



MONTHLY LABOR REVIEW

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In this issue:

Prices in the first 3 quarters of 1987
Comparing U.S. and Canadian price change





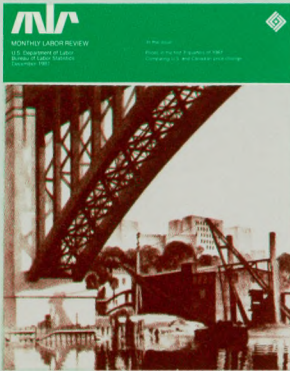
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Janet L. Norwood, *Commissioner*

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Labor Month In Review



JOB SAFETY IN 1986. The Bureau of Labor Statistics reported results of its survey of job-related injuries and illnesses in 1986. The survey shows a workplace injury and illness rate of 7.9 per 100 full-time workers, the same as in 1985. While the number of injuries and illnesses was higher in 1986 (5.6 million) than in 1985 (5.5 million), the rate remained the same because of increases in employment and hours of work.

A measure of workplace safety which reflects injury severity—the rate of lost workdays per 100 full-time workers—also showed little change over the year in the private sector as a whole (65.8 in 1986). In manufacturing, however, the rate increased from 80.2 in 1985 to 85.2 in 1986. This increase occurred in both durable and nondurable goods factories. In contrast, the lost workdays rate in mining dropped from 145.3 to 125.9.

Occupational injuries. Occupational injuries include those which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment beyond first aid.

Work-related injuries occurred at a rate of 7.7 per 100 full-time workers during 1986. As in 1985, about 46 percent of the injuries were serious enough for workers to take time off from work or to be restricted in work activity beyond the day of injury (lost workday cases). While the overall injury rate was the same in 1986 as in 1985, there was again a marked decrease in injury rates in mining industries—from 8.3 in 1985 to 7.2 in 1986. The decrease occurred mainly in the oil and gas extraction industry.

Injury rates varied by establishment size in 1986 as they have in previous years. Rates for establishments with

fewer than 50 or more than 1,000 employees continued to be lower than the rates for mid-size establishments. This pattern held with most major industry groups.

Occupational illnesses. The survey measures the number of new illness cases detected during a year and recognized as being work-related. During 1986, the survey found about 137,000 new cases of occupational illnesses among workers in private industry. Almost two-thirds of these involved skin diseases or disorders associated with repeated trauma (that is, noise-induced hearing loss, and conditions due to repeated motion, pressure, or vibration). About 61 percent of cases occurred in manufacturing. Chronic and long-term latent illnesses, often difficult to recognize or relate to the workplace, are included in the illness measures, but are clearly understated.

Occupational fatalities. The survey found 3,610 work-related fatalities in establishments with 11 or more employees in 1986. Three of every five 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 the 1986 fatalities.

Improving the data. In reporting the survey results, Commissioner of Labor Statistics Janet L. Norwood said that the data are the best currently available, but that the Bureau is concerned about errors in the company logs upon which the survey is based. Norwood explained that the Bureau has begun a full review of the entire job safety and health statistical system and has a number of

improvements already under way including:

- A program to increase employer understanding of the recordkeeping requirements on occupational injuries and illnesses. During 1986, the Bureau and participating State agencies conducted approximately 200 seminars attended by 12,000 individuals who represented companies with about 11 million employees. BLS also distributed nearly 800,000 copies of revised recordkeeping guidelines. These efforts will be continued.

- Technical assistance to the Occupational Safety and Health Administration for a study involving on-site checks of the records of 100 establishments in each of two States—Massachusetts and Missouri. The study tested procedures for evaluating employer recordkeeping under the BLS/OSHA requirements. Statistical implications that can be drawn from the study are limited because of the small number of establishments (200) visited. Preliminary results show that about 90 percent of the establishments were in compliance with the requirement to maintain an OSHA log, but underrecording, especially of cases involving lost workdays, occurred. In addition, the study found some evidence that minor injuries not covered by the guidelines were erroneously recorded on the log.

- A joint effort with State health departments to screen hospital files to determine what information would be available on several well-defined occupational respiratory illnesses.

- A nationwide symposium sponsored by BLS on problems associated with the measurement of illnesses in the workplace.

- A joint effort with the National Institute for Occupational Safety and Health (NIOSH) and the National Center for Health Statistics (NCHS) to expand the NCHS National Health Interview Survey to gather additional information on occupational illnesses.

- BLS review and discussion with business, labor, and cooperating States of recommendations by a panel of experts commissioned by the Bureau and named by the National Research Council's Committee on National Statistics to review BLS safety and health statistics programs. The panel's report, issued on October 16, includes 14 specific recommendations for improving BLS occupational safety and health statistics.

A BLS bulletin, in preparation, will provide detailed tables and analysis of the 1986 data. □

Inflation fueled by oil prices in first 9 months of 1987

Oil price movements dominated the behavior of the CPI during the first three quarters; inflation slowed quarter by quarter, but remained higher on an annualized basis than in each of the preceding 5 years

RICHARD C. BAHR

Inflation, as measured by the Consumer Price Index for All Urban Consumers (CPI-U), increased at a seasonally adjusted annual rate of 4.8 percent during the first 9 months of 1987. This increase, although slowing considerably between the first and third quarters, was notably larger than the 1.1-percent rise in 1986 and the advances of about 4 percent in each of the 4 preceding years.

The marked turnaround in energy prices—up at an annual rate of 12.6 percent in the first 9 months of this year after declining 19.7 percent in 1986—was the primary factor in the larger increase in the overall index. However, the rate of the advance of energy prices decelerated sharply quarter by quarter in 1987, from an annual rate of 26.1 percent to 7.9 percent and, finally, to 5.0 percent in the third quarter.

The CPI excluding energy also rose at a more rapid pace in the first 9 months of 1987. Although the pace moderated between the first and third quarters, this slowdown was not as pronounced as that for energy. Prices for nonfood-nonenergy commodities picked up quite rapidly, with the largest advances posted for clothing and used cars. During the first 9 months of 1987, the indexes for food and shelter each advanced at about the same rates as in the preceding year. Charges for other services, however, slowed over the same period. The annual rates of price change for these

groups and their relative impact on the All-Items index during the last several years and the first 9 months of 1987 are shown in table 1.

Current status

Over the first 9 months of this year, as in all of 1986, movements in oil prices have dominated the behavior of the CPI. If the heightened tensions in the Persian Gulf do not disrupt the flow of oil, however, the influence of this component seems likely to continue to diminish in the coming months. Food price increases also should slow.

Aggregate measures of material and labor costs appear to have bottomed out, but do not pose an immediate cause for concern. The Producer Price Index (PPI) for crude nonfood materials other than fuels did rise sharply in the first 9 months of 1987, and that for intermediate materials less food and energy advanced at a 4.3-percent rate. The index for finished goods less food and energy, however, has not yet accelerated.

Measures of labor costs indicate a lack of pressure on prices. The Bureau's Employment Cost Index increased only 3.4 percent over the year ended in September 1987. The 1.1-percent reduction in the unemployment rate over the past 12 months is likely to result in some upward pressure on labor costs, but it is expected to be moderate and gradual. In addition, capacity utilization has remained very steady throughout 1987 at rates significantly below their optimal level.

Richard Bahr is an economist in the Office of Prices and Living Conditions, Bureau of Labor Statistics.

Table 1. Percent changes and normalized effect on the All-Items index for selected Consumer Price Indexes (CPI-U), selected periods, December 1982 to September 1987

Category	Percent change							
	December 1982 to December 1983	December 1983 to December 1984	December 1984 to December 1985	December 1985 to December 1986	Seasonally adjusted annual rates for—			
					9 months ended September 1987	3 months ended—		
						March 1987	June 1987	September 1987
All items	3.8	4.0	3.8	1.1	4.8	6.2	4.6	3.6
Energy	-.5	.2	1.8	-19.7	12.6	26.1	7.9	5.0
Energy commodities	-3.2	-1.9	3.4	-30.5	27.9	65.8	9.4	15.5
Energy services	4.1	3.4	-5	-3.3	1.0	.4	6.4	-3.6
All items less energy	4.4	4.5	4.0	3.8	4.1	4.8	4.3	3.3
Food	2.6	3.8	2.7	3.8	3.4	2.5	6.5	1.4
Shelter	4.7	5.2	6.0	4.6	4.7	6.2	3.5	4.5
All items less food, shelter, and energy	5.0	4.4	3.7	3.4	4.0	4.5	4.2	3.4
Other commodities	5.0	3.1	2.2	1.4	4.0	5.1	3.8	3.0
Other services	4.9	6.0	5.4	5.6	4.1	4.1	4.4	3.9
	Normalized effect on All Items							
All items	3.800	4.000	3.800	1.100	4.800	6.200	4.600	3.600
Energy	-.057	.026	.211	-2.156	.939	1.815	.601	.409
Energy commodities	-.248	-.136	.236	-2.012	.897	1.800	.339	.565
Energy services .....	.191	.162	-.025	-.144	.042	.015	.261	-.155
All items less energy	3.857	3.974	3.589	3.256	3.861	4.385	4.000	3.191
Food	1.010	.722	.503	.691	.569	.418	1.030	.249
Shelter .....	.492	1.137	1.318	.999	1.326	1.721	.977	1.287
All items less food, shelter, and energy	2.355	2.115	1.768	1.567	1.966	2.246	1.994	1.655
Other commodities	1.303	.821	.569	.341	1.041	1.316	1.008	.800
Other services	1.052	1.294	1.199	1.226	.925	.930	.986	.855

Food. Prices paid by consumers for food rose at a 3.4-percent annual rate in the first 9 months of 1987. While about the same as recent annual increases, this change represents a slowdown from the sharp advance in the second half of 1986. That increase followed a severe drought in the southeastern part of the country in late spring of 1986, which partially accounted for sharp hikes in prices for fresh fruits and vegetables, meats, poultry, and eggs. The index for fresh fruits and vegetables rose even more rapidly in the first half of 1987, but then declined sharply in the third quarter, resulting in a 5.8-percent annual rate of advance for the first 9 months. Prices for tomatoes, potatoes, bananas, and the other fresh fruits category, which rose substantially during the last half of 1986, declined or decelerated sharply in 1987. On the other hand, prices for lettuce, other fresh vegetables, and apples accelerated in 1987, while those for oranges rose sharply over the entire period since mid-1986.

The slower advance in the food component in 1987, relative to the second half of 1986, was primarily due to a decline in prices for poultry and a much smaller increase in those for pork—items whose prices had been greatly influenced by the 1986 drought. Reflecting declining stocks, prices for beef and veal rose at a double-digit rate in the last half of 1986 and slowed to an 8.8-percent rise during the first 9 months of 1987. Other food groups contributing to deceleration in the food index over the first 9 months were dairy products and nonalcoholic beverages, particularly coffee—the largest food import—the price of which continues

to be affected by a sudden release of huge stocks that were built up through the now-defunct producers' quota system during most of the 1980's. On the other hand, prices turned up for fats and oils and accelerated moderately for cereals and bakery products and other prepared foods. Prices for food away from home and alcoholic beverages rose at 3.4-percent and 3.8-percent annual rates, respectively.

Shelter. During the first 9 months of 1987, shelter costs rose at an annual rate of 4.7 percent. This was about the same as the 4.6-percent rise in 1986—the smallest rise in this component since the rental equivalence approach to homeownership was adopted in 1983.¹ The 2.8-percent rise in charges for house or apartment rents was the smallest half-year annual rate since 1968. In the third quarter, rents accelerated, resulting in a 3.9-percent annual rate of advance for the first 9 months compared with an increase of 5.0 percent in 1986.

Energy. The surge in petroleum-based energy prices was the result of the steady drawing down of the tremendous glut of crude oil produced over a period beginning in late 1985, during which production quotas were formally abandoned by the Organization of Petroleum Exporting Countries (OPEC). OPEC pricing discipline was gradually reestablished towards the end of 1986. Thereafter, inventories dropped lower than expected at times, putting upward pressure on motor fuel and fuel oil prices. The refiners' acquisition cost

of imported crude oil as of August 1987 was \$19.30 per barrel compared with only \$10.91 in July 1986.

Despite these price increases, imported petroleum captured a greater proportion of the U.S. market, with imports representing 39 percent of the supply of crude in July 1987 compared with 36 percent a year earlier. During the first 9 months of 1987, fuel oil prices erased more than one-third of their 1986 declines and the price of motor fuel made up almost half of its 1986 drop. However, as of September of this year, fuel oil prices remained 31.2 percent below their April 1981 peak and motor fuel prices were 26.2 percent below their March 1981 high point.

The index for energy services—natural gas and electricity—also turned around in the first 9 months of 1987. After declining 3.3 percent in 1986, it advanced at a 1.0-percent annual rate, despite a modest decline in the third quarter. Charges for natural gas fell at a rate of 1.7 percent and those for electricity rose at a 2.3-percent annual pace.

Other services. After rising faster than the average for all items over a period of at least 5 years, the change in prices for services other than shelter and energy slowed to a below-average pace of 4.1 percent during the first 9 months of 1987. Several components of this index that had shown recent declines continued to decrease, most notably, auto

finance charges and long distance telephone rates. The drop in the latter category was sharp enough to cause the index for telephone services to decline at an annual rate of 0.7 percent, despite a 6.5-percent rate of increase for local telephone charges.

Charges for several services which slackened in the first half of 1987 continued to outpace the overall CPI. Despite a slowing in the first quarter, medical care service costs posted a 5.8-percent annual rate of increase during the first three quarters of the year. After rising at an 11.8-percent rate in 1986, auto insurance charges slowed to an annual rate of 6.3 percent during the 9 months ended in September. Refuse collection charges accelerated at a double-digit annual rate, apparently reflecting the scarcity of landfill sites around major metropolitan centers. Table 2 shows price changes for consumer services other than shelter and energy during recent years and during the first three quarters of 1987.

Other commodities. Price movements for many groups of items in this category reflect the impact of the declining value of the dollar in international markets because of their import component. However, two important elements with little or no import influence also contributed to the price acceleration of this category.

Table 2. Price changes for consumer services other than shelter and energy, selected periods, December 1982–September 1987

Consumer service category	Percent change							
	December 1982 to December 1983	December 1983 to December 1984	December 1984 to December 1985	December 1985 to December 1986	Seasonally adjusted annual rate for—			
					9 months ended September 1987	3 months ended—		
						March 1987	June 1987	September 1987
Services excluding shelter and energy	4.9	6.0	5.4	5.6	4.1	4.1	4.4	3.9
Telephone:								
Local charges	3.2	17.1	8.9	7.1	6.5	9.2	.4	10.2
Interstate toll calls	1.4	-4.3	-3.8	-9.5	-16.5	-30.5	-2.1	-14.4
Intrastate toll calls	7.4	3.7	.5	.4	-4.2	-1.9	-13.1	3.0
Water and sewerage maintenance	8.5	5.5	5.5	5.4	6.4	5.9	7.4	5.9
Cable television	(1)	6.1	6.0	3.8	8.5	19.4	3.0	4.0
Refuse collection	(1)	3.2	6.4	9.4	10.4	12.2	4.2	15.1
Postage .....	.0	.0	10.2	.0	.0	.0	.0	.0
Appliance and furniture repair	4.9	5.6	3.1	2.6	3.3	2.0	5.9	1.9
Moving, storage, freight, household laundry, and drycleaning	6.2	4.9	7.2	3.2	(1)	(1)	(1)	(1)
Gardening and other household services	(1)	(1)	(1)	(1)	5.6	5.7	5.6	5.6
Apparel services	5.0	4.9	4.9	3.9	3.4	5.0	3.2	2.0
Automobile maintenance and repair	3.8	3.2	3.3	3.7	3.6	2.5	3.6	4.8
Automobile insurance	9.1	7.9	12.0	11.8	6.3	7.9	5.7	5.3
Automobile finance charges	-7.9	6.8	-8.3	-7.3	-4.9	-11.1	6.1	-8.9
Automobile registration, licensing, and inspection fees	7.8	8.5	2.1	3.4	1.6	-5	0	5.4
Other automobile related fees	3.5	5.8	4.2	10.0	7.0	9.6	3.5	8.0
Airline fares	4.8	6.5	6.3	5.3	2.0	4.5	-6.4	8.7
Other intercity public transportation	7.0	10.7	6.4	4.9	3.5	-5	3.7	7.4
Intracity public transportation	2.1	5.9	3.6	6.8	2.7	3.3	3.7	1.1
Professional medical services	7.6	6.3	6.5	6.3	6.9	6.0	8.0	6.9
Hospital and related services	10.4	7.6	5.0	7.2	6.9	4.6	9.3	6.8
Entertainment services	5.4	5.7	4.4	5.4	4.8	3.2	4.3	6.9
Personal care services	3.6	4.9	3.6	2.6	4.3	3.9	3.8	3.5
Tuition and other school fees	9.4	10.1	8.4	7.9	6.8	9.5	9.8	1.3
Personal expenses (legal, financial, and funeral)	12.2	6.5	6.1	9.0	4.8	9.1	4.4	4.3

¹ Data not available.

Table 3. Selected seasonally adjusted annual rates of change for Consumer Price Indexes for commodities with higher-than-average import proportions, selected periods, December 1982–September 1987

Category	December 1982 to December 1983	December 1983 to March 1985	March 1985 to June 1986	June 1986 to December 1986	December 1986 to September 1987
Commodities less food and energy	5.0	3.5	0.7	2.0	3.9
Wine at home	-1.5	0.7	2.6	-1.3	6.9
Whiskey at home	1.5	1.3	7.8	.2	1.3
Alcoholic spirits, excluding whiskey	1.0	2.0	9.7	-3	1.3
TV and sound equipment	-2.2	-4.1	-5.1	-3.0	-3.3
Clocks, lamps, and decor items	2.4	1.0	1.6	-5.8	3.4
Tableware, serving pieces, and nonelectric kitchenware	1.6	0.5	2.2	.9	2.6
Lawn equipment, power tools, other hardware	2.3	1.9	-1.9	1.8	1.5
Men's and boys' apparel	2.3	2.3	1.3	.9	3.6
Women's and girls' apparel	3.3	2.5	-2.3	5.0	7.8
Infants' and toddlers' apparel	3.5	5.5	4.6	-4.3	.4
Jewelry and luggage	3.4	0.3	-1.1	5.1	114.4
Footwear	1.0	2.0	-1.4	3.9	3.2
New vehicles	3.3	3.0	4.1	5.8	1.2
Sporting goods and equipment	2.6	2.5	.4	-3.1	2.7
Toys, hobbies, and other entertainment commodities	1.5	1.3	2.5	2.6	1.8
Other toilet goods and small personal care appliances	5.2	3.6	2.9	2.4	3.0

¹ Jewelry only.

Used car prices rose at a 12.9-percent annual rate, after recording a 5.1-percent decline in 1986. This is largely because the recent weakness in new car sales has reduced the supply of trade-ins. For example, sales of new cars in the first 8 months of 1987 were 7.9 percent lower than they were in the same period last year. Prices for tobacco products also advanced at a 9.4-percent annual rate after a 6.0-percent rise in 1986.

Other commodities (imported). When the dollar was appreciating from March 1981 to March 1985, foreign suppliers of imports could receive the same income in their own currency by selling the same quantity of imports at lower dollar prices, as each dollar received by them commanded a greater amount of their own currency.² However, it may have taken some time for the rising value of the dollar to have translated into relatively lower costs of imports; according to one estimate, such an effect may take up to 2 years to appear.³ A large number of factors have been listed as having the potential to minimize the price-reducing effect of the 1981–85 dollar appreciation, and those same factors may have vitiated or delayed any inflationary impact of the post-March 1985 depreciation. Nevertheless, 12 of 16 commodity groups, which were judged to have an above average representation of imports in market sales, had exhibited some evidence of the impact of the declining dollar by the third quarter of 1987. (See table 3.)

Of these 12 groups, 3 showed significant differences in price behavior over the 9 months ended in September. Par-

ticularly evident was the acceleration in prices for apparel. Clothing prices had declined during the 12-month period ended in June 1986. Over the next 15 months, these prices rose at an annual rate of 4.7 percent, with the largest increases coinciding with the introduction of the spring- and summer-weight wear in early 1987. New vehicle prices, however, showed a larger rate of increase in the 12 months ended in June 1986 than in the 15 months ended in September 1987. Other economic factors—notably impending tax law changes—had stimulated demand for new vehicles in calendar year 1986. This concentration of demand in 1986 has resulted in fewer sales in 1987, even with prices increasing at a modest 1.2-percent annual rate. In fact, when the decline in the cost of financing an automobile over the first 9 months is taken into account, the cost of purchasing a new vehicle has remained almost unchanged since the end of 1986. The behavior of automobile prices in the past year certainly is one case where other factors influencing price change in particular markets have dwarfed the effects of exchange rate movements. □

—FOOTNOTES—

¹ See "Changing the Homeownership Component of the Consumer Price Index to Rental Equivalence," *The CPI Detailed Report*, January 1983, pp. 7–13.

² See "A half-year pause in inflation: its antecedents and structure," *Monthly Labor Review*, October 1986, p. 12.

³ Catherine L. Mann, "Prices, Profit Margins, and Exchange Rates," *The Federal Reserve Bulletin*, July 1986.

Comparison of purchasing power parity between the United States and Canada

Purchasing power parities determine expenditures for real gross domestic product among countries without the use of the exchange rate to convert currencies; parities more accurately reflect the rate at which currency in one country can be converted to buy an equivalent "market basket" in another country

JOHN DRYDEN, KATRINA REUT, AND BARBARA SLATER

In August 1987, the Organization for Economic Cooperation and Development (OECD) published results from the 1985 study of multilateral purchasing power parity for its member countries. A purpose of the study was to compare various types of economic data among countries without using market exchange rates to convert the data to a common currency. Because exchange rates do not necessarily reflect the relative purchasing powers of different currencies within countries, the use of exchange rates as a converter for international comparisons could show relationships in price and output levels that did not actually exist. Consequently, a system of purchasing power parities was developed to more accurately reflect the rate at which one currency could be converted to another to purchase equivalent goods and services in both countries. This system not only makes it possible to compare real levels of gross domestic product between countries, rather than nominal levels (which would be obtained if the data were converted using exchange

rates), but can also be used to compare real levels of personal and government consumption and gross fixed capital formation, as well as smaller expenditures such as for food, housing, and construction.

The effort to develop a method for comparing real gross domestic product and national accounts aggregates among countries began in the 1950's with studies conducted at the Organization of the European Economic Community (predecessor to OECD) by Irving Kravis and Milton Gilbert. These studies provided the basic approach and the methodology that was then further refined in benchmark studies in 1970, 1973, 1975, and 1980 under the auspices of the United Nations Statistical Agencies, the University of Pennsylvania, the Statistical Office of the European Communities (EUROSTAT), and the OECD. The strategy of these earlier studies (phase I through IV) was to create a system of world-level comparisons by conducting a series of regional comparisons under the auspices of the United Nations regional economic commissions.

