such as the important role of past practice in determining management rights, and then addresses various areas of those rights in turn. Perhaps the most interesting section of the book is the discussion of areas where management's interests may conflict with employees' interests in privacy, for example, the use of polygraph tests and surveillance and searches in the workplace. Separate discussions of management's rights with respect to medical and psychiatric screening, including drug testing and the handling of employees with AIDS, make the book very topical.

Management Rights is obviously not a book for everyone. Nonarbitrators involved in day-to-day labor relations should

of course be aware that the analyses of the issues here will not necessarily help determine how a given arbitrator might rule on a particular issue because the precedential value of arbitration decisions is limited at best. In terms of reading, the book is filled with quotations and citations that combined with the often convoluted path of arbitration decisions make it considerably slower going than, say, your average gothic novel.

But this detail is precisely what results in a very useful book, especially for arbitrators and lawyers who have limited experience with some of the issues raised here because they can quickly see the line of reasoning in previous decisions. By identifying the trends in arbitration decisions in the difficult area of management's rights, the authors have traveled through relatively uncharted waters and have contributed a real service to the field of labor relations.

—PETER CAPPELLI
Associate Professor
The Wharton School
University of Pennsylvania

Labor in a changing America

Out of Work: The First Century of Unemployment in Massachusetts. By Alexander Keyssar. New York, Cambridge University Press, 1986. 469 pp. \$49.50, cloth; \$14.95, paper.

Alexander Keyssar's book is a scholarly contribution and a valuable resource to economists, labor historians, trade unionists, and policymakers. Keyssar investigates labor markets from the 1870's to the 1920's, a period often passed over by present-day economists and economic historians who tend to direct more attention to the Great Depression and Industrial Revolution in the United States. (John A. Garraty's *Unemployment in History: Economic Thought and Public Policy* and Gordon, Edwards, and Reich's *Segmented Work, Divided Workers* are notable exceptions.) He blends an abundance—sometimes an overabundance—of empirical data with impressionistic evidence depicting the extent and character of the period's unemployment.

Idle labor is a centuries-old phenomenon. But as the structure of production shifted toward manufacturing throughout the 19th century, the consequences for a typical jobless worker became harsher by the 1870's with the disappearance of alternative activities such as household production.

With the stage set, Keyssar then offers four original viewpoints in *Out of Work*. First is his chronicling of the unbelievably slow pace at which unemployment came to be regarded as a conspicuous social problem. Public perception only gradually evolved from considering unemployment as an individual, labor supply problem to understanding it as a labor demand problem endemic to the industrial economy. The tendency for chronic unemployment to uproot many working men was initially regarded as "the tramp problem." Reforms to prevent unemployment or its hardship were routinely rebuffed until 1915, when government and business began to recognize the threat of unemployment to the existing social structure. Economists viewed unemployment as transitory and thus proved little help in remedying it.

Keyssar also describes how chronic unemployment gradually transformed trade unions from organizations promoting universal policies to benefit all labor such as a shorter workweek to policies pursuing exclusionist measures, for example, restricting apprenticeships in order to protect members' jobs.

The author creatively uses the available data to construct unemployment frequencies—the percentage of workers unemployed at some point during the year. The data reveal startlingly high frequencies upwards of 30 percent in the depths of a downturn and surprisingly high proportions in prosperous times as well.

Keyssar's final and most important point derives from these frequencies. The 1870–1920's era was apparently characterized by a substantial *volatility* in employment. Income insecurity rather than low incomes per se was thus the key problem workers faced. Their vulnerability to sudden layoff and income loss cut across occupations, industries, ethnic groups, and gender. One immediate and two subsequent developments from this era could be traced to the widespread income insecurity. Keyssar colorfully illustrates how workers established ad hoc methods of coping with the persistent threat of unemployment. Children were periodically sent to work and debt was commonly incurred with local shopkeepers. After 1915, businesses began to discover the costs associated with high labor turnover. Some implemented progressive personnel practices including the offer of continuous employment over seasonal (but not cyclical) fluctuations, work sharing, and a rationalized allocation of layoffs based on seniority. The modern implicit contract and its increased predictability of incomes were thus born. Finally, the widespread income insecurity ultimately led to the adoption of unemployment insurance programs.

Despite its merits, *Out of Work* has some shortcomings. The author often fails to clearly distinguish structural, frictional, and cyclical sources of unemployment, essential in assessing the consequent hardship. Also, there is no direct mention of productivity growth in industry and its potential role in suppressing employment levels, shortening the workweek, or varying wages and living standards. In addition, Keyssar often subtly implicates but never really outright

indicts the widely accepted employment-at-will doctrine as the ultimate source of the era's employment volatility. This is perhaps the principle message and it is left to the reader to infer. Finally, it is also left to the reader to gauge the *relative* condition of labor because we are given no reference point. Perhaps some of the redundancy that appears throughout the book could be sacrificed for some comparisons to unemployment frequencies, the composition of the "reserve army" of unemployed, and the use of short-time versus layoffs in more recent years.

A final comparison Keyssar misses is the parallel to the current fad of identifying *laissez faire* as the policy solution rather than the problem. Even with these shortcomings, *Out of Work* reminds us that labor market instability and unemployment were the cause of union and government intervention rather than the result of it.

—LONNIE GOLDEN

Assistant Professor of Economics
University of Wisconsin, Whitewater

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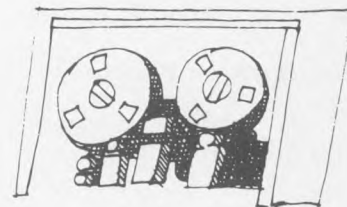
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Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	December 5	November	January 9	December	February 6	January	1; 4-21
Producer Price Index	December 12	November	January 9	December	February 13	January	2; 33-35
Consumer Price Index	December 19	November	January 21	December	February 27	January	2; 30-32
Real earnings	December 19	November	January 21	December	February 27	January	14-17
Productivity and costs:							
Nonfinancial corporations	December 2	3rd quarter	.....	.....	.....	.....	2; 42-44
Nonfarm business and manufacturing .....	.....	.....	.....	.....	February 2	4th quarter	2; 42-44
Major collective bargaining settlements .....	.....	.....	January 27	1986	.....	.....	3; 25-28
Employment Cost Index .....	.....	.....	January 27	4th quarter	.....	.....	1-3; 22-24
U.S. Import and Export Price Indexes .....	.....	.....	January 27	4th quarter	.....	.....	36-41

NOTES ON CURRENT LABOR STATISTICS

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

General notes

The following notes apply to several tables in this section:

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

Seasonally adjusted labor force data in tables 1 and 4-10 were revised in the February 1986 issue of the *Review*, to reflect experience through 1985.

Annual revisions of the seasonally adjusted payroll data shown in tables 13, 14, and 18 were made in the July 1986 *Review* using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in table 42 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from quarter to quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the Hourly Earnings Index in table 17—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 \times 100 = \2). The \$2 (or any other resulting values) are described as "real," "constant," or "1967" dollars.

Additional information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule preceding these general notes. More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in *Employment and Earnings*, a monthly publication of the Bureau. More data from the household survey are published in the two-volume data book—*Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2096. More data from the establishment survey appear in two data books—*Employment, Hours, and Earnings, United States*, and *Employment, Hours, and Earnings, States and Areas*, and the annual supplements to these data books. More detailed information on employee compensation and collective bargaining settlements is published in the monthly periodical, *Current Wage Developments*. More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report*, and *Producer Prices and Price Indexes*. Detailed data on all of the series in this section are provided in the *Handbook of Labor Statistics*, which is published biennially by the Bureau. BLS bulletins are issued covering productivity, injury and illness, and other data in this section. Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

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

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

n.e.c. = not elsewhere classified.

n.e.s. = not elsewhere specified.

COMPARATIVE INDICATORS (Tables 1-3)

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

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-to-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonagricultural payroll data. The Employment Cost Index (compensation), by major sector and by

bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

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

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

Notes on the data

Definitions of each series and notes on the data are contained in later

sections of these notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Volumes I and II, Bulletins 2134-1 and 2134-2 (Bureau of Labor Statistics, 1982 and 1984, respectively), as well as the additional bulletins, articles, and other publications noted in the separate sections of the *Review's* "Current Labor Statistics Notes." Historical data for many series are provided in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). Users may also wish to consult *Major Programs, Bureau of Labor Statistics*, Report 718 (Bureau of Labor Statistics, 1985).

EMPLOYMENT DATA

(Tables 1; 4-21)

Household survey data

Description of the series

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

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

Notes on the data

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

the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Data in tables 4-10 are seasonally adjusted, based on the seasonal experience through December 1985.

Additional sources of information

For detailed explanations of the data, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 1, and for additional data, *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). A detailed description of the Current Population Survey as well as additional data are available in the monthly Bureau of Labor Statistics periodical, *Employment and Earnings*. Historical data from 1948 to 1981 are available in *Labor Force Statistics Derived from the Current Population Survey: A Databook*, Vols. I and II, Bulletin 2096 (Bureau of Labor Statistics, 1982).

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

Establishment survey data

Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by more than 250,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

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

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

Production workers in manufacturing include working supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12-17 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and

services. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). 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 the May 1983 *Review*, 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 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are 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 1986 data, published in the July 1986 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 1984; seasonally adjusted data have been revised back to January 1981. These revisions were published in the *Supplement to Employment and Earnings* (Bureau of Labor Statistics, 1986). Unadjusted data from April 1985 forward, and seasonally adjusted data from January 1982 forward are subject to revision in future benchmarks.

In the establishment survey, estimates for the 2 most recent months are based on incomplete returns and are published as preliminary in the tables (13 to 16 in the *Review*). When all returns have been received, the estimates are revised and published as final in the third month of their appearance. Thus, August data are published as preliminary in October and November and as final in December. For the same reason, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, second-quarter data are published as preliminary in August and September and as final in October.

COMPENSATION AND WAGE DATA

(Tables 1-3; 22-29)

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

Employment Cost Index

Description of the series

The **Employment Cost Index (ECI)** is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of

Additional sources of information

Detailed data from the establishment survey are published monthly in the BLS periodical, *Employment and Earnings*. Earlier comparable unadjusted and seasonally adjusted data are published in *Employment, Hours, and Earnings, United States, 1909-84*, Bulletin 1312-12 (Bureau of Labor Statistics, 1985) and its annual supplement. For a detailed discussion of the methodology of the survey, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 2. For additional data, see *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

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

Unemployment data by State

Description of the series

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

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

Notes on the data

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

Additional sources of information

Information on the concepts, definitions, and technical procedures used to develop labor force data for States and sub-State areas as well as additional data on sub-States are provided in the monthly Bureau of Labor Statistics periodical, *Employment and Earnings*, and the annual report, *Geographic Profile of Employment and Unemployment* (Bureau of Labor Statistics). See also *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 4.

labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor. The index is not seasonally adjusted.

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

The Employment Cost Index probability sample consists of about 2,200 private nonfarm establishments providing about 12,000 occupational observations and 700 State and local government establishments providing

3,500 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

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

Definitions

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

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

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

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

Notes on the data

The Employment Cost Index 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, when combined with the wages and salaries series, a measure of the percent change in employer costs for employee 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 (excluding Federal employees). Historical indexes (June 1981=100) of the quarterly rates of change are presented in the May issue of the BLS monthly periodical, *Current Wage Developments*.

Additional sources of information

For a more detailed discussion of the Employment Cost Index, see the *Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 11, and the following *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor'," July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; "Estimation procedures for the Employment Cost Index," May 1982; and "Introducing new weights for the Employment Cost Index," June 1985.

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

Collective bargaining settlements

Description of the series

Collective bargaining settlements data provide statistical measures of negotiated adjustments (increases, decreases, and freezes) in compensation

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

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

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

Definitions

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

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

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

Notes on the data

Care should be exercised in comparing the size and nature of the settlements in State and local government with those in the private sector because of differences in bargaining practices and settlement characteristics. A principal difference is the incidence of cost-of-living adjustment (COLA) clauses which cover only about 2 percent of workers under a few local government settlements, but cover 50 percent of workers under private sector settlements. Agreements without COLA's tend to provide larger specified wage increases than those with COLA's. Another difference is that State and local government bargaining frequently excludes pension benefits which are often prescribed by law. In the private sector, in contrast, pensions are typically a bargaining issue.

Additional sources of information

For a more detailed discussion on the series, see the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 10. Comprehensive data are published in press releases issued quarterly (in January, April, July, and October) for private industry, and semi-

annually (in February and August) for State and local government. Historical data and additional detailed tabulations for the prior calendar year appear in the April issue of the BLS monthly periodical, *Current Wage Developments*.

Work stoppages

Description of the series

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

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

Definitions

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

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

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

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

Notes on the data

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

Additional sources of information

Data for each calendar year are reported in a BLS press release issued in the first quarter of the following year. Monthly data appear in the BLS

monthly periodical, *Current Wage Developments*. Historical data appear in the *BLS Handbook of Labor Statistics*.

Other compensation data

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

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

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

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

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

PRICE DATA (Tables 2; 30-41)

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

Consumer Price Indexes

Description of the series

The **Consumer Price Index (CPI)** is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all urban consumer index (CPI-U) introduced in 1978 is representative of the 1972-73 buying habits of about 80 percent of the noninstitutional population of the United States at that time, compared with 40 percent represented in the CPI-W. In addition to wage earners and clerical

workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

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

Data collected from more than 24,000 retail establishments and 24,000 tenants in 85 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 28 major urban centers are presented in table 31. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are measured for the CPI-U. A rental equivalence method replaced the

asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI-w. The central purpose of the change was to separate shelter costs from the investment component of homeownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes.

Additional sources of information

For a discussion of the general method for computing the CPI, see *BLS Handbook of Methods, Volume II, The Consumer Price Index*, Bulletin 2134-2 (Bureau of Labor Statistics, 1984). The recent change in the measurement of homeownership costs is discussed in Robert Gillingham and Walter Lane, "Changing the treatment of shelter costs for homeowners in the CPI," *Monthly Labor Review*, June 1982, pp. 9-14.

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

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received in primary markets of the United States by producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,200 commodities and about 60,000 quotations per month selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The stage of processing structure of Producer Price Indexes organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition.

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

Since January 1976, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 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 groups. All Producer Price Index data are subject to revision 4 months after original publication.

Notes on the data

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

The Bureau has completed the first major stage of its comprehensive overhaul of the theory, methods, and procedures used to construct the Producer Price Indexes. Changes include the replacement of judgment sampling with probability sampling techniques; expansion to systematic coverage of the net output of virtually all industries in the mining and manufacturing sectors; a shift from a commodity to an industry orientation;

the exclusion of imports from, and the inclusion of exports in, the survey universe; and the respecification of commodities priced to conform to Bureau of the Census definitions. These and other changes have been phased in gradually since 1978. The result is a system of indexes that is easier to use in conjunction with data on wages, productivity, and employment and other series that are organized in terms of the Standard Industrial Classification and the Census product class designations.

Additional sources of information

For a discussion of the methodology for computing Producer Price Indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 7.

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

International price indexes

Description of the series

The BLS **International Price Program** produces quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts: it includes corporations, businesses, and individuals but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents. With publication of an all-import index in February 1983 and an all-export index in February 1984, all U.S. merchandise imports and exports now are represented in these indexes. The reference period for the indexes is 1977 = 100, unless otherwise indicated.

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

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

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

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each weight category and are then aggregated to the SITC level. The values assigned to each weight category are based on trade value figures compiled

by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1980.

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

For the export price indexes, the preferred pricing basis is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation.

PRODUCTIVITY DATA

(Tables 2; 42-47)

U. S. productivity and related data

Description of the series

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

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

Definitions

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

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

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

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

An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f. (cost, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges.

Additional sources of information

For a discussion of the general method of computing International Price Indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 8.

Additional detailed data and analyses of international price developments are presented in the Bureau's quarterly publication *U.S. Import and Export Price Indexes* and in occasional *Monthly Labor Review* articles prepared by BLS analysts. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

Unit profits include corporate profits and the value of inventory adjustments per unit of output.

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

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

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

Notes on the data

Output measures for the business sector and the nonfarm business sector exclude the constant dollar value of owner-occupied housing, rest of world, households and institutions, and general government output from the constant dollar value of gross national product. The measures are derived from data supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are developed from data of the Bureau of Labor Statistics and the Bureau of Economic Analysis.

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

Additional sources of information

Descriptions of methodology underlying the measurement of output per hour and multifactor productivity are found in the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 13. Historical data for selected industries are provided in the Bureau's *Handbook of Labor Statistics*, 1985, Bulletin 2217.

INTERNATIONAL COMPARISONS (Tables 45—47)

Labor force and unemployment

Description of the series

Tables 45 and 46 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and six European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

Definitions

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

Notes on the data

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

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

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

Additional sources of information

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

Manufacturing productivity and labor costs

Description of the series

Table 47 presents comparative measures of manufacturing labor productivity, hourly compensation costs, and unit labor costs for the United

States, Canada, Japan, and nine European countries. These measures are limited to trend comparisons—that is, intercountry series of changes over time—rather than level comparisons because reliable international comparisons of the levels of manufacturing output are unavailable.

Definitions

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

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

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

Notes on the data

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

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

Additional sources of information

For additional information, see the *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 16, and periodic *Monthly Labor Review* articles. Historical data are provided in the Bureau's *Handbook of Labor Statistics*, Bulletin 2217, 1985. The statistics are issued twice per year—in a news release (generally in May) and in a *Monthly Labor Review* article (generally in December).

OCCUPATIONAL INJURY AND ILLNESS DATA

(Table 48)

Description of the series

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

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

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

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

Definitions

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

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

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

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

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

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

Lost workdays—restricted work activity are the number of workdays (consecutive or not) on which, because of injury or illness: (1) the employee was assigned to another job on a temporary basis; or (2) the em-

ployee worked at a permanent job less than full time; or (3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

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

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

Notes on the data

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

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

Comparable data for individual States are available from the BLS Office of Occupational Safety and Health Statistics.

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

Additional sources of information

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

The definitions of occupational injuries and illnesses and lost workdays are from *Recordkeeping Requirements under the Occupational Safety and Health Act of 1970*. For additional data, see *Occupational Injuries and Illnesses in the United States, by Industry*, annual Bureau of Labor Statistics bulletin; BLS *Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 17; *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985), pp. 411-14; annual reports in the *Monthly Labor Review*; and annual U.S. Department of Labor press releases.

1. Labor market indicators

Selected indicators	1984	1985	1984	1985				1986		
			IV	I	II	III	IV	I	II	III
Employment data										
Employment status of the civilian noninstitutionalized population (household survey) ¹										
Labor Force participation rate	64.4	64.8	64.5	64.8	64.7	64.7	64.9	65.1	65.3	65.3
Employment-population ratio	59.5	60.1	59.8	60.1	60.0	60.1	60.4	60.5	60.6	60.8
Unemployment rate	7.5	7.2	7.2	7.3	7.3	7.2	7.0	7.1	7.2	6.9
Men	7.4	7.0	7.1	7.1	7.1	7.0	6.9	6.8	7.1	6.9
16 to 24 years	14.4	14.1	13.8	14.1	14.2	14.0	14.0	13.3	14.5	13.8
25 years and over	5.7	5.3	5.4	5.4	5.4	5.3	5.2	5.3	5.4	5.4
Women	7.6	7.4	7.5	7.6	7.5	7.4	7.2	7.3	7.3	6.9
16 to 24 years	13.3	13.0	12.9	13.1	13.0	12.7	13.1	13.2	13.2	12.5
25 years and over	6.0	5.9	5.9	6.0	6.0	5.9	5.5	5.7	5.7	5.4
Unemployment rate, 15 weeks and over	2.4	2.0	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0
Employment, nonagricultural (payroll data), in thousands: ¹										
Total	94,496	97,614	94,064	96,581	97,295	97,897	97,295	99,403	99,848	100,279
Private sector	78,472	81,199	78,096	80,341	80,958	81,414	80,958	82,731	83,144	83,623
Goods-producing	24,727	24,930	24,690	24,970	24,947	24,866	24,947	25,028	24,952	24,869
Manufacturing	19,378	19,314	19,381	19,439	19,323	19,241	19,323	19,284	19,194	19,114
Service-producing	69,769	72,684	69,374	71,611	72,347	73,031	72,347	74,375	74,896	75,410
Average hours	35.2	34.9	35.2	35.0	34.9	34.9	34.9	34.9	34.8	34.7
Private sector	40.7	40.5	40.8	40.4	40.4	40.6	40.4	40.7	40.7	40.7
Overtime	3.4	3.3	3.5	3.3	3.2	3.3	3.2	3.4	3.4	3.5
Employment Cost Index										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers)	5.2	4.3	1.2	1.3	.7	1.6	.6	1.1	.7	1.1
Private industry workers	4.9	3.9	1.3	1.2	.8	1.3	.6	1.1	.8	.7
Goods-producing ²	4.6	3.4	1.1	1.5	.7	.6	.6	1.1	.9	.6
Servicing-producing ²	5.1	4.4	1.4	1.0	1.0	1.8	.5	1.1	.6	.8
State and local government workers	6.6	5.7	1.0	1.2	.2	3.4	.7	1.0	.6	2.8
Workers by bargaining status (private industry)										
Union	4.3	2.6	1.1	.7	.6	.8	.5	1.0	.2	.5
Nonunion	5.2	4.6	1.3	1.6	1.0	1.4	.6	1.2	.9	.8

¹ Quarterly data seasonally adjusted.

² Goods-producing industries include mining, construction, and manufacturing. Service-

producing industries include all other private sector industries.

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

Selected measures	1984	1985	1984	1985				1986			
			IV	I	II	III	IV	I	II	III	
Compensation data^{1, 2}											
Employment Cost Index--compensation (wages, salaries, benefits)											
Civilian nonfarm	5.2	4.3	1.2	1.3	0.7	1.6	0.6	1.1	0.7	1.1	
Private nonfarm	4.9	3.9	1.3	1.2	.8	1.3	.6	1.1	.8	.7	
Employment Cost Index--wages and salaries											
Civilian nonfarm	4.5	4.4	1.2	1.2	.9	1.7	.6	1.0	.8	1.1	
Private nonfarm	4.1	4.1	1.2	1.2	1.1	1.3	.6	1.0	.9	.7	
Price data¹											
Consumer Price Index (All urban consumers): All items	4.0	3.8	.3	1.0	1.1	.7	.9	-.4	.6	.7	
Producer Price Index											
Finished goods	1.7	1.8	.9	.0	.7	-1.4	2.5	-3.1	.5	-.6	
Finished consumer goods	1.6	1.5	.8	-.3	.7	-1.4	2.5	-4.1	.4	-.6	
Capital equipment	1.8	2.7	1.1	1.3	.4	-1.4	2.5	.2	.6	-.6	
Intermediate materials, supplies, components	1.3	-.3	-.1	-.4	.2	-.5	.4	-2.9	-.9	-.2	
Crude materials	-1.6	-5.6	-1.2	-3.1	-2.1	-4.5	4.3	-7.6	-1.5	-.5	
Productivity data³											
Output per hour of all persons:											
Business sector	2.3	1.0	-.1	.9	2.7	3.4	-3.2	3.3	.5	.2	
Nonfarm business sector	1.8	.5	-.4	.3	1.8	2.2	-3.5	4.3	.5	.2	
Nonfinancial corporations ⁴	2.0	1.2	1.1	.8	2.2	4.9	-2.8	-.5	-.3	.3	

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

² Excludes Federal and private household workers.

³ Annual rates of change are computed by comparing annual averages.

Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

⁴ Output per hour of all employees.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ended--					
	1985			1986			1985			1986		
	II	III	IV	I	II	III	II	III	IV	I	II	III
Average hourly compensation: ¹												
All persons, business sector	5.1	4.4	3.8	2.5	2.8	2.9	4.5	4.4	4.4	3.9	3.4	3.0
All employees, nonfarm business sector	4.6	3.2	3.7	3.1	2.3	2.3	4.2	4.0	3.9	3.6	3.1	2.9
Employment Cost Index--compensation:												
Civilian nonfarm ² .....	.7	1.6	.6	1.1	.7	1.1	4.6	4.9	4.3	4.1	4.0	3.6
Private nonfarm .....	.8	1.3	.6	1.1	.8	.7	4.2	4.7	3.9	3.8	3.8	3.2
Union .....	.6	.8	.5	1.0	.2	.5	3.1	3.2	2.6	2.9	2.5	2.3
Nonunion	1.0	1.4	.6	1.2	.9	.8	4.9	5.4	4.6	4.2	4.2	3.5
State and local governments .....	.2	3.4	.7	1.0	.6	2.8	6.1	6.0	5.7	5.5	5.8	5.2
Employment Cost Index--wages and salaries:												
Civilian nonfarm ² .....	.9	1.7	.6	1.0	.8	1.1	4.5	5.0	4.4	4.2	4.1	3.5
Private nonfarm	1.1	1.3	.6	1.0	.9	.7	4.3	4.8	4.1	3.9	3.7	3.1
Union	1.1	.9	.5	.7	.4	.6	3.4	3.6	3.1	3.2	2.5	2.3
Nonunion	1.1	1.5	.6	1.1	.9	.7	4.8	5.4	4.6	4.3	4.1	3.4
State and local governments .....	.2	3.5	.8	1.0	.4	3.2	5.5	5.6	5.6	5.5	5.7	5.4
Total effective wage adjustments ³	.8	1.2	.5	.6	.7	.6	3.5	3.5	3.3	3.1	2.9	2.3
From current settlements .....	.2	.2	.1	(*)	.2	.1	.9	.9	.7	.6	.5	.5
From prior settlements .....	.5	.5	.2	.4	.6	.5	1.9	1.8	1.8	1.7	1.8	1.6
From cost-of-living provision .....	.1	.4	.1	.2	(*)	(*)	.7	.8	.7	.8	.7	.2
Negotiated wage adjustments from settlements ³												
First-year adjustments	2.5	2.0	2.1	.9	1.3	1.6	2.4	2.4	2.3	2.0	1.6	1.5
Annual rate over life of contract	2.8	3.1	1.9	1.5	2.0	2.0	2.4	2.5	2.7	2.5	2.2	1.9
Negotiated wage and benefit adjustments from settlements: ⁵												
First-year adjustment	3.5	2.0	2.0	.4	.7	1.9	3.4	3.1	2.6	2.3	1.4	1.4
Annual rate over life of contract	3.4	3.0	1.4	1.2	1.6	1.9	2.7	2.7	2.7	2.6	2.0	1.6

¹ Seasonally adjusted.

² Excludes Federal and household workers.

³ Limited to major collective bargaining units of 1,000 workers or more. The most recent data are preliminary.

⁴ Data round to zero.

⁵ Limited to major collective bargaining units of 5,000 workers or more. The most recent data are preliminary.