The results of the 1985 OECD regional study, while an independent exercise with the European Community study embedded in it, will be incorporated into the world-level project of the United Nations Statistical Office (phase V of the international comparison project). The various regions in the international comparison project will be subsequently linked together by countries either participating in two regions, such as Japan (OECD and ESCAP). Austria (European

John Dryden is with the Organization for Economic Cooperation and Development, Paris; Katrina Reut is chief of the Division of International Prices, Bureau of Labor Statistics, U.S. Department of Labor; and Barbara Slater is chief of the Price Office, Statistics Canada. The authors thank Michael Garland, formerly of the OECD, Bohdan J. Szulc of Statistics Canada, and Michelle A. Vachris of the Bureau of Labor Statistics for their invaluable contribution to the completion of the bilateral comparison and the preparation of this article. The views expressed in this article are not necessarily those of the OECD.

Communities and Group II), or Finland (OECD and Europe Group II), or by carrying out bilateral "core-comparisons" between countries in different regions.

The decision to calculate bilateral purchasing power parities between Canada and the United States was made in 1985, shortly after the OECD Secretariat started work with U.S. and Canadian governments on data collection for the multilateral OECD purchasing power parity project. It was felt that it would be useful to carry out a special data collection exercise that would tighten the links between the two North American countries, and to calculate a special binary comparison which would exclude all data for third countries and would permit a degree of disaggregation of expenditure categories unconstrained by the classification necessarily adopted by the multilateral project.

This article presents estimates of purchasing power parity and real gross domestic product between the United States and Canada. It explains what purchasing power parities are and how they are calculated, and discusses the methodology and operational procedures underlying the data.

What are purchasing power parities?

As purchasing power parities (PPP's) are nothing more than interspatial price indexes (by analogy with the intertemporal price indexes such as consumer price indexes), the methodology and theory underlying their calculation are identical to those of more familiar index numbers. Just as consumer price indexes can be used to compare purchasing power in the same place at different times, PPP's compare purchasing power in different places at the same time.

In many countries, consumer price indexes are calculated by measuring the cost of a fixed basket of typical consumer goods and services at different times, weighting the various prices using weights intended to convey the average expenditure pattern of consumers. It is possible to consider price indexes as PPP's in the same country but between one period and the next—the consumer basket which cost \$1 at time 0 costs \$1.10 at time 1, and so forth. Conversely, PPP's could be considered consumer price indexes between countries at the same point in time—for example, the consumer basket which costs \$1 in U.S. dollars in the United States costs \$1.25 in Canadian dollars in Canada.

There are some differences of emphasis, however, between intertemporal and interspatial price indexes. An important difference is the choice of the goods and services making up the basket. In the intertemporal case, the goods and services chosen are characteristic and representative of expenditure categories in the country concerned. Only after a lengthy period does an item in the basket become unavailable or obsolete. It is more difficult to choose a basket of goods and services equally representative and characteristic in two or more countries. Even in neighboring countries with a similar level of economic development, one may encounter different preferences for a variety of reasons (tastes, climate, size and type of packaging, and so forth).

Also, although PPP's covering private consumption expenditure can be calculated consistently with consumer price index theory, the usual coverage of PPP's is that of the goods and services which make up gross domestic product. Thus, the PPP "basket" must include a selection of consumer goods and services, plant and machinery investment goods, construction activities, and collectively consumed services such as public administration, education, and health (the PPP's of the latter three are usually calculated by comparing the prices of their inputs).

To sum up, to calculate PPP's we need (1) a list of consumer goods and services, plant and equipment investment goods, construction activities, and collectively consumed nonmarket services—"the basket"; (2) the expenditure patterns in the countries concerned which can be used as weights to aggregate the price information (this information is usually obtained from national accounts suitably supplemented by data from expenditure surveys of consumption or investment); and (3) the estimated average annual national prices of the various goods and services in the basket.

Of course, the list is not an exhaustive list of the goods and services consumed in the countries concerned, and certainly estimates of total national expenditures are available only for more or less precisely defined categories. Furthermore, for a product to be included in the list, it must be available in at least two of the countries concerned. In addition, the list must be representative of the expenditure category (basic heading) and characteristic of at least one country. Price ratios for products falling into the same expenditure category are averaged by calculating the unweighted (geometric) mean. Above that level, expenditure weights are used to calculate weighted (geometric) means.

In the early stages of this PPP project, two types of index number formulas were selected as appropriate for this application, the equiweighted Fisher and the Tornqvist. Consequently, most of the tables in this article contain the results for both formulas. However, as a matter of convenience, the Bureau of Labor Statistics and Statistics Canada decided to focus on the Fisher index because in this particular bilateral comparison, the choice between formulas is not of great numerical significance.

U.S.-Canadian parity

The PPP from the 1985 benchmark bilateral comparison for gross domestic product, the central result of the study, is estimated at 1.255 Canadian dollars per U.S. dollar. This figure agrees closely with the 1.22 estimate from the Canadian-U.S. gross domestic product result of the multilateral study released by the OECD and EUROSTAT in August 1987, and compares with the average exchange rate estimate in 1985 of 1.366 Canadian dollars per U.S. dollar.

The parity for individual final consumption of 1.266 Canadian dollars per U.S. dollar, although numerically very close to that for gross domestic product, is the aggregate of some significantly different results for subcategories. (See

Table 1. Purchasing power parities in 1985, selected expenditures of Canada relative to the United States

EUROSTAT code	Item	Fisher index	Tornqvist index	EUROSTAT code	Item	Fisher index	Tornqvist index
1111	Food	1.367	1.368	119	Net purchases abroad	1.259	1.258
1112	Nonalcoholic beverages	1.098	1.098				
1113	Alcoholic beverages	1.502	1.501	11	Individual final consumption	1.266	1.263
1114	Tobacco	1.834	1.832				
111	Food, beverages, and tobacco	1.416	1.417	1311	General government compensation	1.259	1.259
1121	Clothing, including repairs	1.349	1.347	1312	General government intermediate	1.410	1.412
1122	Footwear, including repairs	1.480	1.481	1313	General government depreciation	1.163	1.162
112	Clothing and footwear	1.368	1.366	131	General public services	1.315	1.315
1131	Gross rent and water charges	1.324	1.325	1321	Education services compensation	1.333	1.333
1132	Fuel and power	1.064	1.066	1322	Education services intermediate	1.386	1.387
113	Gross rent, fuel, and power	1.270	1.271	1323	Education services depreciation	1.163	1.162
				132	Education	1.325	1.325
1141	Furniture, floor coverings, and repairs	1.516	1.517	13	General government final consumption	1.318	1.318
1142	Household textiles and repairs	1.379	1.377				
1143	Major household appliances and repairs	1.386	1.386	1411	Other plant and equipment	1.345	1.345
1144	Glass and tableware, utensils, and repairs	1.132	1.131	1412	Electrical and telecommunication equipment	1.260	1.260
1145	Household operation	1.462	1.473	1413	Transport equipment	1.255	1.255
1146	Domestic services	1.739	1.739	141	Plant and equipment	1.310	1.310
114	Household equipment and operation	1.426	1.427	1421	Dwellings	1.169	1.169
1151	Medical and pharmaceutical products	1.277	1.277	1422	Nonresidential buildings	1.069	1.069
1152	Therapeutic appliances and equipment	1.085	1.085	1423	Civil engineering works .....	.984	.986
1153	Medical services outside hospitals .....	.548	.548	142	Construction and civil engineering	1.078	1.077
1154	Hospital care	1.295	1.294				
115	Medical care and health expenses .....	.959	.961	14	Gross fixed capital formation	1.163	1.163
1161	Personal transport equipment	1.243	1.243				
1162	Operation of transport equipment	1.310	1.307	15	Change in stocks	1.270	1.270
1163	Purchased transport	1.251	1.263	16	Net exports of goods and services	1.366	1.366
1164	Communications	1.224	1.223				
116	Transport and communication	1.270	1.269	1	Gross domestic product	1.255	1.253
1171	Equipment and accessories	1.184	1.184				
1172	Entertainment, recreation, and culture	1.077	1.078	2	Consumer services	1.180	1.177
1173	Books, magazines, newspapers	1.175	1.178	3	Consumer goods	1.337	1.337
1174	Education	1.148	1.149				
117	Education, recreation, and culture	1.148	1.149	4	Total services	1.216	1.215
1181	Personal care and effects	1.085	1.085	5	Total goods	1.270	1.270
1182	Goods, not elsewhere classified	1.853	1.853				
1183	Expenditure in restaurants and hotels	1.281	1.281	6	Tradable goods	1.332	1.333
1185	Financial services, not elsewhere classified	1.204	1.219				
1186	Other services, not elsewhere classified	1.281	1.289	7	Gross final consumption expenditure	1.263	1.275
118	Miscellaneous goods and services	1.281	1.289	8	Gross final expenditure	1.243	1.253

NOTE: Indexes are based on Canadian dollars per U.S. dollar.

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

table 1.) Individual final consumption for food, beverages, and tobacco (1.416 Canadian dollars per U.S. dollar), clothing and footwear (1.368), and household equipment and operation (1.426) are relatively expensive in Canada, with the PPP for these categories exceeding the exchange rate in 1985.

In contrast, the lowest PPP for a major category in individual final consumption was for medical care and health expenses, (0.959 Canadian dollars per U.S. dollar). The major influence holding this category down was medical care outside hospitals which, in Canada, is offered under provincially administered medicare plans. Within individual final consumption, it is possible to break down food consumption and expenditures in restaurants and hotels. (See table 2.) The PPP in food ranged from 1.585 Canadian dollars per U.S. dollar for milk, cheese, and eggs to 0.949 for raw and refined sugar. In addition, alcoholic beverages and tobacco, with PPP's of 1.502 and 1.834 are substantially more expensive in Canada, while nonalcoholic beverages (1.098) are cheaper. In the area of expenditures for food in restaurants and hotels, both subcategories—restaurants and cafes and hotels—are somewhat less expensive in Canada.

The parity for government final consumption was 1.318 Canadian dollars per U.S. dollar. This figure is dominated by expenditures for employee compensation and is subject to the statistical margins of error associated with measuring national average compensation and the difficulties of comparing compensation under different administrative systems.

A striking feature of the overall results is the way the gross fixed capital formation figure of 1.163 Canadian dollars per U.S. dollar is composed of the contribution of plant and equipment (relatively expensive in Canada at 1.310, although still marginally below the currency exchange rate) and of construction and civil engineering (relatively cheap at 1.078).

The detailed results for the PPP calculations in this article are given at the greatest level of disaggregation of the OECD expenditure classification used for the international comparison project—namely the four-digit level—which seems to be generally supported by the data.

Expenditure patterns. Comparing the national expenditures of Canada, converted at both PPP's and the exchange rate, with those of the United States shows that although the

gross domestic product of Canada was 9.5 percent that of the United States in 1985 in terms of the real volume (converted using PPP's) of goods and services produced, it was 8.8 percent in nominal terms (converted using the exchange rate) because of the relative strength of the U.S. dollar compared with the Canadian dollar. The following tabulation shows national expenditures of Canada relative to the United States in 1985 (U.S. = 100):

	Nominal	Real
Individual final consumption	7.6	8.2
Government final consumption	9.8	10.2
Gross fixed capital formation	9.2	10.8
Gross domestic product	8.8	9.5

The greatest difference occurs for fixed investment where, in terms of volume, Canada is significantly higher than it first appears when national accounts data were converted using exchange rates.

If the subaggregates of gross domestic product expressed as percentages of total gross domestic product are compared, the data show that in real terms Canadians and Americans spent the same percentage on food, beverages, and tobacco, although at exchange rates the Canadian percentage appears higher. (See table 4.) Canadians spent a smaller percentage of their gross domestic product per capita on medical care than did Americans, but spent about the same as Americans did on household equipment and operation and rent, fuel, and power. As noted earlier, the Canadian proportion of gross domestic product spent on fixed investment is stronger than it first appears, and this is due entirely to expenditures for construction and civil engineering.

Gross domestic product. The expenditure given the greatest attention is usually gross domestic product per capita, which is used as an indicator of the standard of living. In this case, Canada's gross domestic product per capita converted into U.S. dollars at exchange rates was \$13,630 in 1985, or 82.6 percent of the U.S. expenditure of \$16,494. (See table 4.) However, converted at PPP's, the Canadian figure rises to \$14,835, which is 89.9 percent of the U.S. expenditure.

Among the components of gross domestic product, real Canadian expenditure per capita in 1985 almost equals that of the United States in government final consumption (exceeds the United States in the education category, and is close in general public services), and is greater in fixed investment. In fixed investments, the notable feature is that the level of construction and civil engineering in Canada is great enough to outweigh the significant lead of the United States in plant and equipment investment. A considerable effort was made by the OECD, United States, and Canadian experts to obtain an accurate comparison of construction prices, a difficult area to price, and to support the basic data for this category.

Canada is, however, more than 20 percent below the United States in individual final consumption on a per capita basis, and is below in all consumption categories.

Data have been calculated for the aggregate consumption (gross final consumption expenditure) and compared with gross fixed capital formation to illustrate the consumption/investment balance in real terms in 1985:

	Gross final consumption expenditure	Gross fixed capital formation	Gross domestic product
U.S. real dollars:			
United States	\$13,820	\$3,074	\$16,494
Canada	11,369	3,127	14,835

Percentage of U.S. gross domestic product:

United States ..	83.8	18.6	100
Canada	68.9	19.0	89.9

Percentage of national gross domestic product:

United States ..	83.8	18.6	100
Canada	76.6	21.1	100

The gross final consumption expenditure and gross fixed capital formation data do not add to 100 percent of national gross domestic product because of the two missing items: the stock change (0.6 percent of gross domestic product in both countries) and the balance of net exports (-3 percent in the United States, and 2.6 percent in Canada).

When revaluing nominal expenditures at PPP's, one is constrained by the breakdown of expenditures provided by national accounts offices. Hence, the data in this article concerning the revaluation of Canadian expenditures in U.S. dollars and U.S. expenditures in Canadian dollars

Table 2. Purchasing power parities in 1985, selected food expenditures of Canada relative to the United States

EUROSTAT code	Item	Fisher index	Tornqvist index
111101	Bread and cereals	1.347	1.348
111102	Meat	1.417	1.418
111103	Fish	1.300	1.306
111104	Milk, cheese, eggs	1.585	1.585
111105	Oils and fats	1.040	1.035
111106	Fruit and vegetables	1.247	1.247
111107	Potatoes and other tubers	1.099	1.099
111108	Raw and refined sugar .....	.949	.949
111109	Coffee, tea, cocoa	1.348	1.351
111110	Other foods	1.429	1.431
1111	Food	1.367	1.368
1112	Nonalcoholic beverages	1.098	1.098
1113	Alcoholic beverages	1.502	1.501
1114	Tobacco	1.834	1.832
111	Food, beverages, and tobacco	1.416	1.417
118301	Restaurants and cafes	1.285	1.287
118302	Hotels and other lodging services	1.243	1.243
1183	Expenditure in restaurants and hotels ...	1.281	1.281

NOTE: Indexes are based on Canadian dollars per U.S. dollar.

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

Table 3. Canadian price indexes, selected expenditures, 1985

[United States index = 100]

EUROSTAT code	Item	Fisher index	Tornqvist index	EUROSTAT code	Item	Fisher index	Tornqvist index
1111	Food	100.1	100.1	1186	Other services, not elsewhere classified	93.8	94.4
1112	Nonalcoholic beverages	80.4	80.4	118	Miscellaneous goods and services	93.8	94.4
1113	Alcoholic beverages	110.0	109.9	119	Net purchases abroad	92.1	92.1
1114	Tobacco	134.2	134.1				
111	Food, beverages, and tobacco	103.6	103.7	11	Individual final consumption	92.7	92.5
1121	Clothing, including repairs	98.7	98.6	1311	General government compensation	92.1	92.1
1122	Footwear, including repairs	108.3	108.4	1312	General government intermediate	103.3	103.4
112	Clothing and footwear	100.1	100.0	1313	General government depreciation	85.1	85.1
				131	General public services	96.3	96.3
1131	Gross rent and water charges	96.9	97.0	1321	Education services compensation	97.6	97.6
1132	Fuel and power	77.9	78.0	1322	Education services intermediate	101.5	101.6
113	Gross rent, fuel, and power	93.0	93.0	1323	Education services depreciation	85.1	85.1
				132	Education	97.0	97.0
1141	Furniture, floor coverings, and repairs	111.0	111.1	13	General government final consumption	96.5	96.5
1142	Household textiles and repairs	101.0	100.8	1411	Other plant and equipment	98.4	98.4
1143	Major household appliances and repairs	101.5	101.5	1412	Electrical and telecommunication equipment	92.3	92.3
1144	Glass and tableware, utensils, and repairs	82.9	82.8	1413	Transport equipment	91.9	91.9
1145	Household operation	107.0	107.8	141	Plant and equipment	95.9	95.9
1146	Domestic services	127.3	127.3	1421	Dwellings	85.6	85.6
114	Household equipment and operation	104.4	104.4	1422	Nonresidential buildings	78.2	78.2
1151	Medical and pharmaceutical products	93.5	93.5	1423	Civil engineering works	72.0	72.2
1152	Therapeutic appliances and equipment	79.4	79.4	142	Construction and civil engineering	78.9	78.8
1153	Medical services outside hospitals	40.1	40.1	14	Gross fixed capital formation	85.2	85.1
1154	Hospital care	94.8	94.7	15	Change in stocks	93.0	93.0
115	Medical care and health expenses	70.2	70.3	16	Net exports of goods and services	100.0	100.0
1161	Personal transport equipment	91.0	91.0	1	Gross domestic product	91.9	91.7
1162	Operation of transport equipment	95.9	95.7	2	Consumer services	86.4	86.2
1163	Purchased transport	91.6	92.4	3	Consumer goods	97.9	97.9
1164	Communications	89.6	89.5	4	Total services	89.0	89.0
1171	Equipment and accessories	86.7	86.7	5	Total goods	93.0	93.0
1172	Entertainment, recreation, and culture	78.8	78.9	6	Tradable goods	97.5	97.6
1173	Books, magazines, newspapers	86.0	86.3				
1174	Education	84.1	84.1				
117	Education, recreation, and culture	84.1	84.1				
1181	Personal care and effects	79.4	79.4				
1182	Goods, not elsewhere classified	135.6	135.6				
1183	Expenditure in restaurants and hotels	93.7	93.8				
1185	Financial services, not elsewhere classified	88.1	89.2				

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

using PPP converters are given only at the three-digit level because this is the minimum level of disaggregation which is publishable.

Comparisons over time

The evolution of the PPP for the United States and Canada over time is determined by the rates of inflation in the two countries as measured in this case by the implied national accounts deflators for the expenditure categories concerned. Over the 1960–87 period, the aggregate PPP has evolved quite steadily, whereas the exchange rate has been more volatile. (See chart 1.) Between 1975 and 1985, the exchange rate increased from 1.017 to 1.366, while the PPP for this same period increased from 1.168 to 1.255. (See table 5.)

Gross domestic product per capita from 1960 to 1987 in the United States and Canada shows a narrowing of the gap between the two countries. (See chart 2.) Real gross domestic product per capita in the United States has increased about 67 percent from the figure for 1960 and the figure estimated by the OECD for 1987. In Canada, the increase has been faster, rising from only 70 percent of the U.S. figure in 1960 to 91 percent in 1981. Since then, the proportion has

stabilized at around 90 percent.

In 1960, expenditure patterns for the components of gross domestic product were similar between Canada and the United States, ranging within 1 or 2 percentage points for each component. (See chart 3 and tables 6, 7, and 8.) However, by 1985, some changes in expenditure patterns emerged. While expenditures for government consumption and for capital were still similar (18 percent for the United States and 19 percent for Canada), gross fixed capital formation in Canada had risen to 24 percent of gross domestic product per capita by 1985, while the U.S. increase was somewhat smaller, 18 percent.

Price and volume comparisons

Exchange rate movements and relative inflation rates have combined to influence the interspatial price index of Canada relative to the United States. Canada had generally been more expensive than the United States in the sense that the PPP has always exceeded the exchange rate—sometimes by as much as 20 percent, as in 1976—at least from 1960 to 1984, when the increase in the dollar exchange rate brought Canadian prices below those of the United States. (See chart 4.) By 1985, Canadian prices were 6.3 percent

lower than in the United States. Among the components of gross domestic product, the price index for individual final consumption of goods and services, the one most interesting to individual consumers crossing the border to shop, indicates that prices for this component were 5.7 percent lower in Canada in 1987. However, the index covers such items as rent and medical care and, consequently, the weighting pattern reflects the expenditure of the average domestic consumer, not the casual visitor. It would be necessary to make a specially appropriate weighting pattern, or at least to show the detailed price indexes for specific consumer goods, for the index to be useful for those crossing the border to shop.

The volume indexes of Canadian expenditures per capita relative to the United States from 1960 to 1985 show the steady evolution (with significant stability in recent years)

of gross domestic product and individual final consumption and the peaked pattern of government final consumption and, in particular, that of gross fixed capital formation. (See chart 5.)

How parities were calculated

Regional comparisons. For the comparisons within the European Community (the OECD/EUROSTAT exercise), basic parities were calculated for more than 350 expenditure categories, while the non-European Communities countries were included at a more aggregated level, using 240 categories. The categories corresponded to the five-digit and four-digit levels of expenditure classifications. Several non-European Communities countries had difficulty providing the OECD with a 1985 breakdown even at the four-digit level.

Table 4. Canada-U.S. bilateral comparisons, 1985

Item	Purchasing power parity	Nominal expenditures (millions)		Canadian expenditures (millions) at—		Percentage of nominal expenditures		Percent of Canada real expenditures
		United States	Canada	Exchange rate	Purchasing power parity	United States	Canada	
Food, beverages, and tobacco	1.416	\$ 361,533	\$ 48,939	\$ 35,827	\$ 34,561	9.2	10.4	9.2
Clothing and footwear	1.368	168,415	18,231	13,346	13,327	4.3	3.9	3.5
Gross rent, fuel, and power	1.270	518,025	62,239	45,563	49,007	13.1	13.2	13.0
Household equipment and operation ..	1.426	149,474	20,071	14,693	14,075	3.8	4.2	3.7
Medical care and health expenses .....	.959	371,145	14,096	10,319	14,699	9.4	3.0	3.9
Transport and communication	1.270	408,808	45,203	33,092	35,593	10.4	9.6	9.5
Education, recreation, and culture	1.148	178,936	21,144	15,479	18,418	4.5	4.5	4.9
Miscellaneous goods and services	1.281	412,463	36,231	26,523	28,283	10.5	7.7	7.5
Net purchases abroad	1.259	13,934	1,137	832	903	.4	.2	.2
Individual final consumption	1.266	2,582,733	267,291	195,674	211,130	65.4	56.6	56.1
General public services	1.315	490,747	62,527	45,774	47,549	12.4	13.2	12.6
Education	1.325	233,451	34,599	25,329	26,112	5.9	7.3	6.9
Government final consumption	1.318	724,198	97,126	71,102	73,692	18.3	20.6	19.6
Plant and equipment	1.310	330,161	31,011	22,702	23,673	8.4	6.6	6.3
Construction and civil engineering	1.078	405,373	61,282	44,862	56,848	10.3	13.0	15.1
Gross fixed capital formation	1.163	735,534	92,293	67,564	79,358	18.6	19.5	21.1
Gross domestic product	1.255	3,946,612	472,510	345,908	376,502	100.0	100.0	100.0
Gross final consumption expenditure ..	1.263	3,306,931	364,417	266,777	288,533	83.8	77.1	75.7
Gross final expenditure	1.243	4,042,465	456,710	334,341	367,426	102.4	96.7	96.8
Per capita expenditures						(U.S. = 100)		
	U.S. nominal (in U.S. dollars)	Canada nominal (Canadian dollars)	Canada at exchange rate (U.S. dollars)	Canada at purchasing power parity (U.S. dollars)	Price index	Volume index at purchasing power parity		
Food, beverages, and tobacco	\$ 1,511	\$ 1,928	\$ 1,412	\$ 1,362	103.7	90.1		
Clothing and footwear	704	718	526	525	100.1	74.6		
Gross rent, fuel, and power	2,165	2,452	1,795	7,931	93.0	89.2		
Household equipment and operation ..	625	791	579	555	104.1	88.8		
Medical care and health expenses	1,551	553	407	579	70.2	37.3		
Transport and communication	1,708	1,781	1,304	1,402	93.0	82.1		
Education, recreation, and culture	748	833	610	726	84.0	97.0		
Miscellaneous goods and services	1,724	1,428	1,045	1,114	93.8	64.7		
Net purchases abroad	58	45	33	36	92.2	61.1		
Individual final consumption	10,794	10,532	7,710	8,319	92.7	77.1		
General public services	2,051	2,464	1,804	1,874	96.3	91.4		
Education	976	1,363	998	1,029	97.0	105.5		
Government final consumption	3,027	3,827	2,802	2,904	96.5	95.9		
Plant and equipment	1,380	1,222	895	933	95.9	67.6		
Construction and civil engineering	1,694	2,415	1,768	2,240	78.9	132.2		
Gross fixed capital formation	3,074	3,637	2,662	3,127	85.1	101.7		
Gross domestic product	16,494	18,618	13,630	14,835	91.9	89.9		
Gross final consumption expenditure ..	13,820	14,359	10,512	11,369	92.5	82.3		
Gross final expenditure	16,895	17,996	13,174	14,478	91.0	85.7		

NOTE: 1985 exchange rate=1.366 Canadian dollars per U.S. dollar.

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

Chart 1. U.S.—Canadian purchasing power parity for gross domestic product and the exchange rate, 1960-87



Source: Data are from the Organization for Economic Cooperation and Development, Paris.

The timing of the calculations meant that although the control totals of at least the main aggregate of gross domestic product referred to 1985, the detailed breakdowns were for 1984 or even earlier years. Even so, gaps remained which required estimates to meet the minimum requirements of the jointly agreed methodology.

The lists of items for pricing were produced by the EUROSTAT and OECD Secretariats after consultation with experts representing the participating countries. For example, the list of consumer goods and services was determined by the EUROSTAT Price Statistics Working Party, which was attended by OECD representatives. Construction and civil engineering bills of quantities and machinery and equipment product lists were determined on the advice of two groups of national consultants (who also provided estimates of the average prices from their own research) engaged by EUROSTAT. The OECD, after consultation with its member countries, arranged for many non-European Communities products to be added to the lists of items which were characteristic and noncharacteristic and priced in European Communities countries so as to maintain a balance of the two groups of countries.

Although it would simplify matters if the lists of items could consist entirely of goods and services characteristic of all of the countries concerned and representative of the expenditure category to which they are classified, differing

national tastes mean that, in order to produce a balanced matrix of price comparisons between countries, it is necessary to measure the average prices of noncharacteristic items in some countries. These items, of course, are characteristic in at least one of the countries in the study.

Nontransitive parities for each expenditure category between two countries, say countries A and B, are calculated using a three-stage process. First, a Laspeyres-type parity is calculated by taking the geometric average of the price ratios (price in country B divided by price in base country A) of each product which is classified to the basic heading and characteristic of country A, then a Paasche-type parity is calculated using the price ratios of those products which are characteristic of country B. Finally, a Fisher-type parity is calculated as the square-root of the Laspeyres and Paasche parities multiplied together.

The transitive matrices of parities at the basic heading level involve no explicit weighting structure, for lack of reliable, representative expenditure weights to aggregate the parities for particular products. The availability of expenditure weights, from the basic level up, made possible the use of the Geary-Khamis formula, which simultaneously determines the higher level PPP's and indexes of average international prices using an iterative process.

The PPP's between two countries depend on the composition of the group of countries considered, for example, the

France-Germany parity will generally differ depending on whether these two countries are considered alone, as part of the European Communities comparison, or as part of the OECD or world comparisons.

To avoid a proliferation of published PPP results, the participating countries agreed to fix the European Communities countries as a bloc within the OECD group so that the PPP's between any two European Communities countries calculated in the European Communities exercise would be the same in the published results of the OECD exercise.

Bilateral comparisons. There are numerous important differences in the methodology which has been used in the Canada-United States bilateral comparison from that used for the multilateral study. For practical reasons, it was agreed to keep as close as possible to the four-digit classification used in the multilateral exercise, but to incorporate such changes as to eliminate most of the categories for which estimates had to be made for both of the countries concerned to complete three-digit or higher levels of disaggregation required for the multilateral calculations.

The tables in this article give real output estimates at the one-digit level (15 categories) and PPP's and interspatial price indexes at the two-digit level (46 categories). However, at the three- and four-digit levels, there is a further breakdown, not shown explicitly, as follows:

	Number of categories			
	One-digit	Two-digit	Three-digit	Four-digit
Private final consumption	9	32	74	158
Government final consumption	2	6	24	24
Gross fixed capital formation	2	6	24	30
Change in stocks	1	1	1	1
Net exports of goods and services	1	1	1	1
Total	15	46	124	214

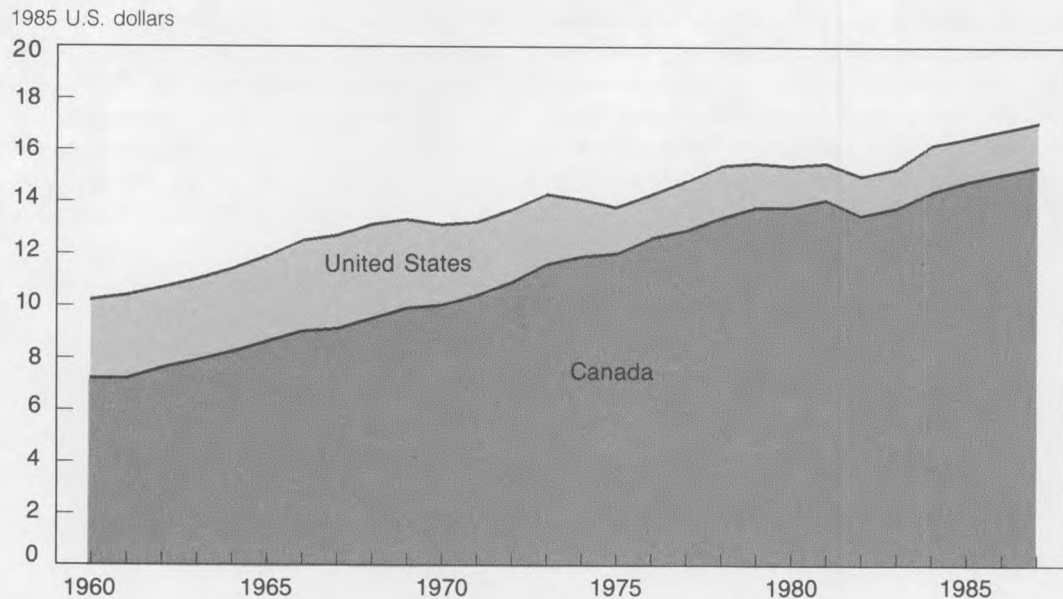
For example, the two-digit "food" category breaks down into 10 three-digit categories: bread and cereals; meat; fish; dairy products; oils and fats; and so forth. (See table 2.) In turn, the three-digit category "bread and cereals" breaks down into six four-digit categories covering rice; flour and other cereals; bread; other bakery products; pasta; and other cereal products. The expenditure breakdown provided by the national accounts offices of the United States and Canada and suitably supplemented by information from family expenditure surveys and by OECD Secretariat estimates is not intended to be an official one at the three- or four-digit level, except in certain categories such as food. Rather, the finer levels of disaggregation are used to provide some reasonable alternative to the "default" weighting sys-

Table 5. Canada-U.S. bilateral comparisons, gross domestic product, 1960-87

	Purchasing power parity	Exchange rate	Nominal expenditures (billions)		Canada at exchange rate (billions of U.S. dollars)	Canada at purchasing power parity (billions of U.S. dollars)	1985 deflator	
			United States (U.S. dollars)	Canada (U.S. dollars)			United States	Canada
			1960	1.086			0.970	\$ 513.6	$ 38.7	$ 39.9	$ 35.6	27.7	24.0
1965	1.112	1.081	701.7	57.2	52.9	51.4	30.3	26.8
1970	1.106	1.048	1,009.2	88.5	84.4	80.0	37.7	33.2
1975	1.168	1.017	1,583.9	170.1	167.3	145.6	53.2	49.5
1980	1.207	1.169	2,688.5	307.7	263.2	255.0	76.9	73.9
1981	1.219	1.199	3,009.5	353.5	294.8	290.0	84.3	81.9
1982	1.247	1.234	3,121.4	372.0	301.4	298.3	89.7	89.1
1983	1.258	1.232	3,353.5	401.8	326.1	319.5	93.2	93.3
1984	1.255	1.295	3,713.0	439.8	339.6	350.5	96.8	96.7
1985	1.255	1.366	3,946.6	472.5	345.9	376.5	100.0	100.0
1986	1.252	1.389	4,166.7	498.8	359.1	398.5	102.8	102.5
1987	1.251	1.336	4,420.4	527.9	395.2	421.9	105.8	105.5
Per capita expenditures (U.S. = 100)								
	United States (U.S. dollars)	Canada nominal (Canadian dollars)	Canada at exchange rate (U.S. dollars)	Canada at purchasing power parity (U.S. dollars)	Price index	Per capita volume index		
1960	\$ 2,843	\$ 2,162	\$ 2,229	\$ 1,990	112.0	70.0		
1965	3,611	2,904	2,687	2,612	102.9	72.3		
1970	4,922	4,148	3,958	3,752	105.5	76.2		
1975	7,334	7,485	7,360	6,406	114.9	87.3		
1980	11,804	12,785	10,937	10,594	103.2	89.8		
1981	13,077	14,506	12,098	11,901	101.7	91.0		
1982	13,424	15,085	12,225	12,097	101.1	90.1		
1983	14,282	16,133	13,095	12,829	102.1	89.8		
1984	15,665	17,489	13,505	13,939	96.9	89.0		
1985	16,494	18,618	13,629	14,835	91.9	89.9		
1986	17,241	19,481	14,025	15,561	90.1	90.3		
1987	18,110	20,433	15,294	16,328	93.7	90.2		

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

Chart 2. Real gross domestic product per capita, United States and Canada, 1960-87



NOTE: Canadian dollar converted to U.S. dollar using purchasing power parities.

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

tem of simply averaging together the price relatives of all items on the list falling into some indivisible category. Thus expenditure estimates for a given category may be acceptable as weights for the calculation of PPP's, but may not come up to the level of statistical acceptability required for publication. Several features of expenditure breakdown used in the bilateral comparison differ significantly from the features used in either the national accounts of the United States and Canada or the standard sets of accounts published by the OECD. These features were adopted to attempt a more meaningful comparison between the two countries:

- Private nonprofit-making institutions are included together with consumers' expenditure in the category of private final consumption.
- Private consumption expenditure for general government services has been netted out across intermediate consumption by general government services, as breakdowns of government costs of providing such services are not available.

A major problem of comparison arises when considering education and health because of the different relative shares of the market and nonmarket sectors in the United States and Canada. In the case of health, even the means adopted by the government to finance nonmarket services cause the payments to be treated in completely different ways. Ac-

cordingly, all market services of education were transferred to the general government sector, leaving only the driving school/language course activities in the private sector. In contrast, all nonmarket services of health care were transferred to the private sector—all categories under "medical care and health expenses" such as medical and pharmaceutical products, therapeutic appliances and equipment, medical services outside hospitals, hospital care, and the like. Clearly, although the ways in which price comparisons are estimated for market and nonmarket services of these categories differ significantly, an alternative method of presenting the revaluation of these services in the two countries is possible by keeping the relative shares of the market and nonmarket services of education and health firmly in the private and public sectors, and reweighting detailed parities appropriately to give alternative PPP estimates to these two items. It should be noted that this treatment differs from that adopted in the OECD/EUROSTAT multilateral exercise where all services of both education and health were transferred in their entirety to the private sector.

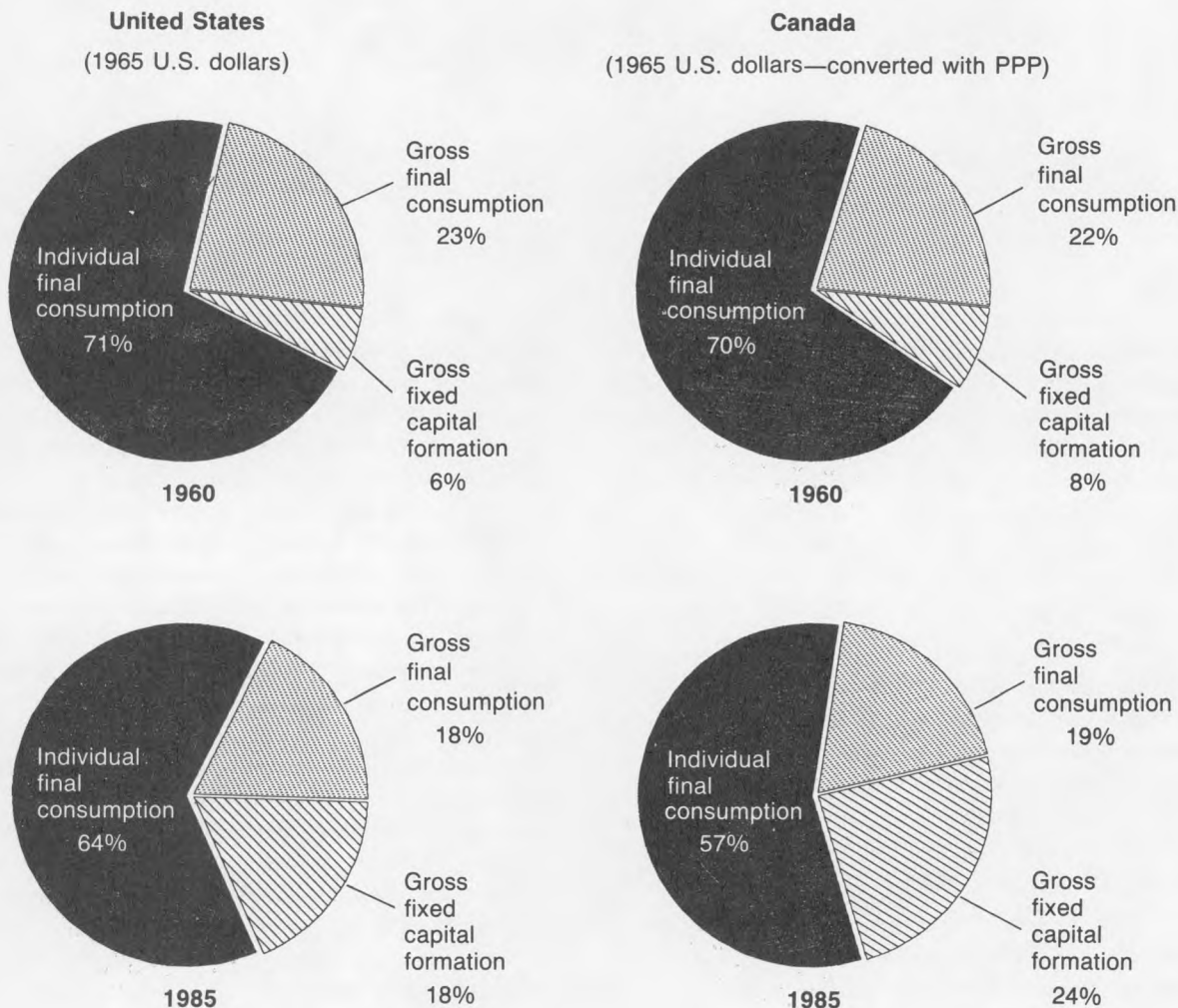
Characteristics markings. In the context of a bilateral comparison between Canada and the United States, the use of items deemed characteristic of both countries to achieve balanced parities is generally agreed to be less important than it would have been between two less similar countries.

Although there are clear differences in the expenditure patterns of Canada and the United States, at the basic heading level, those products deemed characteristic of one country were also usually characteristic of the other. Rather few items were considered noncharacteristic in the bilateral study, and thus the "index-number spread" (ratio between Laspeyres and Paasche indexes) was rather low, particularly at the basic heading level, although at higher levels of aggregation this tended to increase a little. It is worth remembering in this context, however, that because of the difficulty experienced by the Canadian national accounts office in providing a gross domestic product expenditure breakdown

on the special classification used for the PPP exercise, it was frequently necessary to use the United States' expenditure pattern to break down Canadian expenditure estimates, particularly at the finest level of detail.

A separate, but closely connected, issue is the representativeness of the selected products. The requirement that the products be representative of the main category is, perhaps, even more important than the requirement that they be characteristic of the countries being compared. (Here, "representative" refers to the average Canada/U.S. price level of the goods and services falling into the basic expenditure category.)

Chart 3. Patterns of per capita expenditures in the United States and Canada, 1960 and 1985



SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

Table 6. Canada-U.S. bilateral comparisons, individual final consumption, 1960-87

Year	Purchasing power parity	Exchange rate	Nominal expenditures (billions)		Canada at exchange rate (billions of U.S. dollars)	Canada at purchasing power parity (billions of U.S. dollars)	1985 deflator	
			United States (U.S. dollars)	Canada (U.S. dollars)			United States	Canada
1960	1.078	0.970	\$ 328.1	\$ 25.2	\$ 26.0	\$ 23.4	30.5	26.0
1965	1.084	1.081	438.5	34.4	31.8	31.7	33.1	28.3
1970	1.101	1.048	635.8	51.3	48.9	46.5	39.6	34.5
1975	1.115	1.017	1,005.8	96.3	94.6	86.3	54.2	47.7
1980	1.151	1.169	1,721.2	170.4	145.8	148.0	77.9	70.8
1981	1.178	1.199	1,909.7	193.8	161.7	164.6	84.7	78.8
1982	1.226	1.234	2,046.3	209.9	170.1	171.2	89.6	86.8
1983	1.248	1.232	2,223.7	229.1	186.0	183.5	93.2	91.9
1984	1.255	1.295	2,418.1	248.0	191.5	197.6	96.9	96.0
1985	1.266	1.366	2,584.3	271.0	198.4	214.1	100.0	100.0
1986	1.287	1.389	2,748.1	291.7	210.0	226.6	102.3	104.0
1987	1.259	1.336	2,915.5	308.7	231.1	245.1	105.3	104.7
Per capita expenditures						(U.S. = 100)		
	United States (U.S. dollars)	Canada nominal (Canadian dollars)	Canada at exchange rate (U.S. dollars)	Canada at purchasing power parity (U.S. dollars)	Price index	Per capita volume index		
1960	\$ 1,816	\$ 1,410	\$1,453	\$1,308	111.1	72.0		
1965	2,257	1,747	1,616	1,612	100.2	71.4		
1970	3,101	2,404	2,294	2,182	105.1	70.4		
1975	4,657	4,235	4,164	3,799	109.6	81.6		
1980	7,557	7,080	6,056	6,150	98.5	81.4		
1981	8,298	7,955	6,635	6,755	98.2	81.4		
1982	8,801	8,513	6,898	6,942	99.4	78.9		
1983	9,470	9,199	7,467	7,369	101.3	77.8		
1984	10,202	9,861	7,615	7,858	96.9	77.0		
1985	10,800	10,678	7,817	8,434	92.7	78.1		
1986	11,371	11,391	8,201	8,850	92.7	77.8		
1987	11,944	11,948	8,943	9,487	94.3	79.4		

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

A difficulty with the product lists initially produced by EUROSTAT for the European Communities comparison was that whole areas were lacking in products characteristic and representative of North America. It was not possible to make the comparison valid simply by adding a few North American items for reciprocal pricing in other geographical zones. It was necessary to add entire product lists to establish the Canada-United States relationship—private automobiles was an obvious example.

In general, then, in most of the 669 products for which prices were obtained in both countries, characteristic markings were assigned for both countries. This was also necessary for practical reasons: First, in proposing products for pricing, a country nominates only its own characteristic items; second, the other country is able to price the items from its ongoing statistical surveys if the items are also characteristic of that country. If it is necessary to mount a special price collection survey, it would be composed mainly, if not exclusively, of characteristic items.

In a few cases, however, the absence of a characteristic marking has more to do with reliability associated with the price estimate than with characteristic representativeness. The participants believed that price estimates derived from small samples should simply have a lower weight than the others in calculating the basic parities.

Parities. In contrast to the multilateral purchasing power parity project where a one/zero weighting system was adopted, in the bilateral project, products characteristic of both countries were assigned a weight of 2 and noncharacteristic products, a weight of 1 in calculating the basic parities, because the analysts believed that all price ratios should be taken into account to some extent. In all calculations, the U.S. dollar was the numeraire currency used, and also the United States was considered the base country.

Thus, at the basic heading level, the Laspeyres parity is the weighted geometric average of all associated price ratios (expressed in terms of Canadian dollars per U.S. dollar), a weight of 2 being assigned to those price ratios of products which are characteristic of the United States and a weight of 1 assigned to those noncharacteristic products. Similarly, the Paasche parity uses the same products, but the weighting pattern is that of the Canadian characteristic markings.