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

(Numbers in thousands)

Employment status	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
TOTAL															
Noninstitutional population ^{1, 2}	178,080	179,912	180,470	180,642	180,810	181,361	181,512	181,678	181,843	181,998	182,183	182,354	182,525	182,713	182,935
Labor force ²	115,241	117,167	117,814	117,832	117,927	118,477	118,779	118,900	118,929	119,351	119,796	119,744	119,879	119,936	120,231
Participation rate ³	64.7	65.1	65.3	65.2	65.2	65.3	65.4	65.4	65.4	65.6	65.8	65.7	65.7	65.6	65.7
Total employed ²	106,702	108,856	109,513	109,671	109,904	110,646	110,252	110,481	110,587	110,797	111,353	111,554	111,852	111,607	111,989
Employment-population ratio ⁴	59.9	60.5	60.7	60.7	60.8	61.0	60.7	60.8	60.8	60.9	61.1	61.2	61.3	61.1	61.2
Resident Armed Forces ¹	1,697	1,706	1,700	1,702	1,698	1,691	1,691	1,693	1,695	1,687	1,680	1,672	1,697	1,716	1,749
Civilian employed	105,005	107,150	107,813	107,969	108,206	108,955	108,561	108,788	108,892	109,110	109,673	109,882	110,155	109,891	110,240
Agriculture	3,321	3,179	3,058	3,070	3,151	3,299	3,096	3,285	3,222	3,160	3,165	3,112	3,048	3,121	3,149
Nonagricultural industries	101,685	103,971	104,755	104,899	105,055	105,655	105,465	105,503	105,670	105,950	106,508	106,769	107,107	106,770	107,091
Unemployed	8,539	8,312	8,301	8,161	8,023	7,831	8,527	8,419	8,342	8,554	8,443	8,190	8,027	8,329	8,242
Unemployment rate ⁵	7.4	7.1	7.0	6.9	6.8	6.6	7.2	7.1	7.0	7.2	7.0	6.8	6.7	6.9	6.9
Not in labor force	62,839	62,744	62,656	62,810	62,883	62,885	62,733	62,778	62,914	62,647	62,387	62,610	62,646	62,777	62,704
Men, 16 years and over															
Noninstitutional population ^{1, 2}	85,156	86,025	86,293	86,374	86,459	86,882	86,954	87,035	87,120	87,195	87,288	87,373	87,460	87,556	87,682
Labor force ²	65,386	65,967	66,227	66,176	66,139	66,679	66,838	66,864	66,757	66,943	66,964	66,936	66,944	67,094	67,132
Participation rate ³	76.8	76.7	76.7	76.6	76.5	76.7	76.9	76.8	76.6	76.8	76.7	76.6	76.5	76.6	76.6
Total employed ²	60,642	61,447	61,656	61,731	61,793	62,458	62,243	62,288	62,254	62,190	62,322	62,365	62,515	62,483	62,553
Employment-population ratio ⁴	71.2	71.4	71.4	71.5	71.5	71.9	71.6	71.6	71.5	71.3	71.4	71.4	71.5	71.4	71.3
Resident Armed Forces ¹	1,551	1,556	1,551	1,552	1,549	1,539	1,539	1,540	1,541	1,533	1,525	1,518	1,541	1,560	1,590
Civilian employed	59,091	59,891	60,105	60,179	60,244	60,919	60,704	60,748	60,713	60,657	60,797	60,847	60,974	60,923	60,963
Unemployed	4,744	4,521	4,571	4,445	4,346	4,221	4,595	4,577	4,503	4,754	4,642	4,571	4,429	4,611	4,578
Unemployment rate ⁵	7.3	6.9	6.9	6.7	6.6	6.3	6.9	6.8	6.7	7.1	6.9	6.8	6.6	6.9	6.8
Women, 16 years and over															
Noninstitutional population ^{1, 2}	92,924	93,886	94,177	94,266	94,351	94,479	94,558	94,643	94,723	94,803	94,895	94,981	95,065	95,156	95,253
Labor force ²	49,855	51,200	51,587	51,655	51,788	51,797	51,941	52,036	52,172	52,408	52,832	52,808	52,935	52,842	53,099
Participation rate ³	53.7	54.5	54.8	54.8	54.9	54.8	54.9	55.0	55.1	55.3	55.7	55.6	55.7	55.5	55.7
Total employed ²	46,061	47,409	47,857	47,939	48,111	48,187	48,009	48,194	48,333	48,608	49,031	49,189	49,337	49,125	49,436
Employment-population ratio ⁴	49.6	50.5	50.8	50.9	51.0	51.0	50.8	50.9	51.0	51.3	51.7	51.8	51.9	51.6	51.9
Resident Armed Forces ¹	146	150	149	149	149	152	152	153	154	154	155	154	156	156	159
Civilian employed	45,915	47,259	47,708	47,790	47,962	48,035	47,857	48,041	48,179	48,454	48,876	49,035	49,181	48,969	49,277
Unemployed	3,794	3,791	3,730	3,716	3,677	3,610	3,932	3,842	3,839	3,800	3,801	3,619	3,598	3,717	3,663
Unemployment rate ⁵	7.6	7.4	7.2	7.2	7.1	7.0	7.6	7.4	7.4	7.3	7.2	6.9	6.8	7.0	6.9

¹ The population and Armed Forces figures are not adjusted for seasonal variation.

² Includes members of the Armed Forces stationed in the United States.

³ Labor force as a percent of the noninstitutional population.

⁴ Total employed as a percent of the noninstitutional population.

⁵ Unemployment as a percent of the labor force (including the resident Armed Forces).

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

(Numbers in thousands)

Employment status	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
TOTAL															
Civilian noninstitutional population ¹	176,383	178,206	178,770	178,940	179,112	179,670	179,821	179,985	180,148	180,311	180,503	180,682	180,828	180,997	181,186
Civilian labor force	113,544	115,461	116,114	116,130	116,229	116,786	117,088	117,207	117,234	117,664	118,116	118,072	118,182	118,220	118,482
Participation rate	64.4	64.8	65.0	64.9	64.9	65.0	65.1	65.1	65.1	65.3	65.4	65.3	65.4	65.3	65.4
Employed	105,005	107,150	107,813	107,969	108,206	108,955	108,561	108,788	108,892	109,110	109,673	109,882	110,155	109,891	110,240
Employment-population ratio ²	59.5	60.1	60.3	60.3	60.4	60.6	60.4	60.4	60.4	60.5	60.8	60.8	60.9	60.7	60.8
Unemployed	8,539	8,312	8,301	8,161	8,023	7,831	8,527	8,419	8,342	8,554	8,443	8,190	8,027	8,329	8,242
Unemployment rate	7.5	7.2	7.1	7.0	6.9	6.7	7.3	7.2	7.1	7.3	7.1	6.9	6.8	7.0	7.0
Not in labor force	62,839	62,744	62,656	62,810	62,883	62,885	62,733	62,778	62,914	62,647	62,387	62,610	62,646	62,777	62,704
Men, 20 years and over															
Civilian noninstitutional population ¹	76,219	77,195	77,498	77,566	77,651	78,101	78,171	78,236	78,309	78,387	78,484	78,586	78,634	78,722	78,802
Civilian labor force	59,701	60,277	60,526	60,553	60,548	61,212	61,183	61,268	61,053	61,208	61,387	61,323	61,235	61,345	61,391
Participation rate	78.3	78.1	78.1	78.1	78.0	78.4	78.3	78.3	78.0	78.1	78.2	78.0	77.9	77.9	77.9
Employed	55,769	56,562	56,849	56,897	56,982	57,706	57,384	57,459	57,391	57,312	57,560	57,499	57,607	57,547	57,559
Employment-population ratio ²	73.2	73.3	73.4	73.4	73.4	73.9	73.4	73.4	73.3	73.1	73.3	73.2	73.3	73.1	73.0
Agriculture	2,418	2,278	2,188	2,210	2,278	2,349	2,258	2,411	2,347	2,278	2,320	2,266	2,173	2,272	2,288
Nonagricultural industries	53,351	54,284	54,661	54,687	54,704	55,356	55,127	55,048	55,043	55,034	55,241	55,233	55,435	55,275	55,271
Unemployed	3,932	3,715	3,677	3,656	3,566	3,507	3,799	3,809	3,663	3,897	3,827	3,824	3,628	3,798	3,831
Unemployment rate	6.6	6.2	6.1	6.0	5.9	5.7	6.2	6.2	6.0	6.4	6.2	6.2	5.9	6.2	6.2
Women, 20 years and over															
Civilian noninstitutional population ¹	85,429	86,506	86,810	86,901	86,988	87,112	87,185	87,263	87,355	87,444	87,547	87,629	87,689	87,779	87,856
Civilian labor force	45,900	47,283	47,663	47,713	47,870	47,895	47,921	47,952	48,107	48,409	48,805	48,916	48,989	48,922	49,061
Participation rate	53.7	54.7	54.9	54.9	55.0	55.0	55.0	55.0	55.1	55.4	55.7	55.8	55.9	55.7	55.8
Employed	42,793	44,154	44,609	44,656	44,892	44,980	44,710	44,797	45,009	45,284	45,701	45,918	45,999	45,879	46,062
Employment-population ratio ²	50.1	51.0	51.4	51.4	51.6	51.6	51.3	51.3	51.5	51.8	52.2	52.4	52.5	52.3	52.4
Agriculture	595	596	609	591	597	696	593	598	576	609	565	608	627	610	605
Nonagricultural industries	42,198	43,558	44,000	44,065	44,285	44,284	44,117	44,199	44,433	44,675	45,136	45,309	45,372	45,269	45,457
Unemployed	3,107	3,129	3,054	3,057	2,988	2,915	3,211	3,155	3,097	3,125	3,104	2,998	2,990	3,042	2,999
Unemployment rate	6.8	6.6	6.4	6.4	6.2	6.1	6.7	6.6	6.4	6.5	6.4	6.1	6.1	6.2	6.1
Both sexes, 16 to 19 years															
Civilian noninstitutional population ¹	14,735	14,506	14,463	14,472	14,474	14,458	14,465	14,485	14,484	14,480	14,472	14,467	14,505	14,496	14,527
Civilian labor force	7,943	7,901	7,925	7,864	7,811	7,678	7,984	7,987	8,074	8,047	7,923	7,833	7,958	7,953	8,030
Participation rate	53.9	54.5	54.8	54.3	54.0	53.1	55.2	55.1	55.7	55.6	54.7	54.1	54.9	54.9	55.3
Employed	6,444	6,434	6,355	6,416	6,342	6,269	6,467	6,532	6,492	6,515	6,411	6,465	6,549	6,465	6,619
Employment-population ratio ²	43.7	44.4	43.9	44.3	43.8	43.4	44.7	45.1	44.8	45.0	44.3	44.7	45.2	44.6	45.6
Agriculture	309	305	261	269	276	254	246	276	298	274	280	238	249	239	256
Nonagricultural industries	6,135	6,129	6,094	6,147	6,066	6,015	6,221	6,256	6,194	6,241	6,131	6,227	6,300	6,226	6,363
Unemployed	1,499	1,468	1,570	1,448	1,469	1,409	1,517	1,455	1,582	1,532	1,512	1,368	1,409	1,488	1,411
Unemployment rate	18.9	18.6	19.8	18.4	18.8	18.4	19.0	18.2	19.6	19.0	19.1	17.5	17.7	18.7	17.6
White															
Civilian noninstitutional population ¹	152,347	153,679	154,082	154,203	154,327	154,784	154,889	155,005	155,122	155,236	155,376	155,502	155,604	155,723	155,856
Civilian labor force	98,492	99,926	100,533	100,478	100,533	100,961	101,232	101,248	101,249	101,515	101,975	101,922	102,189	102,127	102,326
Participation rate	64.6	65.0	65.2	65.2	65.1	65.2	65.4	65.3	65.3	65.4	65.6	65.5	65.7	65.6	65.7
Employed	92,120	93,736	94,369	94,507	94,585	95,165	94,803	94,958	95,081	95,180	95,731	95,760	96,271	95,953	96,158
Employment-population ratio ²	60.5	61.0	61.2	61.3	61.3	61.5	61.2	61.3	61.3	61.3	61.6	61.6	61.9	61.6	61.7
Unemployed	6,372	6,191	6,164	5,971	5,948	5,796	6,429	6,290	6,168	6,335	6,244	6,162	5,918	6,174	6,169
Unemployment rate	6.5	6.2	6.1	5.9	5.9	5.7	6.4	6.2	6.1	6.2	6.1	6.0	5.8	6.0	6.0
Black															
Civilian noninstitutional population ¹	19,348	19,664	19,761	19,790	19,819	19,837	19,863	19,889	19,916	19,943	19,974	20,002	20,028	20,056	20,089
Civilian labor force	12,033	12,364	12,412	12,457	12,522	12,548	12,545	12,656	12,740	12,781	12,754	12,601	12,473	12,630	12,732
Participation rate	62.2	62.9	62.8	62.9	63.2	63.3	63.2	63.6	64.0	64.1	63.9	63.0	62.3	63.0	63.4
Employed	10,119	10,501	10,566	10,518	10,657	10,737	10,690	10,791	10,856	10,889	10,825	10,836	10,654	10,757	10,893
Employment-population ratio ²	52.3	53.4	53.5	53.1	53.8	54.1	53.8	54.3	54.5	54.6	54.2	54.2	53.2	53.6	54.2
Unemployed	1,914	1,864	1,846	1,939	1,865	1,810	1,855	1,865	1,884	1,892	1,929	1,766	1,819	1,873	1,838
Unemployment rate	15.9	15.1	14.9	15.6	14.9	14.4	14.8	14.7	14.8	14.8	15.1	14.0	14.6	14.8	14.4

See footnotes at end of table.

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

(Numbers in thousands)

Employment status	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Hispanic origin															
Civilian noninstitutional population ¹	11,478	11,915	12,040	12,075	12,111	12,148	12,184	12,219	12,255	12,290	12,326	12,362	12,397	12,432	12,469
Civilian labor force	7,451	7,698	7,854	7,782	7,772	7,787	7,943	7,920	7,975	8,002	8,110	8,123	8,102	8,170	8,210
Participation rate	64.9	64.6	65.2	64.4	64.2	64.1	65.2	64.8	65.1	65.1	65.8	65.7	65.4	65.7	65.8
Employed	6,651	6,888	6,982	6,953	6,962	6,998	6,969	7,105	7,144	7,123	7,251	7,274	7,213	7,264	7,351
Employment-population ratio ²	57.9	57.8	58.0	57.6	57.5	57.6	57.2	58.2	58.3	58.0	58.8	58.8	58.2	58.4	59.0
Unemployed	800	811	872	829	810	789	974	815	832	878	858	849	889	906	858
Unemployment rate	10.7	10.5	11.1	10.7	10.4	10.1	12.3	10.3	10.4	11.0	10.6	10.5	11.0	11.1	10.5

¹ The population figures are not seasonally adjusted.

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

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals

because data for the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

6. Selected employment indicators, monthly data seasonally adjusted

(In thousands)

Selected categories	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CHARACTERISTIC															
Civilian employed, 16 years and over	105,005	107,150	107,813	107,969	108,206	108,955	108,561	108,788	108,892	109,110	109,673	109,882	110,155	109,891	110,240
Men	59,091	59,891	60,105	60,179	60,244	60,919	60,704	60,748	60,713	60,657	60,797	60,847	60,974	60,923	60,963
Women	45,915	47,259	47,708	47,790	47,962	48,035	47,857	48,041	48,179	48,454	48,876	49,035	49,181	48,969	49,277
Married men, spouse present ..	39,056	39,248	39,272	39,314	39,278	39,615	39,382	39,365	39,555	39,614	39,626	39,611	39,716	39,623	39,668
Married women, spouse present ..	25,636	26,336	26,702	26,721	26,804	26,958	26,593	26,656	26,802	26,920	27,427	27,523	27,438	27,203	27,330
Women who maintain families ..	5,465	5,597	5,514	5,605	5,693	5,702	5,733	5,771	5,812	5,718	5,668	5,829	5,826	5,927	6,056
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,555	1,535	1,465	1,537	1,572	1,673	1,519	1,689	1,587	1,480	1,498	1,486	1,469	1,501	1,562
Self-employed workers	1,553	1,458	1,436	1,361	1,409	1,492	1,444	1,453	1,475	1,486	1,504	1,427	1,379	1,472	1,458
Unpaid family workers	213	185	172	158	164	163	156	172	180	186	154	171	178	157	159
Nonagricultural industries:															
Wage and salary workers	93,565	95,871	96,530	96,676	96,921	97,911	97,516	97,698	97,831	97,994	98,372	98,206	98,667	98,738	98,864
Government	15,770	16,031	16,213	16,157	16,194	16,418	16,104	16,095	16,187	16,325	16,387	16,647	16,479	16,307	16,243
Private industries	77,794	79,841	80,317	80,519	80,727	81,494	81,412	81,604	81,643	81,669	81,984	81,559	82,188	82,432	82,621
Other	1,238	1,249	1,271	1,197	1,131	1,256	1,197	1,213	1,321	1,275	1,279	1,243	1,261	1,234	1,216
Self-employed workers	7,785	7,811	7,991	8,013	7,903	7,855	7,669	7,644	7,571	7,757	7,807	8,081	7,982	7,927	7,996
Unpaid family workers	335	289	248	249	250	273	270	240	253	229	235	254	282	277	262
PERSONS AT WORK PART TIME¹															
All industries:															
Part time for economic reasons ..	5,744	5,590	5,475	5,498	5,494	5,543	5,377	5,538	5,923	5,980	5,537	5,399	5,443	5,544	5,772
Slack work	2,430	2,430	2,251	2,306	2,303	2,364	2,369	2,330	2,603	2,659	2,434	2,484	2,411	2,496	2,524
Could only find part-time work ..	2,948	2,819	2,897	2,883	2,864	2,883	2,703	2,953	2,974	2,893	2,810	2,624	2,711	2,764	2,847
Voluntary part time	13,169	13,489	13,713	13,645	13,556	13,958	13,817	13,754	13,933	13,638	14,268	13,991	14,023	13,860	14,257
Nonagricultural industries:															
Part time for economic reasons ..	5,512	5,334	5,241	5,295	5,294	5,275	5,158	5,301	5,621	5,673	5,320	5,191	5,259	5,298	5,501
Slack work	2,291	2,273	2,115	2,196	2,195	2,208	2,224	2,159	2,430	2,523	2,308	2,323	2,286	2,327	2,334
Could only find part-time work ..	2,866	2,730	2,801	2,784	2,760	2,776	2,636	2,861	2,849	2,790	2,724	2,579	2,660	2,712	2,759
Voluntary part time	12,704	13,038	13,277	13,194	13,122	13,441	13,369	13,285	13,599	13,191	13,779	13,656	13,683	13,468	13,811

¹ Excludes persons "with a job but not at work" during the survey period for such

reasons as vacation, illness, or industrial disputes.

7. Selected unemployment indicators, monthly data seasonally adjusted

(Unemployment rates)

Selected categories	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CHARACTERISTIC															
Total, all civilian workers	7.5	7.2	7.1	7.0	6.9	6.7	7.3	7.2	7.1	7.3	7.1	6.9	6.8	7.0	7.0
Both sexes, 16 to 19 years	18.9	18.6	19.8	18.4	18.8	18.4	19.0	18.2	19.6	19.0	19.1	17.5	17.7	18.7	17.6
Men, 20 years and over	6.6	6.2	6.1	6.0	5.9	5.7	6.2	6.2	6.0	6.4	6.2	6.2	5.9	6.2	6.2
Women, 20 years and over	6.8	6.6	6.4	6.4	6.2	6.1	6.7	6.6	6.4	6.5	6.4	6.1	6.1	6.2	6.1
White, total	6.5	6.2	6.1	5.9	5.9	5.7	6.4	6.2	6.1	6.2	6.1	6.0	5.8	6.0	6.0
Both sexes, 16 to 19 years	16.0	15.7	17.0	15.5	15.9	14.9	16.2	14.5	16.4	16.0	16.2	15.0	15.2	16.1	15.4
Men, 16 to 19 years	16.8	16.5	18.5	15.8	16.2	14.7	16.5	15.3	17.2	17.3	17.8	15.3	16.7	17.0	15.4
Women, 16 to 19 years	15.2	14.8	15.3	15.1	15.5	15.1	15.8	13.7	15.6	14.7	14.4	14.7	13.5	15.2	15.4
Men, 20 years and over	5.7	5.4	5.2	5.2	5.1	5.0	5.4	5.5	5.2	5.5	5.4	5.5	5.0	5.4	5.4
Women, 20 years and over	5.8	5.7	5.5	5.4	5.4	5.3	5.9	5.8	5.5	5.5	5.4	5.3	5.2	5.3	5.2
Black, total	15.9	15.1	14.9	15.6	14.9	14.4	14.8	14.7	14.8	14.8	15.1	14.0	14.6	14.8	14.4
Both sexes, 16 to 19 years	42.7	40.2	39.7	40.8	41.6	41.9	39.1	43.7	42.6	40.8	40.2	38.6	39.5	38.3	34.8
Men, 16 to 19 years	42.7	41.0	41.0	45.2	41.0	41.3	38.7	44.1	41.4	40.8	38.5	41.6	37.4	38.9	38.1
Women, 16 to 19 years	42.6	39.2	38.2	36.0	42.3	42.4	39.5	43.4	43.7	40.8	41.9	35.1	41.8	37.8	31.6
Men, 20 years and over	14.3	13.2	13.7	13.7	13.1	12.7	13.3	12.6	12.6	12.7	13.3	12.7	13.2	13.7	13.5
Women, 20 years and over	13.5	13.1	12.1	13.6	12.6	12.0	12.5	12.2	12.5	12.8	12.8	11.9	12.5	12.5	12.4
Hispanic origin, total	10.7	10.5	11.1	10.7	10.4	10.1	12.3	10.3	10.4	11.0	10.6	10.5	11.0	11.1	10.5
Married men, spouse present	4.6	4.3	4.2	4.3	4.3	4.3	4.5	4.5	4.2	4.5	4.5	4.4	4.1	4.2	4.6
Married women, spouse present	5.7	5.6	5.3	5.5	5.3	5.1	5.5	5.6	5.3	5.4	5.2	5.3	5.1	5.0	5.0
Women who maintain families	10.3	10.4	10.4	10.0	9.4	9.9	9.9	10.1	9.4	10.2	10.1	9.2	10.3	10.1	8.8
Full-time workers	7.2	6.8	6.8	6.7	6.6	6.4	6.9	6.9	6.7	7.0	6.7	6.6	6.4	6.7	6.6
Part-time workers	9.3	9.3	9.6	8.8	9.0	8.4	9.4	9.1	9.6	9.2	9.1	9.0	9.3	9.3	9.2
Unemployed 15 weeks and over	2.4	2.0	2.0	1.9	1.9	1.8	2.0	1.9	1.8	1.9	2.0	1.9	1.9	2.0	1.8
Labor force time lost ¹	8.6	8.1	7.9	7.9	7.8	7.6	8.1	8.1	8.1	8.3	8.1	7.7	7.7	8.0	7.9
INDUSTRY															
Nonagricultural private wage and salary workers	7.4	7.2	7.1	7.0	6.9	6.7	7.2	7.2	7.2	7.3	7.1	7.2	6.9	7.0	7.0
Mining	10.0	9.5	7.7	7.3	10.3	10.9	9.2	10.4	12.8	13.7	17.6	17.0	16.7	13.3	14.4
Construction	14.3	13.1	13.5	13.4	12.6	12.9	13.2	13.0	12.0	13.3	12.1	13.2	12.2	12.7	14.1
Manufacturing	7.5	7.7	7.5	7.7	7.3	7.0	7.2	7.2	6.8	7.5	7.3	6.9	6.8	7.0	7.3
Durable goods	7.2	7.6	7.3	7.6	7.3	7.0	7.4	6.8	6.8	7.3	7.1	6.7	6.9	6.5	7.3
Nondurable goods	7.8	7.8	7.8	7.8	7.3	7.1	7.0	7.7	6.8	7.7	7.5	7.2	6.7	7.8	7.3
Transportation and public utilities	5.5	5.1	5.1	5.1	5.0	4.3	5.3	6.1	5.6	5.3	5.5	6.1	4.6	4.7	5.2
Wholesale and retail trade	8.0	7.6	7.7	7.5	7.6	7.2	7.8	7.6	8.1	8.1	7.7	7.8	7.4	7.6	7.4
Finance and service industries	5.9	5.6	5.4	5.4	5.3	5.2	5.9	5.7	5.9	5.5	5.4	5.7	5.7	5.6	5.3
Government workers	4.5	3.9	3.9	3.6	3.8	3.4	3.8	4.0	3.5	3.7	3.6	3.2	3.2	3.5	3.8
Agricultural wage and salary workers	13.5	13.2	12.9	12.5	10.6	10.9	14.3	11.9	13.4	15.8	13.2	11.6	13.8	13.5	11.7

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

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

(Civilian workers)

Sex and age	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Total, 16 years and over	7.5	7.2	7.1	7.0	6.9	6.7	7.3	7.2	7.1	7.3	7.1	6.9	6.8	7.0	7.0
16 to 24 years	13.9	13.6	13.9	13.5	13.3	13.0	13.6	13.2	13.9	14.2	13.5	13.0	12.8	13.8	12.9
16 to 19 years	18.9	18.6	19.8	18.4	18.8	18.4	19.0	18.2	19.6	19.0	19.1	17.5	17.7	18.7	17.6
16 to 17 years	21.2	21.0	22.7	21.4	21.1	20.9	21.8	19.4	20.9	21.1	20.6	19.4	19.6	20.3	19.1
18 to 19 years	17.4	17.0	17.8	16.9	17.5	16.4	17.2	17.1	18.9	17.5	17.9	15.7	16.6	17.4	16.3
20 to 24 years	11.5	11.1	10.9	11.0	10.6	10.4	10.8	10.6	10.9	11.7	10.7	10.8	10.2	11.2	10.4
25 years and over	5.8	5.6	5.4	5.4	5.3	5.1	5.7	5.7	5.4	5.5	5.6	5.4	5.3	5.4	5.5
25 to 54 years	6.1	5.8	5.7	5.6	5.5	5.4	5.9	5.9	5.8	5.9	5.9	5.8	5.6	5.6	5.8
55 years and over	4.5	4.1	3.9	3.8	3.9	3.9	4.4	4.3	3.9	3.6	3.7	3.8	3.7	4.1	4.2
Men, 16 years and over	7.4	7.0	7.1	6.9	6.7	6.5	7.0	7.0	6.9	7.3	7.1	7.0	6.8	7.0	7.0
16 to 24 years	14.4	14.1	14.6	13.9	13.5	12.8	13.6	13.6	14.5	15.0	14.0	13.5	13.3	14.5	13.0
16 to 19 years	19.6	19.5	21.5	19.4	19.3	18.2	19.3	18.9	20.2	20.4	20.1	18.2	19.2	19.4	18.0
16 to 17 years	21.9	21.9	24.0	20.9	21.6	20.9	23.2	20.0	21.2	21.6	19.4	20.0	21.0	21.9	19.7
18 to 19 years	18.3	17.9	19.9	18.7	18.0	16.2	16.6	17.8	19.7	19.6	20.4	16.1	18.1	17.4	16.7
20 to 24 years	11.9	11.4	11.1	11.2	10.6	10.3	10.7	11.0	11.6	12.2	11.0	11.2	10.3	12.0	10.4
25 years and over	5.7	5.3	5.3	5.2	5.1	5.0	5.5	5.5	5.2	5.4	5.5	5.5	5.3	5.3	5.6
25 to 54 years	5.9	5.6	5.5	5.4	5.4	5.3	5.7	5.7	5.5	5.8	5.8	5.8	5.5	5.5	5.8
55 years and over	4.6	4.1	4.1	4.0	3.9	3.9	4.4	4.3	3.9	3.8	4.1	3.9	4.1	4.3	4.6
Women, 16 years and over	7.6	7.4	7.3	7.2	7.1	7.0	7.6	7.4	7.4	7.3	7.2	6.9	6.8	7.1	6.9
16 to 24 years	13.3	13.0	13.1	13.1	13.2	13.2	13.6	12.7	13.2	13.3	13.0	12.5	12.1	12.9	12.8
16 to 19 years	18.0	17.6	17.9	17.4	18.3	18.5	18.6	17.5	19.0	17.6	18.0	16.6	16.0	17.9	17.1
16 to 17 years	20.4	20.0	21.2	22.0	20.6	20.8	20.2	18.7	20.5	20.5	21.9	18.7	18.1	18.5	18.4
18 to 19 years	16.6	16.0	15.5	15.1	16.9	16.5	17.7	16.3	18.1	15.3	15.1	15.3	15.0	17.3	15.9
20 to 24 years	10.9	10.7	10.7	10.8	10.6	10.5	11.0	10.1	10.0	11.1	10.4	10.4	10.1	10.3	10.5
25 years and over	6.0	5.9	5.6	5.6	5.4	5.3	5.9	5.9	5.8	5.7	5.7	5.4	5.4	5.5	5.4
25 to 54 years	6.3	6.2	5.9	5.9	5.7	5.6	6.2	6.3	6.2	6.1	6.1	5.7	5.8	5.8	5.7
55 years and over	4.2	4.1	3.7	3.6	3.9	3.8	4.4	4.4	3.8	3.4	3.1	3.6	3.1	3.8	3.7

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

(Numbers in thousands)