Two methods of averaging have been used to pull together the Laspeyres-type ("United States prices") and Paasche-type ("Canadian prices") basic parities. The first is a Fisher index. It is calculated as the geometric mean of the Laspeyres and Paasche parities. The second method is a Tornqvist-type index. It is calculated directly from the price ratios of the products. It is a weighted geometric average of the price ratios, and the weight assigned to a given price ratio is the arithmetic average of the characteristic scores of

Table 7. Canada-U.S. bilateral comparisons, government final consumption, 1960-85

Year	Purchasing power parity	Exchange rate	Nominal expenditures (billions)		Canada at exchange rate (billions of U.S. dollars)	Canada at purchasing power parity (billions of U.S. dollars)	1985 deflator	
			United States (U.S. dollars)	Canada (U.S. dollars)			United States	Canada
1960	0.906	0.970	\$ 85.4	\$ 5.3	\$ 5.4	\$ 5.8	24.3	16.7
1965	919	1.081	117.4	8.2	7.6	9.0	27.9	19.5
1970	970	1.048	189.6	16.4	15.6	16.9	37.1	27.3
1975	1,056	1.017	294.2	33.1	32.6	31.4	54.0	43.2
1980	1,163	1.169	473.7	59.1	50.6	50.8	77.9	68.7
1981	1,215	1.199	525.6	68.6	57.2	56.5	84.4	77.8
1982	1,276	1.234	574.1	77.6	62.9	60.8	89.6	86.8
1983	1,277	1.232	617.0	82.9	67.3	64.9	94.9	91.9
1984	1,282	1.295	666.6	89.1	68.8	69.5	98.5	95.8
1985	1,318	1.366	722.7	94.8	69.4	71.9	100.0	100.0
Per capita expenditures							(U.S. = 100)	
	United States (U.S. dollars)	Canada nominal (Canadian dollars)	Canada at exchange rate (U.S. dollars)	Canada at purchasing power parity (U.S. dollars)	Price index	Per capita volume index		
1960	\$ 473	\$ 294	\$ 303	\$ 324	93.4	68.6		
1965	604	419	387	455	85.4	75.4		
1970	925	769	733	792	92.6	85.7		
1975	1,362	1,458	1,434	1,382	103.8	101.4		
1980	2,080	2,455	2,100	2,111	99.5	101.5		
1981	2,284	2,816	2,348	2,318	101.3	101.5		
1982	2,469	3,148	2,551	2,467	103.4	99.9		
1983	2,628	3,327	2,701	2,606	103.6	99.2		
1984	2,813	3,544	2,737	2,765	99.0	98.3		
1985	3,020	3,735	2,734	2,834	96.5	93.8		

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

the product in the two countries—for example, if a product is characteristic of the United States (weight 2) but noncharacteristic of Canada (weight 1), the Tornqvist weight is 1.5.

Aggregations. The basic headings are defined by the available level of disaggregation of expenditure weights and, as noted, correspond to a modified version of the four-digit classification adopted by EUROSTAT and the OECD for the multilateral program. Aggregation of the Laspeyres, Paasche, and Tornqvist indexes from the four-digit to three-digit level (and then to higher levels) is made by calculating weighted geometric averages of the four-digit parities.

The Laspeyres parity of a three-digit category is a weighted average of the Laspeyres four-digit parities with U.S. expenditures of the four-digit categories as weights. The three-digit Paasche parity uses Canadian expenditures to aggregate the four-digit Paasche parities. The three-digit Tornqvist indexes weight together the four-digit Tornqvist indexes, using as weights the arithmetic average of the expenditure of that category in the United States expressed as a percentage of U.S. gross domestic product and the expenditure of that category in Canada expressed as a percentage of Canadian gross domestic product.

The Fisher indexes at any level are compiled directly from the Laspeyres and Paasche indexes at the same level, and not from Fisher indexes at the level immediately below. The method of calculation is described in the discussion of the basic parities.

The procedure for aggregation to higher levels is exactly the same, right up to gross domestic product level.

There are several cases where, despite serious attempts by the Bureau of Labor Statistics and Statistics Canada to fill all gaps, no matched product was found in a given main category. For the purposes of the first stage of aggregation, the basic parity for these categories was assumed to be equal to that of the weighted average of the others; or, equivalently, equal to that of the next higher level category.

The only exception concerns net exports of goods and services. Even though many third countries are involved, the U.S.-Canada exchange rate has been assumed for this category. No attempt was made to calculate special parities for exports and imports.

Indirectly calculated parities. The first stage of aggregation covers what might be called the directly calculated parities but, for many categories, no attempt was made to price directly. At the completion of the first stage, it is possible to fill many blanks with indirectly calculated parities.

For collectively consumed services of general government and education and, in the private sector, hospital care and the like, the input approach is used for pricing. The three types of inputs are: compensation of employees (directly measured by surveying wages and salaries and other compensation); intermediate purchases; and depreciation (capital consumption) of fixed assets. The latter two cate-

Table 8. Canada-U.S. bilateral comparisons, gross fixed capital formation, 1960-85

Year	Purchasing power parity	Exchange rate	Nominal expenditures (billions)		Canada at exchange rate (billions of U.S. dollars)	Canada at purchasing power parity (billions of U.S. dollars)	1985 deflator	
			United States (U.S. dollars)	Canada (U.S. dollars)			United States	Canada
1960	1.067	0.970	\$ 92.4	\$ 8.5	\$ 8.7	\$ 7.9	30.3	27.8
1965	1.219	1.081	131.6	13.7	12.6	11.2	31.3	32.8
1970	1.156	1.048	17.8	19.0	18.1	16.4	39.2	39.0
1975	1.219	1.017	272.3	41.8	41.1	34.3	58.9	61.8
1980	1.064	1.169	514.3	72.3	61.8	67.9	89.3	81.7
1981	1.055	1.199	559.3	86.1	71.8	81.6	96.1	87.2
1982	1.088	1.234	537.6	81.6	66.1	75.0	98.8	92.5
1983	1.112	1.232	577.6	81.4	66.0	73.2	98.3	94.0
1984	1.140	1.295	671.7	84.3	65.1	73.9	98.4	96.5
1985	1.163	1.366	735.5	92.6	67.8	79.7	100.0	100.0
Per capita expenditures						(U.S. = 100)		
	United States (U.S. dollars)	Canada nominal (Canadian dollars)	Canada at exchange rate (U.S. dollars)	Canada at purchasing power parity (U.S. dollars)	Price index	Per capita volume index		
1960	\$ 511	\$ 473	\$ 488	\$ 443	110.0	86.7		
1965	677	694	642	570	112.7	84.1		
1970	870	892	851	771	110.3	88.6		
1975	1,261	1,841	1,810	1,510	119.9	119.8		
1980	2,258	3,003	2,569	2,822	91.0	125.0		
1981	2,430	3,534	2,948	3,349	88.0	137.8		
1982	2,312	3,309	2,681	3,041	88.2	131.5		
1983	2,460	3,267	2,652	2,939	90.2	119.5		
1984	2,834	3,351	2,587	2,938	88.1	103.7		
1985	3,074	3,650	2,672	3,139	85.1	102.1		

SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

gories are estimated indirectly. For example, the parity corresponding to intermediate expenditures of nonmarket services of education pertaining to food is assumed to be equal to that for private consumption expenditures on food, and the parity for depreciation is assumed to be equal to that calculated for gross domestic fixed capital formation.

The other cases are (1) capital investment in passenger cars: The parity for private consumption expenditure on passenger cars is weighted together with that directly calculated for commercial vehicles in proportion to the approximate expenditure on the two types of vehicle; and (2) change in stocks: The parity for change in stocks is assumed to be that for total goods. The latter is calculated by weighting together the parities for all those categories classified as goods in the United Nations System of National Accounts.

Final estimation of missing basic parities. At this stage, directly and indirectly calculated basic parities have been set, and it is possible to fill in the remainder. A "top-down" routine is used to examine each category and, if necessary, fill in the missing value by taking the next available higher level parity. Thus, any missing parity for a major aggregate would be filled in using the gross domestic product parity, any missing parity for one-digit categories will be filled in using the major aggregates, two-digit categories will be filled in using the one-digit categories, and so forth, until all four-digit categories are accounted for.

In fact, in the Canada-United States exercise, very few categories needed to be filled in using this procedure, as data

collection had been designed to cover as many categories as possible by direct or indirect means.

Operational procedures—United States

Private consumption. The private consumption specifications developed for the multilateral regional study were used as a basis for the United States-Canadian bilateral comparison. However, the bilateral specifications were tailored to better reflect the United States and Canadian markets. For instance, the sizes required by some of the multilateral specifications were changed because product sizes tend to be larger in the United States and Canada than in the rest of the OECD countries. Any specification that either the United States or Canada could not price was dropped from consideration. Many brand specific product specifications were also deleted because Canadian and U.S. consumer price index (CPI) product categories, in general, do not indicate brands. New product and service specifications were developed to strengthen areas which had weak coverage by either country in the multilateral project. Additional specifications were also created for categories where the price-determining characteristics in Canada and the United States differed from those required by the multilateral specifications (insurance, for example).

Once specifications were developed, the Bureau of Labor Statistics determined which data sources were appropriate for each product area. The major source was the Bureau's CPI data base and related publications. While the CPI covers all aggregate product areas of U.S. private consumption,

because of sampling techniques, some of the detailed products included in the OECD specifications are not priced in the CPI. In those cases, the OECD referred to other data sources, such as published surveys of prices for motorcycles, catalogs for furniture and clothing, U.S. Department of Commerce data for fish, and airline companies for air fares. However, outside sources were used only as a supplement; the CPI average prices for food and energy categories were used whenever possible. In the case of insurance, two types of policies were priced, tenant and automobile. For both types, a special data base was constructed from information and prices collected by the CPI to match the OECD specification. The specification for tenant insurance used for both the multilateral and the bilateral projects was slightly different from the typical configuration found in the United States, particularly with regard to coverage for theft and current value versus replacement value. However, it was possible to adjust the available data to account for these differences. For automobile insurance, the multilateral specification was impossible to match, largely because of the wide discrepancy in levels of liability coverage between European-based policies and North American policies. As a result, for the multilateral project, the United States matched the Canadian CPI specification for automobile insurance and linked into the OECD regional comparison through Canada, which had conducted a special survey to match the European specification,

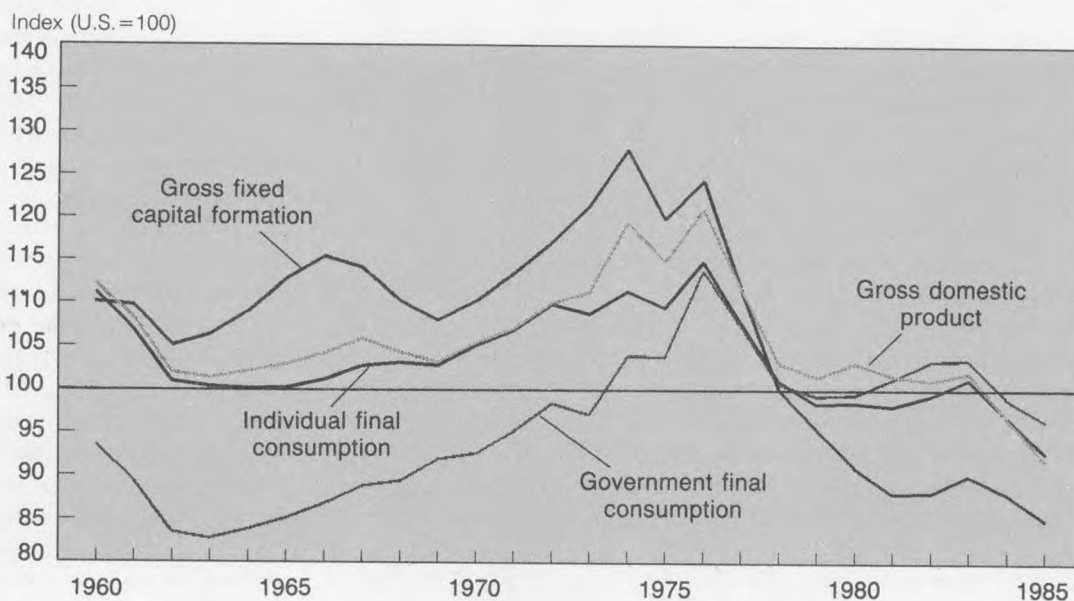
while the U.S.-Canada specification was used for the bilateral comparison.

All prices extracted from the CPI data base were subjected to a sanitization process before being transmitted to the OECD. Each price quote was examined for indications of brand, model, and company or outlet and, where necessary, this type of information was removed to ensure confidentiality.

For the most part, the actual calculation of U.S. average prices was carried out by the OECD. The methodology ranged from a straight arithmetic average to a regression on several variables, depending on the particular characteristics of the product. A straight arithmetic average was used on specifications for homogeneous products for which the United States had exact matches; for example, produce, meats, haircuts, and domestic help. Often a weighted average was needed, as in the case of fish prices where CPI quotes were supplemented with the prices published by the Department of Commerce, and the two quotes were weighted to form one national average price. Frequently, while prices to be averaged were for a homogeneous product, the unit of size provided by the United States differed from the specified unit of size. This occurred because most U.S. goods are not measured in metric units, unlike Canadian goods.

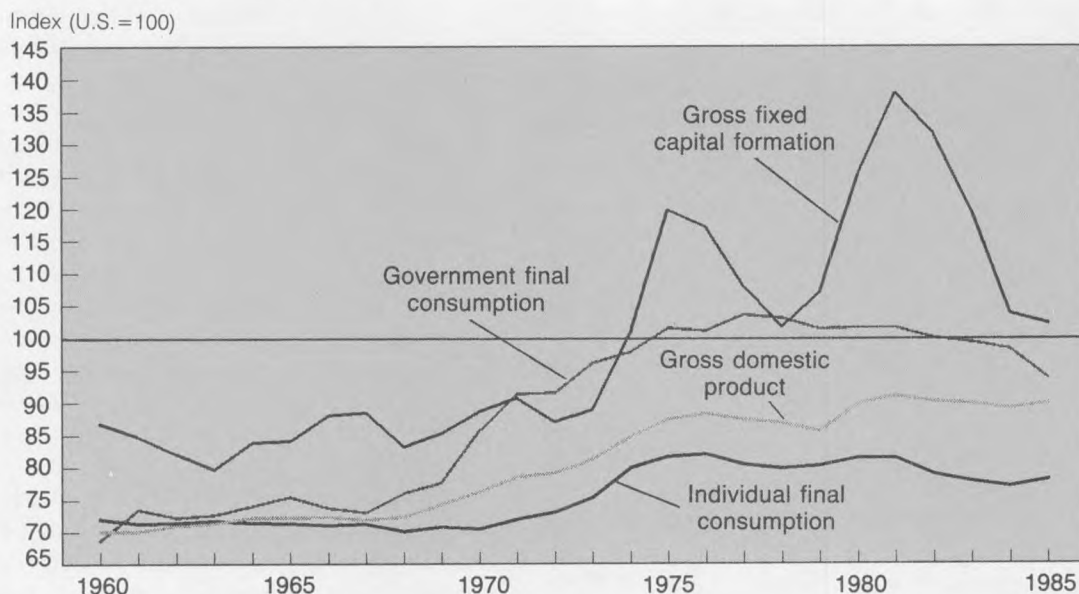
Occasionally, the food and the household goods specifications required a size that was unavailable in the United

Chart 4. Canadian price levels relative to those of the United States, 1960-85



SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris

Chart 5. Volume index of Canadian per capita expenditures relative to those of the United States, 1960-85



SOURCE: Data are from the Organization for Economic Cooperation and Development, Paris.

States, even though the products themselves were available and were priced by the CPI. For these items (detergents or canned foods, for example), the price quotes extracted from the CPI were used as observations in a regression on size. Once the relationship between price and size was estimated, an average price was calculated for the size required by the specification. If other characteristics, in addition to the size of the product, were identified as price determining, then a more detailed regression model was developed which included these variables. This type of application was needed for durable goods such as refrigerator-freezers where the price depended on factors such as automatic defrosters, ice makers, and color, as well as size. The price effects of these types of options were combined to estimate a price for the refrigerator-freezer described in the specification. Another category requiring special pricing techniques was rent. Here, a combination of hedonic regression (where rental values were assumed to be determined by a variety of physical, social, and environmental characteristics) and direct comparison was used.

After calculating the average prices for July 1985 using the methodology best suited to the product area, sales tax was added where required, with the Bureau of Labor Statistics providing the OECD with the appropriate data. Products within each basic category were then selected to serve as the

characteristic products for the United States in preparation for calculation of the actual parities.

Gross fixed capital formation. The procedures followed to price machinery and equipment were similar to those used to price consumer goods. The OECD multilateral specifications for machinery and equipment were used as the starting point for development of the bilateral specification. Although a great deal of work had already been done by the Bureau of Labor Statistics Industrial Price Program in 1983 and 1984 to augment and adjust the 1985 multilateral specification to reflect the U.S. market, the parties believed a number of areas remained weak, at least in terms of a U.S.-Canada bilateral comparison. Consequently, Statistics Canada and the Bureau undertook a further refinement of existing specifications, particularly with regard to the terms of each transaction, and in a few areas added new specifications to better reflect the North American market.

After obtaining the specifications, the industrial price data base and the export-import data base were searched for exact matches. A detailed review of each match was carried out by the appropriate industry analyst, and each company was contacted to obtain permission to use the data it reported to the Bureau and to assist in making any necessary adjustments to arrive at the market price.

The final data were then sanitized of any confidential information and sent to the OECD for calculation of the parities. Additional review of matched products and the resulting parities was conducted by the staff from Statistics Canada, the Bureau, and the OECD Secretariat before the actual price data were finalized.

The pricing of gross fixed capital formation in construction was carried out by the "bill of quantities" method. That is, bills of quantities corresponding to carefully specified construction projects were compiled by experts engaged by EUROSTAT for their own exercise. The list, which covered dwellings and buildings for public and commercial use as well as civil engineering projects, was adopted by the OECD for the wider project after canvassing suggestions for additional bills of quantities from non-European Communities countries, the objective being to improve the balance of the list. In the event, only one addition was made in a Scandinavian-type wooden house. Although a North American-type house was proposed, it was not possible to develop the specification to the level required for adoption in the 1985-based project.

In Canada, the Construction Prices Section of Statistics Canada estimated prices for most of the construction projects and provided them to the OECD Secretariat. However, such estimates are not available from official sources in the United States.

The OECD engaged a consulting firm which had significant experience in the preparation of cost estimates for construction projects. An immediate problem faced by the Canadian and U.S. experts was that the specifications (developed by EUROSTAT's consultants and expressed in specialized European terminology) were unusable in the North American context. A few of the specifications had been "translated" into North American terminology by Statistics Canada in the context of the 1980-based exercise and were adapted with only minor modifications for the purposes of the 1985 study. Further "translations" were carried out by Statistics Canada and by the consulting firm, Hanscomb Associates. The difficult and time-consuming part of the job, and the part which required the most expertise, was the development of the bills of quantities expressed in North American terminology. Once that stage had been completed, provisional pricing was carried out relatively quickly. Problems were discussed (and resolved to the greatest extent possible) at a meeting between representatives of Statistics Canada and Hanscomb Associates.

The U.S. data were supplied by Hanscomb Associates on the basis of estimates of national average prices, as regional variation of construction costs is known to be significant.

Unfortunately, there were some unresolved problems. There was a feeling that even after discussion between the two parties and the OECD Secretariat and after rejection of outliers, several of the U.S. prices seemed surprisingly high relative to the Canadian prices.

Public consumption. The cost of general public administrative and educational services of governments as reflected

in the wages and salaries of 25 job categories was obtained from data provided by the Bureau of Labor Statistics, the U.S. Office of Personnel Management, State governments, and various associations. Federal data were produced by the Office of Personnel Management from a data base for the complete universe, while State data were obtained from published reports for a sample of 21 States, which were selected on the basis of geographic location and level of employment. Average salaries for the more than 81,000 local governments in the United States were not available; however, data for more than 30 percent of the job categories were available for municipal and county governments which account for 50 percent of existing local governments. These data were used to represent all local government wherever possible. However, for job categories that were not covered, or not covered at a sufficiently disaggregated level, the all-State average was used as a proxy on the assumption that local government salaries are more likely to trend with State salaries than with Federal salaries. In a few cases, sources outside this framework were used if they were the result of a more complete national survey. Generally, the data came from professional associations or federations such as the National Education Association or the American Association of University Professors. The average wages derived for each of the three components, Federal, State, and local, were then combined using aggregate employment levels for each component for each job category.

Operational procedures—Canada

Private consumption—data based on regular surveys. The two regular price surveys whose data were extensively used for the multilateral and bilateral comparisons are: the Consumer Price Index (CPI) Survey and the Average Retail Price (ARP) Survey. The ARP Survey provides data closer to the purpose of international comparisons in the sense that it is explicitly designed to produce national average prices, based on information collected four times a year in 26 cities. It covers 60 basic food and grocery items, and many of them were good matches with the OECD specifications.

The CPI Survey is designed to measure price change over time and involves more than 600 commodities. Only a few of the commodities matched the OECD specifications closely enough to be used directly. For many others, a sub-selection of price data was necessary for the purpose of multilateral comparisons to establish as good a qualitative correspondence with the OECD specifications as possible. For the bilateral comparison, however, it was decided that, in most cases, the complete CPI selection is more typical of North American consumption, and hence, more directly comparable with its counterpart from the U.S. CPI samples. Although this is generally true, the comparability was weaker for some items, particularly in the area of clothing and furniture, for which there was quite a large sample dispersion of Canadian prices. The average Canadian prices in each category were estimated as weighted means of average CPI prices

for particular urban center strata in a given month of 1985. They were adjusted to the average 1985 level using the corresponding consumer price indexes.

Private consumption—data based on special procedures. In some areas of household expenditures, special procedures had to be applied to obtain the best possible multilateral or bilateral comparability, while using the available price data. The most important cases of the use of special procedures are described below. In addition to these cases, several Canadian prices were estimated through the use of published list prices, including tariffs for public utilities, provincial price lists for alcoholic beverages and a few other specific items (for example, IKEA price catalogs for some furniture items explicitly designated by the OECD).

Individual data for 1985, as recorded in the rent survey, were provided to the OECD. They included rent levels as well as multiple characteristics of both the dwelling and the tenancy agreement. For the owner-occupied dwellings, a cross-tabulation by the number of bedrooms and the age class of dwellings, estimated by the Household Surveys Divisions of Statistics Canada on the base of the May 1985 Household Facilities and Equipment Survey, was also provided. These individual data were edited and aggregated by the United Nations Statistical Office to produce internationally comparable rent levels.

For the U.S.-Canada bilateral comparisons, an average Canadian price was estimated for each of the automobile specifications priced in the regular CPI survey in November 1985. These prices relate to the base model with specified options, after dealer's discount and inclusive of transportation and predelivery charges as well as of the applicable sales taxes. The average Canadian registration fees were provided separately and added to the prices. The national averages were estimated from the average prices for 10 Canadian provinces, weighted by the number of car registrations in each province. The adjustment factors to the average 1985 price level were provided.

In the area of health services, except for dentists' fees, for which the regular CPI data were used, the only other Canadian price information provided were fees for a consultation and a home visit by a general practitioner and for a consultation by a specialist (ophthalmologist). These fees were derived from provincial fee schedules as of mid-1985 and were averaged using provincial population numbers as weights.

For pharmaceuticals, item matching and price estimation were done by the Bureau of Drug Quality of Health and Welfare Canada. For prescription drugs, price lists provided by major national drug wholesalers for January 1985 were used and estimated average prescription fees were added. For the nonprescribed drugs, retail prices suggested by the wholesaler were used. For all drugs, the adjustment to the average 1985 price level was performed using the CPI for medical and pharmaceutical products.

For the purpose of bilateral comparisons, the standard CPI specifications related to automobile and homeowners' and tenants' insurance were used. Tariff tables from various insurance companies (at least one per province) were used to obtain average provincial premiums, which were then weighted to obtain a national average.

Private consumption—data based on special surveys. Special price surveys were conducted in November-December 1985 in three cities (Montreal, Toronto, and Vancouver) to fill the gaps in Canadian price information, particularly in the cases of restaurant meals and clothing and furniture items for which the regular CPI and the OECD specifications were far apart. Although these surveys provided price data for closely matching specifications, the number of obtained price quotations was, in some cases, rather small.

Car rental rates were the subject of another special survey, which was conducted by telephone across the country. Unfortunately, there was a very large regional differentiation in typical rental contracts, particularly with respect to the free distance included in the basic rate, which made comparability of the price data difficult, in spite of all the adjustments performed.

Gross fixed capital formation. Canadian prices for machinery and equipment used in both the multilateral and bilateral comparisons were collected through a special price survey. The survey was conducted for Prices Division of Statistics Canada by a consulting firm engaged to supply nonconfidential purchase prices and related information for 168 capital equipment goods. (Eventually 175 items were priced, 108 of which were included in the U.S.-Canadian bilateral comparison.)

Considerable effort was made to include items representative of all areas of machinery and equipment in a balanced mix characteristic of the European market (those from the initial OECD lists) and the North American market. Preparatory consultations were held between officials of the Bureau of Labor Statistics and Statistics Canada to find out the broad characteristics of the varieties priced in the United States and to consider them in the Canadian survey. In some areas, though, representation could not be achieved because the specification lists did not cover, or only partly covered, the equipment for such industries as forestry; pulp and paper; mining; and oil and natural gas exploration, production, and refining.

The consulting firm was asked to conform as closely as possible to the specifications and general rules of price collection established by the OECD for the 1985 comparison round. Consequently, it attempted to provide the best estimates of average purchase prices (that is, "firm" prices) quoted in representative transactions for specified equipment goods, which also included imported products, where typical. The consulting firm provided explicit estimates for important additional costs to purchasers such as installation (where required), transportation (where significant), tariffs, and taxes. Intracompany transfer prices were not collected.

Efforts were made to ensure that the definitions and methodology used in price collection in the United States and in Canada are as close as possible. In the absence of precise international guidelines to the typical users and market characteristics of items to be priced, though, typical Canadian transaction terms were applied.

The resource limitations, however, led to the imposition of some constraints on data collection. For example, reference prices for 1985 were needed, but the study was conducted mainly in the May to August 1986 period. For this reason, prices prevailing at that time were adjusted to the mid-July 1985 level using the closest corresponding Statistics Canada price indexes (some of them unpublished) and the relevant information on tax and tariff changes. Also, average prices from the most active markets in Central Canada (Ontario and Quebec) were assumed to satisfy the requirement for national average prices. This notwithstanding, some items were priced in other regions, where the market for those goods was large.

According to the OECD methodology, which was also used for the U.S.-Canada bilateral comparisons, the pricing of selected construction projects is based on their detailed specification. In the 1985 round, Canada priced 16 construction projects. Eleven of them were the same as those Canada had already priced in the 1980 round of international comparisons, namely, a single-family house (row house), an apartment building, a factory, an office building, a school, a road, a sewer main, an electricity supply project, a concrete bridge, a cattle house, and an agricultural shed. Their specifications had been translated into North American terminology and adjusted to the Canadian construction technique and standards as in the 1980 comparisons.

The five new projects priced by Canada in 1985 were: a detached single-family house, a sports hall, a car park, pavement reconstruction, and a sports facility. They were translated into North American terminology by the consultants hired to do the pricing of construction projects for the United States in 1985.

Because Statistics Canada uses a similar methodology of pricing the construction projects for its regular price index series, a large portion of detailed price data which serve as inputs in those series was also applicable in the international comparison project, both multilateral and bilateral. Nevertheless, about one-third of detailed input price data had to be collected especially for the purpose of international comparisons.

The Canadian prices relate to the Toronto area, which is geographically central and represents a substantial share of Canada's construction activity. In this task, Statistics Canada received assistance from the Ontario Department of Highways, the Ontario Department of Agriculture, the City of Toronto Department of Public Works, and the Hydro of North York (a Toronto suburb).

Close contact was maintained with the consultant doing the U.S price estimation to enhance the quality of the

bilateral comparison. There was an exchange of ideas about the interpretation of particular projects, as well as an exchange of detailed input price data. This notwithstanding, several questions remain as to the comparability of some prices between the United States and Canada.

Public consumption. Canadian price data were specifically prepared in the following two areas of inputs to the government services: compensation for selected categories of employees in general government and health and educational services; and prices of public utilities (in particular, electricity, natural gas, fuel oil, and water). With respect to public utilities, the parties decided that commercial rates paid by large users would be most appropriate. Consequently, the data were drawn from lists of tariffs provided by regular respondents to Statistics Canada.

With respect to compensation for employees in general government and health services, data were prepared by the Pay Research Bureau, a Federal agency which gathers data on remunerations for various government jobs at the Federal, provincial, and city levels, including health services. The Pay Research Bureau identified in its own surveys those job categories that most closely matched the descriptions adopted by the OECD for the purpose of international comparisons. It provided information on basic salaries as well as other payments and social contributions for the selected categories of employees.

The Canadian average compensation by category of employees (job specification) in general government and health services was calculated by averaging the appropriate data for employees at the three levels of government (Federal, provincial, and municipal), whenever applicable. The average total compensation for a particular category of employees at a given level of government was estimated from the respective average basic salary, augmented using coefficients that represented the proportion of other payments and social contributions to the basic salary. The above coefficients were derived from data relating to employees of all categories at a given level of government. The data on compensation relate to mid-1985 and were not adjusted to the average 1985 level.

With respect to compensation for employees in education services, data on basic salaries were provided by the Education, Culture and Tourism Division of Statistics Canada. For basic salaries, an equi-weighted average of data from two consecutive school years, 1984-85 and 1985-86, was used. Within each designated teachers category, the average basic salary was represented by a salary in the modal class of employees, with classes established according to the number of years of education achieved by teachers (which is a salary-determining variable in most school jurisdictions). Because of lack of specific information on other payments and social contributions by employers, the same coefficients were applied as for the employees in general government and health services at the provincial level (the education system being primarily administered by provinces). □

Trends in manufacturing productivity and labor costs in the U.S. and abroad

The gain in output per hour in U.S. manufacturing was matched only by the United Kingdom among 11 other industrial countries in 1986; Japanese and European unit labor costs, measured in U.S. dollars, rose 20–40 percent

ARTHUR NEEF AND JAMES THOMAS

The U.S. gain in manufacturing labor productivity in 1986—about 3½ percent—was matched only by the United Kingdom among 11 other industrial countries studied. Modest increases of about 1 to 3 percent were recorded by Japan and five European countries—Belgium, Denmark, France, West Germany, and Italy. Productivity fell slightly in Canada and two European countries—the Netherlands and Norway—and remained unchanged in Sweden.

While this marked the fourth consecutive year of relatively large productivity increases in the U.S. manufacturing sector, manufacturing employment declined for the second consecutive year to 91 percent of the 1979 peak. Employment also fell in Japan and four of the European countries, but rose 1 to 2 percent in Canada, Germany, the Netherlands, Norway, and Sweden.

Unit labor costs—a measure of the relationship between hourly labor costs and labor productivity (output per hour)—fell about ½ of 1 percent in U.S. manufacturing in 1986. Unit labor costs rose in all of the other industrial countries—by about 1 percent in Japan and Belgium, more than 7 percent in Norway and Sweden, and 2 to 5 percent in the other countries. This marked the first year since 1981 that Japanese unit labor costs rose. Korea (Republic of Korea), newly added to the unit labor cost comparisons, recorded an increase of 3½ percent.

The favorable productivity and labor cost developments of 1986 improved the competitive situation of U.S. manu-

facturing. However, this modest improvement was dwarfed by the effect of the massive changes in exchange rates on lowering U.S. unit labor costs relative to Japan and Europe. Largely because of exchange rate changes, Japanese unit labor costs measured in U.S. dollars rose more than 40 percent in 1986, and European unit labor costs rose from nearly 20 percent in the United Kingdom up to 40 percent in Germany. On the other hand, Canadian and Korean unit labor costs benefited from small relative depreciations of their currencies.

This article examines comparative trends in manufacturing labor productivity and labor costs through 1986 in the United States and 11 other industrial nations and introduces comparative unit labor cost measures for Korea.¹ Korea has not been added to the productivity and hourly compensation measures at this time because of apparent deficiencies in the labor input measures available to the Bureau. The introduction of Korea emphasizes the major importance the newly industrializing countries are having on world trade in manufactured goods. In 1986, Korea accounted for 4.3 percent in value of U.S. imports of manufactured goods and for 5.6 percent of the U.S. trade deficit in manufactured goods. Only Japan, Canada, Germany, and Taiwan accounted for larger shares.

The measures reported on in this article reflect major benchmark revisions of the Canadian, French, and Italian national accounts and other revisions of underlying data series as well as the usual modifications of some recent yearly figures.² The Canadian changes include a comprehensive revision of the output measures for the period 1961–

Arthur Neef is chief of the Division of Foreign Labor Statistics, Bureau of Labor Statistics. James Thomas is an economist in the same division.

85, a shift in the base period for the calculation of constant value output from 1971 to 1981 for the years beginning 1981, and a historical revision in the labor income series. The French base period for constant value output has been shifted from 1970 to 1980 for the years beginning 1977, and the average hours series has been revised to account for part-time workers. The Italian base period for constant value output has been shifted from 1970 to 1980, beginning with 1980.

The Canadian revisions affect year-to-year changes, but have little effect on the long-term measures. The French revisions lower France's rate of productivity growth, primarily through their effect on the output measures. Prior to rebasing, the manufacturing output measure rose at an annual average rate of 0.4 percent from 1979 to 1985; after the rebasing, output declined by 0.3 percent per year. The productivity growth rate over this period is lowered by $\frac{1}{2}$ of a percentage point per year and unit labor costs are increased by 1 percentage point per year. The Italian revisions have the opposite effect. Prior to the revisions, manufacturing output showed no growth between 1980 and 1985. The Italian measure now shows a 0.4-percent rate of increase. This change, along with a downward revision in the employment figures, raises Italy's 1980-85 productivity growth rate by nearly $1\frac{1}{2}$ percentage points per year. Because of an upward revision in hourly compensation, however, the revisions have little effect on unit labor costs.

Productivity trends

As pointed out in previous articles, all 12 industrial countries have had productivity slowdowns since 1973. However, the nearly 4-percent gain in 1986 in U.S. labor productivity reflects a continuing recovery in the U.S. manufacturing productivity growth rate since 1979. (See chart 1.) All the countries show slowdowns in productivity in the 1973-79 period, and only the United States, Italy, Sweden, and the United Kingdom have achieved productivity gains in the 1979-86 period that exceed their rates of deceleration. In addition, the United States and the United Kingdom are the only two countries to have increased their productivity growth enough since 1979 to surpass their pre-1973 trend rates.

Output

Manufacturing output grew for at least the second consecutive year in all countries except France, where output fell slightly for the second consecutive year, and Sweden (unchanged). The U.S. output growth rate of 2.8 percent for 1986 was the third largest increase recorded in all 13 countries. The Korean output increase of more than 17 percent overshadowed the gains of the other countries and was the largest increase in that country since 1978. Excluding France and Sweden, the other countries, led by Italy, had increases that ranged from 1 percent to around 3 percent.

However, output growth was slower than the 1985 increases in 10 of the countries studied. The most significant slowing of output growth seems to be occurring in Japan, where the 1986 output growth rate of 1.5 percent is far below the 1985 rate.

Korea's output growth rate since 1973, 12 percent per year, greatly exceeds that of any of the industrial countries. At the other extreme, British manufacturing output in 1986 was still 8 percent below the peak level reached in 1973.

Aggregate hours and employment

Total hours of labor input rose about 1 to $2\frac{1}{2}$ percent in six countries and fell by about the same range in the other six industrial countries, including the United States. Four of the six countries with 1986 increases in aggregate hours—Canada, Germany, the Netherlands, and Norway—also had increases in employment of at least $1\frac{1}{2}$ percent. Denmark's increases resulted almost entirely from an increase in average hours. In Italy, total hours rose 2 percent despite a $1\frac{1}{2}$ percent reduction in employment.

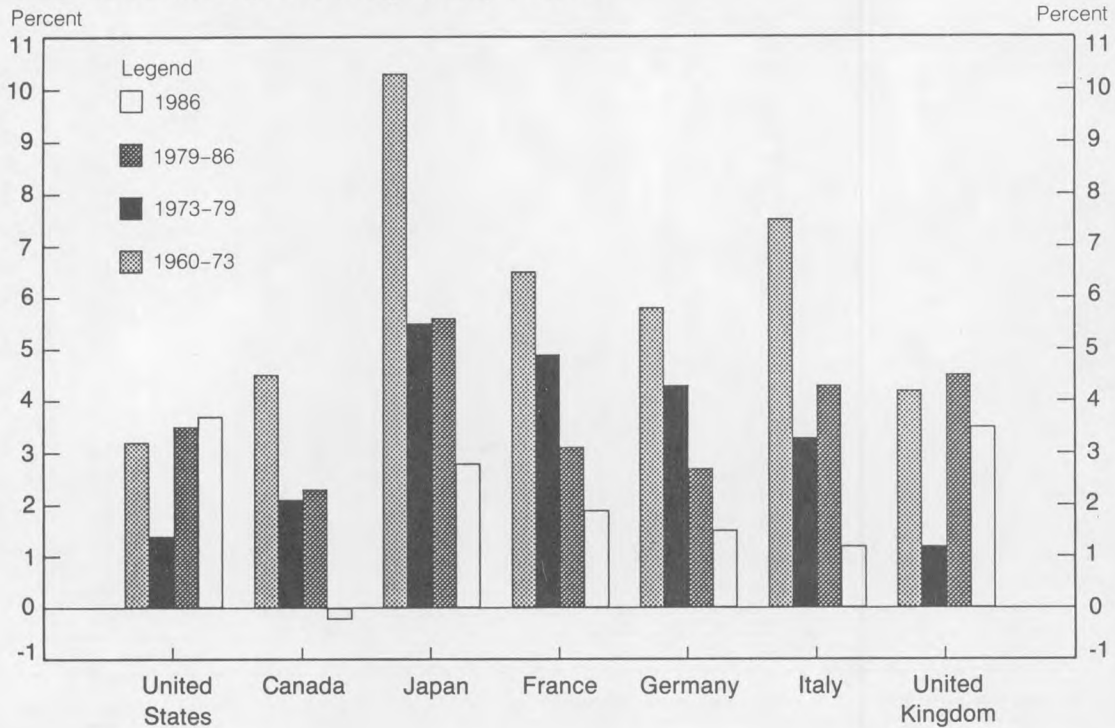
In the six countries in which labor input fell, employment declined $\frac{1}{2}$ of 1 percent in Japan and Belgium, over 1 percent in the United States, and over 2 percent in France and the United Kingdom, but rose 1 percent in Sweden. The $\frac{1}{2}$ -percent decline for Japan was the first since 1982 and reflected a leveling off from the previous year's employment peak. For Belgium and France, 1986 was the 12th consecutive year of employment declines. In the United Kingdom, employment has declined in 11 of the past 12 years.

Table 1. Annual percent changes in manufacturing productivity, 12 countries, 1960-86

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden
Output per hour:												
1960-86	2.8	3.3	7.9	5.2	4.6	5.7	3.6	6.3	4.6	5.9	3.2	4.6
1960-73	3.2	4.5	10.3	6.5	5.8	7.5	4.2	6.9	6.4	7.4	4.3	6.4
1973-86	2.5	2.2	5.6	3.9	3.5	3.8	3.0	5.8	2.8	4.5	2.1	2.8
1973-79	1.4	2.1	5.5	4.9	4.3	3.3	1.2	6.0	4.2	5.5	2.1	2.6
1979-86	3.5	2.3	5.6	3.1	2.7	4.3	4.5	5.5	1.7	3.7	2.2	3.0
1985	5.1	2.5	7.3	3.1	4.1	1.5	3.8	3.0	-2	3.2	1.1	3.8
1986	3.7	-2	2.8	1.9	1.5	1.2	3.5	2.6	1.3	-3	-6	2

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

Chart 1. Average annual percent changes in manufacturing productivity in seven countries, selected periods, 1960-86



Hourly compensation and unit labor costs

Hourly compensation rose moderately, at about $2\frac{1}{2}$ to 5 percent, in 1986 in all the industrial countries except the Scandinavian countries and the United Kingdom, which recorded gains of 6 to 10 percent. The increases in all countries were less than their average rates of gain since 1979 and well below the large increases recorded in the 1970's.

The United States, Japan, and the Netherlands had the smallest 1986 increases, ranging from the Dutch increase of $2\frac{1}{2}$ percent to the Japanese gain of $3\frac{1}{2}$ percent. The Netherlands and Japan, which had some of the largest increases during the 1960's and through the early 1970's, continued to exhibit the wage restraint which has resulted in these two countries having the lowest rates of increase over the 1979-86 period.

The United States was the only country showing a 1986 decline in unit labor costs, a measure of the relationship of hourly compensation to productivity. Unit labor costs increased in the other 12 countries studied. Japan and Belgium had increases of close to 1 percent, with the other countries increasing from about 2 to 5 percent except Norway, which advanced by 10 percent, and Sweden, which advanced by 7 percent.

Unit labor costs in U.S. dollars

In assessing changes in unit labor costs in competitive terms, changes in the market value of each country's currency need to be taken into account, as well as relative changes in costs measured in national currencies. Between 1979-80 and 1985, the U.S. dollar rose strongly versus the European currencies and, to a lesser extent, against the Canadian dollar and Japanese yen. U.S. unit labor costs rose much less from 1979 to 1985 than those of any of the other countries except Japan, the two Benelux countries, and Germany on a national currency basis, but Canada was the only other country to show an increase after adjustment for exchange rate changes.

The U.S. dollar began depreciating strongly against the yen and most European currencies in 1985 and continued to depreciate during 1986. Between 1985 (annual average) and 1986 (annual average), the value of the yen relative to the U.S. dollar rose more than 40 percent and European currency values appreciated from 13 percent in the United Kingdom to 30 percent or more in Belgium, Denmark, France, Germany, and the Netherlands. Therefore, the relative improvement in U.S. manufacturing unit labor costs measured in national currency terms was greatly enhanced by exchange rate movements. Measured in U.S. dollar

Table 2. Annual percent changes in manufacturing output and labor input, 13 countries, 1960-86

Year	United States	Canada	Japan	Korea ¹	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden
Output:													
1960-86	3.4	4.3	9.0	13.5	4.2	3.2	4.8	1.2	4.2	3.7	3.8	2.6	3.1
1960-73	4.8	6.5	12.8	—	7.3	5.2	7.3	3.0	6.6	5.3	6.0	4.6	5.1
1973-86	2.1	2.2	5.4	12.0	1.2	1.2	2.3	-7	1.8	2.2	1.6	.6	1.1
1973-79	1.9	2.5	3.6	16.5	2.9	1.7	3.1	-7	1.3	1.6	1.7	.1	.5
1979-86	2.2	1.9	6.9	8.2	-3	.8	1.7	-6	2.3	2.7	1.4	.9	1.5
1985	4.3	5.5	8.4	3.8	-7	3.5	1.5	3.0	2.1	3.0	2.3	2.5	3.3
1986	2.8	2.3	1.5	17.4	-4	2.5	3.3	1.1	1.7	2.7	1.1	1.7	0
Aggregate hours:													
1960-86	.6	.9	1.0	—	-9	-1.4	-9	-2.3	-2.0	-9	-2.0	-6	-1.5
1960-73	1.6	1.9	2.3	—	.8	-6	-2	-1.1	-3	-1.1	-1.2	.3	-1.2
1973-86	-4	0	-2	—	-2.7	-2.1	-1.5	-3.5	-3.7	-7	-2.8	-1.5	-1.7
1973-79	.5	.4	-1.8	—	-1.9	-2.5	-2	-1.9	-4.5	-2.5	-3.6	-1.9	-2.0
1979-86	-1.2	-3	1.2	—	-3.3	-1.9	-2.5	-4.9	-3.1	.9	-2.2	-1.2	-1.4
1985	-8	2.9	1.0	—	-3.7	-6	0	-8	-9	3.3	-9	1.4	-5
1986	-9	2.5	-1.2	—	-2.2	1.0	2.1	-2.4	-8	1.3	1.5	2.3	-2
Employment:													
1960-86	.5	1.1	1.6	—	-2	-5	.1	-1.8	-1.0	.1	-9	.2	-4
1960-73	1.4	2.0	3.3	—	1.3	.4	1.6	-5	.8	.5	.1	1.3	.1
1973-86	-4	.1	0	—	-1.8	-1.3	-1.3	-3.1	-2.9	-4	-1.9	-8	-8
1973-79	.8	.8	-1.5	—	-1.1	-1.6	.3	-1.4	-3.4	-2.0	-2.3	-2	-5
1979-86	-1.4	-4	1.3	—	-2.4	-1.2	-2.7	-4.5	-2.4	1.0	-1.6	-1.4	-1.1
1985	-7	2.6	1.6	—	-3.2	1.1	-1.1	-9	-1.4	6.9	1.7	1.2	.2
1986	-1.2	1.9	-5	—	-2.3	1.6	-1.5	-2.2	-6	.2	1.8	2.1	1.1

¹ Korean data begin with 1970.

NOTE: Rates of change based on the compound rate method. Dashes indicate data are not available.