Reason for unemployment	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Job losers	4,421	4,139	4,040	4,081	3,933	3,776	4,162	4,246	4,034	4,311	4,335	3,937	3,831	4,044	3,979
On layoff	1,171	1,157	1,161	1,175	1,132	1,163	1,152	1,164	1,028	1,133	1,066	1,079	990	1,014	1,082
Other job losers	3,250	2,982	2,879	2,906	2,801	2,613	3,010	3,082	3,006	3,178	3,269	2,858	2,841	3,030	2,897
Job leavers	823	877	911	808	876	996	1,001	1,002	1,110	975	1,013	1,034	978	1,043	997
Reentrants	2,184	2,256	2,237	2,226	2,225	2,066	2,292	2,197	2,191	2,217	2,064	2,223	2,232	2,118	2,223
New entrants	1,110	1,039	1,045	1,055	1,033	1,025	1,097	1,000	1,059	1,062	1,059	965	1,000	1,044	955
PERCENT OF UNEMPLOYED															
Job losers	51.8	49.8	49.1	50.0	48.8	48.0	48.7	50.3	48.1	50.3	51.2	48.3	47.6	49.0	48.8
On layoff	13.7	13.9	14.1	14.4	14.0	14.8	13.5	13.8	12.2	13.2	12.6	13.2	12.3	12.3	13.3
Other job losers	38.1	35.9	35.0	35.6	34.7	33.2	35.2	36.5	35.8	37.1	38.6	35.0	35.3	36.7	35.5
Job leavers	9.6	10.6	11.1	9.9	10.9	12.7	11.7	11.9	13.2	11.4	12.0	12.7	12.2	12.6	12.2
Reentrants	25.6	27.1	27.2	27.2	27.6	26.3	26.8	26.0	26.1	25.9	24.4	27.2	27.8	25.7	27.3
New entrants	13.0	12.5	12.7	12.9	12.8	13.0	12.8	11.8	12.6	12.4	12.5	11.8	12.4	12.7	11.7
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.9	3.6	3.5	3.5	3.4	3.2	3.6	3.6	3.4	3.7	3.7	3.3	3.2	3.4	3.4
Job leavers .....	.7	.8	.8	.7	.8	.9	.9	.9	.9	.8	.9	.9	.8	.9	.8
Reentrants	1.9	2.0	1.9	1.9	1.9	1.8	2.0	1.9	1.9	1.9	1.7	1.9	1.9	1.8	1.9
New entrants	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.8	.8	.9	.8

10. Duration of unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Weeks of unemployment	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Less than 5 weeks	3,350	3,498	3,430	3,465	3,374	3,311	3,562	3,589	3,628	3,705	3,384	3,394	3,427	3,407	3,418
5 to 14 weeks	2,451	2,509	2,536	2,448	2,460	2,441	2,622	2,640	2,685	2,737	2,708	2,486	2,379	2,533	2,584
15 weeks and over	2,737	2,305	2,277	2,205	2,188	2,056	2,340	2,258	2,135	2,209	2,320	2,256	2,295	2,405	2,167
15 to 26 weeks	1,104	1,025	1,057	894	973	969	1,149	1,099	1,001	1,072	1,036	1,066	1,086	1,114	929
27 weeks and over	1,634	1,280	1,220	1,311	1,215	1,087	1,191	1,159	1,134	1,137	1,284	1,190	1,209	1,291	1,238
Mean duration in weeks	18.2	15.6	15.4	15.7	15.4	14.9	15.3	14.4	14.3	14.4	15.2	15.0	15.8	15.6	15.2
Median duration in weeks	7.9	6.8	7.0	6.9	6.9	6.8	6.9	6.8	6.5	6.6	7.3	7.1	7.2	7.2	7.0

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

State	Sept. 1985	Sept. 1986	State	Sept. 1985	Sept. 1986
Alabama	8.1	9.7	Montana	6.1	6.6
Alaska	7.3	9.7	Nebraska	4.7	3.9
Arizona	6.5	6.9	Nevada	7.3	5.0
Arkansas	7.4	8.0	New Hampshire	3.2	2.6
California	7.0	6.2	New Jersey	4.8	4.3
Colorado	5.3	6.7	New Mexico	8.4	9.0
Connecticut	4.3	3.6	New York	6.4	5.8
Delaware	4.2	3.9	North Carolina	4.2	5.0
District of Columbia	8.2	8.5	North Dakota	4.4	5.0
Florida	6.5	6.3	Ohio	9.0	8.4
Georgia	6.4	5.8	Oklahoma	6.6	8.2
Hawaii	5.6	4.5	Oregon	7.5	7.7
Idaho	6.4	7.1	Pennsylvania	7.1	6.4
Illinois	8.9	7.8	Rhode Island	4.2	3.3
Indiana	6.9	6.3	South Carolina	6.2	5.4
Iowa	7.0	5.8	South Dakota	4.0	3.6
Kansas	4.4	5.2	Tennessee	7.2	7.0
Kentucky	8.2	7.0	Texas	7.2	9.1
Louisiana	11.4	12.5	Utah	5.0	5.2
Maine	4.3	4.2	Vermont	3.7	3.4
Maryland	4.1	4.2	Virginia	5.2	4.5
Massachusetts	3.9	4.3	Washington	6.8	7.1
Michigan	9.8	8.3	West Virginia	10.7	11.6
Minnesota	4.9	4.2	Wisconsin	5.8	6.1
Mississippi	9.5	11.2	Wyoming	5.9	8.0
Missouri	5.4	5.9			

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

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

(In thousands)

State	Sept. 1985	Aug. 1986	Sept. 1986 ^P	State	Sept. 1985	Aug. 1986	Sept. 1986 ^P
Alabama	1,422.9	1,436.6	1,442.1	Nebraska	656.3	657.1	663.7
Alaska	244.9	242.7	237.4	Nevada	455.4	469.6	473.0
Arizona	1,286.3	1,335.5	1,354.6	New Hampshire	479.2	494.8	495.4
Arkansas	819.0	823.3	839.2	New Jersey	3,451.6	3,564.3	3,550.0
California	11,084.9	11,173.1	11,305.4	New Mexico	524.9	523.7	524.6
Colorado	1,426.8	1,445.8	1,441.6	New York	7,797.6	7,914.0	7,948.5
Connecticut	1,583.6	1,607.6	1,623.2	North Carolina	2,672.5	2,696.9	2,752.7
Delaware	297.8	301.9	301.6	North Dakota	254.8	248.9	252.4
District of Columbia	627.0	667.2	648.9	Ohio	4,437.7	4,526.0	4,570.1
Florida	4,414.8	4,508.5	4,575.8	Oklahoma	1,186.0	1,137.1	1,146.1
Georgia	2,591.1	2,650.4	2,672.9	Oregon	1,047.2	1,058.6	1,068.8
Hawaii	418.9	431.5	425.8	Pennsylvania	4,777.9	4,835.3	4,852.2
Idaho	348.7	333.0	344.2	Rhode Island	430.2	430.6	433.4
Illinois	4,794.6	4,826.3	4,857.3	South Carolina	1,318.7	1,347.8	1,362.7
Indiana	2,218.6	2,266.3	2,296.3	South Dakota	249.7	252.0	253.3
Iowa	1,084.1	1,062.0	1,072.3	Tennessee	1,889.7	1,943.3	1,964.9
Kansas	985.4	989.7	999.3	Texas	6,711.0	6,644.1	6,676.0
Kentucky	1,260.1	1,274.6	1,289.4	Utah	634.9	632.9	642.6
Louisiana	1,603.9	1,504.3	1,517.8	Vermont	227.1	224.3	227.8
Maine	471.7	485.6	484.9	Virginia	2,479.3	2,536.5	2,562.1
Maryland	1,902.1	1,941.5	1,941.5	Washington	1,741.5	1,772.4	1,794.1
Massachusetts	2,938.6	2,967.5	2,991.1	West Virginia	601.7	597.5	600.9
Michigan	3,553.0	3,575.2	3,611.9	Wisconsin	2,016.1	2,031.4	2,047.5
Minnesota	1,894.8	1,905.0	1,923.8	Wyoming	211.8	201.1	201.0
Mississippi	848.5	835.0	856.5	Puerto Rico	679.0	696.9	704.2
Missouri	2,133.1	2,163.2	2,186.0	Virgin Islands	35.5	37.2	35.8
Montana	282.8	273.6	273.9				

^P = preliminary

because of the continual updating of the database.

NOTE: Some data in this table may differ from data published elsewhere

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

(In thousands)

Industry	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. ^P	Oct. ^P
TOTAL	94,496	97,614	98,428	98,666	98,910	99,296	99,429	99,484	99,783	99,918	99,843	100,105	100,283	100,448	100,746
PRIVATE SECTOR	78,472	81,199	81,853	82,073	82,281	82,659	82,748	82,785	83,072	83,198	83,161	83,508	83,655	83,705	83,943
GOODS PRODUCING	24,727	24,930	24,903	24,931	24,977	25,101	25,038	24,945	25,038	24,965	24,854	24,869	24,888	24,850	24,882
Mining	966	930	913	907	901	897	880	852	821	790	772	768	753	743	746
Oil and gas extraction	607	585	571	565	560	556	541	518	488	461	446	442	431	423	424
Construction	4,383	4,687	4,754	4,765	4,787	4,901	4,864	4,838	4,972	4,974	4,947	4,980	5,012	5,008	5,010
General building contractors	1,161	1,251	1,276	1,283	1,287	1,330	1,320	1,298	1,315	1,314	1,299	1,299	1,306	1,299	1,306
Manufacturing	19,378	19,314	19,236	19,259	19,289	19,303	19,294	19,255	19,245	19,201	19,135	19,121	19,123	19,099	19,126
Production workers	13,285	13,130	13,059	13,074	13,100	13,111	13,097	13,061	13,060	13,025	12,979	12,961	12,971	12,955	12,998
Durable goods	11,505	11,516	11,447	11,453	11,461	11,466	11,455	11,418	11,415	11,378	11,307	11,294	11,302	11,275	11,290
Production workers	7,739	7,660	7,594	7,594	7,595	7,595	7,579	7,545	7,547	7,519	7,462	7,441	7,458	7,439	7,471
Lumber and wood products	704	700	705	708	710	716	716	715	719	719	721	724	729	734	738
Furniture and fixtures	487	493	493	493	494	494	494	493	494	496	496	498	499	500	501
Stone, clay, and glass products	593	591	591	591	593	596	597	594	600	599	597	593	592	594	593
Primary metal industries	857	813	797	801	803	798	795	787	785	780	761	758	751	749	750
Blast furnaces and basic steel products	334	305	304	302	303	300	299	293	291	288	286	285	272	270	274
Fabricated metal products	1,463	1,468	1,460	1,459	1,456	1,455	1,452	1,450	1,451	1,447	1,440	1,428	1,429	1,433	1,431
Machinery, except electrical	2,198	2,182	2,146	2,139	2,133	2,137	2,127	2,118	2,111	2,100	2,089	2,079	2,072	2,044	2,039
Electrical and electronic equipment	2,208	2,207	2,181	2,179	2,182	2,182	2,181	*2,177	2,177	2,175	2,143	2,169	2,168	2,162	2,171
Transportation equipment	1,901	1,971	1,987	1,993	1,998	1,996	1,998	1,989	1,986	1,972	1,974	1,969	1,985	1,982	1,990
Motor vehicles and equipment	862	876	873	870	872	867	864	858	854	839	839	824	839	836	836
Instruments and related products	714	723	722	723	725	724	725	726	723	721	717	713	713	714	713
Miscellaneous manufacturing industries	382	369	365	367	367	368	370	369	369	369	369	363	364	363	364
Nondurable goods	7,873	7,798	7,789	7,806	7,828	7,837	7,839	7,837	7,830	7,823	7,828	7,827	7,821	7,824	7,836
Production workers	5,546	5,470	5,465	5,480	5,505	5,516	5,518	5,516	5,513	5,506	5,517	5,520	5,513	5,516	5,527
Food and kindred products	1,612	1,608	1,610	1,612	1,623	1,623	1,631	1,632	1,633	1,640	1,648	1,645	1,642	1,638	1,635
Tobacco manufactures	64	65	64	65	64	64	63	63	63	62	62	62	59	60	59
Textile mill products	746	704	699	701	702	702	705	707	703	705	707	710	711	710	710
Apparel and other textile products	1,185	1,125	1,121	1,122	1,130	1,133	1,122	1,117	1,119	1,113	1,106	1,108	1,108	1,109	1,108
Paper and allied products	681	683	683	687	686	687	687	688	689	689	690	687	685	690	693
Printing and publishing	1,376	1,435	1,447	1,454	1,457	1,461	1,467	1,469	1,472	1,474	1,477	1,483	1,481	1,485	1,489
Chemicals and allied products	1,049	1,046	1,040	1,037	1,035	1,034	1,032	1,031	1,028	1,024	1,026	1,025	1,026	1,023	1,023
Petroleum and coal products	189	178	171	170	169	168	167	166	166	166	164	163	163	162	163
Rubber and misc. plastics products	780	790	790	794	798	802	803	804	800	796	797	792	794	797	805
Leather and leather products	189	166	164	164	164	163	162	160	157	154	151	152	152	150	151
SERVICE-PRODUCING	69,769	72,684	73,525	73,735	73,933	74,195	74,391	74,539	74,745	74,953	74,989	75,236	75,395	75,598	75,864
Transportation and public utilities	5,159	5,242	5,260	5,272	5,277	5,286	5,277	5,280	5,266	5,265	5,167	5,288	5,255	5,309	5,314
Transportation	2,917	3,006	3,026	3,040	3,046	3,056	3,048	3,053	3,040	3,037	3,035	3,057	3,063	3,080	3,092
Communication and public utilities	2,242	2,236	2,234	2,232	2,231	2,230	2,229	2,227	2,226	2,228	2,132	2,231	2,192	2,229	2,222
Wholesale trade	5,555	5,740	5,796	5,796	5,809	5,830	5,843	5,841	5,864	5,872	5,829	5,849	5,863	5,858	5,871
Durable goods	3,276	3,409	3,442	3,451	3,460	3,470	3,482	3,480	3,485	3,488	3,454	3,483	3,485	3,485	3,493
Nondurable goods	2,279	2,331	2,354	2,345	2,349	2,360	2,361	2,361	2,379	2,384	2,375	2,366	2,378	2,373	2,378
Retail trade	16,545	17,360	17,543	17,589	17,622	17,734	17,795	17,828	17,851	17,911	17,944	17,992	18,030	18,030	18,109
General merchandise stores	2,267	2,320	2,329	2,326	2,317	2,328	2,333	2,333	2,342	2,344	2,350	2,354	2,359	2,364	2,383
Food stores	2,637	2,779	2,828	2,845	2,870	2,880	2,891	2,901	2,910	2,917	2,932	2,938	2,951	2,951	2,958
Automotive dealers and service stations	1,799	1,892	1,916	1,918	1,922	1,929	1,938	1,939	1,940	1,944	1,945	1,950	1,962	1,967	1,975
Eating and drinking places	5,388	5,715	5,772	5,783	5,801	5,831	5,854	5,868	5,859	5,889	5,918	5,931	5,923	5,918	5,952
Finance, insurance, and real estate	5,689	5,953	6,038	6,070	6,095	6,123	6,157	6,184	6,228	6,261	6,295	6,334	6,364	6,383	6,399
Finance	2,854	2,979	3,024	3,039	3,053	3,066	3,082	3,095	3,120	3,137	3,159	3,176	3,192	3,201	3,213
Insurance	1,757	1,830	1,852	1,862	1,868	1,878	1,889	1,900	1,910	1,918	1,927	1,945	1,952	1,962	1,968
Real estate	1,078	1,144	1,162	1,169	1,174	1,179	1,186	1,189	1,198	1,206	1,209	1,213	1,220	1,220	1,218
Services	20,797	21,974	22,313	22,415	22,501	22,585	22,638	22,707	22,825	22,924	23,072	23,176	23,255	23,275	23,368
Business services	4,057	4,452	4,567	4,604	4,631	4,660	4,687	4,698	4,750	4,755	4,792	4,835	4,848	4,887	4,911
Health services	6,122	6,310	6,375	6,401	6,424	6,447	6,471	6,497	6,511	6,543	6,571	6,601	6,634	6,650	6,687
Government	16,024	16,415	16,575	16,593	16,629	16,637	16,681	16,699	16,711	16,720	16,682	16,597	16,628	16,743	16,803
Federal	2,807	2,875	2,895	2,904	2,913	2,918	2,918	2,923	2,914	2,899	2,875	2,866	2,875	2,899	2,895
State	3,734	3,848	3,895	3,901	3,904	3,916	3,924	3,927	3,938	3,936	3,927	3,921	3,919	3,940	3,951
Local	9,482	9,692	9,785	9,788	9,812	9,803	9,839	9,849	9,859	9,885	9,880	9,810	9,834	9,904	9,957

^P = preliminary

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

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

Industry	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. ^P	Oct. ^P
PRIVATE SECTOR	35.2	34.9	34.9	34.8	34.9	35.0	34.9	34.9	34.8	34.8	34.7	34.7	34.8	34.7	34.6
CONSTRUCTION	37.8	37.7	-	-	-	-	-	-	-	-	-	-	-	-	-
MANUFACTURING	40.7	40.5	40.7	40.7	40.9	40.8	40.7	40.7	40.7	40.7	40.6	40.6	40.8	40.8	40.6
Overtime hours	3.4	3.3	3.4	3.4	3.6	3.5	3.4	3.4	3.4	3.4	3.3	3.4	3.5	3.5	3.4
Durable goods	41.4	41.2	41.3	41.3	41.6	41.5	41.4	41.4	41.3	41.2	41.2	41.1	41.4	41.5	41.2
Overtime hours	3.6	3.5	3.5	3.6	3.7	3.6	3.5	3.6	3.6	3.4	3.5	3.5	3.5	3.6	3.5
Lumber and wood products	39.9	39.9	40.2	39.9	40.2	40.4	40.0	40.2	40.3	40.3	39.9	40.1	40.2	40.1	40.2
Furniture and fixtures	39.7	39.4	39.5	39.4	39.9	40.0	39.7	39.4	39.1	39.4	39.4	39.4	39.9	40.1	39.8
Stone, clay, and glass products	42.0	41.9	42.1	41.8	41.8	42.7	41.9	41.9	42.4	42.3	42.2	42.2	42.5	42.5	42.2
Primary metal industries	41.7	41.5	41.8	41.9	42.1	41.9	42.1	41.9	41.3	41.7	41.6	41.3	41.9	42.1	42.3
Blast furnaces and basic steel products	40.7	41.1	41.6	41.9	41.9	41.7	41.8	41.7	40.5	41.5	41.1	41.2	41.5	41.9	42.8
Fabricated metal products	41.4	41.3	41.5	41.5	41.6	41.5	41.5	41.4	41.2	41.1	41.1	41.1	41.2	41.5	41.0
Machinery except electrical	41.9	41.5	41.5	41.6	41.7	41.6	41.6	41.6	41.8	41.8	41.7	41.4	41.7	41.7	41.5
Electrical and electronic equipment	41.0	40.6	40.6	40.9	41.1	41.0	40.9	41.0	41.1	41.0	41.0	41.1	41.2	41.3	41.0
Transportation equipment	42.7	42.6	42.8	42.7	43.0	42.8	42.7	42.7	42.1	41.9	42.2	42.1	42.6	42.6	42.0
Motor vehicles and equipment	43.8	43.5	43.7	43.6	44.0	43.6	43.4	43.3	41.9	41.8	42.4	42.4	42.8	42.7	41.9
Instruments and related products	41.3	41.0	40.9	41.0	41.6	41.1	41.2	41.3	41.3	40.9	41.0	40.8	41.0	40.7	40.8
Miscellaneous manufacturing	39.4	39.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Nondurable goods	39.7	39.6	39.8	39.8	40.0	39.9	39.7	39.8	39.9	39.9	39.8	39.8	40.0	39.9	39.8
Overtime hours	3.1	3.1	3.2	3.2	3.4	3.3	3.2	3.2	3.3	3.4	3.2	3.4	3.4	3.3	3.4
Food and kindred products	39.8	40.0	40.2	40.0	40.1	40.1	39.8	39.9	40.2	40.2	40.0	40.0	40.3	39.7	39.7
Tobacco manufactures	38.9	37.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Textile mill products	39.9	39.7	40.7	40.8	41.0	40.8	40.6	40.7	41.3	41.1	40.8	40.9	41.4	41.5	41.2
Apparel and other textile products	36.4	36.4	36.6	36.8	36.8	36.7	36.3	36.5	36.9	36.5	36.5	36.6	36.5	36.7	36.6
Paper and allied products	43.1	43.1	43.2	43.3	43.5	43.6	43.5	43.5	43.0	43.2	43.1	43.2	43.5	43.1	42.9
Printing and publishing	37.9	37.8	37.9	37.9	38.1	38.0	38.0	38.0	38.0	38.0	37.8	37.9	38.0	38.0	37.8
Chemicals and allied products	41.9	41.9	41.8	41.9	42.0	41.9	41.8	41.9	41.9	42.0	41.9	41.9	42.1	42.0	42.1
Petroleum and coal products	43.7	43.0	44.2	43.2	43.6	43.5	43.7	43.8	43.6	43.4	44.0	43.5	44.3	43.2	43.4
Leather and leather products	36.8	37.2	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION AND PUBLIC UTILITIES	39.4	39.5	39.5	39.4	39.5	39.4	39.5	39.6	39.2	39.2	39.1	39.2	39.1	38.9	38.8
WHOLESALE TRADE	38.5	38.4	38.4	38.4	38.4	38.5	38.4	38.5	38.5	38.4	38.3	38.3	38.4	38.2	38.3
RETAIL TRADE	29.8	29.4	29.3	29.3	29.2	29.3	29.3	29.3	29.2	29.2	29.1	29.2	29.2	29.2	29.1
SERVICES	32.6	32.5	32.5	32.4	32.5	32.6	32.6	32.5	32.5	32.5	32.4	32.4	32.4	32.4	32.3

- Data not available.
^P = preliminary

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

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

Industry	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. ^P	Oct. ^P
PRIVATE SECTOR	\$8.32	\$8.57	\$8.64	\$8.66	\$8.71	\$8.72	\$8.74	\$8.73	\$8.72	\$8.72	\$8.71	\$8.69	\$8.70	\$8.81	\$8.83
Seasonally adjusted	-	-	8.63	8.65	8.70	8.68	8.71	8.73	8.72	8.73	8.74	8.73	8.77	8.77	8.82
MINING	11.63	11.98	12.00	12.07	12.27	12.24	12.32	12.35	12.43	12.44	12.50	12.46	12.51	12.51	12.54
CONSTRUCTION	12.13	12.31	12.42	12.28	12.47	12.34	12.35	12.22	12.29	12.33	12.31	12.39	12.54	12.63	
MANUFACTURING	9.19	9.53	9.56	9.63	9.74	9.70	9.70	9.72	9.70	9.71	9.70	9.74	9.68	9.73	9.73
Durable goods	9.74	10.10	10.15	10.22	10.34	10.27	10.29	10.30	10.28	10.28	10.26	10.27	10.22	10.30	10.28
Lumber and wood products	8.03	8.22	8.30	8.29	8.35	8.30	8.36	8.33	8.32	8.37	8.43	8.36	8.40	8.42	8.37
Furniture and fixtures	6.84	7.17	7.29	7.32	7.38	7.36	7.31	7.35	7.36	7.39	7.46	7.44	7.46	7.50	7.49
Stone, clay, and glass products	9.57	9.84	9.87	9.91	9.95	9.96	9.94	9.93	10.00	10.04	10.04	10.06	10.07	10.10	10.08
Primary metal industries	11.47	11.68	11.61	11.77	11.84	11.81	11.96	11.99	12.00	12.02	11.94	12.06	11.85	11.95	11.93
Blast furnaces and basic steel products	12.98	13.34	13.32	13.43	13.44	13.48	13.81	13.80	13.82	13.86	13.88	14.08	13.83	14.01	13.95
Fabricated metal products	9.40	9.70	9.71	9.76	9.91	9.85	9.85	9.88	9.84	9.85	9.88	9.84	9.82	9.87	9.87
Machinery, except electrical	9.96	10.29	10.41	10.48	10.55	10.50	10.53	10.58	10.55	10.55	10.55	10.57	10.57	10.58	10.58
Electrical and electronic equipment	9.04	9.47	9.55	9.61	9.68	9.60	9.60	9.62	9.62	9.64	9.61	9.68	9.67	9.72	9.67
Transportation equipment	12.20	12.72	12.78	12.85	13.06	12.91	12.87	12.90	12.83	12.79	12.78	12.78	12.75	12.89	12.89
Motor vehicles and equipment	12.73	13.42	13.44	13.52	13.81	13.66	13.59	13.66	13.54	13.47	13.41	13.40	13.36	13.53	13.51
Instruments and related products	8.84	9.16	9.24	9.27	9.39	9.32	9.39	9.41	9.41	9.40	9.41	9.47	9.45	9.50	9.46
Miscellaneous manufacturing	7.05	7.30	7.32	7.37	7.48	7.48	7.50	7.51	7.50	7.54	7.54	7.59	7.52	7.60	7.65
Nondurable goods	8.38	8.71	8.72	8.79	8.87	8.86	8.86	8.88	8.88	8.90	8.91	8.99	8.93	8.95	8.96
Food and kindred products	8.39	8.57	8.51	8.61	8.71	8.72	8.71	8.74	8.75	8.78	8.74	8.75	8.65	8.63	8.67
Tobacco manufactures	11.22	11.94	11.31	11.97	11.78	11.89	12.38	12.76	12.84	13.38	13.68	13.48	13.44	12.16	12.10
Textile mill products	6.46	6.71	6.76	6.79	6.83	6.85	6.83	6.86	6.87	6.88	6.87	6.90	6.99	7.05	7.03
Apparel and other textile products	5.55	5.73	5.74	5.75	5.80	5.82	5.79	5.80	5.81	5.78	5.79	5.76	5.79	5.87	5.85
Paper and allied products	10.41	10.82	10.91	10.97	11.07	11.02	10.99	11.03	11.05	11.12	11.15	11.31	11.17	11.19	11.27
Printing and publishing	9.41	9.71	9.78	9.83	9.92	9.85	9.86	9.90	9.87	9.91	9.88	9.96	10.00	10.10	10.09
Chemicals and allied products	11.07	11.56	11.70	11.80	11.85	11.86	11.81	11.78	11.82	11.89	11.94	12.04	11.99	12.00	12.09
Petroleum and coal products	13.44	14.06	13.99	14.07	14.24	14.26	14.21	14.22	14.16	14.02	14.14	14.16	14.07	14.22	14.13
Rubber and miscellaneous plastics products	8.29	8.54	8.54	8.63	8.73	8.69	8.69	8.72	8.68	8.75	8.75	8.82	8.81	8.75	8.76
Leather and leather products	5.71	5.82	5.77	5.83	5.83	5.86	5.83	5.86	5.89	5.88	5.88	5.89	5.90	5.93	5.91
TRANSPORTATION AND PUBLIC UTILITIES	11.12	11.40	11.48	11.59	11.61	11.59	11.64	11.62	11.55	11.54	11.57	11.61	11.61	11.72	11.72
WHOLESALE TRADE	8.89	9.16	9.16	9.23	9.33	9.28	9.36	9.33	9.29	9.29	9.32	9.30	9.31	9.37	9.38
RETAIL TRADE	5.85	5.94	5.95	5.97	5.99	6.03	6.04	6.03	6.01	6.00	5.99	5.97	5.97	6.06	6.06
FINANCE, INSURANCE, AND REAL ESTATE	7.63	7.94	8.01	8.06	8.15	8.14	8.28	8.30	8.29	8.31	8.37	8.30	8.33	8.40	8.40
SERVICES	7.59	7.89	7.99	8.05	8.12	8.12	8.17	8.18	8.12	8.10	8.10	8.04	8.05	8.19	8.25