Table 3. Annual percent changes in hourly compensation and unit labor costs in manufacturing, 13 countries, 1960-86

Year	United States	Canada	Japan	Korea ¹	France	Germany	Italy	United Kingdom	Belgium	Denmark	Netherlands	Norway	Sweden
Hourly compensation:													
1960-86	6.4	8.0	11.7	—	11.9	8.9	15.6	11.8	10.7	11.4	10.4	10.7	11.1
1960-73	5.0	6.2	15.1	—	10.0	10.3	13.5	9.2	11.0	12.2	12.9	10.0	10.5
1973-86	7.8	9.8	8.4	—	13.8	7.5	17.7	14.4	10.3	10.6	7.8	11.5	11.7
1973-79	9.5	12.0	12.8	—	16.2	9.5	20.6	19.4	14.0	14.0	11.6	13.4	14.2
1979-86	6.4	7.9	4.8	—	11.7	5.8	15.2	10.3	7.2	7.8	4.7	9.9	9.6
1985	5.3	5.0	4.9	—	8.1	6.0	10.4	6.6	6.9	6.4	5.1	8.7	12.0
1986	3.3	3.9	3.5	—	4.5	4.7	4.3	7.4	3.7	5.9	2.4	9.7	7.4
Unit labor costs:													
1960-86	3.4	4.5	3.5	13.0	6.4	4.1	9.4	7.9	4.1	6.5	4.2	7.3	6.2
1960-73	1.8	1.6	4.3	—	3.3	4.3	5.6	4.8	3.8	5.5	5.2	5.4	3.9
1973-86	5.2	7.5	2.7	13.3	9.5	3.9	13.3	11.1	4.3	7.5	3.2	9.2	8.6
1973-79	8.0	9.8	6.9	20.2	10.8	4.9	16.7	17.9	7.5	9.4	5.8	11.1	11.2
1979-86	2.8	5.5	-8	7.6	8.4	3.0	10.4	5.6	1.6	5.9	1.0	7.6	6.4
1985	.2	2.4	-2.3	2.3	4.8	1.8	8.8	2.8	3.8	6.6	1.8	7.6	7.8
1986	-4	4.1	.7	3.6	2.5	3.1	3.0	3.7	1.1	4.5	2.7	10.4	7.2
Unit labor costs in U.S. dollars:													
1960-86	3.4	3.0	6.6	5.9	5.0	6.7	5.8	5.3	4.5	5.8	5.9	7.1	4.9
1960-73	1.8	1.3	6.6	—	4.1	8.0	6.1	3.7	5.8	6.6	7.7	7.2	5.3
1973-86	5.2	4.8	6.5	6.5	5.8	5.5	5.4	6.8	3.2	5.1	4.2	7.1	4.6
1973-79	8.0	6.9	10.8	16.4	11.5	11.6	10.0	15.2	12.7	11.9	11.7	13.4	11.5
1979-86	2.8	3.0	3.0	-1.2	1.1	.6	1.6	.2	-4.3	-4	-1.8	1.9	-1.1
1985	.2	-2.9	-2.7	-5.3	2.0	-1.5	.1	-2	1.0	4.2	-1.6	2.1	3.7
1986	-4	2.4	42.6	2.2	32.9	39.8	31.9	17.4	34.3	36.8	39.2	28.2	29.3

¹ Korean data begin with 1970.

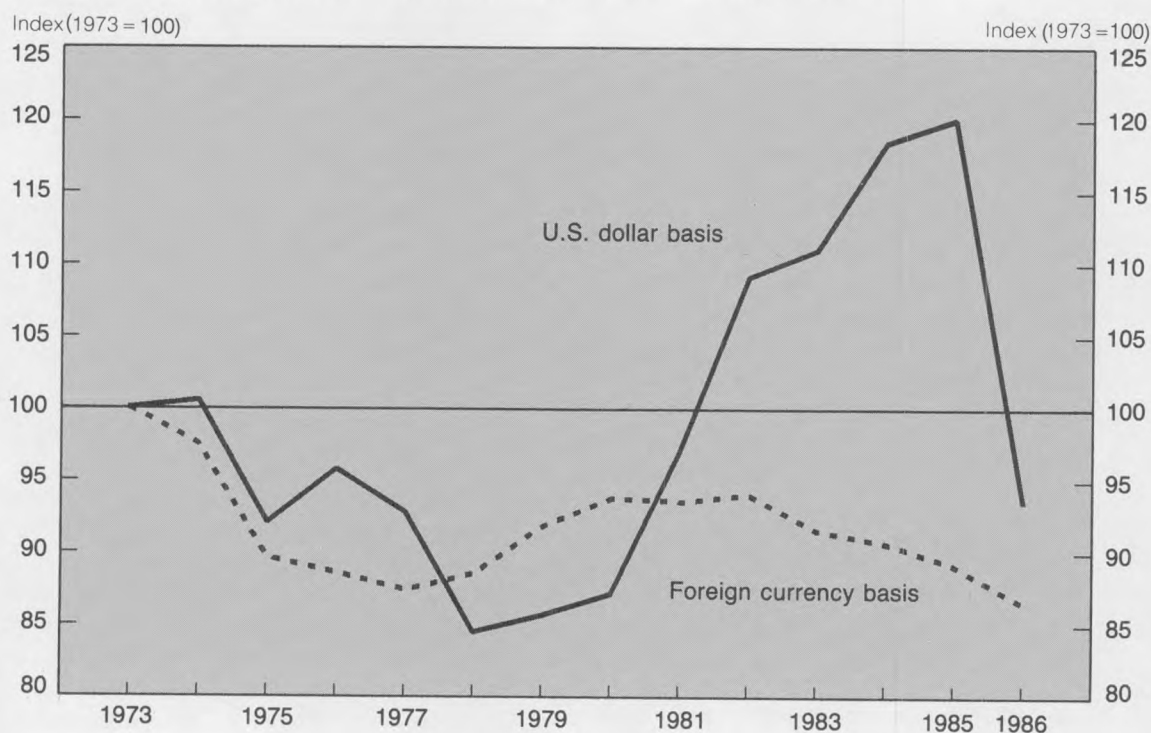
NOTE: Rates of change based on the compound rate method. Dashes indicate data are not available.

terms, unit labor costs rose more than 40 percent in Japan from 1985 to 1986 and by about 20 to 40 percent in the European countries, compared with the 0.4-percent decline in the United States. The market values of the Canadian dollar and Korean won continued to fall slightly in 1986; therefore, Canada's and Korea's competitive situations ben-

efited to an even greater extent from exchange rate movements.

Despite the sharp 1986 appreciations of the Japanese and European currencies, only the yen had a higher relative value in 1986 than in 1979—up 30 percent. The Canadian dollar, the German mark, and the Dutch guilder were 16–18

Chart 2. Relative indexes of unit labor costs, United States, 1973-86



percent below their 1979 values and the other European currencies still 30 to more than 40 percent lower. In the absence of adjustment for these exchange rate changes, Japan improved its relative competitive position more than any of the other countries, with an overall decline in manufacturing unit labor costs between 1979 and 1986, followed by the Benelux countries, the United States, and Germany with increases of 7 to 23 percent. The other countries had increases of nearly 50 up to 100 percent. Adjusted for exchange rate changes, however, Japan's increase slightly exceeded that of the United States at 23 percent and equaled Canada's increase.

Trade-weighted relative unit labor costs

The preceding section provides comparisons of trends in unit labor costs on a country-by-country basis. However, the countries covered differ greatly in their relative importance to U.S. foreign trade in manufactured goods. For example, Canada and Japan each accounted for about 20 percent of total U.S. imports and exports of manufactured goods in 1986, the four large European countries each accounted for about 3 to 7½ percent, and the five smaller European countries each accounted for about 2 percent or less. Consequently, the Bureau also constructs trade-weighted summary measures that take account of these differences.

Two summary measures are constructed: a "competitors" index, which is the trade-weighted geometric average of the indexes for the 11 other industrial countries (Korea is not included), and a relative index, which is the ratio of the U.S. index to the "competitors" index. The trade weights were derived by rescaling a 17-country International Monetary Fund (IMF) series, which the IMF uses to compute relative cost and price indicators, to the 12 industrial countries covered by this article. The weights are based on disaggregated 1980 trade data for manufactured goods and take account of both direct bilateral trade and the relative importance of "third country" markets.

Chart 2 shows U.S. relative unit labor cost indexes on both a national currency and U.S. dollar basis over the 1973 to 1986 period. As the chart shows, U.S. unit labor costs, measured on a national currency basis declined from 1973 to 1977 relative to the 11 "competitor" countries, rose slightly from 1977 to 1982, and then declined again from 1982 to 1986. As of 1986, U.S. relative unit labor costs were down 13 percent from 1973 and 1 percent from the previous low in 1977.

Measured on a U.S. dollar basis, U.S. relative unit labor costs were down 16 percent as of 1978, rose moderately in 1979 and 1980, and then rose sharply as the dollar appreciated strongly in the first half of the 1980's. As of 1985, U.S. relative unit labor costs were up 38 percent over 1980 and

Table 4. Percent change in manufacturing unit labor costs in 13 countries, 1979-86

Country	Unit labor costs: National currency			Exchange rate ¹			Unit labor costs: U.S. dollars		
	1979-86	1979-85	1985-86	1979-86	1979-85	1985-86	1979-86	1979-85	1985-86
United States	21	22	0	—	—	—	21	22	0
Canada	46	40	4	-16	-14	-2	23	20	2
Japan	-5	-6	1	30	-9	42	23	-14	43
Korea	67	61	4	-45	-44	-1	-8	-10	2
Belgium	12	11	1	-34	-50	33	-27	-45	34
Denmark	50	43	5	-35	-51	31	-3	-29	37
France	76	72	3	-39	-53	30	8	-19	33
Germany	23	19	3	-16	-38	36	4	-26	40
Italy	100	94	3	-44	-56	28	12	-15	32
Netherlands	7	4	3	-18	-40	36	-12	-37	39
Norway	67	51	10	-32	-41	16	14	-11	28
Sweden	54	44	7	-40	-50	21	-7	-28	29
United Kingdom	46	41	4	-31	-39	13	1	-14	17

¹ Value of foreign currency relative to the U.S. dollar.

20 percent over 1973. The sharp fall in the U.S. dollar against the yen and European currencies, which began in 1985 and continued during 1987, resulted in a 1985-86 decline of 22 percent in U.S. relative unit labor costs. While still about 11 percent above the previous low in this index in 1978, it put U.S. relative costs at about the same level as in 1977.

This overall index of U.S. relative unit labor costs of course masks some divergent trends among the competitor countries. In particular, the U.S. dollar rose less against the Canadian dollar in the first half of the 1980's than it did against the European currencies and did not fall against the Canadian dollar in 1986. Relative to a "competitors" index consisting of Japan and the nine European countries, U.S. unit labor costs rose 47 percent between 1980 and 1985 and fell 26 percent in 1986.

Recent exchange rate changes

The Japanese and European currencies continued to appreciate against the U.S. dollar during 1987 and the Canadian dollar rose moderately. The Korean won also began appreciating during 1987. As of late November, the Canadian dollar was 6 percent above its 1986 average value, the Korean won was up 20 percent, and the other currencies were up 15 to more than 30 percent. U.S. manufacturing unit labor costs fell through the first three quarters of 1987 and were about 3 percent below their 1986 average as of the third quarter. Consequently, the U.S. competitive situation should have improved relative to Japan, Europe, and Korea. □

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 industrial countries.

The comparisons are limited to trend measures only because reliable level comparisons of manufacturing productivity and unit labor costs are

not available. See Arthur Neef, "International trends in productivity and unit labor costs in manufacturing," *Monthly Labor Review*, December 1986, p. 17, footnote 2.

² This article includes revised statistics which have not yet been incorporated in "Current Labor Statistics," table 47, this issue.

Producer services industries: why are they growing so rapidly?

Does the hefty postwar growth of some service industries mean that manufacturers are cutting overhead by farming out activities once performed in house? Analysis of data shows this to be an unlikely explanation for the growth of producer services industries

JOHN TSCHETTER

Economists continue to search for the causes of the dramatic post-World War II growth in service-producing industries.¹ Some claim that the growth simply reflects changes in the way U.S. companies are doing business, according to the following argument:² To be competitive in domestic and international markets, manufacturing companies need to reduce their overhead costs. To do this, companies are transferring service-type activities formerly performed by in-house staff to firms which specialize in those activities. Persons subscribing to this hypothesis believe that these simple transfers of activities—called “unbundling”—account for a significant proportion of the output and employment growth in the service-producing industries, but contribute little to the total economy.

This article examines producer services industries, an important subset of the service-producing industries. We want to review several possible explanations for the growth of this important group of industries, particularly the unbundling hypothesis. Producer services include advertising, computer and data processing services, personnel supply services, management and business consulting services, protective and detective services, services to dwellings and other buildings, legal services, accounting and auditing services, and engineering and architectural services.³ In 1986, producer services industries employed about 6.8 million wage and salary workers, or 6.8 percent of nonagricultural workers.

John Tschetter is an economist in the Office of Economic Growth and Employment Projections, Bureau of Labor Statistics.

Certain common threads unite these very diverse industries. Producer services industries perform activities that are usually classified as overhead in other companies. They have grown faster than the total economy, in terms of both output and employment, for several decades. In fact, their performance has outpaced that of the service-producing industries as a group. However, based on the evidence presented in this article, the unbundling explanation accounts for a *very small portion* of the recent employment growth of producer services industries.

Overview of producer services

The industries as a group. Wage and salary employment growth in the producer services industries has been rapid relative to total nonagricultural employment and to total employment in the service-producing industries for several decades.⁴ The following tabulation contrasts average annual rates of change (in percent) for selected economic sectors and periods:

≈ SIC 73, 81, 87

	1959-72	1972-82	1982-86	Numerical change, 1982-86 (thousands)
Nonagricultural industries	2.5	2.0	2.7	10,044
Service-producing . . .	3.3	2.8	3.3	9,177
Producer services .	6.2	6.2	8.5	1,886

Self-employment is growing faster in producer services industries than in either the total nonagricultural economy or service-producing industries. In 1986, 15 percent of the self-employed persons in the nonagricultural economy were found in producer services:

	<i>Self-employed persons</i>	
	<i>1986 level (thousands)</i>	<i>Average annual change, 1982-86 (percent)</i>
Nonagricultural industries	7,881	2.0
Service-producing industries	6,116	1.5
Producer services	1,184	4.3

During the 1982-86 span, wage and salary employment in the U.S. nonagricultural economy increased by 10 million persons. The producer services industries employed 1.9 million of these additional workers. This increase represents 19 percent of the nonagricultural employment change.

As shown in the next tabulation, output of producer services industries also has grown several percentage points faster than that of the total economy.⁵ In 1986, 6 percent of the United States' gross product originating or value added occurred in producer services. (Levels are in billions of 1982 dollars; changes are average annual rates, in percent.)

	<i>1986 level</i>	<i>Change</i>	
		<i>1972-82</i>	<i>1982-86</i>
Total economy	\$3,713	2.0	4.1
Service-producing industries	2,495	2.5	4.2
Producer services	220	4.9	7.2

Finally, the number of establishments classified in the producer services industries increased more rapidly between 1982 and 1986 than the number in either the total economy or in the service-producing industries. As indicated below, about 10 percent of all reporting units covered by State unemployment insurance laws in 1986 were in producer services. (Levels are in thousands of units; changes are average annual rates, in percent.)

	<i>1986 level</i>	<i>Change, 1982-86</i>
All industries	5,426	2.7
Service-producing industries	4,288	2.8
Producer services	568	6.4

Individual industries. Although we are studying producer services industries in the aggregate, they are by no means a homogeneous group. They range in size from personnel supply services (1 million wage and salary workers in 1986) and services to buildings (681,000) to credit reporting and collection agencies (98,000) and photofinishing laboratories (80,000). (See table 1.)

There is considerable variation in the employment trends among individual producer services industries but most have expanded faster than the total economy in recent years. During the 1982-86 period, the most rapidly growing activities in this group of industries were personnel supply and computer and data processing services. The dramatic growth in personnel supply occurred in temporary help agencies. The expansion in computer and data processing services occurred in both software and data processing. The largest numerical growth during the 1982-86 period also occurred in these two industries.

Can we explain the rapid growth?

Several explanations have been offered for the rapid growth of the producer services industries. We will briefly review these explanations using input-output methodology as a framework for the analysis.⁶

GNP growth. One obvious explanation for the industries' growth is the expansion of the total economy. Over the 1972-85 period, output of producer services (in real terms) grew about 6 percent per year while the total economy grew 2.6 percent per year. (See table 2.) Thus, for those 13 years at least, GNP growth explains only about 40 percent of growth for the producer services industries. By comparison, GNP change explains about 50 percent of the communications industry's output growth, 65 percent of the medical services industry's growth, and about 90 percent of the growth for eating and drinking establishments.

Table 1. Employment trends in producer services industries, selected periods, 1972-86

<i>Industry</i>	<i>1986 level</i>	<i>Annual percent change</i>		<i>Numerical change, 1982-86</i>
		<i>1972-82</i>	<i>1982-86</i>	
Producer services ¹	6,791	6.2	8.5	1,886
Business services	4,781	6.3	9.8	1,495
Advertising	202	2.8	5.8	41
Credit reporting and collection	98	-0.2	6.9	23
Mailing, reproduction, stenographic	195	5.1	9.6	60
Services to buildings	681	4.5	6.8	158
Personnel supply services	1,017	9.6	16.3	461
Computer and data processing services	591	13.1	12.8	227
Research and development laboratories	191	(2)	3.0	21
Management and public relations	550	(2)	10.7	184
Detective and protective services	445	(2)	6.3	96
Equipment rental and leasing	208	(2)	12.1	76
Photofinishing laboratories	80	(2)	1.8	5
Legal services	748	7.6	7.2	182
Miscellaneous professional services	1,262	5.2	4.6	209
Engineering and architectural	678	5.4	4.3	106
Accounting, auditing, and bookkeeping	433	5.6	5.3	81

¹ Includes industries not listed separately below.

² Data not available.

NOTE: Data are from the Current Employment Statistics survey.

Table 2. Sources of industry output growth, selected service-producing industries, 1972-85

[Average annual change, in percent]

Industry	Actual change	Output change explained by— ¹		
		GNP growth	Composition of—	
			Final demand	Business practices
Service-producing	2.9	2.6	0.1	0.2
Producer services	6.0	2.6	0.1	3.3
Communications	5.5	2.6	1.1	1.8
Eating and drinking places	2.9	2.6	.0	.3
Medical services	4.0	2.6	1.4	.0

¹ The model for these calculations is described in the appendix.

Final demand composition. Why have some industries, particularly producer services, grown faster than GNP? One possibility is that shifts in the composition of final demand within GNP have occurred over time. Does an economy that consumes more personal and medical services and relatively less cars and food generate more employment among lawyers, guards, and computer programmers, and less employment among farmers and assembly line workers?

Over the 1972-85 period, the composition of final demand changed modestly. In 1972, consumer expenditures for durable goods accounted for about 8 percent of total GNP, compared with 10 percent in 1985. (GNP is measured in real 1982 dollars.) Expenditures for nondurable goods accounted for about 26 percent of GNP in 1972, and for 24 percent in 1985. Consumer outlays for services accounted for 29 percent of GNP in 1972, and for 32 percent in 1985. Expenditures for investment and foreign trade as a proportion of GNP increased over the 1972-85 period while those for total government declined (although the share devoted to defense increased).

To isolate the impact of the changing composition of final demand on producer services output growth, we need to estimate what the industries' output growth would have been if the composition of final demand had changed while both the GNP level and business practices *had not*. Here, business practices—the manner in which goods and services are assembled and delivered to final demand—are measured with input-output coefficients. (The model used for this analysis is described in the appendix.) The difference between the estimated output growth and actual growth is the effect of changing final demand composition on the output of producer services industries.

In the analysis, final demand includes 82 consumption groups, producers' durable equipment, residential and non-residential structures, inventory change, exports, imports, Federal Government defense and nondefense expenditures, and State and local government expenditures. The changing final demand composition includes the shifts between personal consumption expenditure categories, such as medical services and food, as well as the shifts among investment,

total personal consumption, and other aggregate categories. The period covered is 1972 to 1985. (Data availability limits the analysis throughout this article to selected periods. For the following discussion, the input-output data are available only for selected years.)

According to this calculation, changes in final demand composition alone boosted the demand for producer services by only 0.1 percent per year over the 1972-85 period. (See table 2.) Thus, the changing composition of final demand had only a very slight impact on the very rapid growth of the producer services industries, explaining less than 2 percent of the increase. (Recall that GNP growth explained about 40 percent of the growth.) The size of this effect varies little with the choice of years studied.

The changes in final demand composition did affect some service-producing industries during the 1972-85 period, causing medical services and communications industries in particular to grow faster than GNP. However, these changes had little impact on the broad service-producing sector.

For two reasons, the small effect of changing final demand composition on producer services (0.1 percent per year) might have been anticipated. First, these industries usually sell their outputs to many other industries, and the distribution of their sales for the most part parallels the size of the purchasing industries. Two exceptions are purchases of engineering and architectural services by the construction industry and purchases of legal services by consumers. Second, the purchased producer services usually account for only 3 to 7 percent of the total costs of production in other industries.

The effect of changing final demand composition on medical services and communications also might have been anticipated. These industries sell much of their output to consumers, and consumer expenditures for medical services and for communications grew faster than GNP over the 1972-85 period. The effect on eating and drinking industries is modest because consumer expenditures for food purchased off-premises grew at about the same rate as GNP over the study period.

Business practices. Changes over time in business practices is another potential explanation for the above average growth of the producer services industries. Business practices concern the inputs that companies require to assemble and deliver their products. For example, companies require material inputs such as plastics, steel, aluminum, glass, and packaging materials. They also require other inputs, such as transportation services, financial services, communications, maintenance, and repair. These other inputs also include producer services-type activities.

An illustration is useful here. A consumer buying a new car sees only the car in a dealer's showroom, but has actually purchased an array of goods and services. The consumer purchases the tires, glass, paint, and other materials required to produce a car; the energy needed to assemble

the car; the shipment of the car from the manufacturing plant to the dealer's showroom; the inventory expense dealers incur to keep cars in the showroom to attract customers; and the overhead expenses, such as accounting, legal, or advertising services, incurred at each step of the assembly and delivery.

Business practices—or the composition of material and nonmaterial inputs—change over time for several reasons. For example, new technologies and innovations, such as computer hardware and software, fiber optics, composite materials, and plastics are introduced. Relative prices of inputs may change, as did energy prices during the 1970's and 1980's. There may be shifts in political, social, or demographic phenomena, such as deregulation or altered industrial relations practices. And finally, another potential reason is unbundling. The changes in material inputs are easier to visualize than those in the other inputs, but both types of change can have dramatic implications even in the short term.

What would producer services' output growth have been if business practices had changed but both the level of GNP and the composition of final demand had remained constant? The answer may be estimated by examining the changes in input-output coefficients for 156 industries.

Changes in business practices added about 3.3 percentage points per year, or about 55 percent, to output growth of the producer services industries over the 1972–85 period. (See table 2.) Such changes added very little to the output growth of some other industries, explaining only 0.0 to 0.3 percentage points for service-producing industries as a group and for the medical services and the eating and drinking establishments industries. However, the changes did add 1.8 percentage points per year to the output growth of the communications industry.

The exact proportion of the producer services industries' output growth explained by the changes in business practices could be sensitive to developments peculiar to the period analyzed. However, the estimate would always be meaningful because these industries usually sell their outputs to many different industries.

Unbundling

Hypothesis. Which changes in business practices have caused the output and employment of the producer services industries to grow at above average rates? Some argue that the employment growth of producer services industries reflects simply the shifting of existing legal, accounting and auditing, janitorial, or clerical activities from one industry classification to another. The usual anecdotal reference for this shift, or unbundling, is a manufacturing company which previously provided its own producer services activities, but which now purchases these activities.

All else held equal, unbundling implies several things. First, the absolute numbers of employees involved in producer services-type activities within manufacturing indus-

tries would decline over time as the functions performed by these employees are transferred to the producer services industries. Second, the volume of producer services activity throughout the total economy would not increase; only the location of the activity would change. Finally, unbundling would be a significant source of increasing demand for the producer services industries.

In discussions of unbundling, there often is confusion between unbundling and increased contracting out. Unbundling implies increased contracting out, but increased contracting need not imply unbundling. Strictly speaking, unbundling implies that the location of producer services activities has changed for the total economy, but not the volume. Increased contracting out implies that manufacturing industries are purchasing more from the producer services industries, but the increased purchases could result from unbundling, from new needs for producer services-type activities, or from both.

Why would companies be switching from in-house staff to outside suppliers? If the unbundling hypothesis holds, perhaps it is because many businesses find it cheaper to purchase producer services from another establishment than to perform the activities with in-house staff and capital.⁷ The supplying establishments offer specialization and economies of scale in providing overhead inputs. Manufacturing companies have long made similar cost decisions for the materials, energy, and other inputs used in the production process.

Unbundling also concerns how companies cope with fluctuating work force requirements.⁸ They can staff their operations with enough permanent employees for their peak production loads. Or they can staff their operations with just enough permanent employees for their average production loads and hire temporary workers (or contract for other producer services) for peak production periods. In recent years, companies have adopted "just-in-time" inventory practices in their manufacturing processes. If the unbundling hypothesis is correct, perhaps they have also adopted "just-in-time" personnel practices to meet overhead requirements.

To trace the progress of the practice of unbundling, we review employment trends by industry and occupation for the 1977–86 period. A more in-depth review would focus specifically on the purchases of producer services by manufacturing industries. However, such data are not collected in the U.S. Department of Commerce Census of Manufactures or other surveys. Because of this, it is extremely difficult to isolate the unbundling phenomenon itself or to control for other factors which affect employment trends. We can isolate only several broad factors affecting employment.

The employment estimates used here are from BLS' Occupational Employment Survey (OES).⁹ This survey is designed to collect data on employment of wage and salary workers by occupation and industry in nonagricultural establishments. Each industry is surveyed every 3 years. We

use the surveys of manufacturing conducted in the spring of 1977, 1980, 1983, and 1986.

Two limitations of the OES data should be noted before we proceed with the analysis. First, a major new occupational classification system was introduced in the 1983 survey. Because of this, the 1977–80 employment estimates are *not comparable* to the 1983–86 estimates. For example, the 1977 and 1980 estimates counted first-line supervisor as a managerial occupation; the 1983 and 1986 estimates counted the first-line supervisor as a production occupation. This shift creates the incorrect impression that employment among managers declined between 1980 and 1983. Second, the OES is conducted during April, May, and June. Thus, the employment estimates are not annual averages, but estimates for selected months.

Broad occupational trends, 1977–86. We first simply track the numbers of wage and salary workers in broad occupational groups in manufacturing for the 1977–86 period. These employment trends are the net effect of changes in GNP, final demand composition, business practices, and staffing patterns. (Staffing patterns are the percentages of an industry's employment accounted for by particular occupations.) The trends do not provide specific information on unbundling. However, the observations are useful because they are the longest available trends.

Among the broad occupational groups, the number of managers employed in manufacturing increased between 1977 and 1980, and again between 1983 and 1986. (See table 3.) (Managerial occupations include financial, purchasing, personnel, marketing, and administrative managers.) The number of managers increased by 201,000 between 1977 and 1980 and by 131,000 between 1983 and 1986. As noted above, the 1980–83 decline is largely the

result of new occupational definitions. Further, the share of all manufacturing jobs held by managers increased from 5.7 percent of all wage and salary workers in 1977 to 6.6 percent in 1980, and from 5.8 percent in 1983 to 6.4 percent in 1986. These increasing employment levels and shares suggest that the unbundling of managerial-type producer services by manufacturing industries has not occurred.

Similar changes occurred among the professional, paraprofessional, and technical occupations within manufacturing. (Included here are accountants, engineers, scientists, computer scientists and programmers, and engineering and science technicians.) The number of professional and technical workers increased by about 336,000 between 1977 and 1980, and by 239,000 between 1983 and 1986. As a result, the share of manufacturing employment accounted for by professional, paraprofessional, and technical occupations increased from 8.4 percent in 1977 to 9.9 percent in 1980, and from 11.0 percent in 1983 to 11.8 percent in 1986. As for managers, these increasing levels and shares suggest that an unbundling of activities related to professional and technical occupations in manufacturing industries has not occurred.

A different picture emerges for clerical and administrative support occupations. (Clerical workers include secretaries, computer operators, bookkeepers, and dispatching and inventory clerks.) The number of clerical workers employed in manufacturing increased between 1977 and 1980 (162,000 wage and salary workers), and again between 1983 and 1986 (49,000 persons). (The 1980 and 1983 estimates shown in table 3 are not comparable because of changes in the coding structure.)

However, the importance of clerical occupations to manufacturing peaked in the early 1980's. Wage and salary workers in such occupations accounted for 11 percent of total manufacturing employment in 1977 and 11.5 percent in 1980. Between 1983 and 1986, however, the share of clerical occupations within manufacturing declined from 11.7 percent of the total to 11.6 percent. The increasing employment level but declining share for the 1983–86 period suggests a structural change affecting clerical workers which warrants further exploration.

Further study of developments among service occupations in manufacturing also is suggested by the results of this analysis. (Such occupations include guards and janitors.) The number of service workers employed in manufacturing decreased over the 1977–80 period (–17,000 persons). From 1983 to 1986, the number of service workers again declined (–23,000 persons). The importance of service occupations to manufacturing industries has declined since 1977; these occupations accounted for 2 percent of manufacturing employment in 1977 and 1.8 percent in 1980. The share declined again, from 1.8 percent in 1983 to 1.6 percent in 1986.

For completeness, employment estimates for sales and production occupations also are shown in table 4. However,

Table 3. Employment trends for selected broad occupational groups within manufacturing, selected years, 1977–86

Occupation	Numbers (in thousands)		Percent distribution		Numbers (in thousands)		Percent distribution	
	1977 ¹	1980 ¹	1977 ¹	1980 ¹	1983	1986	1983	1986
Total employment	19,722	20,228	100.0	100.0	18,369	19,042	100.0	100.0
Managers and administrative workers	1,127	1,328	5.7	6.6	1,062	1,193	5.8	6.4
Professional, paraprofessional, and technical workers	1,662	1,998	8.4	9.9	2,013	2,252	11.0	11.8
Clerical and administrative support workers	2,160	2,322	11.1	11.5	2,151	2,200	11.7	11.6
Service occupations	390	373	2.0	1.8	326	302	1.8	1.6
Sales workers	419	439	2.1	2.2	541	611	2.9	3.2
Production and related workers ²	13,964	13,767	70.8	68.1	12,277	12,484	66.8	65.6

¹Because of revisions in occupational definitions introduced with the 1983 data, the 1977 and 1980 estimates are *not comparable* to the 1983 and 1986 estimates. For 1977 and 1980 estimates, professional and technical occupations were combined.

²For the 1983 and 1986 estimates, production and agricultural workers were combined.

NOTE: Data are from the Occupational Employment Survey. The 1986 data are unpublished, and are subject to revision.

they are not discussed here, for they are seldom the focus of the unbundling argument.

Further exploration of 1983–86 period. To determine the extent of possible unbundling of clerical and service occupations by manufacturing industries, we need to isolate the sources of the occupational employment changes. If we can estimate the effects of changes in final demand composition, business practices, and labor productivity on the employment trends of clerical occupations within manufacturing, then we can finally focus on the unbundling phenomenon. For example, if we can explain the declining share of manufacturing employment accounted for by clerical occupations for the 1983–86 period by the changing composition of final demand, then we can argue that unbundling is not occurring.

This analysis is limited to the 1983–1986 period because of the changes in occupational definitions introduced in the 1983 OES. However, this is not a major problem, for manufacturing employment trends since the 1981–82 recession are the chief concern of the analysis at this point. Manufacturing employment did not recover as quickly from the last recession as from earlier recessions. Unbundling is one of several explanations given for the slow recovery.

One explanation for the continued employment growth of clerical occupations over the 1983–86 period is the total employment growth of manufacturing industries. According to the data from the OES, wage and salary employment in manufacturing employment increased by 673,000 over the 3 years. (Recall that the OES is measuring from the spring of 1983 to the spring of 1986. Thus, any estimates are affected by the fact that the two surveys were conducted at different points in the business cycle.) Other things equal, this growth would have boosted employment of wage and salary workers in clerical occupations by 79,000 persons. This estimate is derived simply by multiplying the increase in total manufacturing employment by the 1983 proportion of manufacturing employment accounted for by clerical occupations (11.7 percent). (See table 4.) However, because the actual change in clerical occupations in manufacturing was only 49,000 between 1983 and 1986, we must conclude that something caused the employment of clerical workers to lag total manufacturing employment.

This analysis was repeated for other occupations. If total manufacturing employment growth were the only change between 1983 and 1986, the number of persons in managerial occupations in manufacturing would have increased by 39,000 compared with actual growth of 131,000. Similarly, the number of persons in professional, paraprofessional, and technical occupations would have grown by 74,000 rather than the increase of 239,000 actually noted. Thus, manufacturing job growth explains only part of the growing numbers of managers and professional and related workers in manufacturing.

Finally, the number of persons in service occupations would have increased by 12,000 if the only change over the

1983–86 span had been the level of manufacturing employment. The actual change was a decrease of 23,000 persons. Thus, something is causing employment of service workers to lag.

Industrial composition, 1983–86. Another potential source of employment growth among clerical occupations is a changing mix of manufacturing industries. Industry mix is defined as the numbers of persons employed in particular industries as percentages of total manufacturing employment. For example, the motor vehicles industry accounted for 4.1 percent of manufacturing workers in 1983, and for 4.6 percent in 1986. The construction machinery industry accounted for 1.4 percent of all manufacturing workers in 1983, and for 1.2 percent in 1986.

The effect of changing industry mix may be gauged by determining what the change in clerical employment between 1983 and 1986 would have been if industry employment shares had changed, but both the level of manufacturing employment and the proportion of clerical workers within the individual manufacturing industries had not. The difference between this employment estimate and the actual number of clerical workers in total manufacturing in 1983 measures the impact of the changing mix of manufacturing industries. This portion of the analysis is based on employment trends for 143 manufacturing industries. The industries are defined at the 3-digit level of the Standard Industrial Classification (SIC).

Changes in industry mix are the result of other developments, including relative productivity trends among the detailed industries, changes in the composition of final demand, and changes in the business practices. Both the level of total manufacturing employment and staffing patterns by detailed industry are held constant in this analytical step.

The changing mix of manufacturing industries was found to have caused the number of clerical workers in total manufacturing to increase 17,000 between 1983 and 1986. By

Table 4. Sources of occupational change in manufacturing employment, 1983–86

[Numbers in thousands]

Occupation	Actual change	Employment change explained by—			
		Total manufacturing employment growth	Composition of—		
			Industry mix	Staffing patterns	Other ¹
Managers and administrative workers	131	39	9	81	2
Professional, paraprofessional, and technical workers . . .	239	74	36	118	11
Clerical and administrative support workers . . .	49	79	17	-44	-2
Service occupations . . .	-23	12	-1	-33	-1
Sales workers	70	20	5	43	2
Production and related workers	207	450	-66	-166	-12

¹ Residual effects.

comparison, the industry mix effect explains 9,000 of the actual 31,000 increase in the number of managers, and 36,000 of the 39,000 increase in professional, paraprofessional, and technical workers. Finally, industry mix alone would have caused employment among service workers to decline by 1,000.

Industry staffing patterns. A final possible explanation for the employment growth of clerical workers in manufacturing during the 1983–86 period is changing staffing patterns among the detailed manufacturing industries. For this purpose, then, the staffing pattern is the proportion of employment accounted for by clerical occupations within a particular industry. Following the procedure outlined above for the testing of other possible explanatory variables, we attempt to determine what the change in occupational employment would have been if staffing patterns had changed between 1983 and 1986, but both total manufacturing employment and the composition of industries had not. Holding these last two elements constant implicitly holds final demand composition and industry productivity constant over the 3-year study period. (Changes in staffing patterns are the result of other developments including changes in technology and in business practices, both of which also affect industry mix.) The difference between the resulting employment estimates and actual 1983 employment isolates the effect of changing staffing patterns.

If staffing patterns among the detailed manufacturing industries were the only change for the 1983–86 period, then employment of clerical workers for total manufacturing would have declined by 44,000. (See table 4.) This means that most manufacturing industries employed proportionately fewer clerical workers in 1986 than in 1983. However, the growth of total manufacturing employment more than offset the changes in staffing patterns for the clerical occupations among the detailed industries, resulting in the actual net increase of 49,000 noted earlier.

By comparison, employment in managerial and professional, paraprofessional, and technical occupations would have grown by 81,000 and 118,000, respectively, if staffing patterns had been the only change during the 1983–86 period. These estimates imply that the individual manufacturing industries employed proportionately more persons in these occupations over the 3 study years. Finally, employment of service workers would have declined 33,000 because of the changes in staffing patterns alone over the 1983–86 period—that is, individual industries employed proportionately fewer persons in this occupational group.

Three factors combined. We can now combine the three employment estimates to understand the changes occurring in clerical employment within manufacturing over the years 1983–86. The number of clerical workers would have increased by 79,000 based on total manufacturing employment growth alone. It would have increased 17,000 based

on changing industry mix alone. And it would have declined by 44,000 based on changes in industry staffing patterns alone. As noted, the actual change was an increase of 49,000. The decline isolated by changing staffing patterns alone was the only estimate that even suggests possible unbundling. (Earlier, we defined unbundling as an absolute employment decline.)

Similar conclusions hold for service workers employed in manufacturing. Unbundling could be occurring: The number of service workers did decline by 23,000 between 1983 and 1986. The changes in staffing patterns among the detailed industries alone would have caused a 33,000 decline. (The effect of changing staffing patterns was offset by the total employment change in manufacturing.) The effect of changing industry mix was slightly negative, –1,000.

The estimates for professional, paraprofessional, and technical occupations yield a different picture. The three effects were all positive. The change in the level of manufacturing employment alone explained 44,000 of the actual 239,000 increase in the number of professional workers. The change in industry mix alone explained 36,000. And, the change in staffing patterns alone explained 118,000. We conclude from these three positive effects that unbundling of professional-type activities did not occur.

Impact on producer services industries. What does the 44,000 decline in employment among clerical occupations explained by changing staffing patterns mean? One possibility is that individual manufacturing industries are employing proportionately fewer clerical workers because of unbundling. Unfortunately, available data do not permit us to isolate the causes of changing staffing patterns. This estimate represents the net effects of many factors, such as technology and the business cycle, as well as possible unbundling.

If unbundling were the sole explanation for the changes in staffing patterns, then the 44,000 estimate would be equivalent to about 2.8 percent of the employment growth of producer services industries. The number of workers in those industries increased by 1,544,000 between 1983 and 1986. (The 44,000 estimate could, of course, explain a larger proportion of the employment of clerical workers in producer services.) For the 44,000 estimate to reflect unbundling would require all the producer services activities related to these jobs to be simply transferred from manufacturing industries to producer services industries.

However, we do not know whether a direct transfer of clerical activities from manufacturing to producer services has even occurred. We do know that unbundling did not alter the staffing patterns in the producer services industries. According to the Current Population Survey, the proportion of producer services employment accounted for by clerical workers changed very little between 1983 and 1986. This fact strongly suggests that all activities within producer services grew, and not just those of a clerical nature.

The analysis presented earlier indicated that the employment of service workers within manufacturing declined 33,000 because of changes in staffing patterns alone. This estimate would be equivalent to about 2.1 percent of the actual employment growth of the producer services industries.

According to the above calculations, unbundling is not even a possible explanation for the trends of managerial and professional, paraprofessional, and technical employment within the producer service industries, because changes in staffing patterns alone caused employment in these occupations to increase within manufacturing industries.

Conclusions for unbundling. We conclude from the evidence presented above that unbundling has been a very small factor in the employment growth of producer services. Occupational employment trends within manufacturing show that unbundling is not occurring for managerial, professional, and technical occupations within manufacturing, for employment in these occupations is increasing. Unbundling is potentially a factor in employment trends for the clerical and service occupations within manufacturing if the changes in staffing patterns demonstrated earlier were related to unbundling. However, those employment shifts for the broad clerical and service occupations that were due to changing staffing patterns could account for only a small proportion of the total employment growth of producer services.

A question not addressed here is whether unbundling could be occurring within individual firms.¹⁰ The analysis was conducted only for total manufacturing, and the trends observed were the net effects of decisions by all the individual firms at the industry or sector level. Thus, considerable unbundling at some firms could have been offset by the employment growth in the same occupation at other firms.

Other reasons to purchase producer services

Why have businesses demanded more producer services inputs over time to make their products? We established that changes in business practices explain a large proportion of output growth of producer services. However, we have demonstrated that unbundling is not important among those changes. Thus, the increased contracting out must be for new services. The remainder of this article lists possible explanations for the increased contracting out but does not attempt to review their merits.¹¹

Information. The employment growth of producer services may be a response to increasing demands for information as the cost of purchasing information declines.¹² The computer and data processing services industry has spread the costs of the computer-related technologies over many users. Similarly, management and business consulting services, engineering and architectural services, and other producer services have spread the costs of acquiring technical knowledge in demography, economics, marketing, engineering, and other fields among many customers.

Higher level corporate services. The increasing number of large companies and conglomerates may have created a demand for producer services.¹³ According to this argument, today's corporation is probably involved in many more fields or industries—manufacturing, retail trade, transportation, personal services, and so on—than its 1960's counterpart. Thus, managers now must increasingly rely on experts in sophisticated producer services, such as business management and consulting, to ensure efficient operations.

Government regulations and laws. Some argue there are more lawyers, accountants, and other technical experts today than in the 1950's and 1960's simply because of the number of laws passed in recent years by Congress, State legislatures, and city councils.¹⁴ Because many of these regulations and laws deal with banking, construction, environment, labor relations and safety, transportation, and other fields that touch on business interests, it seems logical that the modern firm would periodically seek expert advice and assistance by purchasing producer services.

International trade. The growth of producer services industries may be explained by the expansion of foreign trade, especially to the extent that producer services themselves are being exported.¹⁵

Unbalanced growth. So far, we have focused on the demand side of the demand/supply scissors to offer explanations for the rapid employment trends for producer services. However, the explanation may lie on the supply side of the scissors.

One supply argument is that service-producing workers and industries resist innovations over time.¹⁶ According to this explanation, the economy is divided into two types of industries—stagnant industries that resist innovations, and progressive industries that readily incorporate change. Over time, the stagnant industries would absorb more and more of the economy's inputs. According to this argument, lawyers, janitors, and computer programmers are performing their tasks about as efficiently today as they did 10 or 20 years ago.

Data issues. Data problems and issues also affect any analysis of employment and production trends. It is difficult to measure outputs and prices. Collecting these data requires defining what is being produced or serviced and determining how to measure the activity. These problems are readily apparent in the case of services, such as legal services, automobile repair, or bank services, where there is little in common from one transaction to the next in terms of either quality or quantity.¹⁷ And such problems are particularly acute in producer services. In contrast, transactions for goods, such as automobiles or wheat, are more likely to be well-defined and to occur in large volumes.

Another data issue is the relative durability and portability of goods and services. As a rule, goods are thought to be more durable, more portable than services. But, computer software programs are both durable and portable. Some producer services such as temporary help or janitorial services are neither durable nor portable. Other services such as legal, engineering, and management consulting services are portable via telecommunications and air travel. And the technical expertise of a lawyer or engineer is as durable as the output of many manufacturing industries.

Summary

In this article, we reviewed several explanations for the rapid relative growth of the producer services industries

over the postwar period. The most telling of these involved changes in how our economy produces goods and services. Based on the evidence presented here, unbundling accounted for at best only a small portion of producer services industries' above average growth.

Nevertheless, unbundling certainly could be occurring in individual firms. The unbundling for individual firms could be overwhelmed by the growth of in-house employment for these activities in other firms. And in the individual unbundling situations, there may be displacement—as opposed to the transfer—of individual workers. Thus, the possibility that such unbundling is adversely affecting individuals must always be recognized. □

FOOTNOTES

¹ Recent BLS studies analyzing broad employment shifts include Michael Urquhart, "The employment shift to services: where did it come from," *Monthly Labor Review*, April 1984, pp. 15–22; and Ronald E. Kutscher and Valerie Personick, "Deindustrialization: the shift to services," *Monthly Labor Review*, June 1986, pp. 3–13. Recent studies on individual industries include Max Carey and Kim Hazelbaker, "Employment growth in the temporary help industry," *Monthly Labor Review*, April 1986, pp. 37–44; and Wayne Howe, "The business services industry sets pace in employment growth," *Monthly Labor Review*, April 1986, pp. 29–36.

Other recent articles include Bobbie H. McCrackin, "Why are business and professional services growing so rapidly?" *Economic Review* (Federal Reserve Bank of Atlanta), August 1985, pp. 15–28; Lynn E. Browne, "High technology and business services," *New England Economic Review*, July/August 1983, pp. 5–17; and Lynn E. Browne, "Taking in each other's laundry—the service economy," *New England Economic Review*, July/August 1986, pp. 20–31.