- Data not available.
P = preliminary

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

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

Industry	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. ^P	Oct. ^P
PRIVATE SECTOR															
Current dollars	\$292.86	\$299.09	\$301.54	\$301.37	\$306.59	\$302.58	\$300.66	\$302.93	\$301.71	\$302.58	\$303.98	\$304.15	\$305.37	\$307.47	\$306.40
Seasonally adjusted	-	-	301.19	301.02	303.63	303.80	303.98	304.68	303.46	303.80	303.28	302.93	305.20	304.32	305.17
Constant (1977) dollars	172.78	170.42	170.36	169.59	172.05	169.32	168.82	171.05	170.94	170.85	170.78	170.97	171.36	171.77	-
MINING	503.58	519.93	518.40	521.42	537.43	543.46	522.37	522.41	522.06	519.99	525.00	518.34	529.17	530.42	526.68
CONSTRUCTION	458.51	464.09	475.69	450.68	460.14	459.05	434.72	444.81	462.10	467.31	465.32	471.47	475.78	482.79	478.68
MANUFACTURING															
Current dollars	374.03	385.97	390.05	393.87	406.16	394.79	390.91	395.60	392.85	394.23	395.76	391.55	393.98	398.93	396.01
Constant (1977) dollars	220.67	219.93	220.37	221.65	227.92	220.92	219.49	223.38	222.58	222.60	222.34	220.10	221.09	222.87	-
Durable goods	403.24	416.12	419.20	424.13	439.45	425.18	421.89	426.42	423.54	423.54	424.76	417.99	420.04	428.48	424.56
Lumber and wood products	320.40	327.98	335.32	327.46	335.67	329.51	328.55	333.20	334.46	338.99	342.26	334.40	341.04	342.69	338.15
Furniture and fixtures	271.55	282.50	291.60	291.34	303.32	289.98	284.36	288.12	286.30	288.21	294.67	287.93	298.40	303.75	302.60
Stone, clay, and glass products	401.94	412.30	419.48	414.24	414.92	414.34	403.56	412.10	425.00	428.71	429.71	427.55	432.00	435.31	429.41
Primary metal industries	478.30	484.72	480.65	491.99	504.38	493.66	503.52	504.78	499.20	501.23	499.09	495.67	491.78	504.29	499.87
Blast furnaces and basic steel products	528.29	548.27	544.79	557.35	564.48	556.72	578.64	576.84	569.38	576.58	577.41	582.91	569.80	587.02	585.90
Fabricated metal products	389.16	400.61	403.94	406.02	422.17	407.79	403.85	409.03	403.44	404.84	408.04	398.52	402.62	410.59	405.66
Machinery, except electrical	417.32	427.04	430.97	438.06	452.60	437.85	437.00	442.24	437.83	437.83	439.94	431.26	436.54	441.19	438.01
Electrical and electronic equipment	370.64	384.48	387.73	396.89	408.50	394.56	389.76	395.38	392.50	393.31	394.01	391.07	395.50	402.41	396.47
Transportation equipment	520.94	541.87	545.71	551.27	577.25	555.13	545.69	552.12	542.71	537.18	540.59	530.37	531.68	545.25	540.09
Motor vehicles and equipment	557.57	583.77	585.98	588.12	625.59	595.58	583.01	592.84	574.10	567.09	572.61	560.12	555.78	575.03	566.07
Instruments and related products	365.09	375.56	376.07	382.85	400.81	383.05	384.99	389.57	385.81	382.58	385.81	382.59	384.62	388.55	384.08
Miscellaneous manufacturing	277.77	287.62	295.00	296.27	304.44	297.70	294.75	299.65	297.75	297.08	298.58	294.49	294.78	300.20	305.24
Nondurable goods	332.69	344.92	347.93	351.60	359.24	352.63	347.31	352.54	351.65	354.22	355.51	356.00	358.09	359.79	357.50
Food and kindred products	333.92	342.80	343.80	346.12	354.50	347.93	339.69	344.36	346.50	352.08	350.47	350.00	352.06	348.65	345.93
Tobacco manufactures	436.46	444.17	444.48	435.71	448.82	448.25	453.11	478.50	469.94	504.43	523.94	483.93	486.53	470.59	469.48
Textile mill products	257.75	266.39	276.48	279.75	283.45	278.80	274.57	278.52	278.92	282.08	283.04	278.07	290.78	294.69	291.04
Apparel and other textile products	202.02	208.57	211.23	212.75	215.18	213.01	207.28	211.70	211.48	210.97	213.65	209.09	211.91	215.43	215.28
Paper and allied products	448.67	466.34	472.40	477.20	490.40	479.37	472.57	477.60	474.05	479.27	480.57	486.33	483.66	485.65	484.61
Printing and publishing	356.64	367.04	371.64	375.51	384.90	371.35	370.74	377.19	374.07	374.60	370.50	374.50	381.00	386.83	382.41
Chemicals and allied products	463.83	484.36	486.72	495.60	503.63	495.75	492.48	494.76	495.26	499.38	502.67	502.07	501.18	504.00	505.36
Petroleum and coal products	587.33	604.58	619.76	610.64	622.29	616.03	612.45	621.41	615.96	605.66	622.16	618.79	623.30	624.26	614.66
Rubber and miscellaneous plastics products	345.69	350.99	350.99	356.42	366.66	359.77	356.29	360.14	356.75	360.50	361.38	357.21	362.97	363.13	362.66
Leather and leather products	210.13	216.50	216.95	219.21	220.96	217.41	209.88	212.72	213.81	215.80	221.68	217.93	216.53	218.22	216.31
TRANSPORTATION AND PUBLIC UTILITIES	438.13	450.30	453.46	457.81	460.92	452.01	456.29	457.83	450.45	450.06	455.86	457.43	457.43	458.25	454.74
WHOLESALE TRADE	342.27	351.74	351.74	355.36	360.14	355.42	355.68	357.34	355.81	356.74	358.82	358.05	358.44	358.87	359.25
RETAIL TRADE	174.33	174.64	173.74	173.73	178.50	173.06	172.74	174.27	173.69	174.60	176.71	178.50	178.50	176.95	175.74
FINANCE, INSURANCE, AND REAL ESTATE	278.50	289.02	290.76	291.77	299.11	296.30	304.70	304.61	301.76	301.65	306.34	302.95	304.88	305.76	306.60
SERVICES	247.43	256.43	259.68	260.02	263.90	263.09	264.71	265.03	263.09	262.44	264.06	263.71	264.04	265.36	266.48

- Data not available.
P = preliminary

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

17. The Hourly Earnings Index for production or nonsupervisory workers on private nonagricultural payrolls by industry

Industry	Not seasonally adjusted				Seasonally adjusted					
	Oct. 1985	Aug. 1986	Sept. 1986 ^P	Oct. 1986 ^P	Oct. 1985	June 1986	July 1986	Aug. 1986	Sept. 1986	Oct. 1986 ^P
PRIVATE SECTOR (in current dollars)	166.2	168.5	170.0	170.3	166.2	169.2	168.9	169.3	169.6	170.3
Mining ¹	178.8	181.5	181.4	181.9	-	-	-	-	-	-
Construction	151.9	151.3	153.0	154.1	150.4	151.4	150.8	151.3	151.2	152.8
Manufacturing	169.3	172.2	172.6	172.8	169.7	172.5	172.7	172.9	172.8	173.3
Transportation and public utilities	167.7	169.6	171.6	171.7	167.4	170.7	170.3	170.1	170.9	171.3
Wholesale trade ¹	169.1	171.7	172.8	173.1	-	-	-	-	-	-
Retail trade	156.0	157.4	159.3	159.1	156.4	157.8	157.7	158.5	159.1	159.6
Finance, insurance, and real estate ¹	173.2	179.8	181.0	181.3	-	-	-	-	-	-
Services	170.1	172.6	175.1	175.9	169.9	174.3	174.3	174.3	174.4	175.7
PRIVATE SECTOR (in constant dollars)	93.9	94.6	94.9	-	94.0	95.2	95.1	95.1	95.0	-

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.
- Data not available.

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

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

(In percent)

Time span and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Over 1-month span:												
1984	67.8	72.7	67.6	67.6	62.4	65.4	62.2	55.9	50.5	63.0	53.5	57.0
1985	52.4	47.8	53.8	49.2	51.6	47.0	56.2	56.8	50.8	61.9	57.6	59.5
1986	59.7	53.5	45.1	54.1	49.2	46.2	54.6	54.3	52.2	55.1	-	-
Over 3-month span:												
1984	76.5	75.1	75.9	71.4	71.6	68.1	63.2	58.1	56.8	53.5	58.1	53.0
1985	51.1	49.7	46.2	46.2	45.1	51.4	49.7	51.1	55.1	55.9	61.4	60.5
1986	58.1	54.3	51.1	49.7	48.4	44.9	47.3	52.7	55.1	-	-	-
Over 6-month span:												
1984	78.1	76.5	77.0	75.1	69.2	65.1	63.2	59.2	58.6	53.2	49.7	54.9
1985	49.2	47.8	43.0	45.9	44.3	44.3	48.9	50.8	54.1	57.0	57.0	55.9
1986	53.8	53.8	47.6	45.9	45.9	48.4	48.9	-	-	-	-	-
Over 12-month span:												
1984	81.1	78.1	72.2	72.2	68.9	67.8	65.7	62.7	59.7	54.6	51.4	48.6
1985	46.2	45.7	46.8	43.8	44.9	47.3	47.6	48.9	47.3	49.5	48.9	48.6
1986	50.3	51.1	51.6	51.1	-	-	-	-	-	-	-	-

- Data not available.

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. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

19. Annual data: Employment status of the noninstitutional population

(Numbers in thousands)

Employment status	1977	1978	1979	1980	1981	1982	1983	1984	1985
Noninstitutional population	160,689	163,541	166,460	169,349	171,775	173,939	175,891	178,080	179,912
Labor force:									
Total (number)	100,665	103,882	106,559	108,544	110,315	111,872	113,226	115,241	117,167
Percent of population	62.6	63.5	64.0	64.1	64.2	64.3	64.4	64.7	65.1
Employed:									
Total (number)	93,673	97,679	100,421	100,907	102,042	101,194	102,510	106,702	108,856
Percent of population	58.3	59.7	60.3	59.6	59.4	58.2	58.3	59.9	60.5
Resident Armed Forces	1,656	1,631	1,597	1,604	1,645	1,668	1,676	1,697	1,706
Civilian									
Total	92,017	96,048	98,824	99,303	100,397	99,526	100,834	105,005	107,150
Agriculture	3,283	3,387	3,347	3,364	3,368	3,401	3,383	3,321	3,179
Nonagricultural industries	88,734	92,661	95,477	95,938	97,030	96,125	97,450	101,685	103,971
Unemployed:									
Total (number)	6,991	6,202	6,137	7,637	8,273	10,678	10,717	8,539	8,312
Percent of labor force	6.9	6.0	5.8	7.0	7.5	9.5	9.5	7.4	7.1
Not in labor force (number)	60,025	59,659	59,900	60,806	61,460	62,067	62,665	62,839	62,744

20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total employment	82,471	86,697	89,823	90,406	91,156	89,566	90,200	94,496	97,614
Private sector	67,344	71,026	73,876	74,166	75,126	73,729	74,330	78,472	81,199
Goods-producing	24,346	25,585	26,461	25,658	25,497	23,813	23,334	24,727	24,930
Mining	813	851	958	1,027	1,139	1,128	952	966	930
Construction	3,851	4,229	4,463	4,346	4,188	3,905	3,948	4,383	4,687
Manufacturing	19,682	20,505	21,040	20,285	20,170	18,781	18,434	19,378	19,314
Service-producing	58,125	61,113	63,363	64,748	65,659	65,753	66,866	69,769	72,684
Transportation and public utilities	4,713	4,923	5,136	5,146	5,165	5,082	4,954	5,159	5,242
Wholesale trade	4,708	4,969	5,204	5,275	5,358	5,278	5,268	5,555	5,740
Retail trade	13,808	14,573	14,989	15,035	15,189	15,179	15,613	16,545	17,360
Finance, insurance, and real estate	4,467	4,724	4,975	5,160	5,298	5,341	5,468	5,689	5,953
Services	15,303	16,252	17,112	17,890	18,619	19,036	19,694	20,797	21,974
Government	15,127	15,672	15,947	16,241	16,031	15,837	15,869	16,024	16,415
Federal	2,727	2,753	2,773	2,866	2,772	2,739	2,774	2,807	2,875
State	3,377	3,474	3,541	3,610	3,640	3,640	3,662	3,734	3,848
Local	9,023	9,446	9,633	9,765	9,619	9,458	9,434	9,482	9,692

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

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

Industry	1977	1978	1979	1980	1981	1982	1983	1984	1985
Private sector									
Average weekly hours	36.0	35.8	35.7	35.3	35.2	34.8	35.0	35.2	34.9
Average hourly earnings (in dollars)	5.25	5.69	6.16	6.66	7.25	7.68	8.02	8.32	8.57
Average weekly earnings (in dollars)	189.00	203.70	219.91	235.10	255.20	267.26	280.70	292.86	299.09
Mining									
Average weekly hours	43.4	43.4	43.0	43.3	43.7	42.7	42.5	43.3	43.4
Average hourly earnings (in dollars)	6.94	7.67	8.49	9.17	10.04	10.77	11.28	11.63	11.98
Average weekly earnings (in dollars)	301.20	332.88	365.07	397.06	438.75	459.88	479.40	503.58	519.93
Construction									
Average weekly hours	36.5	36.8	37.0	37.0	36.9	36.7	37.1	37.8	37.7
Average hourly earnings (in dollars)	8.10	8.66	9.27	9.94	10.82	11.63	11.94	12.13	12.31
Average weekly earnings (in dollars)	295.65	318.69	342.99	367.78	399.26	426.82	442.97	458.51	464.09
Manufacturing									
Average weekly hours	40.3	40.4	40.2	39.7	39.8	38.9	40.1	40.7	40.5
Average hourly earnings (in dollars)	5.68	6.17	6.70	7.27	7.99	8.49	8.83	9.19	9.53
Average weekly earnings (in dollars)	228.90	249.27	269.34	288.62	318.00	330.26	354.08	374.03	385.97
Transportation and public utilities									
Average weekly hours	39.9	40.0	39.9	39.6	39.4	39.0	39.0	39.4	39.5
Average hourly earnings (in dollars)	6.99	7.57	8.16	8.87	9.70	10.32	10.79	11.12	11.40
Average weekly earnings (in dollars)	278.90	302.80	325.58	351.25	382.18	402.48	420.81	438.13	450.30
Wholesale trade									
Average weekly hours	38.8	38.8	38.8	38.5	38.5	38.3	38.5	38.5	38.4
Average hourly earnings (in dollars)	5.39	5.88	6.39	6.96	7.56	8.09	8.55	8.89	9.16
Average weekly earnings (in dollars)	209.13	228.14	247.93	267.96	291.06	309.85	329.18	342.27	351.74
Retail trade									
Average weekly hours	31.6	31.0	30.6	30.2	30.1	29.9	29.8	29.8	29.4
Average hourly earnings (in dollars)	3.85	4.20	4.53	4.88	5.25	5.48	5.74	5.85	5.94
Average weekly earnings (in dollars)	121.66	130.20	138.62	147.38	158.03	163.85	171.05	174.33	174.64
Finance, insurance, and real estate									
Average weekly hours	36.4	36.4	36.2	36.2	36.3	36.2	36.2	36.5	36.4
Average hourly earnings (in dollars)	4.54	4.89	5.27	5.79	6.31	6.78	7.29	7.63	7.94
Average weekly earnings (in dollars)	165.26	178.00	190.77	209.60	229.05	245.44	263.90	278.50	289.02
Services									
Average weekly hours	33.0	32.8	32.7	32.6	32.6	32.6	32.7	32.6	32.5
Average hourly earnings (in dollars)	4.65	4.99	5.36	5.85	6.41	6.92	7.31	7.59	7.89
Average weekly earnings (in dollars)	153.45	163.67	175.27	190.71	208.97	225.59	239.04	247.43	256.43

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

(June 1981 = 100)

Series	1984		1985				1986			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1986	Sept. 1986
Civilian workers ²	122.4	123.9	125.5	126.4	128.4	129.2	130.6	131.5	133.0	1.1	3.6
Workers, by occupational group:											
White-collar workers	124.0	125.5	127.3	128.3	130.7	131.6	133.1	134.2	136.0	1.3	4.1
Blue-collar workers	119.6	120.9	122.2	123.1	124.4	124.9	126.2	126.8	127.8	.8	2.7
Service occupations	124.6	126.8	127.8	128.0	130.9	131.8	133.1	133.7	135.4	1.3	3.4
Workers, by industry division:											
Manufacturing	120.4	122.0	123.9	124.6	125.5	126.0	127.7	128.7	129.3	.5	3.0
Nonmanufacturing	123.3	124.8	126.2	127.2	129.7	130.6	131.9	132.8	134.6	1.4	3.8
Services	128.8	130.9	131.9	132.6	136.4	137.1	138.8	139.4	142.4	2.2	4.4
Public administration ³	126.9	128.6	130.1	130.3	134.2	134.8	136.8	138.0	140.6	1.9	4.8
Private industry workers	121.1	122.7	124.2	125.2	126.8	127.5	128.9	129.9	130.8	.7	3.2
Workers, by occupational group:											
White-collar workers	122.4	123.9	125.8	127.1	128.8	129.8	131.3	132.5	133.5	.8	3.6
Blue-collar workers	119.3	120.6	121.9	122.8	124.0	124.4	125.7	126.3	127.2	.7	2.6
Service occupations	123.2	125.7	126.3	126.5	128.8	129.5	130.9	131.1	132.3	.9	2.7
Workers, by industry division:											
Manufacturing	120.4	122.0	123.9	124.6	125.5	126.0	127.7	128.7	129.3	.5	3.0
Nonmanufacturing	121.6	123.1	124.4	125.6	127.6	128.4	129.7	130.6	131.7	.8	3.2
State and local government workers	128.8	130.1	131.7	132.0	136.5	137.5	138.9	139.7	143.6	2.8	5.2
Workers, by occupational group:											
White-collar workers	129.7	131.1	132.5	132.9	137.6	138.6	140.0	140.5	145.0	3.2	5.4
Blue-collar workers	125.0	125.9	128.1	128.5	131.9	132.7	134.7	136.3	138.5	1.6	5.0
Workers, by industry division:											
Services	129.9	131.3	132.8	133.2	137.9	139.1	140.4	140.8	145.5	3.3	5.5
Schools	130.6	132.0	133.4	133.7	139.1	140.3	141.5	141.7	147.6	4.2	6.1
Elementary and secondary	132.1	133.5	134.4	134.6	140.9	142.0	143.0	143.2	149.4	4.3	6.0
Hospitals and other services ⁴	127.9	129.2	131.1	131.5	134.1	135.2	136.8	137.9	139.4	1.1	4.0
Public administration ³	126.9	128.6	130.1	130.3	134.2	134.8	136.8	138.0	140.6	1.9	4.8

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

² Consist of private industry workers (excluding farm and household workers)

and State and local government (excluding Federal Government) workers.

³ Consists of legislative, judicial, administrative, and regulatory activities.

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

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

(June 1981 = 100)

Series	1984		1985				1986			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3	12
										months	months
										Sept. 1986	
Civilian workers ¹	120.3	121.7	123.1	124.2	126.3	127.0	128.3	129.3	130.7	1.1	3.5
Workers, by occupational group:											
White-collar workers	122.2	123.5	125.2	126.4	128.8	129.8	131.2	132.4	134.1	1.3	4.1
Blue-collar workers	117.0	118.2	119.3	120.5	122.0	122.3	123.4	124.1	125.0	.7	2.5
Service occupations	122.3	124.3	124.8	125.3	128.0	128.6	129.8	130.0	131.7	1.3	2.9
Workers, by industry division											
Manufacturing	118.0	119.5	121.0	122.3	123.2	123.8	125.3	126.5	127.2	.6	3.2
Nonmanufacturing	121.3	122.6	123.9	125.0	127.6	128.4	129.6	130.4	132.2	1.4	3.6
Services	127.2	128.9	129.7	130.5	134.2	134.8	136.4	137.0	139.9	2.1	4.2
Public administration ²	124.4	125.7	127.0	127.2	131.4	132.0	133.8	134.6	137.5	2.2	4.6
Private industry workers	119.2	120.6	122.0	123.3	124.9	125.6	126.8	127.9	128.8	.7	3.1
Workers, by occupational group:											
White-collar workers	120.9	122.3	124.0	125.5	127.3	128.3	129.6	131.1	132.0	.7	3.7
Professional specialty and technical occupations	125.2	127.3	127.7	128.7	131.2	131.5	132.7	134.0	135.4	1.0	3.2
Executive, administrative, and managerial occupations	121.0	122.2	123.8	126.5	127.7	128.4	130.5	132.1	132.4	.2	3.7
Sales occupations	110.5	111.6	116.3	117.4	119.3	122.5	122.4	124.3	125.2	.7	4.9
Administrative support occupations, including clerical	122.0	122.9	124.7	125.6	127.1	127.9	129.6	130.8	131.7	.7	3.6
Blue-collar workers	116.7	118.0	119.1	120.3	121.7	122.0	123.1	123.7	124.5	.6	2.3
Precision production, craft, and repair occupations	118.0	119.4	120.8	122.0	123.7	123.8	125.3	125.7	126.7	.8	2.4
Machine operators, assemblers, and inspectors	116.6	117.9	118.9	120.1	121.1	121.6	122.6	123.6	124.1	.4	2.5
Transportation and material moving occupations	113.4	114.0	114.5	115.7	117.7	117.8	118.0	118.9	119.8	.8	1.8
Handlers, equipment cleaners, helpers, and laborers	114.7	115.9	116.7	118.5	118.6	119.8	120.0	120.3	120.9	.5	1.9
Service occupations	121.2	123.7	123.8	124.4	126.3	126.6	128.0	128.0	128.9	.7	2.1
Workers, by industry division:											
Manufacturing	118.0	119.5	121.0	122.3	123.2	123.8	125.3	126.5	127.2	.6	3.2
Durables	117.7	119.1	120.6	122.0	122.7	123.4	124.8	125.8	126.4	.5	3.0
Nondurables	118.6	120.2	121.6	122.6	124.0	124.6	126.1	127.9	128.5	.5	3.6
Nonmanufacturing	119.9	121.2	122.6	123.9	125.9	126.6	127.7	128.7	129.7	.8	3.0
Construction	114.3	114.4	115.5	116.6	117.3	117.9	118.3	119.8	120.5	.6	2.7
Transportation and public utilities	119.9	120.7	121.7	122.8	124.8	125.2	126.3	126.6	127.3	.6	2.0
Wholesale and retail trade	116.5	118.1	118.8	121.1	122.7	123.7	124.5	125.8	126.5	.6	3.1
Wholesale trade	120.7	122.9	123.7	126.8	127.7	128.3	129.7	131.2	131.8	.5	3.2
Retail trade	114.9	116.2	116.9	118.9	120.8	121.9	122.5	123.7	124.4	.6	3.0
Finance, insurance, and real estate	115.3	115.8	122.0	121.7	124.1	126.5	126.6	128.0	129.0	.8	3.9
Services	127.1	129.5	129.9	131.0	133.9	134.1	136.2	136.9	138.2	.9	3.2
State and local government workers	126.1	127.1	128.4	128.7	133.2	134.2	135.5	136.0	140.4	3.2	5.4
Workers, by occupational group											
White-collar workers	127.1	128.0	129.3	129.6	134.3	135.3	136.6	137.0	141.8	3.5	5.6
Blue-collar workers	121.9	122.5	124.2	124.5	127.9	128.4	130.4	131.9	134.5	2.0	5.2
Workers, by industry division											
Services	127.2	128.1	129.4	129.7	134.5	135.6	136.8	137.1	142.1	3.6	5.7
Schools	127.8	128.7	129.9	130.2	135.8	137.0	138.0	138.2	144.1	4.3	6.1
Elementary and secondary	129.3	130.2	130.8	131.1	137.5	138.5	139.4	139.4	145.7	4.5	6.0
Hospitals and other services ³	125.1	125.9	127.7	128.0	130.2	130.9	132.4	133.3	135.8	1.9	4.3
Public administration ²	124.4	125.7	127.0	127.2	131.4	132.0	133.8	134.6	137.5	2.2	4.6

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

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

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

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

(June 1981 = 100)

Series	1984		1985				1986			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1986	
COMPENSATION											
Workers, by bargaining status¹											
Union	122.6	123.9	124.8	125.5	126.5	127.1	128.4	128.7	129.4	0.5	2.3
Manufacturing	121.6	123.2	124.2	124.2	125.0	125.5	127.0	126.9	127.5	.5	2.0
Nonmanufacturing	123.6	124.5	125.3	126.6	127.8	128.6	129.7	130.4	131.2	.6	2.7
Nonunion	120.3	121.9	123.8	125.0	126.8	127.5	129.0	130.2	131.2	.8	3.5
Manufacturing	119.3	120.8	123.6	124.8	125.7	126.3	128.1	129.7	130.4	.5	3.7
Nonmanufacturing	120.7	122.4	123.9	125.1	127.3	128.1	129.5	130.4	131.6	.9	3.4
Workers, by region¹											
Northeast	122.4	123.8	125.1	126.4	128.8	129.9	131.6	133.3	134.2	.7	4.2
South	120.7	122.2	124.2	125.2	126.5	127.2	128.7	129.6	130.7	.8	3.3
Midwest (formerly North Central)	119.7	120.8	122.0	122.7	124.2	124.6	125.9	126.2	127.3	.9	2.5
West	122.5	124.9	126.8	127.9	129.1	129.8	130.8	131.6	132.1	.4	2.3
Workers, by area size¹											
Metropolitan areas	121.5	123.2	124.7	125.7	127.3	128.1	129.5	130.5	131.4	.7	3.2
Other areas	119.0	119.8	121.4	122.5	123.9	123.9	125.5	126.4	127.2	.6	2.7
WAGES AND SALARIES											
Workers, by bargaining status¹											
Union	119.8	120.9	121.7	123.0	124.1	124.7	125.6	126.1	126.9	.6	2.3
Manufacturing	118.1	119.5	120.4	121.7	122.8	123.3	124.2	124.6	125.0	.3	1.8
Nonmanufacturing	121.3	122.1	122.8	124.1	125.3	125.9	126.9	127.4	128.5	.9	2.6
Nonunion	118.8	120.4	122.1	123.4	125.2	125.9	127.3	128.5	129.4	.7	3.4
Manufacturing	117.9	119.5	121.5	122.8	123.7	124.4	126.1	127.7	128.5	.6	3.9
Nonmanufacturing	119.2	120.7	122.3	123.6	125.9	126.6	127.8	128.9	129.8	.7	3.1
Workers, by region¹											
Northeast	120.5	121.9	123.0	124.6	126.8	128.1	129.2	131.3	132.3	.8	4.3
South	119.0	120.2	122.3	123.4	124.8	125.4	126.8	127.8	128.8	.8	3.2
Midwest (formerly North Central)	117.8	118.7	119.6	121.1	122.5	122.9	124.2	124.4	125.3	.7	2.3
West	120.0	122.5	124.0	125.1	126.6	127.1	128.1	128.9	129.3	.3	2.1
Workers, by area size¹											
Metropolitan areas	119.5	121.0	122.4	123.8	125.5	126.3	127.4	128.5	129.4	.7	3.1
Other areas	117.5	118.3	119.6	120.6	121.9	122.0	123.6	124.5	125.0	.4	2.5

¹ The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the

Monthly Labor Review Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

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

Measure	Annual average		Quarterly average							
	1984	1985	1984	1985				1986		
			IV	I	II	III	IV	IP	IIP	IIIP
Specified adjustments:										
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:										
First year of contract	3.6	2.6	3.7	3.6	3.5	2.0	2.0	0.4	0.7	1.9
Annual rate over life of contract	2.8	2.7	2.0	2.7	3.4	3.0	1.4	1.2	1.6	1.9
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract	2.4	2.3	2.3	3.3	2.5	2.0	2.1	.9	1.3	1.6
Annual rate over life of contract	2.4	2.7	1.5	3.2	2.8	3.1	1.9	1.5	2.0	2.0
Effective adjustments:										
Total effective wage adjustment ³	3.7	3.3	.7	.7	.8	1.2	.5	.6	.7	.6
From settlements reached in period .....	.8	.7	.3	.1	.2	.2	.1	.0	.2	.1
Deferred from settlements reached in earlier periods	2.0	1.8	.2	.6	.5	.5	.2	.4	.6	.5
From cost-of-living-adjustments clauses .....	.9	.7	.2	.1	.1	.4	.1	.2	.0	.0

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

² Adjustments are the net result of increases, decreases, and no changes in

compensation or wages.

³ Because of rounding total may not equal sum of parts.

P = preliminary.

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

Measure	Average for four quarters ending--							
	1984	1985				1986		
	IV	I	II	III	IV	IP	IIP	IIIP
Specified total compensation adjustments, settlements covering 5,000 workers or more, all industries:								
First year of contract	3.6	3.4	3.4	3.1	2.6	2.3	1.4	1.4
Annual rate over life of contract	2.8	2.6	2.7	2.7	2.7	2.6	2.0	1.6
Specified wage adjustments, settlements covering 1,000 workers or more:								
All industries								
First year of contract	2.4	2.4	2.4	2.4	2.3	2.0	1.6	1.5
Contracts with COLA clauses	2.9	2.5	2.3	1.9	1.6	1.6	1.8	2.2
Contracts without COLA clauses	2.1	2.4	2.4	2.7	2.7	2.2	1.5	1.2
Annual rate over life of contract	2.4	2.3	2.4	2.5	2.7	2.5	2.2	1.9
Contracts with COLA clauses	1.8	1.3	1.5	1.8	2.5	2.5	2.6	2.1
Contracts without COLA clauses	2.7	2.8	2.8	3.0	2.8	2.5	2.1	1.8
Manufacturing								
First year of contract	2.3	2.1	2.0	1.5	.8	.8	.1	-.1
Contracts with COLA clauses	2.1	2.0	1.9	1.5	.8	.8	.7	1.1
Contracts without COLA clauses	2.9	2.5	2.2	1.5	.9	.9	-.4	-.8
Annual rate over life of contract	1.5	1.4	1.5	1.6	1.8	1.8	1.4	.8
Contracts with COLA clauses	1.0	.9	1.0	1.4	2.1	2.1	2.0	1.2
Contracts without COLA clauses	3.3	3.2	3.0	2.4	1.6	1.5	.9	.6
Nonmanufacturing								
First year of contract	2.5	2.6	2.7	3.2	3.3	2.8	2.6	2.1
Contracts with COLA clauses	5.5	5.1	4.3	4.0	3.6	3.5	3.5	2.7
Contracts without COLA clauses	2.0	2.4	2.5	3.0	3.3	2.7	2.4	1.9
Annual rate over life of contract	2.9	2.8	2.9	3.3	3.3	3.0	2.8	2.3
Contracts with COLA clauses	4.8	4.0	3.8	3.9	3.6	3.6	3.4	2.5
Contracts without COLA clauses	2.6	2.7	2.8	3.2	3.3	2.9	2.7	2.2
Construction								
First year of contract .....	.5	.9	1.1	1.0	1.5	1.7	2.4	2.4
Contracts with COLA clauses	4.0	4.6	9.2	(¹)	(¹)	(¹)	.9	1.4
Contracts without COLA clauses .....	.4	.8	1.0	(¹)	(¹)	(¹)	2.4	2.5
Annual rate over life of contract	1.0	1.4	1.7	1.7	2.1	2.2	2.6	2.6
Contracts with COLA clauses	1.4	1.7	4.6	(¹)	(¹)	(¹)	1.4	1.8
Contracts without COLA clauses	1.0	1.4	1.7	(¹)	(¹)	(¹)	2.6	2.7

¹ Data do not meet publication standards.

P = preliminary.

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

Effective wage adjustment	Average for four quarters ending--						
	1985				1986		
	I	II	III	IV	I ^P	II ^P	III ^P
For all workers:¹							
Total	3.6	3.5	3.5	3.3	3.1	2.9	2.3
From settlements reached in period .....	.7	.9	.9	.7	.6	.5	.5
Deferred from settlements reached in earlier period	2.2	1.9	1.8	1.8	1.7	1.8	1.6
From cost-of-living-adjustments clauses .....	.7	.7	.8	.7	.8	.7	.2
For workers receiving changes:							
Total	4.5	4.2	4.3	4.1	4.0	3.8	3.1
From settlements reached in period	2.9	2.9	2.8	3.4	2.9	2.5	1.7
Deferred from settlements reached in earlier period	4.2	3.9	3.7	3.7	3.5	3.4	3.8
From cost-of-living-adjustments clauses	2.3	2.3	2.8	2.2	2.5	2.0	1.0

¹ Because of rounding total may not equal sum of parts. ^P = preliminary.

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

Measure	Annual average		First 6 months 1986 ^P
	1984	1985	
Specified adjustments:			
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:			
First year of contract	5.2	4.2	6.7
Annual rate over life of contract	5.4	5.1	6.4
Wage adjustments, settlements covering 1,000 workers or more:			
First year of contract	4.8	4.6	6.1
Annual rate over life of contract	5.1	5.4	6.0
Effective adjustments:			
Total effective wage adjustment ³	5.0	5.7	1.8
From settlements reached in period	1.9	4.1	.6
Deferred from settlements reached in earlier periods	3.1	1.6	1.2
From cost-of-living-adjustment clauses	(⁴)	(⁴)	(⁴)

¹ Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.
² Adjustments are the net result of increases, decreases, and no changes in compensation or wages.

³ Because of rounding, total may not equal sum of parts.
⁴ Less than 0.05 percent.
^P = preliminary.

29. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May ^P	June ^P	July ^P	Aug. ^P	Sept. ^P	Oct. ^P
Number of stoppages:															
Beginning in period	62	54	6	3	2	4	3	2	4	6	11	13	10	7	5
In effect during period	68	61	20	13	9	7	7	8	8	10	15	22	22	17	17
Workers involved:															
Beginning in period (in thousands)	376.0	323.9	76.6	26.2	8.2	7.6	24.0	11.2	6.1	28.6	198.0	46.7	113.3	37.9	44.3
In effect during period (in thousands)	391.0	584.1	119.3	47.0	38.0	12.0	28.4	38.6	17.6	41.2	205.9	66.3	144.8	85.2	107.7
Days idle:															
Number (in thousands)	8,499.0	7,079.0	1,428.8	688.2	661.9	170.0	309.5	367.5	297.3	303.6	3,684.3	894.5	1,612.1	1,208.5	1,420.6
Percent of estimated working time ¹ .....	.04	.03	.06	.04	.03	.01	.02	.02	.02	.02	.07	.04	.07	.06	.06

¹ Agricultural and government employees are included in the total employed and total working time: private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is

found in "'Total economy' measure of strike idleness," *Monthly Labor Review*, October 1968, pp. 54-56.
^P = preliminary

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

(1967 = 100, unless otherwise indicated)

Series	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:															
All items	311.1	322.2	325.5	326.6	327.4	328.4	327.5	326.0	325.3	326.3	327.9	328.0	328.6	330.2	330.5
All items (1957-59=100)	361.9	374.7	378.5	379.9	380.8	381.9	380.8	379.1	378.3	379.5	381.4	381.4	382.1	384.1	384.4
Food and beverages	295.1	302.0	302.5	303.6	305.6	307.9	307.7	307.8	308.5	309.4	309.5	312.2	314.6	315.1	315.6
Food	302.9	309.8	309.8	311.0	313.2	315.6	315.3	315.4	316.1	317.0	317.1	320.1	322.7	323.2	323.7
Food at home	292.6	296.8	295.3	296.6	299.3	302.5	301.5	301.2	301.5	302.1	301.6	305.5	308.9	309.0	309.5
Cereals and bakery products	305.3	317.0	318.9	319.9	321.9	322.0	322.5	322.7	322.5	323.8	326.1	326.3	328.2	328.5	328.4
Meats, poultry, fish, and eggs	266.6	263.4	261.1	266.1	269.9	271.5	268.4	267.7	264.2	263.4	265.1	274.9	283.0	284.7	284.9
Dairy products	253.2	256.0	257.1	257.1	256.9	257.2	257.3	256.8	256.8	257.1	257.2	258.4	258.3	258.5	260.0
Fruits and vegetables	317.4	325.7	317.1	314.3	323.9	334.4	320.7	319.2	329.5	336.5	327.8	330.3	330.2	329.1	328.6
Other foods at home	352.2	361.1	363.0	362.2	361.3	365.7	375.1	375.7	376.1	374.6	374.1	373.7	374.0	373.7	374.4
Sugar and sweets	389.1	398.8	402.6	401.4	402.2	405.1	408.6	408.4	411.4	411.2	411.5	412.4	413.1	413.7	413.4
Fats and oils	288.0	294.4	291.2	292.1	290.3	292.1	291.4	290.2	288.5	287.2	287.0	287.3	287.8	285.6	284.6
Nonalcoholic beverages	443.0	451.7	454.1	451.7	448.8	459.7	485.3	488.0	487.4	481.9	480.0	478.3	476.9	475.7	477.5
Other prepared foods	284.9	294.2	296.8	296.8	297.3	298.0	299.5	299.3	300.2	301.4	301.7	301.8	303.2	303.8	304.7
Food away from home	333.4	346.6	350.3	351.3	352.1	353.1	354.2	355.5	357.0	358.8	360.2	360.8	361.8	363.3	364.0
Alcoholic beverages	222.1	229.5	236.4	236.2	236.2	237.5	238.3	238.8	239.5	239.4	240.1	240.4	240.1	240.4	240.6
Housing	336.5	349.9	354.4	355.0	355.8	356.8	356.5	357.0	358.0	358.5	361.2	361.5	362.4	363.7	363.0
Shelter	361.7	382.0	389.1	391.3	392.3	393.8	394.8	397.0	400.1	400.9	401.6	403.5	405.2	407.6	409.5
Renters' costs (12/82=100)	108.6	115.4	117.9	118.4	118.3	118.8	119.0	119.6	120.9	121.1	121.6	122.5	122.9	123.6	124.0
Rent, residential	249.3	264.6	269.9	271.7	272.4	273.4	273.7	275.0	277.9	278.4	279.4	281.2	281.7	283.2	284.6
Other renters' costs	373.4	398.4	412.5	408.7	398.1	401.1	404.1	405.5	410.8	411.3	415.2	420.1	425.7	429.1	427.3
Homeowners' costs (12/82=100)	107.3	113.1	115.1	115.8	116.3	116.7	117.0	117.9	118.7	118.9	119.0	119.4	119.9	120.7	121.3
Owners' equivalent rent (12/82=100)	107.3	113.2	115.1	115.9	116.3	116.7	117.0	117.9	118.7	118.9	119.0	119.4	119.9	120.7	121.3
Household insurance (12/82=100)	107.5	112.4	114.6	114.5	115.0	115.7	117.4	118.0	118.3	118.8	118.9	119.9	119.9	120.2	120.6
Maintenance and repairs	359.2	368.9	368.5	372.7	373.7	379.1	379.6	367.5	367.6	367.1	366.6	369.2	376.4	376.2	379.0
Maintenance and repair services	409.7	421.1	422.2	426.4	426.2	432.6	432.8	422.4	424.6	425.5	427.4	430.1	434.2	437.0	437.5
Maintenance and repair commodities	262.7	269.6	268.0	271.5	273.3	277.1	277.8	266.1	264.5	262.9	260.7	262.7	271.3	268.7	273.0
Fuel and other utilities	387.3	393.6	395.6	392.1	393.3	394.6	390.0	385.5	381.8	382.5	389.3	389.4	389.5	388.3	379.1
Fuels	485.5	488.1	488.4	481.5	483.6	484.7	476.3	467.6	459.6	460.6	477.0	469.2	469.0	467.2	450.3
Fuel oil, coal, and bottled gas	641.8	619.5	615.3	641.6	657.3	650.3	591.2	549.9	518.3	496.8	486.6	459.4	447.3	453.5	451.9
Gas (piped) and electricity	445.2	452.7	453.9	440.5	439.9	442.6	444.5	442.3	439.2	444.6	466.0	462.3	464.5	461.1	441.4
Other utilities and public services	230.2	240.7	244.7	245.9	245.8	247.3	247.9	249.0	251.3	251.5	255.2	255.6	255.9	255.6	257.1
Household furnishings and operations	242.5	247.2	248.4	248.8	248.8	248.8	249.0	249.8	249.6	249.9	250.2	250.5	250.5	251.5	251.6
Housefurnishings	199.1	200.1	200.3	200.8	200.1	199.8	199.7	201.0	200.4	200.8	200.8	201.2	200.9	202.2	202.2
Housekeeping supplies	303.2	313.6	315.7	316.4	317.7	318.3	318.6	317.9	318.5	318.3	319.6	319.5	319.8	320.1	319.8
Housekeeping services	327.5	338.9	342.2	342.7	343.2	343.9	344.5	345.1	345.4	345.8	346.1	346.6	347.4	347.8	348.5
Apparel and upkeep	200.2	206.0	211.1	211.2	209.0	205.0	204.1	206.3	207.3	206.4	204.5	203.2	207.0	212.1	213.2
Apparel commodities	187.0	191.6	196.7	196.8	194.2	189.5	188.5	190.8	191.7	190.7	188.4	187.0	191.2	196.6	197.6
Men's and boys' apparel	192.4	197.9	203.2	203.6	202.0	198.6	196.8	198.3	199.7	200.2	198.1	195.8	197.8	203.2	204.3
Women's and girls' apparel	163.6	169.5	177.9	176.5	172.6	164.4	163.4	167.6	168.0	164.9	161.3	159.8	167.2	175.7	176.4
Infants' and toddlers' apparel	287.0	299.7	302.1	307.0	304.1	313.9	311.6	313.1	316.6	318.5	319.7	307.5	310.6	309.7	312.0
Footwear	209.5	212.1	212.3	215.5	213.1	209.1	207.9	210.1	211.4	211.5	210.0	209.6	210.6	212.0	215.1
Other apparel commodities	216.4	215.5	214.9	214.9	214.6	215.5	216.1	214.6	213.3	215.4	215.8	218.1	221.6	221.1	219.8
Apparel services	305.0	320.9	325.7	326.3	326.9	328.8	330.7	331.5	332.9	333.6	334.3	334.6	334.7	336.7	338.3
Transportation	311.7	319.9	320.9	323.2	324.0	323.9	319.2	309.6	303.3	305.7	308.6	304.7	301.3	302.2	302.6
Private transportation	306.6	314.2	314.7	317.0	317.8	317.3	312.2	302.1	295.3	297.8	300.8	296.5	292.8	293.7	294.1
New vehicles	208.0	214.9	215.9	218.2	219.2	219.7	220.2	220.1	221.0	222.8	224.0	224.5	224.5	224.2	226.7
New cars	208.5	215.2	216.2	218.4	219.4	219.9	220.4	220.3	221.2	222.0	224.2	224.7	224.7	224.5	227.1
Used cars	375.7	379.7	375.3	376.4	375.6	374.1	370.7	367.2	364.8	363.6	362.5	360.3	358.0	359.5	360.6
Motor fuel	370.7	373.8	374.6	376.7	377.5	373.3	351.5	308.5	279.5	289.3	299.4	280.2	265.9	271.1	263.2
Gasoline	370.2	373.3	374.2	376.1	376.8	372.5	350.8	307.7	278.6	288.7	299.1	279.8	265.3	270.6	262.6
Maintenance and repair	341.5	351.4	355.7	355.8	357.5	357.9	358.9	359.3	360.6	361.3	362.1	363.4	364.3	365.0	365.7
Other private transportation	273.3	287.6	289.6	293.9	295.2	297.7	299.2	301.5	301.6	301.3	303.0	304.5	304.5	302.3	307.6
Other private transportation commodities	201.5	202.6	202.8	201.6	202.1	203.4	202.9	203.6	202.2	202.4	201.5	201.6	201.8	200.3	198.9
Other private transportation services	295.0	312.8	315.4	321.2	322.7	325.5	327.6	330.3	330.9	330.4	332.8	334.6	334.6	332.3	339.3
Public transportation	385.2	402.8	411.5	412.8	412.9	419.6	422.2	421.2	422.2	423.7	425.4	428.0	428.0	428.5	428.7
Medical care	379.5	403.1	410.5	413.0	414.7	418.2	422.3	425.8	428.0	429.7	432.0	434.8	437.5	439.7	442.3
Medical care commodities	239.7	256.7	261.3	262.7	262.9	264.5	267.4	269.4	271.3	272.3	273.3	275.4	276.0	276.7	277.5
Medical care services	410.3	435.1	443.0	445.8	448.0	451.9	456.2	460.1	462.3	464.2	466.8	469.8	473.0	475.7	478.8
Professional services	346.1	367.3	373.2	375.5	377.1	378.9	381.6	385.0	386.9	388.3	390.3	391.7	393.3	396.1	398.0
Other medical care services	488.0	517.0	527.4	530.8	533.6	540.3	546.4	550.8	553.5	555.9	559.2	564.2	569.4	571.9	576.4
Entertainment	255.1	265.0	268.4	269.0	268.3	270.8	272.0	271.9	272.3	272.9	273.9	274.4	274.7	275.3	276.5
Entertainment commodities	253.3	260.6	264.0	264.0	262.5	264.7	265.2	265.0	264.8	265.3	266.1	265.8	266.1	265.9	266.7
Entertainment services	258.3	271.8	275.2	276.6	277.1	279.9	282.1	282.2	283.5	284.2	285.5	287.0	287.3	289.2	290.8
Other goods and services	307.7	326.6	334.9	335.3	336.5	339.1	340.3	341.1	341.8	342.1	342.6	344.9	346.4	353.3	354.6
Tobacco products	310.0	328.5	334.4												

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

(1967 = 100, unless otherwise indicated)

Series	Annual average		1985			1986									
	1984	1985	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
All items	311.1	322.2	325.5	326.6	327.4	328.4	327.5	326.0	325.3	326.3	327.9	328.0	328.6	330.2	330.5
Commodities	280.7	286.7	287.9	289.2	289.9	290.1	287.4	283.7	281.2	282.1	282.8	281.9	281.9	283.5	283.6
Food and beverages	295.1	302.0	302.5	303.6	305.6	307.9	307.7	307.8	308.5	309.4	309.5	312.2	314.6	315.1	315.6
Commodities less food and beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nondurables less food and beverages	275.7	282.1	285.3	286.8	286.8	284.9	278.6	268.9	262.0	263.3	264.7	259.8	258.1	261.5	260.4
Apparel commodities	187.0	191.6	196.7	196.8	194.2	189.5	188.5	190.8	191.7	190.7	188.4	187.0	191.2	196.6	197.6
Nondurables less food, beverages, and apparel	325.8	333.3	335.6	337.8	339.1	338.7	329.5	313.6	302.6	305.2	308.4	301.7	296.9	299.5	297.2
Durables	266.5	270.7	270.2	271.5	271.4	271.4	270.5	269.7	269.2	269.6	269.9	269.6	269.0	269.3	270.5
Services	363.0	381.5	387.7	388.7	389.5	391.7	393.3	394.9	396.8	397.9	401.0	402.3	403.7	405.5	406.1
Rent of shelter	107.7	113.9	116.1	116.7	117.0	117.4	117.7	118.5	119.4	119.7	119.9	120.5	120.9	121.7	122.2
Household services less rent of shelter	108.1	111.2	112.1	110.8	110.8	111.4	111.8	111.6	111.6	112.3	115.2	114.9	115.3	114.9	112.9
Transportation services	321.1	337.0	341.1	344.7	346.1	349.0	351.0	352.4	353.2	353.4	355.3	357.1	357.3	356.2	360.5
Medical care services	410.3	435.1	443.0	445.8	448.0	451.9	456.2	460.1	462.3	464.2	466.8	469.8	473.0	475.7	478.8
Other services	296.0	314.1	321.4	322.5	322.9	324.8	326.1	326.6	327.6	328.2	329.2	330.1	330.8	337.9	339.5
Special indexes:															
All items less food	311.3	323.3	327.4	328.5	328.9	329.5	328.5	326.6	325.7	326.7	328.6	328.0	328.1	330.0	330.2
All items less shelter	295.1	303.9	306.3	307.2	307.9	308.8	307.4	305.2	303.6	304.7	306.5	306.1	306.4	307.9	307.8
All items less homeowners' costs	106.3	109.7	110.7	111.1	111.3	111.6	111.2	110.5	110.1	110.4	111.1	111.0	111.2	111.7	111.7
All items less medical care	307.3	317.7	320.8	321.9	322.6	323.4	322.2	320.5	319.7	320.6	322.2	322.1	322.6	324.2	324.4
Commodities less food	267.0	272.5	274.4	275.7	275.7	274.7	270.9	265.2	261.2	262.1	263.0	260.2	259.0	261.1	260.9
Nondurables less food	270.8	277.2	280.7	282.0	282.0	280.4	274.5	265.6	259.2	260.5	261.8	257.3	255.6	258.9	257.8
Nondurables less food and apparel	311.9	319.2	322.0	324.0	325.1	324.9	316.8	302.7	292.9	295.2	298.1	292.2	287.9	290.2	288.1
Nondurables	286.6	293.2	295.1	296.4	297.4	297.7	294.3	289.5	286.3	287.4	288.2	287.1	287.4	289.4	289.0
Services less rent of shelter	108.5	113.5	115.1	115.2	115.4	116.2	116.8	117.1	117.4	117.8	119.2	119.5	119.8	120.2	120.1
Services less medical care	355.6	373.3	379.3	380.1	380.8	382.7	384.0	385.4	387.2	388.3	391.3	392.5	393.6	395.4	395.7
Energy	423.6	426.5	427.1	425.1	426.5	424.7	408.9	381.3	361.8	367.6	380.6	366.5	358.6	360.6	348.6
All items less energy	302.9	314.8	318.4	319.8	320.5	321.8	322.3	324.4	325.0	325.5	326.9	326.9	328.3	330.0	331.4
All items less food and energy	301.2	314.4	318.9	320.4	320.7	321.6	322.3	323.6	324.8	325.3	325.9	326.9	327.9	329.9	331.6
Commodities less food and energy	253.1	259.7	262.0	262.7	262.2	261.8	261.6	262.0	262.1	262.2	262.0	262.0	262.9	264.5	265.5
Energy commodities	409.8	409.9	410.1	415.2	417.9	413.2	386.5	343.0	313.3	319.3	327.1	306.6	292.4	297.7	290.6
Services less energy	356.4	375.9	382.5	384.8	385.8	387.9	389.4	391.5	393.8	394.5	395.9	397.7	399.0	401.4	403.7
Purchasing power of the consumer dollar:															
1967 = \$1.00	32.1	31.0	30.7	30.6	30.5	30.5	30.5	30.7	30.7	30.6	30.5	30.5	30.4	30.3	30.3
1957-59 = \$1.00	27.6	26.7	26.4	26.3	26.3	26.2	26.3	26.4	26.4	26.4	26.2	26.2	26.2	26.0	26.0
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:															
All items	307.6	318.5	321.3	322.6	323.4	324.3	323.2	321.4	320.4	321.4	323.0	322.9	323.4	324.9	325.0
All items (1957-59 = 100)	357.7	370.4	373.7	375.1	376.1	377.1	375.8	373.7	372.6	373.7	375.6	375.5	376.1	377.8	378.0
Food and beverages	295.2	301.8	302.2	303.4	305.4	307.7	307.5	307.6	308.3	309.0	309.3	312.0	314.5	315.0	315.4
Food	302.7	309.3	309.3	310.6	312.8	315.1	314.9	315.0	315.6	316.4	316.6	319.5	322.3	322.8	323.3
Food at home	291.2	295.3	293.7	295.2	297.9	300.9	300.1	299.7	299.9	300.4	300.0	303.9	307.3	307.5	307.9
Cereals and bakery products	303.7	315.4	317.3	318.2	320.4	320.4	320.9	321.1	320.9	322.1	324.5	324.6	326.7	326.8	326.8
Meats, poultry, fish, and eggs	266.0	262.7	260.4	265.4	269.2	270.7	267.7	267.2	263.5	262.6	264.2	274.0	282.2	284.0	284.4
Dairy products	252.2	256.9	255.9	255.9	255.7	256.0	256.0	255.5	255.5	255.8	255.9	257.0	256.9	257.1	258.6
Fruits and vegetables	312.5	320.3	311.2	309.4	319.3	329.7	316.0	314.6	325.0	331.6	323.5	325.6	327.2	324.2	322.9
Other foods at home	352.7	361.5	363.4	362.5	361.6	366.1	375.2	375.6	376.0	374.3	373.9	373.4	373.9	373.5	374.4
Sugar and sweets	388.6	398.3	402.2	400.9	401.8	404.7	408.1	407.8	410.9	410.6	410.9	411.9	412.6	413.0	412.8
Fats and oils	287.5	293.9	290.6	291.8	289.6	291.6	290.8	289.7	287.8	286.6	286.6	287.1	285.1	284.1	284.1
Nonalcoholic beverages	444.4	453.2	455.6	453.1	450.4	461.0	485.5	487.4	487.0	481.2	477.6	477.6	476.9	475.5	477.7
Other prepared foods	286.4	295.7	298.3	298.3	298.7	299.4	300.9	300.7	301.6	302.7	303.0	303.1	304.5	305.2	305.9
Food away from home	336.7	349.7	353.4	354.4	355.2	356.2	357.3	358.6	360.2	362.0	363.5	364.2	365.2	366.6	367.3
Alcoholic beverages	225.3	232.6	239.1	238.8	239.1	240.1	240.9	241.4	242.3	242.2	242.9	243.4	243.0	243.4	243.5
Housing	329.2	343.3	347.5	348.3	349.1	350.1	349.7	350.1	351.1	351.6	354.3	354.5	355.4	356.6	355.6
Shelter	350.0	370.4	377.1	379.3	380.4	381.8	382.9	385.0	388.1	388.8	389.4	391.5	392.9	395.2	397.1
Renters' costs (12/84 = 100)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rent, residential	248.6	263.7	268.9	270.7	271.5	272.5	272.8	274.1	277.0	277.5	278.5	280.3	280.8	282.2	283.6
Other renters' costs	372.4	397.9	411.6	408.0	397.5	400.8	403.5	405.4	411.6	411.3	415.5	420.4	426.1	428.9	426.7
Homeowners' costs (12/84 = 100)	—	103.1	104.8	105.5	105.9	106.3	106.6	107.4	108.1	108.3	108.4	108.8	109.3	110.0	110.5
Owners' equivalent rent (12/84 = 100)	—	103.0	104.8	105.5	105.9	106.3	106.6	107.3	108.1	108.3	108.4	108.8	109.2	110.0	110.5
Household insurance (12/84 = 100)	—	103.2	105.2	105.2	105.7	106.3	107.8	108.2	108.5	109.0	109.1	110.1	110.1	110.4	110.8
Maintenance and repairs	356.3	364.1	364.6	367.7	368.5	373.2	374.0	364.7	364.6	363.8	363.2	366.7	371.5	370.6	373.1
Maintenance and repair services	403.5	415.0	417.4	420.9	420.1	426.2	426.5	416.6	419.2	420.0	422.6	425.2	428.6	430.7	431.1
Maintenance and public commodities	257.2	261.1	260.5	262.7	264.2	267.2	268.1	261.1	259.4	258.0	255.7	259.0	263.5	261.1	264.3
Fuel and other utilities	388.6	394.7	396.3	393.2	394.3	395.6	390.9	386.3	382.6	383.0	394.9	390.3	390.6	389.1	379.3
Fuels	485.0	487.5	487.2	481.0	483.1	484.1	475.7	467.1	459.1	459.7	477.3	469.1	469.3	467.1	449.2
Fuel oil, coal, and bottled gas	644.3	622.0	618.1	644.3	659.9	652.7	593.6	552.8	521.5	499.9	489.9	462.9	450.7	456.6	454.8
Gas (piped) and electricity	444.1	451.6	452.0	439.5	438.8	441.4	443.2	441.2	438.0	443.0	465.7	461.4	464.1	460.3	439.6
Other utilities and public services	231.2	241.6	245.7	246.											

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

(1967=100, unless otherwise indicated)

Area ¹	Pricing schedule ²	Other index base	All Urban Consumers							Urban Wage Earners						
			1985		1986					1985		1986				
			Oct.	Nov.	June	July	Aug.	Sept.	Oct.	Oct.	Nov.	June	July	Aug.	Sept.	Oct.
U.S. city average		-	325.5	326.6	327.9	328.0	328.6	330.2	330.5	321.3	322.6	323.0	322.9	323.4	324.9	325.0
Chicago, Ill.-Northwestern Ind.	M	-	322.6	324.2	330.4	331.1	331.4	333.9	328.7	308.9	310.9	315.6	316.0	316.2	318.3	313.4
Detroit, Mich.	M	-	319.7	323.1	321.0	318.4	323.2	321.1	324.3	309.7	313.2	310.2	307.5	312.8	310.5	313.6
Los Angeles-Long Beach, Anaheim, Calif.	M	-	326.1	325.0	331.3	330.9	330.9	334.6	336.2	320.0	319.1	324.5	323.8	323.5	326.8	328.3
New York, N.Y.-Northeastern N.J.	M	-	317.4	319.9	322.8	325.1	325.9	326.6	327.8	309.9	312.5	314.4	316.5	317.2	317.5	318.7
Philadelphia, Pa.-N.J.	M	-	317.4	318.8	321.7	323.0	323.1	325.8	324.7	320.3	321.5	323.5	324.6	324.4	326.7	326.1
Anchorage, Alaska (10/67 = 100)	1	10/67	-	286.9	-	286.3	-	286.2	-	-	280.1	-	278.4	-	277.9	-
Baltimore, Md.	1	-	-	327.3	-	330.2	-	334.0	-	-	326.3	-	327.9	-	330.9	-
Boston, Mass.	1	-	-	325.4	-	323.6	-	328.2	-	-	323.0	-	320.8	-	325.2	-
Cincinnati, Ohio-Ky.-Ind.	1	-	-	333.4	-	332.4	-	333.0	-	-	326.2	-	324.9	-	324.7	-
Denver-Boulder, Colo.	1	-	-	359.4	-	358.4	-	362.9	-	-	354.1	-	352.4	-	357.2	-
Miami, Fla. (11/77 = 100)	1	11/77	-	173.9	-	171.2	-	174.3	-	-	174.9	-	171.6	-	174.5	-
Milwaukee, Wis.	1	-	-	333.9	-	331.3	-	332.9	-	-	353.2	-	350.1	-	351.7	-
Northeast, Pa.	1	-	-	310.6	-	309.0	-	311.3	-	-	309.6	-	307.8	-	310.2	-
Portland, Oreg.-Wash.	1	-	-	317.1	-	314.7	-	318.0	-	-	307.3	-	303.4	-	306.3	-
St. Louis, Mo.-Ill.	1	-	-	321.6	-	325.6	-	325.7	-	-	318.5	-	320.6	-	320.7	-
San Diego, Calif.	1	-	-	379.0	-	383.1	-	385.9	-	-	341.9	-	345.0	-	347.4	-
Seattle-Everett, Wash.	1	-	-	324.0	-	323.7	-	326.3	-	-	310.8	-	310.1	-	312.3	-
Washington, D.C.-Md.-Va.	1	-	-	326.9	-	329.3	-	332.3	-	-	330.5	-	330.2	-	334.6	-
Alanta, Ga.	2	-	333.0	-	338.5	-	338.9	-	339.9	330.0	-	335.5	-	335.4	-	335.9
Buffalo, N.Y.	2	-	309.3	-	308.9	-	307.5	-	309.4	295.3	-	294.0	-	292.5	-	294.2
Cleveland, Ohio	2	-	348.6	-	350.6	-	352.7	-	352.1	327.0	-	328.2	-	329.9	-	329.3
Dallas-Ft. Worth, Tex.	2	-	343.9	-	344.7	-	346.2	-	345.9	337.5	-	337.4	-	339.1	-	338.5
Honolulu, Hawaii	2	-	295.6	-	299.2	-	301.5	-	302.2	302.7	-	306.5	-	308.3	-	308.8
Houston, Tex.	2	-	337.6	-	333.3	-	332.9	-	334.0	335.0	-	330.9	-	330.5	-	331.7
Kansas City, Mo.-Kansas	2	-	323.1	-	322.9	-	323.9	-	323.7	312.9	-	311.4	-	311.9	-	311.3
Minneapolis-St. Paul, Minn.-Wis.	2	-	340.6	-	342.1	-	340.3	-	340.9	336.0	-	336.2	-	334.5	-	334.6
Pittsburgh, Pa.	2	-	328.4	-	328.6	-	330.1	-	331.8	309.9	-	308.3	-	309.2	-	310.6
San Francisco-Oakland, Calif.	2	-	336.7	-	344.0	-	345.5	-	347.7	331.0	-	338.1	-	339.0	-	341.1
Region ³																
Northeast	2	12/77	172.5	-	174.2	-	175.0	-	176.4	170.3	-	171.6	-	172.2	-	173.5
North Central	2	12/77	174.9	-	176.1	-	176.2	-	176.5	171.4	-	172.2	-	172.2	-	172.4
South	2	12/77	175.7	-	176.3	-	176.4	-	177.5	175.3	-	175.2	-	175.3	-	176.3
West	2	12/77	176.9	-	178.7	-	179.0	-	180.4	174.8	-	176.3	-	176.4	-	177.8
Population size class ³																
A-1	2	12/77	172.9	-	175.7	-	176.6	-	177.6	168.7	-	171.0	-	171.8	-	172.5
A-2	2	12/77	177.6	-	178.9	-	179.1	-	179.9	174.6	-	175.2	-	175.3	-	176.0
B	2	12/77	176.3	-	177.0	-	176.6	-	178.3	173.6	-	174.1	-	173.5	-	175.1
C	2	12/77	173.8	-	174.7	-	175.0	-	175.9	174.1	-	174.6	-	174.8	-	175.7
D	2	12/77	173.8	-	173.4	-	173.8	-	174.5	174.9	-	174.2	-	174.5	-	175.1
Region/population size class cross classification ³																
Class A:																
Northeast	2	12/77	169.6	-	171.8	-	173.1	-	174.2	166.1	-	167.7	-	168.8	-	169.7
North Central	2	12/77	178.2	-	180.3	-	180.7	-	180.3	173.1	-	174.7	-	175.0	-	174.5
South	2	12/77	175.6	-	176.8	-	176.7	-	177.6	175.7	-	176.1	-	176.1	-	176.9
West	2	11/77	179.1	-	181.8	-	182.0	-	184.2	174.6	-	177.1	-	176.9	-	179.0
Class B:																
Northeast	2	12/77	174.9	-	175.2	-	174.7	-	178.0	171.8	-	172.2	-	171.8	-	174.6
North Central	2	12/77	173.4	-	174.1	-	172.5	-	174.0	169.5	-	169.7	-	168.1	-	169.5
South	2	12/77	177.4	-	178.5	-	178.6	-	180.0	173.9	-	174.6	-	174.6	-	175.7
West	2	12/77	177.9	-	178.3	-	178.1	-	179.2	178.4	-	178.7	-	178.3	-	179.3

See footnotes at end of table.

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

(1967 = 100, unless otherwise indicated)

Area ¹	Pricing schedule ²	Other index base	All Urban Consumers						Urban Wage Earners							
			1985		1986				1985		1986					
			Oct.	Nov.	June	July	Aug.	Sept.	Oct.	Oct.	Nov.	June	July	Aug.	Sept.	Oct.
Class C:																
Northeast	2	12/77	181.7	-	183.4	-	182.8	-	183.8	186.5	-	187.8	-	187.2	-	188.1
North Central	2	12/77	170.1	-	170.7	-	171.2	-	172.3	166.9	-	167.2	-	167.7	-	168.7
South	2	12/77	174.3	-	174.5	-	174.8	-	175.8	175.7	-	175.2	-	175.3	-	176.3
West	2	12/77	169.7	-	171.6	-	173.0	-	173.1	168.3	-	169.9	-	171.1	-	171.2
Class D:																
Northeast	2	12/77	175.6	-	176.1	-	176.8	-	178.1	175.3	-	175.5	-	176.2	-	177.2
North Central	2	12/77	171.6	-	171.3	-	171.4	-	171.7	173.1	-	172.6	-	172.4	-	172.7
South	2	12/77	174.8	-	173.9	-	174.3	-	175.4	176.2	-	174.6	-	175.0	-	175.9
West	2	12/77	174.5	-	174.1	-	174.9	-	175.3	176.0	-	175.4	-	176.3	-	176.7

¹ Area is generally the Standard Metropolitan Statistical Area (SMSA), exclusive of farms. L.A.-Long Beach, Anaheim, Calif. is a combination of two SMSA's, and N.Y., N.Y.-Northeastern N.J. and Chicago, Ill.-Northwestern Ind. are the more extensive Standard Consolidated Areas. Area definitions are those established by the Office of Management and Budget in 1973, except for Denver-Boulder, Colo. which does not include Douglas County. Definitions do not include revisions made since 1973.

² Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:

M - Every month.

1 - January, March, May, July, September, and November.

2 - February, April, June, August, October, and December.

³ Regions are defined as the four Census regions.

The population size classes are aggregations of areas which have urban population as defined:

A-1 - More than 4,000,000.

A-2 - 1,250,000 to 4,000,000.

B - 385,000 to 1,250,000

C - 75,000 to 385,000.

D - Less than 75,000.

Population size class A is the aggregation of population size classes A-1 and A-2.

- Data not available.

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

32. Annual data: Consumer Price Index all items and major groups

Series	1977	1978	1979	1980	1981	1982	1983	1984	1985
Consumer Price Index for All Urban Consumers:									
All items:									
Index	181.5	195.4	217.4	246.8	272.4	289.1	298.4	311.1	322.2
Percent change	6.5	7.7	11.3	13.5	10.4	6.1	3.2	4.3	3.6
Food and beverages:									
Index	188.0	206.3	228.5	248.0	267.3	278.2	284.4	295.1	302.0
Percent change	6.0	9.7	10.8	8.5	7.8	4.1	2.2	3.8	2.3
Housing:									
Index	186.5	202.8	227.6	263.3	293.5	314.7	323.1	336.5	349.9
Percent change	6.8	8.7	12.2	15.7	11.5	7.2	2.7	4.1	4.0
Apparel and upkeep:									
Index	154.2	159.6	166.6	178.4	186.9	191.8	196.5	200.2	206.0
Percent change	4.5	3.5	4.4	7.1	4.8	2.6	2.5	1.9	2.9
Transportation:									
Index	177.2	185.5	212.0	249.7	280.0	291.5	298.4	311.7	319.9
Percent change	7.1	4.7	14.3	17.8	12.1	4.1	2.4	4.5	2.6
Medical care:									
Index	202.4	219.4	239.7	265.9	294.5	328.7	357.3	379.5	403.1
Percent change	9.6	8.4	9.3	10.9	10.8	11.6	8.7	6.2	6.2
Entertainment:									
Index	167.7	176.6	188.5	205.3	221.4	235.8	246.0	255.1	265.0
Percent change	4.9	5.3	6.7	8.9	7.8	6.5	4.3	3.7	3.9
Other goods and services:									
Index	172.2	183.3	196.7	214.5	235.7	259.9	288.3	307.7	326.6
Percent change	5.8	6.4	7.3	9.0	9.9	10.3	10.9	6.7	6.1
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	181.5	195.3	217.7	247.0	272.3	288.6	297.4	307.6	318.5
Percent change	6.5	7.6	11.5	13.5	10.2	6.0	3.0	3.4	3.5

33. Producer Price Indexes, by stage of processing

(1967 = 100)

Grouping	Annual average		1985		1986									
	1984	1985	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Finished goods	291.1	293.7	296.4	297.2	296.0	291.9	288.0	287.2	288.9	289.3	288.0	288.3	287.5	290.5
Finished consumer goods	290.3	291.8	294.4	295.4	293.8	288.4	283.4	281.9	284.1	284.5	282.7	283.1	282.7	284.9
Finished consumer foods	273.3	271.2	271.8	275.0	275.0	272.0	271.6	271.9	274.8	275.1	280.7	283.6	282.2	282.9
Finished consumer goods excluding foods	294.1	297.3	300.7	300.7	298.3	291.8	284.6	282.2	284.0	284.4	278.8	278.0	278.1	281.0
Nondurable goods less food	337.3	339.3	342.6	343.2	339.6	328.0	315.4	309.8	313.0	313.5	303.4	302.0	304.8	301.9
Durable goods	236.8	241.5	245.0	244.3	243.5	243.9	243.7	245.7	245.5	245.9	246.3	246.2	242.7	253.6
Capital equipment	294.0	300.5	303.8	303.7	303.9	304.3	304.3	305.6	305.7	306.1	306.4	306.3	304.2	310.1
Intermediate materials, supplies, and components	320.0	318.7	318.1	318.9	317.4	313.5	309.5	307.1	306.7	306.8	305.0	304.5	306.1	304.9
Materials and components for manufacturing	301.8	299.5	297.7	297.9	297.1	296.5	296.4	295.5	295.4	295.1	295.8	296.0	296.2	296.5
Materials for food manufacturing	271.1	258.8	254.0	254.3	252.8	249.2	246.7	244.8	248.7	247.9	251.6	255.7	254.3	253.2
Materials for nondurable manufacturing	290.5	285.9	282.8	283.1	283.8	282.4	282.5	279.3	278.2	277.8	278.2	277.2	277.3	277.7
Materials for durable manufacturing	325.1	320.2	317.5	317.6	313.4	313.1	313.6	313.7	313.2	312.9	313.3	313.4	314.5	315.4
Components for manufacturing	287.5	291.5	292.3	292.4	293.1	293.6	293.7	294.1	294.1	294.1	294.6	294.9	295.1	294.9
Materials and components for construction	310.3	315.2	315.0	315.7	316.2	316.5	317.0	318.3	318.3	317.8	318.0	317.6	317.9	317.3
Processed fuels and lubricants	566.2	548.9	550.5	557.2	540.8	500.8	453.4	428.5	424.2	426.7	401.6	395.2	409.1	395.1
Containers	302.3	311.2	309.8	310.6	311.2	310.9	312.3	312.8	313.6	314.0	314.2	316.4	317.8	318.4
Supplies	283.4	284.2	285.6	285.7	286.6	286.4	286.8	287.2	287.1	287.3	287.4	287.1	287.9	287.5
Crude materials for further processing ...	330.8	306.1	304.7	304.3	301.0	289.0	281.1	273.7	279.4	276.9	278.0	275.5	275.5	276.7
Foodstuffs and feedstuffs	259.5	235.0	236.6	236.8	231.7	227.2	224.4	220.3	229.9	227.1	233.6	236.3	231.9	233.7
Nonfood materials ¹	484.5	459.2	451.6	450.0	450.6	422.7	403.9	389.4	386.9	384.8	374.1	360.0	369.6	369.8
Special groupings														
Finished goods, excluding foods	294.8	299.0	302.4	302.4	300.7	296.3	291.2	289.9	291.2	291.6	287.8	287.2	286.6	290.5
Finished energy goods	750.3	720.9	729.5	733.8	700.9	629.3	554.1	517.2	534.1	536.4	467.8	459.1	477.2	454.9
Finished goods less energy	265.1	269.2	271.6	272.2	272.7	272.2	272.1	273.1	274.0	274.3	276.4	277.2	275.4	279.7
Finished consumer goods less energy	257.8	261.3	263.4	264.3	264.8	264.0	263.9	264.9	266.1	266.3	269.0	270.0	268.4	272.2
Finished goods less food and energy	262.3	268.7	271.8	271.4	272.1	272.5	272.5	273.9	274.0	274.3	275.0	275.0	273.1	278.8
Finished consumer goods less food and energy	245.9	252.1	255.0	254.6	255.5	256.0	256.0	257.3	257.5	257.7	258.6	258.6	256.9	262.4
Consumer nondurable goods less food and energy	239.0	246.2	248.5	248.3	250.5	251.1	251.2	252.0	252.3	252.5	253.8	253.8	253.6	254.4
Intermediate materials less foods and feeds	325.0	325.0	324.5	325.3	323.6	319.7	315.5	313.0	312.4	312.5	310.5	309.9	311.5	310.4
Intermediate foods and feeds	253.1	232.8	231.4	232.7	232.6	228.9	227.8	227.0	229.3	229.0	230.3	232.4	233.3	229.8
Intermediate energy goods	545.0	528.3	529.3	536.2	520.0	482.0	437.0	413.3	409.1	411.1	387.1	380.8	393.8	380.5
Intermediate goods less energy	303.8	304.0	303.2	303.5	303.4	303.0	303.3	303.1	303.0	302.9	303.4	303.5	304.0	303.9
Intermediate materials less foods and energy	303.6	305.2	304.2	304.5	304.3	304.2	304.5	304.3	304.0	303.8	304.2	304.2	304.7	304.9
Crude energy materials	785.2	748.1	737.1	735.6	732.8	662.9	614.5	577.0	570.6	563.9	538.7	524.5	544.1	539.2
Crude materials less energy	255.5	233.2	233.2	233.0	229.8	226.5	224.7	221.9	229.2	227.3	232.0	231.1	228.5	230.5
Crude nonfood materials less energy	266.1	249.7	244.6	242.9	245.8	246.5	247.9	249.1	249.3	250.1	249.2	236.1	239.2	242.3

¹ Crude nonfood materials except fuel.

34. Producer Price indexes, by durability of product

(1967 = 100)

Grouping	Annual average		1985		1986									
	1984	1985	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Total durable goods	293.6	297.3	298.5	298.5	298.1	298.4	298.6	299.7	299.6	299.7	300.0	300.1	299.2	302.3
Total nondurable goods	323.3	317.2	317.6	318.8	316.8	308.4	300.7	296.0	297.9	297.7	294.9	294.0	295.6	294.2
Total manufactures	302.9	304.3	305.4	306.0	304.8	301.1	297.3	296.1	296.7	296.9	295.4	295.6	296.2	297.0
Durable	293.9	298.1	299.5	299.5	299.0	299.3	299.4	300.5	300.4	300.5	300.9	300.9	300.1	303.2
Nondurable	312.3	310.5	311.4	312.5	310.6	302.9	294.9	291.2	292.6	293.0	289.2	289.7	292.0	290.2
Total raw or slightly processed goods	346.6	327.9	326.2	327.6	326.0	316.3	310.3	303.0	306.2	304.2	304.3	299.7	299.2	298.8
Durable	266.7	252.2	245.2	244.3	248.2	251.2	252.4	253.1	252.1	251.2	248.9	252.4	253.2	252.0
Nondurable	351.4	332.4	331.2	332.7	330.6	320.2	313.6	305.8	309.3	307.2	307.4	302.3	301.7	301.4

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

(1967 = 100)

Index	1977	1978	1979	1980	1981	1982	1983	1984	1985
Finished goods:									
Total	181.7	195.9	217.7	247.0	269.8	280.7	285.2	291.1	293.7
Consumer goods	180.7	194.9	217.9	248.9	271.3	281.0	284.6	290.3	291.8
Capital equipment	184.6	199.2	216.5	239.8	264.3	279.4	287.2	294.0	300.5
Intermediate materials, supplies, and components:									
Total	201.5	215.6	243.2	280.3	306.0	310.4	312.3	320.0	318.7
Materials and components for manufacturing	195.4	208.7	234.4	265.7	286.1	289.8	293.4	301.8	299.5
Materials and components for construction	203.4	224.7	247.4	268.3	287.6	293.7	301.8	310.3	315.2
Processed fuels and lubricants	282.5	295.3	364.8	503.0	595.4	591.7	564.8	566.2	548.9
Containers	188.3	202.8	226.8	254.5	276.1	285.6	286.6	302.3	311.2
Supplies	188.7	198.5	218.2	244.5	263.8	272.1	277.1	283.4	284.2
Crude materials for further processing:									
Total	209.2	234.4	274.3	304.6	329.0	319.5	323.6	330.8	306.1
Foodstuffs and feedstuffs	192.1	216.2	247.9	259.2	257.4	247.8	252.2	259.5	235.0
Nonfood materials except fuel	245.0	272.3	330.0	401.0	482.3	473.9	477.4	484.5	459.2
Fuel	372.1	426.8	507.6	615.0	751.2	886.1	931.5	931.3	909.6

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

(June 1977 = 100, unless otherwise indicated)

Category	1974 SITC	1984				1985				1986		
		Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
ALL COMMODITIES (9/83=100)		100.2	101.5	99.3	98.1	97.5	97.5	96.5	96.7	97.0	96.7	95.1
Food (3/83=100)	0	106.2	109.6	103.5	96.5	95.8	94.0	90.2	93.6	90.5	89.5	77.2
Meat (3/83=100)	01	108.9	108.7	105.6	104.4	103.9	104.7	106.1	112.2	111.5	114.7	122.0
Fish (3/83=100)	03	99.8	98.7	98.0	98.7	101.0	103.6	102.6	101.8	102.2	106.2	111.2
Grain and grain preparations (3/80=100)	04	102.7	107.4	101.2	92.9	92.4	90.3	82.6	87.1	82.1	79.1	59.0
Vegetables and fruit (3/83=100)	05	116.2	126.9	125.6	114.7	119.5	120.2	126.9	118.9	115.3	125.8	131.4
Feedstuffs for animals (3/83=100)	08	106.9	98.8	83.5	82.4	72.8	68.6	75.7	83.4	88.5	85.5	90.2
Misc. food products (3/83=100)	09	104.9	110.6	109.5	108.4	110.6	109.2	108.1	107.7	106.0	104.7	106.6
Beverages and tobacco (6/83=100)	1	101.6	101.9	102.8	101.3	99.9	100.1	99.7	98.6	95.6	96.5	96.3
Beverages (9/83=100)	11	102.3	102.9	103.3	103.7	104.0	105.3	101.8	100.9	101.9	103.0	102.2
Tobacco and tobacco products (6/83=100)	12	101.6	101.8	102.7	101.1	99.5	99.6	99.5	98.4	95.1	95.9	95.8
Crude materials (6/83=100)	2	112.5	118.3	105.2	101.4	97.5	96.8	93.3	92.5	95.8	95.6	92.3
Raw hides and skins (6/80=100)	21	145.6	154.7	153.7	133.6	121.0	126.2	129.0	139.9	138.9	148.9	138.0
Oilseeds and oleaginous fruit (9/77=100)	22	93.9	104.3	79.9	74.8	71.0	71.2	64.2	63.9	66.9	65.8	64.5
Crude rubber (including synthetic and reclaimed) (9/83=100)	23	103.3	106.0	104.1	104.0	106.4	106.3	107.1	106.0	106.0	106.1	105.3
Wood	24	131.1	129.4	123.8	125.4	128.7	125.7	124.5	128.1	128.7	128.7	129.7
Pulp and waste paper (6/83=100)	25	112.5	122.1	120.8	114.2	100.5	96.1	93.8	92.7	98.8	109.7	120.7
Textile fibers	26	120.5	125.6	109.4	106.7	102.4	105.8	103.6	97.7	101.6	98.6	74.7
Crude fertilizers and minerals	27	146.6	147.7	163.0	163.2	165.6	167.9	169.4	165.5	168.0	166.1	164.3
Metalliferous ores and metal scrap	28	100.2	98.5	93.2	92.4	89.2	82.0	80.1	78.7	83.4	80.5	84.6
Mineral fuels	3	99.1	99.7	99.7	99.7	100.1	99.2	97.6	96.6	91.9	86.7	85.7
Animal and vegetable oils, fats, and waxes	4	129.8	164.5	145.7	147.9	142.0	144.5	114.5	101.4	90.8	84.4	76.5
Fixed vegetable oils and fats (6/83=100)	42	133.2	176.4	159.0	156.7	152.9	164.8	128.8	108.7	95.4	95.3	80.8
Chemicals (3/83=100)	5	101.4	99.7	98.3	97.7	97.0	96.8	97.1	96.6	96.5	95.4	93.1
Organic chemicals (12/83=100)	51	100.2	101.0	97.4	94.7	93.8	96.5	97.1	95.4	93.5	89.3	88.0
Fertilizers, manufactured (3/83=100)	56	108.3	96.9	97.4	94.8	92.5	87.9	89.8	90.0	88.6	84.0	77.4
Intermediate manufactured products (9/81=100)	-	101.0	101.3	102.0	100.4	99.4	99.2	99.2	99.1	100.3	101.2	102.2
Leather and furskins (9/79=100)	6	83.5	81.2	80.8	79.0	82.5	79.2	75.9	78.5	77.8	82.5	84.2
Rubber manufactures	61	146.7	147.5	148.9	148.5	150.2	149.0	148.3	148.7	151.0	150.0	150.4
Paper and paperboard products (6/78=100)	62	150.2	154.7	160.0	159.5	155.0	151.6	149.6	148.2	152.2	158.7	165.3
Iron and steel (3/82=100)	64	95.9	96.1	96.8	96.5	95.5	95.3	95.9	98.2	98.4	99.4	100.2
Nonferrous metals (9/81=100)	-	94.2	92.9	90.4	82.5	79.7	79.6	79.8	78.2	80.2	79.1	79.4
Metal manufactures, n.e.s. (3/82=100)	-	103.1	104.5	105.1	105.0	105.4	105.2	105.4	104.4	105.3	105.5	105.6
Machinery and transport equipment, excluding military and commercial aircraft (12/78=100)	67	138.5	139.4	140.1	141.5	142.3	142.9	143.1	143.3	144.0	144.1	144.4
Power generating machinery and equipment (12/78=100)	68	158.4	156.9	160.6	167.5	165.3	167.4	167.1	167.5	169.1	169.2	169.5
Machinery specialized for particular industries (9/78=100)	69	152.3	152.8	153.7	153.4	155.0	155.7	156.0	156.2	155.5	154.7	155.0
Metalworking machinery (6/78=100)	7	150.8	151.2	151.7	151.9	153.4	155.1	156.3	158.4	159.0	158.9	160.4
General industrial machines and parts n.e.s. 9/78=100)	71	148.6	149.0	149.3	150.2	152.4	152.0	152.4	152.2	152.3	153.3	154.4
Office machines and automatic data processing equipment	72	101.4	101.5	99.8	101.4	100.9	100.0	99.9	99.4	99.9	99.2	98.8
Telecommunications, sound recording and reproducing equipment	73	133.0	132.3	134.4	134.3	133.3	133.3	134.1	134.5	136.5	137.0	137.8
Electrical machinery and equipment	74	110.2	112.6	113.8	114.6	114.9	116.1	115.3	113.8	115.1	114.2	114.2
Road vehicles and parts (3/80=100)	75	130.2	131.2	131.0	131.8	133.1	133.9	133.8	135.0	135.5	136.4	136.5
Other transport equipment, excl. military and commercial aviation	76	183.1	187.7	189.6	191.7	195.5	196.6	199.3	200.7	203.3	205.6	206.0
Other manufactured articles	77	100.6	100.4	100.7	99.3	99.5	100.4	100.3	100.3	102.6	103.4	104.1
Apparel (9/83=100)	78	101.9	102.1	103.9	103.4	104.7	104.7	105.0	105.3	-	-	-
Professional, scientific, and controlling instruments and apparatus	79	171.8	172.0	175.8	171.7	175.5	178.3	178.7	178.8	182.1	183.8	183.8
Photographic apparatus and supplies, optical goods, watches and clocks (12/77=100)	8	132.0	131.3	132.7	130.3	128.0	129.1	127.5	128.5	131.6	132.9	132.7
Miscellaneous manufactured articles, n.e.s.	84	98.5	97.9	95.2	94.1	92.4	93.1	93.1	92.4	95.6	95.6	97.6
Gold, non-monetary (6/83=100)	971	95.8	93.5	81.7	79.5	69.1	75.4	77.4	77.5	81.8	82.2	97.5

- Data not available.

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

(June 1977=100, unless otherwise indicated)

Category	1974 SITC	1984		1985				1986		
		Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
ALL COMMODITIES (9/82=100)		96.7	95.7	93.5	93.0	92.9	94.2	88.5	83.2	83.8
Food (9/77=100)	0	102.0	98.1	98.5	96.8	94.9	102.8	113.4	104.7	109.1
Meat	01	135.4	132.3	130.4	118.2	120.6	131.2	122.7	118.5	126.9
Dairy products and eggs (6/81=100)	02	98.9	98.4	98.3	97.9	99.1	100.5	106.7	107.1	109.4
Fish	03	134.2	133.9	132.9	129.4	129.7	132.7	139.3	144.8	149.6
Bakery goods, pasta products, grain and grain preparations (9/77=100)	04	132.9	132.8	131.8	132.3	136.3	141.9	146.9	149.2	154.0
Fruits and vegetables	05	135.4	117.2	127.1	129.4	120.2	131.3	119.4	119.4	127.1
Sugar, sugar preparations, and honey (3/82=100)	06	119.0	118.5	118.4	122.6	123.1	111.9	124.6	121.6	123.9
Coffee, tea, cocoa	07	60.3	58.4	57.0	56.0	54.4	64.6	85.9	69.2	71.8
Beverages and tobacco	1	157.1	156.5	156.2	157.1	158.0	162.1	163.2	165.5	165.8
Beverages	11	153.5	152.8	154.2	154.3	156.0	159.1	161.8	163.9	165.5
Crude materials	2	100.6	98.9	94.0	93.6	91.5	91.2	94.2	95.3	98.2
Crude rubber (inc. synthetic & reclaimed) (3/84=100)	23	90.7	83.8	77.6	76.4	68.9	73.2	78.8	75.5	76.9
Wood (9/81=100)	24	99.6	104.0	100.7	106.9	101.6	99.4	104.3	106.3	109.4
Pulp and waste paper (12/81=100)	25	96.3	93.2	84.0	80.4	76.8	75.8	74.9	79.9	86.0
Crude fertilizers and crude minerals (12/83=100)	27	98.0	98.6	100.3	101.7	102.7	102.1	101.5	100.0	100.4
Metalliferous ores and metal scrap (3/84=100)	28	100.1	95.6	90.4	87.6	89.5	90.1	94.5	95.6	98.2
Crude vegetable and animal materials, n.e.s.	29	101.1	106.4	104.3	104.9	102.5	102.5	103.6	104.4	104.8
Fuels and related products (6/82=100)	3	86.9	85.2	82.9	80.9	79.8	79.1	55.3	37.5	33.3
Petroleum and petroleum products (6/82=100)	33	87.0	85.2	83.8	81.6	80.3	80.1	54.7	36.1	31.8
Fats and oils (9/83=100)	4	124.4	114.9	89.9	76.7	57.6	50.6	41.4	39.3	35.5
Vegetable oils (9/83=100)	42	125.3	115.3	89.5	75.9	56.2	48.9	39.3	37.4	33.5
Chemicals (9/82=100)	5	98.8	97.1	95.7	94.9	94.5	94.2	94.6	93.3	93.4
Medicinal and pharmaceutical products (3/84=100)	54	96.4	94.6	91.6	95.1	95.3	96.7	102.9	104.9	110.0
Manufactured fertilizers (3/84=100)	56	98.5	92.9	94.2	82.0	80.8	78.5	79.2	79.7	77.4
Chemical materials and products, n.e.s. (9/84=100)	59	100.0	97.5	96.1	95.6	96.9	97.8	99.9	100.3	101.0
Intermediate manufactured products (12/77=100)	6	137.2	136.8	133.1	132.4	133.6	133.4	134.0	135.6	138.8
Leather and furskins	61	144.0	140.4	135.3	133.3	137.0	141.3	141.6	143.0	147.4
Rubber manufactures, n.e.s.	62	139.6	140.5	139.5	138.6	137.3	138.1	136.5	137.7	138.1
Cork and wood manufactures	63	126.4	126.1	121.3	121.2	123.4	124.0	130.8	134.3	137.4
Paper and paperboard products	64	156.1	157.5	157.6	157.2	157.8	156.5	157.1	157.1	157.5
Textiles	65	131.6	132.9	130.4	127.5	126.5	128.1	131.2	132.9	135.4
Nonmetallic mineral manufactures, n.e.s.	66	156.6	159.4	154.2	151.7	157.6	162.2	164.2	169.6	178.2
Iron and steel (9/78=100)	67	124.7	123.7	121.0	120.1	119.1	118.3	117.3	118.1	119.0
Nonferrous metals (12/81=100)	68	90.2	87.3	81.9	82.3	83.7	80.4	79.4	78.9	83.5
Metal manufactures, n.e.s.	69	119.3	119.3	117.4	117.8	119.5	121.6	124.4	127.8	129.1
Machinery and transport equipment (6/81=100)	7	102.6	102.9	101.6	102.6	103.5	107.2	111.5	115.3	118.1
Machinery specialized for particular industries (9/78=100)	72	98.8	98.0	96.2	97.0	101.4	104.9	112.1	115.4	120.1
Metalworking machinery (3/80=100)	73	92.1	89.9	86.3	90.5	94.2	98.1	105.0	107.7	110.7
General industrial machinery and parts, n.e.s. (6/81=100)	74	92.4	91.3	89.2	91.1	94.3	98.0	103.8	109.0	112.8
Office machines and automatic data processing equipment (3/80=100)	75	94.1	92.2	89.6	89.4	90.3	93.7	96.9	100.8	102.1
Telecommunications, sound recording and reproducing apparatus (3/80=100)	76	93.6	91.3	90.0	88.8	88.3	88.6	89.4	91.6	93.7
Electrical machinery and equipment (12/81=100)	77	87.0	86.4	82.1	83.9	81.4	83.1	84.5	87.5	89.5
Road vehicles and parts (6/81=100)	78	109.8	111.3	111.5	112.1	112.7	117.8	123.4	127.1	129.8
Misc. manufactured articles (3/80=100)	8	99.7	100.0	97.0	98.0	99.6	100.8	103.3	104.8	109.5
Plumbing, heating, and lighting fixtures (6/80=100)	81	110.7	111.6	113.9	114.1	117.8	115.0	120.1	123.5	125.5
Furniture and parts (6/80=100)	82	138.4	142.5	137.4	136.7	142.1	142.7	147.0	142.2	145.8
Clothing (9/77=100)	84	135.4	138.5	136.7	133.9	134.5	134.5	133.4	135.3	137.8
Footwear	85	138.4	142.5	137.4	136.7	142.1	142.7	147.0	142.2	145.8
Professional, scientific, and controlling instruments and apparatus (12/79=100)	87	95.6	92.9	89.2	92.3	98.8	102.4	106.4	112.5	118.5
Photographic apparatus and supplies, optical goods, watches, and clocks (3/80=100)	88	91.2	91.3	88.9	89.5	91.1	94.5	99.3	103.2	106.8
Misc. manufactured articles, n.e.s. (6/82=100)	89	98.3	96.3	91.2	95.2	96.4	97.9	102.1	103.4	112.3
Gold, non-monetary (6/82=100)	971	106.4	103.6	90.1	98.3	101.1	101.0	106.7	107.3	126.9

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

(September 1983 = 100 unless otherwise indicated)

Category	Per-centage of 1980 trade value	1984		1985				1986		
		Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Foods, feeds, and beverages	16.294	88.8	83.0	81.5	80.9	76.2	77.5	75.5	74.7	66.0
Raw materials	30.696	100.5	99.1	97.6	97.2	96.5	95.9	96.0	94.9	93.4
Raw materials, nondurable	21.327	102.8	101.4	99.6	99.5	98.7	97.9	97.5	96.1	93.7
Raw materials, durable	9.368	95.0	93.3	92.6	91.6	91.1	91.0	92.5	91.9	92.5
Capital goods (12/82=100)	30.186	104.6	105.6	106.2	106.6	106.6	106.6	107.4	107.5	107.6
Automotive vehicles, parts and engines (12/82=100)	7.483	105.3	105.7	106.7	108.0	108.1	109.2	109.5	110.4	110.8
Consumer goods	7.467	101.3	100.8	100.9	101.1	101.9	101.4	103.7	104.5	104.5
Durables	3.965	99.4	99.3	99.1	99.2	100.4	99.5	101.8	101.8	102.1
Nondurables	3.501	103.0	102.3	102.7	103.0	103.3	103.3	105.5	107.2	106.9

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

(December 1982=100)

Category	Per-centage of 1980 trade value	1984		1985				1986		
		Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Foods, feeds, and beverages	7.477	105.6	101.8	102.1	100.4	99.0	106.0	115.8	108.2	112.3
Petroleum and petroleum products, excl. natural gas	31.108	87.5	85.7	84.4	82.1	80.9	80.5	55.4	36.8	32.3
Raw materials, excluding petroleum	19.205	102.5	101.1	96.3	95.8	95.4	93.9	94.5	94.0	95.3
Raw materials, nondurable	9.391	101.7	100.7	95.0	93.9	93.5	91.8	91.1	89.7	89.5
Raw materials, durable	9.814	103.3	101.6	97.7	97.8	97.4	96.2	98.1	98.7	101.4
Capital goods	13.164	98.0	97.8	94.8	96.3	97.6	100.0	102.8	106.7	109.4
Automotive vehicles, parts and engines	11.750	104.0	105.2	105.4	105.9	106.4	111.4	115.6	119.0	121.0
Consumer goods	14.250	100.6	101.1	99.5	99.4	101.0	102.4	104.5	106.5	110.1
Durable	5.507	98.8	98.5	97.0	97.0	98.9	100.7	103.4	106.5	111.2
Nondurable	8.743	103.0	104.6	103.0	102.5	103.9	104.7	106.0	106.6	108.6

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

Industry group	1984		1985				1986		
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Manufacturing:									
Food and kindred products (6/83=100)	105.6	103.3	99.5	99.5	96.7	98.1	97.0	95.0	95.2
Lumber and wood products, except furniture (6/83=100)	97.0	97.9	99.9	99.5	98.3	101.2	101.5	101.2	102.1
Furniture and fixtures (9/83=100)	103.5	104.9	105.2	106.5	107.1	108.4	109.2	109.7	110.1
Paper and allied products (3/81=100)	106.1	103.6	97.1	94.7	93.2	92.1	95.7	101.5	106.4
Chemicals and allied products (12/84=100)	101.3	100.7	100.3	99.6	99.7	99.2	98.9	98.3	96.2
Petroleum and coal products (12/83=100)	100.7	100.4	101.3	102.7	102.0	99.1	93.5	83.1	83.1
Primary metal products (3/82=100)	100.0	95.8	91.2	92.7	93.6	93.6	96.4	96.6	101.6
Machinery, except electrical (9/78=100)	138.0	139.9	140.4	140.5	140.6	140.5	140.6	140.3	140.5
Electrical machinery (12/80=100)	110.7	111.1	111.3	112.4	111.9	111.2	112.6	112.3	112.5
Transportation equipment (12/78=100)	157.7	158.8	160.4	161.8	162.6	164.1	165.1	166.8	167.1
Scientific instruments; optical goods; clocks (6/77=100)	156.0	153.0	154.9	156.6	156.2	156.7	159.7	161.2	161.5

¹ SIC - based classification.

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

Industry group	1984		1985				1986		
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Manufacturing:									
Food and kindred products (6/77=100)	124.1	122.6	118.8	115.0	114.2	115.1	117.7	115.6	118.1
Textile mill products (9/82=100)	104.3	104.7	102.8	101.0	100.4	101.8	104.7	106.4	107.4
Apparel and related products (6/77=100)	133.9	138.2	135.6	133.0	133.9	134.4	133.4	135.1	137.8
Lumber and wood products, except furniture (6/77=100)	117.3	120.0	116.3	120.6	117.5	115.8	122.1	124.8	127.9
Furniture and fixtures (6/80=100)	96.2	95.6	93.9	96.1	97.7	98.2	101.2	103.5	105.4
Paper and allied products (6/77=100)	146.1	145.5	141.5	139.8	138.7	137.4	137.6	139.4	142.2
Chemicals and allied products (9/82=100)	99.8	98.2	95.3	93.9	93.3	95.8	98.6	102.1	103.8
Rubber and miscellaneous plastic products (12/80=100)	97.8	98.0	96.9	96.7	96.6	97.5	100.9	100.6	101.9
Leather and leather products	141.6	144.2	139.1	138.9	142.3	144.0	145.8	144.6	147.7
Primary metal products (6/81=100)	88.3	86.6	82.2	83.0	83.4	81.9	82.0	82.4	86.4
Fabricated metal products (12/84=100)	-	100.0	99.0	99.1	101.0	102.6	104.9	108.5	110.3
Machinery, except electrical (3/80=100)	95.5	94.1	91.8	93.4	96.6	100.0	105.5	108.9	112.5
Electrical machinery (9/84=100)	100.0	98.6	95.1	95.8	94.5	95.8	97.0	100.2	102.6
Transportation equipment (6/81=100)	110.7	112.9	113.1	114.2	114.8	119.6	123.9	128.0	130.4
Scientific instruments; optical goods; clocks (12/79=100)	94.4	93.2	90.7	91.7	94.6	98.8	103.9	109.1	113.7
Miscellaneous manufactured commodities (9/82=100)	95.8	96.4	95.1	95.1	96.6	98.7	99.9	101.7	106.9

¹ SIC - based classification.

- Data not available.

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

(1977=100)

Item	Annual average	Quarterly Indexes											
		1984	1984				1985				1986		
			I	II	III	IV	I	II	III	IV	I	II	III
Business:													
Output per hour of all persons	105.3	104.9	105.6	105.5	105.5	105.7	106.4	107.3	106.4	107.3	107.4	107.4	
Compensation per hour	168.1	165.9	167.1	169.0	170.6	172.3	174.5	176.4	178.0	179.1	180.4	181.7	
Real compensation per hour	98.1	98.1	97.9	98.1	98.2	98.4	98.7	99.1	99.0	99.2	100.3	100.4	
Unit labor costs	159.7	158.2	158.3	160.2	161.7	163.1	164.0	164.4	167.3	167.0	168.0	169.1	
Unit nonlabor payments	156.3	154.1	156.7	157.0	157.7	158.3	160.0	161.4	159.6	162.2	161.9	163.7	
Implicit price deflator	158.5	156.7	157.7	159.0	160.3	161.4	162.6	163.4	164.6	165.3	165.8	167.2	
Nonfarm business:													
Output per hour of all persons	104.3	103.9	104.6	104.4	104.3	104.4	104.9	105.4	104.5	105.6	105.7	105.8	
Compensation per hour	167.9	165.6	166.9	168.7	170.4	172.1	174.0	175.4	177.0	178.3	179.3	180.4	
Real compensation per hour	98.0	97.9	97.8	98.0	98.1	98.2	98.4	98.5	98.4	98.8	99.8	99.7	
Unit labor costs	161.0	159.4	159.5	161.5	163.3	164.8	165.9	166.3	169.3	168.8	169.6	170.5	
Unit nonlabor payments	156.1	153.2	156.4	157.2	157.9	158.9	160.8	163.0	160.3	163.9	163.7	165.9	
Implicit price deflator	159.3	157.2	158.4	160.0	161.4	162.7	164.1	165.2	166.2	167.1	167.5	168.9	
Nonfinancial corporations:													
Output per hour of all employees	105.6	105.3	105.9	105.5	105.8	106.0	106.5	107.8	107.0	106.9	106.8	106.9	
Compensation per hour	165.9	163.6	164.8	166.6	168.3	169.9	171.6	173.1	174.5	175.4	176.1	176.8	
Real compensation per hour	96.8	96.8	96.6	96.7	96.8	97.0	97.0	97.2	97.0	97.1	97.9	97.7	
Total unit costs	161.5	159.4	160.1	162.6	163.8	164.9	165.8	165.0	167.2	168.3	168.6	169.8	
Unit labor costs	157.0	155.4	155.7	157.9	159.1	160.3	161.1	160.5	163.0	164.0	164.8	165.4	
Unit nonlabor costs	174.6	171.1	173.1	176.4	177.5	178.5	179.8	178.3	179.8	181.1	179.9	182.8	
Unit profits	133.4	134.4	138.5	130.3	130.5	129.3	130.2	141.7	131.2	131.7	132.3	134.4	
Unit nonlabor payments	160.1	158.3	161.0	160.3	161.0	161.3	162.5	165.5	162.8	163.8	163.2	165.9	
Implicit price deflator	158.1	156.4	157.5	158.7	159.8	160.6	161.6	162.2	162.9	164.0	164.3	165.6	
Manufacturing:													
Output per hour of all persons	116.6	114.7	115.7	117.8	118.2	119.3	121.7	123.0	122.9	123.7	124.7	125.8	
Compensation per hour	168.2	165.4	166.8	169.1	171.5	173.8	175.6	178.1	179.3	180.2	181.4	182.5	
Real compensation per hour	98.1	97.8	97.8	98.2	98.7	99.2	99.3	100.0	99.7	99.8	100.9	100.9	
Unit labor costs	144.2	144.1	144.2	143.5	145.1	145.7	144.3	144.8	145.8	145.7	145.5	145.0	

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

(1977=100)

Item	1960	1970	1973	1974	1976	1978	1979	1980	1981	1982	1983	1984
Private business												
Productivity:												
Output per hour of all persons	67.3	88.4	95.9	93.8	98.4	100.8	99.5	99.2	100.6	100.3	103.0	105.4
Output per unit of capital services	102.4	102.0	105.3	98.8	97.2	102.0	99.8	94.2	92.4	86.6	88.3	92.4
Multifactor productivity	78.2	92.9	99.1	95.6	98.0	101.2	99.7	97.4	97.7	95.2	97.6	100.6
Output	55.3	80.2	93.0	91.2	94.5	105.8	107.9	106.6	108.9	105.4	109.9	118.9
Inputs:												
Hours of all persons	82.2	90.8	96.9	97.2	96.1	105.0	108.4	107.5	108.2	105.2	106.7	112.8
Capital services	54.0	78.7	88.3	92.4	97.2	103.8	108.0	113.1	117.8	121.7	124.4	128.7
Combined units of labor and capital input	70.7	86.3	93.8	95.5	96.5	104.5	108.2	109.4	111.5	110.7	112.6	118.1
Capital per hour of all persons	65.7	86.7	91.1	95.0	101.2	98.8	99.7	105.3	108.8	115.7	116.7	114.1
Private nonfarm business												
Productivity:												
Output per hour of all persons	70.7	89.2	96.4	94.3	98.5	100.8	99.2	98.7	99.6	99.1	102.4	104.3
Output per unit of capital services	103.7	102.8	106.0	99.2	97.3	101.9	99.0	93.4	91.1	85.1	87.3	90.9
Multifactor productivity	80.9	93.7	99.6	96.0	98.1	101.2	99.1	96.9	96.7	94.1	97.0	99.6
Output	54.4	79.9	92.9	91.1	94.4	106.0	107.9	106.6	108.4	104.8	110.0	118.9
Inputs:												
Hours of all persons	77.0	89.6	96.3	96.6	95.8	105.1	108.8	108.0	108.8	105.7	107.4	114.0
Capital services	52.5	77.7	87.6	91.9	97.0	104.0	109.0	114.1	119.0	123.2	126.1	130.8
Combined units of labor and capital input	67.3	85.3	93.3	95.0	96.2	104.7	108.9	110.0	112.2	111.4	113.5	119.4
Capital per hour of all persons	68.2	86.8	91.0	95.1	101.3	98.9	100.1	105.6	109.4	116.5	117.4	114.7
Manufacturing												
Productivity:												
Output per hour of all persons	62.2	80.8	93.4	90.6	97.1	101.5	101.4	101.4	103.6	105.9	112.0	116.6
Output per unit of capital services	102.5	98.6	111.4	101.2	96.2	102.1	99.7	91.2	89.2	81.8	86.9	94.4
Multifactor productivity	71.9	85.2	97.9	93.3	96.8	101.7	101.0	98.7	99.8	99.2	105.1	110.7
Output	52.5	78.6	96.3	91.7	93.1	106.0	108.1	103.2	104.8	98.4	104.7	116.0
Inputs:												
Hours of all persons	84.4	97.3	103.1	101.2	95.9	104.4	106.5	101.7	101.1	92.9	93.5	99.5
Capital services	51.2	79.7	86.4	90.6	96.7	103.7	108.4	113.1	117.5	120.3	120.6	122.9
Combined units of labor and capital inputs	73.0	92.2	98.4	98.3	96.1	104.2	107.0	104.5	105.0	99.2	99.7	104.8
Capital per hour of all persons	60.7	82.0	83.8	89.5	100.9	99.4	101.7	111.2	116.2	129.4	129.0	123.6

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

(1977=100)

Item	1960	1970	1973	1974	1976	1978	1979	1980	1981	1982	1983	1984	1985
Business:													
Output per hour of all persons	67.6	88.4	95.9	93.9	98.3	100.8	99.6	99.3	100.7	100.3	103.0	105.3	106.4
Compensation per hour	33.6	57.8	70.9	77.6	92.8	108.5	119.1	131.5	143.7	154.9	161.5	168.1	175.3
Real compensation per hour	68.9	90.2	96.7	95.4	98.7	100.8	99.4	96.7	95.7	97.3	98.2	98.1	98.8
Unit labor costs	49.7	65.4	73.9	82.7	94.3	107.6	119.5	132.5	142.7	154.5	156.8	159.7	164.8
Unit nonlabor payments	46.4	59.4	72.5	76.4	93.3	106.7	112.5	118.7	134.6	136.6	146.3	156.3	159.7
Implicit price deflator	48.5	63.2	73.4	80.5	94.0	107.3	117.0	127.6	139.8	148.1	153.0	158.5	163.0
Nonfarm business:													
Output per hour of all persons	71.0	89.3	96.4	94.3	98.5	100.8	99.3	98.8	99.8	99.2	102.4	104.3	104.8
Compensation per hour	35.3	58.2	71.2	78.0	92.8	108.6	118.9	131.3	143.6	154.8	161.5	167.9	174.6
Real compensation per hour	72.3	90.8	97.1	95.9	98.8	100.9	99.2	96.6	95.7	97.2	98.2	98.0	98.4
Unit labor costs	49.7	65.2	73.9	82.7	94.3	107.7	119.7	132.9	144.0	156.0	157.7	161.0	166.7
Unit nonlabor payments	46.3	60.0	69.3	74.0	93.0	105.6	110.5	118.5	133.5	136.5	148.1	156.1	160.6
Implicit price deflator	48.5	63.4	72.3	79.7	93.8	107.0	116.5	127.8	140.3	149.2	154.3	159.3	164.6
Nonfinancial corporations:													
Output per hour of all employees	73.4	91.1	97.5	94.6	98.4	100.6	99.8	99.1	99.6	100.4	103.5	105.6	106.8
Compensation per hour	36.9	59.2	71.6	78.2	92.9	108.4	118.7	131.1	143.3	154.3	159.9	165.9	172.3
Real compensation per hour	75.5	92.4	97.6	96.1	98.9	100.7	99.1	96.4	95.5	96.9	97.3	96.8	97.0
Unit labor costs	50.2	65.0	73.4	82.6	94.3	107.8	119.0	132.3	143.8	153.8	154.5	157.0	161.2
Unit nonlabor payments	51.5	60.1	68.9	73.1	93.8	104.4	108.4	118.6	137.8	142.1	152.1	160.1	163.0
Implicit price deflator	50.7	63.3	71.9	79.4	94.2	106.6	115.4	127.6	141.7	149.8	153.7	158.1	161.8
Manufacturing:													
Output per hour of all persons	62.2	80.8	93.4	90.6	97.1	101.5	101.4	101.4	103.6	105.9	112.0	116.6	121.7
Compensation per hour	36.5	57.4	68.8	76.2	92.1	108.2	118.6	132.4	145.2	157.5	162.4	168.2	176.7
Real compensation per hour	74.8	89.5	93.8	93.6	98.1	100.5	99.1	97.4	96.7	98.9	98.8	98.1	99.5
Unit labor costs	58.7	71.0	73.7	84.1	94.9	106.6	117.0	130.6	140.1	148.7	145.0	144.2	145.1
Unit nonlabor payments	60.0	64.1	70.7	67.7	93.5	101.9	98.9	97.8	111.8	114.0	128.5	136.9	134.4
Implicit price deflator	59.1	69.0	72.8	79.3	94.5	105.2	111.7	121.0	131.8	138.6	140.2	142.1	142.0

45. Unemployment rates in nine countries, quarterly data seasonally adjusted

Country	Annual average		1985				1986		
	1984	1985	I	II	III	IV	I	II	III
Total labor force basis									
United States	7.4	7.1	7.2	7.2	7.1	6.9	7.0	7.1	6.8
Canada	11.2	10.4	11.0	10.5	10.2	10.1	9.7	9.5	9.6
Australia	8.9	8.2	8.5	8.4	8.1	7.8	7.9	-	-
Japan	2.7	2.6	2.6	2.5	2.6	2.9	2.6	2.8	-
France	9.7	10.1	10.2	10.1	10.2	9.9	10.0	10.3	10.4
Germany	7.6	7.7	7.7	7.8	7.7	7.7	7.6	7.5	7.3
Great Britain	12.8	13.0	12.9	13.0	13.2	12.8	13.0	13.1	-
Italy ^{1, 2}	5.8	5.9	5.8	5.7	5.9	6.2	6.2	6.3	6.0
Sweden	3.1	2.8	3.0	2.9	2.7	2.7	2.8	2.6	2.6
Civilian labor force basis									
United States	7.5	7.2	7.3	7.3	7.2	7.0	7.1	7.2	6.9
Canada	11.3	10.5	11.1	10.6	10.2	10.1	9.7	9.6	9.7
Australia	9.0	8.3	8.6	8.5	8.2	7.9	8.0	-	-
Japan	2.8	2.6	2.6	2.6	2.7	2.9	2.7	2.8	-
France	9.9	10.4	10.5	10.4	10.4	10.1	10.2	10.5	10.7
Germany	7.8	7.9	7.9	7.9	7.9	7.8	7.8	7.6	7.5
Great Britain	12.9	13.1	13.1	13.2	13.4	13.0	13.1	13.3	-
Italy	5.9	6.0	5.9	5.8	6.0	6.3	6.3	6.5	6.1
Sweden	3.1	2.8	3.0	2.9	2.8	2.7	2.8	2.6	2.6

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

² Major changes in the Italian labor force survey, introduced in 1977, resulted in a large increase in persons enumerated as unemployed. However, many persons reported that they had not actively sought work in the past 30 days, and they have been provisionally excluded for comparability with U.S. concepts. Inclusion of such persons would more

than double the Italian unemployment rate shown.

- Data not available.

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

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

(Numbers in thousands)

Employment status and country	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Labor force										
United States	96,158	99,009	102,251	104,962	106,940	108,670	110,204	111,550	113,544	115,461
Canada	10,203	10,500	10,895	11,231	11,573	11,904	11,958	12,183	12,399	12,639
Australia	6,244	6,358	6,443	6,519	6,693	6,810	6,910	6,997	7,133	7,272
Japan	53,100	53,820	54,610	55,210	55,740	56,320	56,980	58,110	58,480	58,820
France	22,000	22,300	22,470	22,670	22,790	22,930	23,150	23,130	23,290	23,330
Germany	25,900	25,870	26,000	26,250	26,520	26,650	26,710	26,740	26,880	27,090
Great Britain	25,290	25,430	25,620	25,710	25,870	25,870	25,880	26,010	26,530	26,960
Italy	20,300	20,530	20,630	20,910	21,210	21,410	21,450	21,610	21,680	21,800
Netherlands	4,890	4,950	5,010	5,100	5,290	5,500	5,560	5,720	5,740	5,690
Sweden	4,149	4,168	4,203	4,262	4,312	4,326	4,350	4,369	4,385	4,418
Participation rate										
United States	61.6	62.3	63.2	63.7	63.8	63.9	64.0	64.0	64.4	64.8
Canada	61.1	61.6	62.7	63.4	64.1	64.8	64.1	64.4	64.8	65.2
Australia	62.7	62.7	62.0	61.7	62.2	62.0	61.8	61.5	61.5	61.8
Japan	62.4	62.5	62.8	62.7	62.6	62.6	62.7	63.1	62.7	62.3
France	57.3	57.6	57.5	57.5	57.2	57.1	57.1	56.6	56.6	56.4
Germany	53.8	53.4	53.3	53.3	53.2	52.9	52.7	52.5	52.6	53.2
Great Britain	63.2	63.2	63.3	63.2	63.2	62.2	61.9	61.9	62.7	63.6
Italy	47.8	48.0	47.7	47.8	48.0	48.0	47.4	47.2	47.3	47.2
Netherlands	49.1	49.0	48.8	49.0	50.0	51.3	51.2	52.1	52.0	51.2
Sweden	66.0	65.9	66.1	66.6	67.0	66.8	66.8	66.7	66.8	67.2
Employed										
United States	88,752	92,017	96,048	98,824	99,303	100,397	99,526	100,834	105,005	107,150
Canada	9,477	9,651	9,987	10,395	10,708	11,006	10,644	10,734	11,000	11,311
Australia	5,946	6,000	6,038	6,111	6,284	6,416	6,415	6,300	6,490	6,670
Japan	52,020	52,720	53,370	54,040	54,600	55,060	55,620	56,550	56,870	57,260
France	21,010	21,180	21,260	21,300	21,320	21,200	21,230	21,170	20,980	20,910
Germany	25,010	24,970	25,130	25,470	25,750	25,560	25,130	24,750	24,790	24,960
Great Britain	23,810	23,840	24,040	24,360	24,100	23,190	22,820	22,680	23,100	23,420
Italy	19,600	19,800	19,870	20,100	20,380	20,480	20,430	20,470	20,390	20,490
Netherlands	4,630	4,700	4,750	4,830	4,960	4,990	4,930	4,890	4,880	4,890
Sweden	4,083	4,093	4,109	4,174	4,226	4,218	4,213	4,218	4,249	4,293
Employment-population ratio										
United States	56.8	57.9	59.3	59.9	59.2	59.0	57.8	57.9	59.5	60.1
Canada	56.7	56.6	57.5	58.7	59.3	59.9	57.0	56.7	57.4	58.4
Australia	59.7	59.2	58.1	57.9	58.4	58.4	57.3	55.4	56.0	56.6
Japan	61.1	61.2	61.3	61.4	61.3	61.2	61.2	61.4	61.0	60.6
France	54.8	54.7	54.4	54.0	53.5	52.8	52.3	51.8	51.0	50.5
Germany	52.0	51.6	51.5	51.7	51.7	50.8	49.6	48.6	48.5	49.0
Great Britain	59.5	59.3	59.4	59.8	58.9	55.8	54.6	54.0	54.6	55.2
Italy	46.1	46.3	45.9	45.9	46.1	45.9	45.2	44.7	44.5	44.4
Netherlands	46.5	46.5	46.3	46.4	46.9	46.5	45.4	44.5	44.2	44.0
Sweden	64.9	64.8	64.6	65.3	65.6	65.1	64.7	64.4	64.7	65.3
Unemployed										
United States	7,406	6,991	6,202	6,137	7,637	8,273	10,678	10,717	8,539	8,312
Canada	726	849	908	836	865	898	1,314	1,448	1,399	1,328
Australia	298	358	405	408	409	394	495	697	642	602
Japan	1,080	1,100	1,240	1,170	1,140	1,260	1,360	1,560	1,610	1,560
France	990	1,120	1,210	1,370	1,470	1,730	1,920	1,960	2,310	2,420
Germany	890	900	870	780	770	1,090	1,580	1,990	2,090	2,130
Great Britain	1,480	1,590	1,580	1,350	1,770	2,680	3,060	3,330	3,430	3,540
Italy	700	740	760	810	830	920	1,020	1,140	1,280	1,310
Netherlands	260	250	260	270	330	510	630	830	860	800
Sweden	66	75	94	88	86	108	137	151	136	125
Unemployment rate										
United States	7.7	7.1	6.1	5.8	7.1	7.6	9.7	9.6	7.5	7.2
Canada	7.1	8.1	8.3	7.4	7.5	7.5	11.0	11.9	11.3	10.5
Australia	4.8	5.6	6.3	6.3	6.1	5.8	7.2	10.0	9.0	8.3
Japan	2.0	2.0	2.3	2.1	2.0	2.2	2.4	2.7	2.8	2.6
France	4.5	5.0	5.4	6.0	6.4	7.5	8.3	8.5	9.9	10.4
Germany	3.4	3.5	3.4	3.0	2.9	4.1	5.9	7.4	7.8	7.9
Great Britain	5.9	6.3	6.2	5.3	6.8	10.4	11.8	12.8	12.9	13.1
Italy	3.4	3.6	3.7	3.9	3.9	4.3	4.8	5.3	5.9	6.0
Netherlands	5.3	5.0	5.2	5.3	6.2	9.3	11.3	14.5	15.0	14.1
Sweden	1.6	1.8	2.2	2.1	2.0	2.5	3.1	3.5	3.1	2.8

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

(1977 = 100)

Item and country	1960	1970	1973	1974	1976	1977	1979	1980	1981	1982	1983	1984	1985
Output per hour													
United States	62.2	80.8	93.4	90.6	97.1	100.0	101.4	101.4	103.6	105.9	112.9	118.5	121.8
Canada	50.3	76.8	91.3	93.4	96.2	100.0	104.2	101.9	104.0	101.0	107.6	111.5	115.1
Japan	23.2	64.8	83.1	86.5	94.3	100.0	114.8	122.7	127.2	135.0	142.3	152.2	159.9
Belgium	32.8	60.0	78.7	83.2	95.3	100.0	111.8	119.3	127.2	132.8	141.0	145.5	-
Denmark	37.2	65.5	83.2	86.0	98.2	100.0	106.5	112.3	114.2	114.6	117.3	118.3	118.4
France	36.4	69.6	82.2	85.2	95.0	100.0	110.3	112.0	116.4	123.5	129.3	135.0	140.2
Germany	40.3	71.2	84.0	87.4	96.5	100.0	108.2	108.6	111.0	112.6	119.0	124.7	131.9
Italy	36.5	72.7	90.9	95.3	98.9	100.0	110.5	116.9	121.0	123.4	126.6	135.0	139.1
Netherlands	32.4	64.3	81.5	88.1	95.8	100.0	112.3	113.9	116.9	119.4	126.1	139.3	-
Norway	54.6	81.7	94.6	97.7	99.7	100.0	107.1	109.3	109.7	112.6	119.2	122.3	125.0
Sweden	42.3	80.7	94.8	98.8	101.7	100.0	110.9	112.7	113.2	116.5	125.5	132.6	135.2
United Kingdom	53.8	77.6	92.9	95.2	99.1	100.0	102.2	101.2	107.9	112.7	121.2	126.2	129.7
Output													
United States	52.5	78.6	96.3	91.7	93.1	100.0	108.1	103.2	104.8	98.4	105.6	117.9	121.0
Canada	41.5	75.1	94.6	98.0	98.1	100.0	110.9	107.7	108.8	96.4	101.7	110.1	115.2
Japan	19.2	69.9	91.9	91.7	94.8	100.0	113.9	124.1	129.8	137.3	148.2	165.2	175.8
Belgium	41.7	78.1	95.8	99.6	99.5	100.0	104.2	107.2	105.9	109.1	110.7	112.8	-
Denmark	49.2	82.0	95.9	97.4	99.6	100.0	105.4	110.1	106.6	108.3	112.2	118.6	122.3
France	35.4	73.3	88.6	91.8	96.1	100.0	106.1	106.6	105.9	106.0	107.4	108.4	109.0
Germany	50.0	86.6	96.1	95.4	98.0	100.0	106.6	106.6	104.9	102.4	103.5	107.4	113.0
Italy	37.4	78.0	90.5	96.3	97.9	100.0	108.6	115.4	114.3	111.6	109.2	113.2	115.3
Netherlands	44.8	84.4	95.8	100.0	99.0	100.0	106.1	106.6	106.7	105.0	105.3	110.8	-
Norway	55.1	87.0	99.5	104.0	101.4	100.0	100.3	101.3	100.1	99.8	98.8	101.3	103.7
Sweden	52.6	92.5	100.3	105.7	106.1	100.0	103.6	104.0	100.6	100.1	105.2	112.4	114.6
United Kingdom	71.0	94.7	104.7	103.5	98.2	100.0	100.5	91.7	86.2	86.4	88.9	92.4	95.0
Total hours													
United States	84.4	97.3	103.1	101.2	95.9	100.0	106.5	101.7	101.1	92.9	93.5	99.5	99.3
Canada	82.6	97.7	103.6	105.0	102.0	100.0	106.4	105.7	104.6	95.4	94.6	98.7	100.1
Japan	82.7	107.9	110.7	106.1	100.6	100.0	99.3	101.2	102.0	101.7	104.2	108.5	110.0
Belgium	127.0	130.1	121.8	119.7	104.4	100.0	93.2	89.9	83.3	82.1	78.5	77.5	-
Denmark	132.4	125.1	115.2	113.2	101.4	100.0	99.0	98.1	93.4	94.5	95.7	100.2	103.3
France	97.2	105.3	107.8	107.8	101.2	100.0	96.2	95.2	91.0	85.9	83.0	80.3	77.8
Germany	123.8	121.7	114.4	109.2	101.6	100.0	98.5	98.1	94.6	91.0	87.0	86.2	85.7
Italy	102.3	107.4	99.6	101.0	99.0	100.0	98.2	98.7	94.5	90.4	86.2	83.9	82.9
Netherlands	138.4	131.2	117.6	113.5	103.3	100.0	94.4	93.6	91.2	88.0	83.5	79.5	-
Norway	101.0	106.4	105.1	106.5	101.7	100.0	93.6	92.6	91.3	88.6	82.9	82.8	83.0
Sweden	124.4	114.6	105.7	107.0	104.3	100.0	93.4	92.3	88.9	85.9	83.9	84.8	84.8
United Kingdom	131.9	122.1	112.7	108.7	99.0	100.0	98.3	90.7	79.9	76.7	73.3	73.2	73.3
Compensation per hour													
United States	36.5	57.3	68.8	76.2	92.1	100.0	118.6	132.4	145.2	157.5	163.2	169.1	176.6
Canada	27.1	46.5	59.2	68.5	89.9	100.0	118.3	130.6	151.5	167.1	179.3	182.1	191.4
Japan	8.9	33.9	55.1	72.3	90.7	100.0	113.4	120.7	129.8	136.6	140.7	144.8	148.3
Belgium	13.8	34.9	53.5	65.2	89.5	100.0	117.6	130.4	144.6	152.0	163.7	176.6	-
Denmark	12.6	36.3	56.1	67.9	90.4	100.0	123.1	135.9	149.6	162.9	174.3	183.9	195.5
France	15.1	36.6	52.3	62.0	88.9	100.0	129.3	147.5	170.3	200.8	226.2	246.5	262.7
Germany	18.8	48.0	67.5	76.9	91.3	100.0	116.1	125.6	134.5	141.0	148.4	155.3	164.7
Italy	8.3	26.1	43.7	54.5	84.2	100.0	134.7	160.2	197.1	237.3	276.4	303.0	334.0
Netherlands	12.5	39.0	60.5	71.9	91.9	100.0	117.0	123.6	129.1	137.5	144.7	152.8	-
Norway	15.8	37.9	54.5	63.6	88.8	100.0	116.0	128.0	142.8	156.0	173.5	188.3	205.2
Sweden	14.7	38.5	54.2	63.8	91.5	100.0	120.1	133.6	148.1	158.9	173.3	190.7	205.8
United Kingdom	14.8	30.8	44.8	56.9	88.4	100.0	137.7	165.8	188.9	206.4	222.4	237.2	257.0
Unit labor costs: National currency basis:													
United States	58.7	70.9	73.7	84.1	94.9	100.0	117.0	130.6	140.1	148.7	144.5	142.8	145.0
Canada	53.9	60.6	64.8	73.3	93.5	100.0	113.5	128.1	145.7	165.4	166.7	163.2	166.3
Japan	38.4	52.3	66.4	83.6	96.2	100.0	98.8	98.4	102.0	101.2	98.9	95.1	92.7
Belgium	42.0	58.1	68.0	78.3	93.9	100.0	105.2	109.3	113.6	114.4	116.1	121.4	-
Denmark	33.8	55.4	67.4	79.0	92.1	100.0	115.7	121.0	131.1	142.2	148.6	155.5	165.1
France	41.6	52.6	63.6	72.8	93.6	100.0	117.3	131.7	146.3	162.6	175.0	182.5	187.4
Germany	46.6	67.4	80.3	88.0	94.6	100.0	107.3	115.7	121.2	125.2	124.7	124.6	124.9
Italy	22.8	36.0	48.1	57.2	85.1	100.0	121.9	137.0	162.9	192.4	218.3	224.5	240.1
Netherlands	38.5	60.7	74.3	81.6	96.0	100.0	104.1	108.5	110.4	115.2	114.7	109.7	-
Norway	29.0	46.4	57.6	65.2	89.1	100.0	108.2	117.0	130.2	138.6	145.5	154.0	164.2
Sweden	34.8	47.7	57.2	64.6	90.0	100.0	108.3	118.6	130.9	136.3	138.1	143.8	152.2
United Kingdom	27.6	39.7	48.2	59.7	89.2	100.0	134.7	163.8	175.1	183.1	183.5	187.9	198.1
Unit labor costs: U.S. dollar basis:													
United States	58.7	70.9	73.7	84.1	94.9	100.0	117.0	130.6	140.1	148.7	144.5	142.8	145.0
Canada	59.0	61.7	68.8	79.7	100.7	100.0	103.0	116.4	129.1	142.3	143.7	133.9	129.4
Japan	28.5	39.1	65.6	76.8	86.9	100.0	121.3	116.8	123.8	108.8	111.5	107.2	104.2
Belgium	30.2	42.0	62.8	72.1	87.2	100.0	128.5	134.1	109.9	89.5	81.3	75.3	-
Denmark	29.5	44.4	67.2	77.9	91.5	100.0	132.0	129.0	110.3	102.3	97.5	90.1	93.5
France	41.7	46.8	70.4	74.5	96.3	100.0	135.5	153.4	132.2	121.5	112.9	102.7	102.6
Germany	25.9	42.9	70.4	79.1	87.3	100.0	135.9	147.9	124.9	119.7	113.4	101.6	98.6
Italy	32.5	50.6	73.1	77.6	90.5	100.0	129.5	141.4	126.3	125.4	126.8	112.8	111.1
Netherlands	25.1	41.2	65.6	74.6	89.1	100.0	127.4	134.2	108.9	105.8	98.6	83.9	-
Norway	21.7	34.5	53.4	62.8	86.9	100.0	113.8	126.2	120.6	114.2	106.1	100.4	101.7
Sweden	30.1	41.1	58.7	65.1	92.3	100.0	112.9	125.3	115.4	96.9	80.4	77.7	79.1
United Kingdom	44.4	54.4	67.7	80.1	92.3	100.0	163.9	218.3	203.1	183.5	159.4	143.9	147.3

- Data not available.

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

Industry and type of case ¹	Incidence rates per 100 full-time workers ²								
	1976	1977	1978	1979	1980	1981	1982	1983	1984
PRIVATE SECTOR³									
Total cases	9.2	9.3	9.4	9.5	8.7	8.3	7.7	7.6	8.0
Lost workday cases	3.5	3.8	4.1	4.3	4.0	3.8	3.5	3.4	3.7
Lost workdays	60.5	61.6	63.5	67.7	65.2	61.7	58.7	58.5	63.4
Agriculture, forestry, and fishing³									
Total cases	11.0	11.5	11.6	11.7	11.9	12.3	11.8	11.9	12.0
Lost workday cases	4.7	5.1	5.4	5.7	5.8	5.9	5.9	6.1	6.1
Lost workdays	83.3	81.1	80.7	83.7	82.7	82.8	86.0	90.8	90.7
Mining									
Total cases	11.0	10.9	11.5	11.4	11.2	11.6	10.5	8.4	9.7
Lost workday cases	5.8	6.0	6.4	6.8	6.5	6.2	5.4	4.5	5.3
Lost workdays	114.4	128.8	143.2	150.5	163.6	146.4	137.3	125.1	160.2
Construction									
Total cases	15.3	15.5	16.0	16.2	15.7	15.1	14.6	14.8	15.5
Lost workday cases	5.5	5.9	6.4	6.8	6.5	6.3	6.0	6.3	6.9
Lost workdays	105.0	111.5	109.4	120.4	117.0	113.1	115.7	118.2	128.1
General building contractors:									
Total cases	14.5	15.0	15.9	16.3	15.5	15.1	14.1	14.4	15.4
Lost workday cases	5.2	5.7	6.3	6.8	6.5	6.1	5.9	6.2	6.9
Lost workdays	100.0	100.2	105.3	111.2	113.0	107.1	112.0	113.0	121.3
Heavy construction contractors:									
Total cases	16.3	16.0	16.6	16.6	16.3	14.9	15.1	15.4	14.9
Lost workday cases	5.5	5.7	6.2	6.7	6.3	6.0	5.8	6.2	6.4
Lost workdays	109.2	116.7	110.9	123.1	117.6	106.0	113.1	122.4	131.7
Special trade contractors:									
Total cases	15.3	15.6	15.8	16.0	15.5	15.2	14.7	14.8	15.8
Lost workday cases	5.6	6.1	6.6	6.9	6.7	6.6	6.2	6.4	7.1
Lost workdays	105.8	115.5	111.0	124.3	118.9	119.3	118.6	119.0	130.1
Manufacturing									
Total cases	13.2	13.1	13.2	13.3	12.2	11.5	10.2	10.0	10.6
Lost workday cases	4.8	5.1	5.6	5.9	5.4	5.1	4.4	4.3	4.7
Lost workdays	79.5	82.3	84.9	90.2	86.7	82.0	75.0	73.5	77.9
Durable goods									
Lumber and wood products:									
Total cases	22.1	22.3	22.6	20.7	18.6	17.6	16.9	18.3	19.6
Lost workday cases	9.7	10.4	11.1	10.8	9.5	9.0	8.3	9.2	9.9
Lost workdays	167.3	178.0	178.8	175.9	171.8	158.4	153.3	163.5	172.0
Furniture and fixtures:									
Total cases	16.9	17.2	17.5	17.6	16.0	15.1	13.9	14.1	15.3
Lost workday cases	6.0	6.0	6.9	7.1	6.6	6.2	5.5	5.7	6.4
Lost workdays	94.5	92.0	95.9	99.6	97.6	91.9	85.6	83.0	101.5
Stone, clay, and glass products:									
Total cases	16.1	16.9	16.8	16.8	15.0	14.1	13.0	13.1	13.6
Lost workday cases	6.4	6.9	7.8	8.0	7.1	6.9	6.1	6.0	6.6
Lost workdays	114.1	120.4	126.3	133.7	128.1	122.2	112.2	112.0	120.8
Primary metal industries:									
Total cases	16.6	16.2	17.0	17.3	15.2	14.4	12.4	12.4	13.3
Lost workday cases	6.3	6.8	7.5	8.1	7.1	6.7	5.4	5.4	6.1
Lost workdays	114.8	119.4	123.6	134.7	128.3	121.3	101.6	103.4	115.3
Fabricated metal products:									
Total cases	18.9	19.1	19.3	19.9	18.5	17.5	15.3	15.1	16.1
Lost workday cases	6.8	7.2	8.0	8.7	8.0	7.5	6.4	6.1	6.7
Lost workdays	109.8	109.0	112.4	124.2	118.4	109.9	102.5	96.5	104.9
Machinery, except electrical:									
Total cases	14.2	14.0	14.4	14.7	13.7	12.9	10.7	9.8	10.7
Lost workday cases	4.6	4.7	5.4	5.9	5.5	5.1	4.2	3.6	4.1
Lost workdays	70.6	69.9	75.1	83.6	81.3	74.9	66.0	58.1	65.8
Electric and electronic equipment:									
Total cases	8.5	8.6	8.7	8.6	8.0	7.4	6.5	6.3	6.8
Lost workday cases	2.8	3.0	3.3	3.4	3.3	3.1	2.7	2.6	2.8
Lost workdays	44.9	46.7	50.3	51.9	51.8	48.4	42.2	41.4	45.0
Transportation equipment:									
Total cases	12.4	11.8	11.5	11.6	10.6	9.8	9.2	8.4	9.3
Lost workday cases	4.7	5.0	5.1	5.5	4.9	4.6	4.0	3.6	4.2
Lost workdays	73.8	79.3	78.0	85.9	82.4	78.1	72.2	64.5	68.8
Instruments and related products:									
Total cases	7.2	7.0	6.9	7.2	6.8	6.5	5.6	5.2	5.4
Lost workday cases	2.4	2.4	2.6	2.8	2.7	2.7	2.3	2.1	2.2
Lost workdays	36.7	37.4	37.0	40.0	41.8	39.2	37.0	35.6	37.5
Miscellaneous manufacturing industries:									
Total cases	11.7	11.5	11.8	11.7	10.9	10.7	9.9	9.9	10.5
Lost workday cases	4.0	4.0	4.5	4.7	4.4	4.4	4.1	4.0	4.3
Lost workdays	59.4	58.7	66.4	67.7	67.9	68.3	69.9	66.3	70.2

See footnotes at end of table.

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

Industry and type of case ¹	Incidence rates per 100 full-time workers ²								
	1976	1977	1978	1979	1980	1981	1982	1983	1984
Nondurable goods									
Food and kindred products:									
Total cases	19.3	19.5	19.4	19.9	18.7	17.8	16.7	16.5	16.7
Lost workday cases	8.0	8.5	8.9	9.5	9.0	8.6	8.0	7.9	8.1
Lost workdays	123.8	130.1	132.2	141.8	136.8	130.7	129.3	131.2	131.6
Tobacco manufacturing:									
Total cases	10.0	9.1	8.7	9.3	8.1	8.2	7.2	6.5	7.7
Lost workday cases	4.1	3.8	4.0	4.2	3.8	3.9	3.2	3.0	3.2
Lost workdays	62.5	66.7	58.6	64.8	45.8	56.8	44.6	42.8	51.7
Textile mill products:									
Total cases	10.5	10.2	10.2	9.7	9.1	8.8	7.6	7.4	8.0
Lost workday cases	2.7	2.9	3.4	3.4	3.3	3.2	2.8	2.8	3.0
Lost workdays	55.5	57.4	61.5	61.3	62.8	59.2	53.8	51.4	54.0
Apparel and other textile products:									
Total cases	6.7	6.7	6.5	6.5	6.4	6.3	6.0	6.4	6.7
Lost workday cases	1.9	2.0	2.2	2.2	2.2	2.2	2.1	2.4	2.5
Lost workdays	31.0	31.7	32.4	34.1	34.9	35.0	36.4	40.6	40.9
Paper and allied products:									
Total cases	13.7	13.6	13.5	13.5	12.7	11.6	10.6	10.0	10.4
Lost workday cases	4.7	5.0	5.7	6.0	5.8	5.4	4.9	4.5	4.7
Lost workdays	94.8	101.6	103.3	108.4	112.3	103.6	99.1	90.3	93.8
Printing and publishing:									
Total cases	6.8	6.8	7.0	7.1	6.9	6.7	6.6	6.6	6.5
Lost workday cases	2.6	2.7	2.9	3.1	3.1	3.0	2.8	2.9	2.9
Lost workdays	40.3	41.7	43.8	45.1	46.5	47.4	45.7	44.6	46.0
Chemicals and allied products:									
Total cases	8.2	8.0	7.8	7.7	6.8	6.6	5.7	5.5	5.3
Lost workday cases	3.1	3.1	3.3	3.5	3.1	3.0	2.5	2.5	2.4
Lost workdays	50.6	51.4	50.9	54.9	50.3	48.1	39.4	42.3	40.8
Petroleum and coal products:									
Total cases	7.9	8.1	7.9	7.7	7.2	6.7	5.3	5.5	5.1
Lost workday cases	3.2	3.3	3.4	3.6	3.5	2.9	2.5	2.4	2.4
Lost workdays	62.5	59.2	58.3	62.0	59.1	51.2	46.4	46.8	53.5
Rubber and miscellaneous plastics products:									
Total cases	16.8	16.8	17.1	17.1	15.5	14.6	12.7	13.0	13.6
Lost workday cases	7.1	7.6	8.1	8.2	7.4	7.2	6.0	6.2	6.4
Lost workdays	113.3	118.1	125.5	127.1	118.6	117.4	100.9	101.4	104.3
Leather and leather products:									
Total cases	11.6	11.5	11.7	11.5	11.7	11.5	9.9	10.0	10.5
Lost workday cases	4.1	4.4	4.7	4.9	5.0	5.1	4.5	4.4	4.7
Lost workdays	69.0	68.9	72.5	76.2	82.7	82.6	86.5	87.3	94.4
Transportation and public utilities									
Total cases	9.8	9.7	10.1	10.0	9.4	9.0	8.5	8.2	8.8
Lost workday cases	5.0	5.3	5.7	5.9	5.5	5.3	4.9	4.7	5.2
Lost workdays	94.0	95.9	102.3	107.0	104.5	100.6	96.7	94.9	105.1
Wholesale and retail trade									
Total cases	7.5	7.7	7.9	8.0	7.4	7.3	7.2	7.2	7.4
Lost workday cases	2.8	2.9	3.2	3.4	3.2	3.1	3.1	3.1	3.3
Lost workdays	43.2	44.0	44.9	49.0	48.7	45.3	45.5	47.8	50.5
Wholesale trade:									
Total cases	8.1	8.5	8.9	8.8	8.2	7.7	7.1	7.0	7.2
Lost workday cases	3.3	3.6	3.9	4.1	3.9	3.6	3.4	3.2	3.5
Lost workdays	51.8	52.5	57.5	59.1	58.2	54.7	52.1	50.6	55.5
Retail trade:									
Total cases	7.2	7.4	7.5	7.7	7.1	7.1	7.2	7.3	7.5
Lost workday cases	2.6	2.7	2.8	3.1	2.9	2.9	2.9	3.0	3.2
Lost workdays	39.7	40.5	39.7	44.7	44.5	41.1	42.6	46.7	48.4
Finance, insurance, and real estate									
Total cases	2.0	2.0	2.1	2.1	2.0	1.9	2.0	2.0	1.9
Lost workday cases .....	.7	.8	.8	.9	.8	.8	.9	.9	.9
Lost workdays	11.6	10.4	12.5	13.3	12.2	11.6	13.2	12.8	13.6
Services									
Total cases	5.3	5.5	5.5	5.5	5.2	5.0	4.9	5.1	5.2
Lost workday cases	2.0	2.2	2.4	2.5	2.3	2.3	2.3	2.4	2.5
Lost workdays	38.4	35.4	36.2	38.1	35.8	35.9	35.8	37.0	41.1

¹ Total cases include fatalities.

² The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as: (N/EH) X 200,000, where:

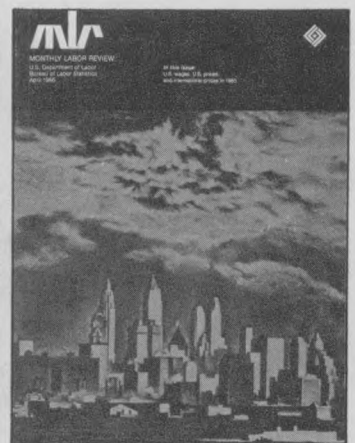
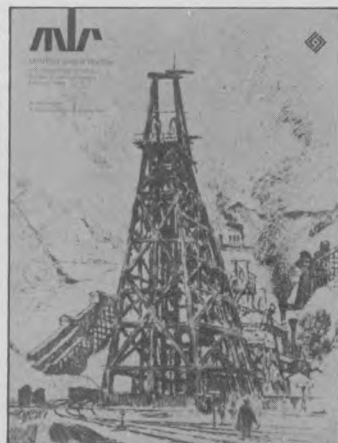
N = number of injuries and illnesses or lost workdays.

EH = total hours worked by all employees during calendar year.
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year.)

³ Excludes farms with fewer than 11 employees since 1976.

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Women's role in the family

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. . . the type and duration of employment experienced by married farm worker women is strongly influenced by their generally disadvantaged status, by their role in the family, and by the economic position of the family. In almost all instances, women's work careers are organized in such a way as to carry out the traditional duties of wife and mother, in addition to that of wage earner. A wife's wage may represent an integral part of the family budget, particularly in the case of families living in the United States and border areas, but the range of work opportunities and the duration of employment are limited by her subordinate status in the family. Thus, the availability of work in low skill, seasonal production allows women to carry out the dual roles of wife and wage-earner. At the same time, however, the availability of this attractive labor pool facilitates expansion of those jobs.

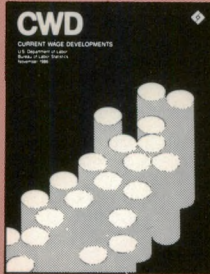
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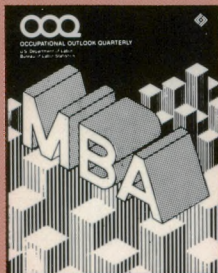
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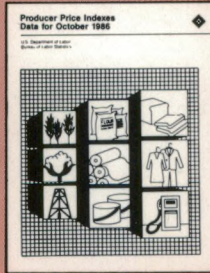
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