² See Garth Mangum, Donald Mayall, and Kristin Nelson, "The temporary help market," *Industrial and Labor Relations Review*, vol. 38, no. 4, pp. 599–611; Ronald C. Henson, "Coping with fluctuating work-force requirements," *Employment Relations Today*, Summer 1985, pp. 149–56; and Michael J. Piore, "Perspectives on Labor Market Flexibility," *Industrial Relations*, vol. 25, no. 2, pp. 146–66.

No economist is directly identified with the unbundling explanation, although many allude to the economic, accounting, and organizational theories that underlie the thesis.

³ In this article, producer services includes business services (SIC 73), legal services (SIC 81), and miscellaneous professional services (SIC 89). This group of industries—along with other groups—have been singled out in studies such as Harry I. Greenfield, *Manpower and the Growth of Producer Services* (New York, Columbia University Press, 1966); and Thomas M. Stanbeck, Jr., *Understanding the Service Economy* (Baltimore, Johns Hopkins University Press, 1979).

⁴ This article uses numerous data sources. When describing employment trends in the nonagricultural industries and producer services, we use the Current Employment Statistics (CES) survey. When describing the occupational employment for manufacturing industries, we use the Occupational Employment Survey (OES).

An alternative industry data source is the Current Population Survey (CPS) which is compiled from the household interviews. There are important differences among the surveys. In particular, the CPS counts the number of persons who are employed; the CES and OES count jobs. Because of this difference, a person holding two or more jobs would be counted two times in the CES and OES, but only once in the CPS. Another difference is that the CPS includes estimates of self-employed workers, unpaid family workers, and wage and salary workers; the CES and OES cover only wage and salary workers.

⁵ The source of these estimates is the National Income and Product Accounts, developed by the Bureau of Economic Analysis, U.S. Department of Commerce.

⁶ When viewed in a descriptive sense, as a system of data classification and accounting, input-output is generally acceptable to all economists. However, here we use input-output as a theory of production with the assumption that the coefficients comprise a set of technological parameters in a linear homogeneous production function with fixed proportions among the various inputs. For another example of the analysis used in this article, see Bureau of Labor Statistics employment projections: detailed analysis of selected occupations and industries, Report No. GAO/OCE-85-1 (Washington, U.S. General Accounting Office, April 1985).

The input-output tables used in this article are developed by the Bureau of Labor Statistics and are based on tables prepared by the U.S. Department of Commerce, Bureau of Economic Analysis. See "The Input-Output Structure of the U.S. Economy, 1977," *Survey of Current Business*, May 1984, pp. 42–79, for a description of input-output tables.

In the Department of Commerce's input-output tables, industrial purchases of producer services are usually based on occupational employment patterns. Total receipts of a particular service are usually distributed to the purchasing industry based on the number of persons in a particular occupation in the purchasing industry. See U.S. Department of Commerce "Definitions and conventions of the 1972 input-output study" (Washington, Bureau of Economic Analysis).

⁷ See footnote 2.

⁸ See Mangum, Mayall, and Nelson, "The temporary help market"; and Henson, "Coping." Also see Michael J. Piore, "Perspectives."

⁹ The Occupational Employment Statistics (OES) survey is designed to collect data on occupational employment of wage and salary workers by industry in nonagricultural establishments. The Bureau of Labor Statistics provides the procedures and technical assistance for the survey, and State employment security agencies collect the data. Employment is based upon survey results adjusted to reflect total industry employment. (See *Occupational Employment in Manufacturing Industries*, Bulletin 2248 (Bureau of Labor Statistics, 1985)).

The analysis presented in this section was repeated with data from the Current Population survey. The results from the CPS analysis were virtually identical—that is, some unbundling might be occurring, but it would explain very little of the employment growth in the producer services industries. The CPS provides information on staffing patterns that is similar to that from the OES. But the OES, unlike the CPS, is designed specifically to collect data on occupational employment and is based on a substantially larger sample.

¹⁰ Another question that will not be addressed in this article is the implications of increasing employment in manufacturing of persons in occupations closely identified with producer services. It would be interesting in these instances to determine whether the proportion of total producer services activities demanded by manufacturing industries was being shifted significantly from in-house staff to producer services industries. The answer to this question for the 1972–77 period is that the proportion did not change for most activities. This conclusion is based on information from the Bureau of Economic Analysis' 1972 and 1977 input-output tables,

combined with employment trends for selected occupations in both manufacturing and producer services industries. This analysis cannot be extended through 1982 or later until independently estimated input-output tables are available for these recent years.

¹¹ For more information on the extent of contracting out by businesses, see *Business Contracting-Out Services*, Summary Report 87-8 (Bureau of Labor Statistics, 1987).

¹² Browne, "High technology."

¹³ Stanbeck, *Understanding the Service Economy*, pp. 18-21. Also see Donald J. Cocheba, Robert W. Gilmer, and Richard S. Mack, "Causes and consequences of slow growth in the Tennessee Valley's service sector," *Growth and Change*, January 1986, pp. 51-65.

¹⁴ There is no specific proponent of this explanation, but it is reviewed in many studies of producer services. See McCrackin, "Why are business and professional services growing so rapidly?" p. 23.

¹⁵ Office of Technology Assessment, *Trade in Services: Exports and Foreign Revenues-Special Report*, OTA-ITE-316 (Washington, U.S. Congress, September 1986).

¹⁶ See William J. Baumol, "Macroeconomics of unbalanced growth," *American Economic Review*, June 1967, pp. 415-26; William J. Baumol, Sue Anne Batey Blackman, and Edward N. Wolff, "Unbalanced growth revisited; asymptotic stagnancy and new evidence," *American Economic Review*, September 1985, pp. 806-17; Lester C. Thurow, "Pruning our white-collar ranks: a key to productivity," *Technology Review*, November/December 1985, pp. 14-15; and Center for Democratic Policy, *Strengthening the economy* (Washington).

See Martin Neil Baily, "What has happened to productivity growth?" *Science*, October 1986, pp. 443-52, for a summary of this explanation.

¹⁷ See chapter 7 of *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982) for a discussion the Producer Price Index and issues concerning price indexes.

APPENDIX: Description of the model

In this article, three factors or determinants of output and employment trends are considered. In the input-output section, the analysis focuses on output trends. In the unbundling section, the emphasis is on occupational employment trends. This appendix describes the model on which the analysis is based. However, to keep the mathematics simple, a model for only two factors is shown. A three-factor model would be more complicated but similar.

Based on two factors, the analysis can be represented as follows:

In year T , the dependent variable is expressed:

$$D_T = A_T * B_T \tag{1}$$

where: D = dependent variable;
 A = first factor or explanatory variable;
 B = second factor or explanatory variable; and
 T = time.

The change in output between two periods is:

$$D_T - D_O = (A_T * B_T) - (A_O * B_O) \tag{2}$$

Adding and subtracting several expressions on the right-hand side of equation (2) yields:

$$\begin{aligned} D_T - D_O = & (A_T * B_T) - (A_O * B_O) \\ & + (A_T * B_O) - (A_T * B_O) \\ & + (A_O * B_T) - (A_O * B_T) \\ & + (A_O * B_O) - (A_O * B_O) \end{aligned} \tag{3}$$

Rearranging the terms yields:

$$\begin{aligned} D_T - D_O = & (A_T * B_O) - (A_O * B_O) \\ & + (A_O * B_T) - (A_O * B_O) \end{aligned} \tag{4}$$

$$\begin{aligned} & + (A_T * B_T) - (A_O * B_T) \\ & - (A_T * B_O) - (A_O * B_O) \end{aligned}$$

Combining the terms yields:

$$\begin{aligned} D_T - D_O = & (A_T - A_O) * B_O \\ & + (B_T - B_O) * A_O \\ & + (A_T - A_O) * (B_T - B_O) \end{aligned} \tag{5}$$

where the first term on the right-hand side of equation (5), $(A_T - A_O) * B_O$, is the contribution of factor A to total change of variable D ; the second term, $(B_T - B_O) * A_O$, is the contribution of factor B to total change of variable D ; and the third term, $(A_T - A_O) * (B_T - B_O)$, is the residual change of variable D which is due to the interaction of factors A and B .

The individual terms of equation (5) were used in the article to determine or isolate factors. For example, in the section on final demand, the following question was asked: "What would the estimated change in the output for producer services have been if the composition of final demand alone had changed and the GNP level and business practices had not changed?" The answer to this question (shown in table 2 of the text) was based on either the first or second term of equation (5).

In the unbundling section, the interaction component is shown. In the input-output section, the interaction component is combined with the effect of changing business practices. This choice reflects the difficulties of measuring changes in business practices (or input-output coefficients) over time.

What is the effect of random variation in State unemployment rates?

State and local users of the data may tend to assume that the rates have low levels of dispersion; however, a closer analysis reveals large variances attributed to sample size

EDWARD W. HILL

The reported monthly unemployment rate from the Current Population Survey (CPS) is the best point estimate of labor market activity available by State and local labor market areas. Because of its timeliness, wide coverage, and comprehensiveness, it is used by governments, planners, corporations, and the media. However, statements are often made about fluctuations in the unemployment rate which are unwarranted due to the variance of the data series.

The inverse of the unemployment rate is commonly used as a proxy for gross regional product. It is also used intraregionally, as a coincident indicator of the local business cycle. Interregionally, it is used as a sign of the relative strength of local economies. The unemployment rate is also an important instrument in public policy decisions. This is especially true at the State and local levels where announcements in the rate can trigger political activity. The annual rate is used by the Federal Government to redistribute funds to the States. In many States, the rate is used as part of formulae to redistribute funds from State to local governments. It is also used to extend or contract the length of time people are eligible for unemployment benefits.

Most of these uses of the unemployment rate for States and localities assume that it has low levels of dispersion and that month-to-month movements in the rate are meaningful. Because users usually do not pay attention to error attributed

to random variation in sampling, they may be using the unemployment rate to make inferences, decisions, resource allocations, or policy statements which are unwarranted.

The first section of this article examines national CPS data to indicate the impact which sample size has on the standard error of subpopulations in the sample and to show how these errors can influence policy conclusions.

The second section examines the unemployment rate cross-sectionally for the 11 States for which data are available from the April 1986 CPS.¹ These data demonstrate that the monthly unemployment rate should not be used to make finely drawn distinctions between the States. This is especially true if the data are used to make inferences about the relative aggregate economic well-being of the States.

The third section uses monthly time series data, from January 1982 to December 1986, for the State of Ohio. These data are employed to examine the extent to which movements in the reported monthly unemployment rate are statistically significant.

Statistical error in the CPS

Reported differences in the variance for specific national CPS subpopulations are largely caused by relative subsample sizes. For instance, the expected coefficient of variation for the civilian labor force and the number employed will be lower than the coefficient of variation for the number unemployed and, correspondingly, for the unemployment rate. Relative errors for demographically distinct subpopulations also vary with size. It is shown in table 1 that as the size of

Edward W. Hill is Research Director of the Economic Development Program, College of Urban Affairs, Cleveland State University.

*Se
(mean)*

the population decreases, the coefficient of variation and the resulting confidence interval increases.

The CPS unemployment rate was 7 percent in April of 1986; with a coefficient of variation of 1.7 percent, the 95-percent confidence interval ranged from 6.76 percent to 7.24 percent. (The normal confidence level used for these by BLS is 90 percent.) It is interesting to note that the levels of dispersion for subpopulations, with which social policy has been historically concerned, are of much greater magnitude than those found for the sample as a whole. The reported unemployment rate for black men was 13.4 percent, and the 95-percent confidence interval was from 12.04 percent to 14.69 percent. The rate for black teens was 40.7 percent, and the 95-percent confidence interval ranged from 36.40 percent to just under 44.68 percent. These are wide error bands and are cause for concern if the rates are being used for reasons other than business cycle analysis.² Seemingly large changes in the unemployment rate for these groups would actually not be significant. They could be a fluke of the specific month's sample.

It is instructive to calculate what the unemployment rate would have to be in May to be significantly different, at the 95-percent confidence interval, from the April figures. This can be done by using the standard error of month-to-month variation in the unemployment rate. The overall unemployment rate must either exceed 7.24 percent, or drop below 6.76 percent. The rate for nonteenage white men would need to fall outside of the 5.05-percent to 5.67-percent range, and the rate for nonteen black men would be outside of the 12.04-percent to 14.69-percent range. The range for black teens is from 36.40 percent to 44.69 percent.³ In each case, the May rate fell inside of the confidence interval, which implies that we cannot say with statistical certainty that the May rates are different from those of April.

National data demonstrate how relatively small sample sizes can influence the utility of the unemployment rate as a social indicator. This is a task for which the metric is frequently used. Dispersion caused by small sample sizes makes movements in the monthly unemployment rate for minority subpopulations nearly meaningless.

Cross-sectional variations

Few attempts are made to gauge the precision of the States' monthly unemployment estimates. However, the CPS is designed to ensure that reported unemployment levels have a coefficient of variation of 8 percent or less, at a 6-percent unemployment rate.⁴ This standard applies to monthly unemployment rates which are reported for the 11 States with populations large enough to yield an adequate sample (these will be referred to as "survey States" in this article). It also applies to the annual unemployment estimates for all of the States and the District of Columbia. The remaining 39 States and the District of Columbia use a nonsurvey method to estimate their monthly and quarterly rates.

There are large differences in the estimated unemployment rates among the States. However, finely drawn distinctions among them may be misleading. This is especially apparent when the data are viewed within the context of the "common wisdom." This wisdom holds that States on the coasts have fared well in the current recovery, but the mid-section of the country is faring less well. This wisdom can be questioned when variations in State estimates are considered.

Table 2 lists the estimated unemployment rates, the coefficients of variation, and the 95-percent confidence intervals for the survey States. There are substantial differences in the levels of variation. The coefficient of variation is higher for States with smaller populations and lower unemployment rates; the average coefficient of variation is 7.11 percent. The table contains two measures of relative dispersion, the coefficient of variation and the range of the confidence interval as a percentage of the estimate. The latter measure divides the difference between the extremes of the 95-percent confidence interval by the reported unemployment rate. It is a measure of the relative width of the interval. The average of this measure is 27.4 percent, indicating that the interval is extremely wide.

A t-test of the difference in the unemployment rates between any two of the survey States was conducted to examine whether the differences were statistically significant. As table 3 indicates, in several cases they were not.

The States can be placed into four groups. Massachusetts' reported unemployment rate is significantly different from New Jersey's and it constitutes the first group. The second group consists of New Jersey, North Carolina, and Florida.

Table 1. Month-to-month variation in the unemployment rates for subpopulations in the Current Population Survey, April 1986

Characteristic	Estimated unemployment rates	Coefficient of variation ¹ (percent)	95-percent critical values ²	
			Minimum	Maximum
Total, 16 years and older	7.0	1.70	6.76	7.24
White:				
Men, 20 years and older	5.4	2.59	5.05	5.67
Women, 20 years and older	5.2	2.50	4.86	5.45
Both sexes, 16-19	15.7	3.69	14.44	16.83
Black:				
Total, 16 years and older	14.6	4.04	13.42	15.76
Men, 20 years and older	13.4	4.92	12.04	14.69
Women, 20 years and older	12.0	4.50	10.82	13.06
Both sexes, 16-19	40.7	4.98	36.40	44.68

¹ The coefficient of variation is calculated by dividing the standard error (s) by the mean (x) and multiplying the result by 100, ((s/x)·100).

² The 95-percent confidence interval of the unemployment rate is calculated by multiplying the standard error by 1.96 and adding or subtracting, that number from the reported unemployment rate (which is the estimate of this distribution), $x \pm (1.96 \cdot s)$.

SOURCE: The standard errors were obtained and calculated from *Employment and Earnings*, May 1986, tables A-6, C, and G. All calculations were made by the author.

The estimated mean unemployment rate of each State is not statistically different from the other States in this group. California, New York, and Pennsylvania constitute the third group. When one puts aside glorified stories of the economic renaissance on the west coast, it appears that there is no significant difference between California and Pennsylvania in terms of their mean levels of unemployment. The hypothesis that Pennsylvania's rate of 7 percent is not different from Ohio's 7.9 percent cannot be rejected. But it appears that Ohio is more closely associated with the high unemployment group: Ohio, Illinois, Texas, and Michigan.

It is unwise to use monthly unemployment rates unaccompanied by other data to make finely drawn distinctions among the States. Cross-sectional data indicate that statistical uncertainty, which is inherent in monthly State unemployment rates, results in confidence intervals that are nearly 28 percent as large as the estimated unemployment rate.

Ohio's time-series variation

Monthly data for Ohio are examined to determine the frequency of significant differences in the reported unemployment rates. Seasonally adjusted time-series data from January 1982 to December 1986 are used to examine whether month-to-month changes in Ohio's unemployment rates are significant.

The 59 months of data plotted in chart 1 constitute a particularly good period to examine movements in Ohio's monthly unemployment rate because of the wide range—a high of 14.2 percent in January 1983, to a low of 7.4 percent

Table 2. Reported unemployment rates for 11 CPS survey States, by levels of variation, April 1986

Area	Estimated unemployment rate ¹	Coefficient of variation ²	Range of 95-percent confidence ³	95-percent confidence interval ⁴	
				Minimum	Maximum
Massachusetts	3.8	9.62	36.8	3.1	4.5
New Jersey	4.7	8.55	34.0	3.9	5.5
North Carolina	5.1	8.38	31.4	4.3	5.9
Florida	5.4	7.86	29.6	4.6	6.2
California	6.7	5.46	20.9	6.0	7.4
New York	6.7	5.58	20.9	6.0	7.4
Pennsylvania	7.0	7.04	28.6	6.0	8.0
Ohio	7.9	6.63	25.3	6.9	8.9
Illinois	8.2	6.56	25.6	7.1	9.2
Texas	8.2	6.27	24.4	7.2	9.2
Michigan	9.1	6.27	24.2	8.0	10.2
Average, 11 States	—	7.11	27.4	—	—

¹ Not seasonally adjusted.

² Coefficient of variation is calculated by dividing the standard error (s) by the mean (x) and multiplying the result by 100. ((s/x)*100).

³ Range of percent of employment estimate: [(95-percent confidence interval maximum - 95 percent confidence interval minimum)/(Unemployment rate)]*100.

⁴ The 95-percent confidence interval of the unemployment rate is calculated by multiplying the standard error by 1.96 and adding or subtracting that number from the reported unemployment rate (which is the estimate of this distribution), $x \pm (1.96 \cdot s)$.

SOURCE: Unemployment rate: *Employment and Earnings*, table D-1 (Bureau of Labor Statistics, 1986). Data and formulae to calculate standard errors: Charles D. Jones, "CPS Variances—Parameters Needed to Calculate State, Census Region, and Division Variances." All calculations made by author.

Table 3. Differences between estimated unemployment rates of the 11 survey States

State	Group 1	Group 2			Group 3			Group 4			
	MA	NJ	NC	FL	CA	NY	PA	OH	IL	TX	MI
MA	-----	1-1.65									
NJ	-----	-----	-0.68	-1.21	1-3.67						
NC	-----	-----	-----	-0.50	1-2.82						
FL	-----	-----	-----	-----	1-2.32						
CA	-----	-----	-----	-----	-----	0.00	-0.49	1-1.88			
NY	-----	-----	-----	-----	-----	-----	-0.49	1-1.88			
PA	-----	-----	-----	-----	-----	-----	-----	-1.26	1-1.65		
OH	-----	-----	-----	-----	-----	-----	-----	-----	-0.40	-0.41	-1.55
IL	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.00	-1.15
TX	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-1.18
MI	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

¹ The reported unemployment rate for the State listed in the row is significantly different from that of the State listed in the column, using a one-tailed t-test at the 95-percent critical value.

NOTE: Reported numbers are the value of the t-test on the difference between two means:

$$[(u_i - u_j) / ((s_i^2 + s_j^2)^{.5})]$$

where: u_i is the reported unemployment rate for State i, u_j is the reported unemployment rate for the State with the next highest rate (State j), s_i is the standard deviation of the rate of State i, s_j is the standard deviation of the rate of State j.

SOURCE: See table 2.

in March 1986. This was an especially difficult time for Ohio. The people of the State experienced the usual cyclical swings of an economy dependent on capital goods production. In addition, they had to contend with accelerated secular change partially due to offshore competition.

To get a feeling for the amount of variance in the series, measures of dispersion and central tendency were developed.⁵ Normally, economists and planners use the monthly unemployment rate as if each observation has no variation. But as the series is constructed with monthly samples, each observation has its own measure of dispersion.

The average monthly coefficient of variation of the unemployment rate over the time period was 5.9 percent. This metric, in turn, had a coefficient of variation of 9.6 percent, which indicates that there was a range of statistical error, or imprecision, in the data series. However, each month's reported unemployment rate is an efficient point estimator and the best unemployment data available for Ohio. It remains to be determined if the dispersion is sufficiently low to justify the robust way in which monthly changes in the unemployment rate are used.

The values of the t-ratios of the difference in each months' unemployment rate over time are plotted in chart 1. The t-test used is slightly biased in favor of finding that each month's rate is not different from the previous month's rate. This is attributed to the fact that the correlation of the month-to-month variances used in the computation of the t-test is for the levels of unemployment, rather than the unemployment rates.⁶

The 66-percent and 95-percent critical values of the two-tailed t-test are displayed; they are ± 1.00 and ± 1.96 , respectively. If the ratio has a value which lies outside of the range ± 1.00 , then there are at least 2 chances out of 3 that the reported rate is significantly different from the previous

month's rate; if it exceeds the range ± 1.96 , then there are 95 chances out of 100 that the actual rates are different in the 2 months. It is evident that most of the observations fall within the ± 1.00 range. The 95-percent test is very stringent; in fact, only two observations exceed the boundaries. This means that reported unemployment rates were statistically different from the previous month's rates only twice over this time period.

The 66-percent critical values appear to be a more sensible standard, especially as the test is biased in favor of finding no relationship.⁷ The reported unemployment rate was significantly different from the previous month's rate, with 66-percent confidence, 12 times out of a total of 59, or 1 month out of every 5. The reported rate exceeded the upper bound 5 times and the lower bound, 7 times.

Much of the reported movement in the unemployment rate is not statistically significant. As a rule of thumb, the reported unemployment rate in Ohio must change by, plus or minus, 0.7 percent before it is considered to be significantly different from the previous month's rate with 66-percent confidence. The same figure, with 95-percent confidence, is ± 1.3 percent.⁸

The CPS State unemployment rates are important data; they are provided on a regular and timely basis and are the best available point estimates of the capacity of a State's labor market. Despite the large amount of random error in

each month's estimates, they also provide information about the direction in which a State's economy is heading. A moving average of the rate provides very reliable information about the trend of the State's business cycle. But the rate suffers as an indicator of social distress because it does not include people who are not part of the labor force and it weighs all employment equally (from 1 hour per week to 40 hours per week).

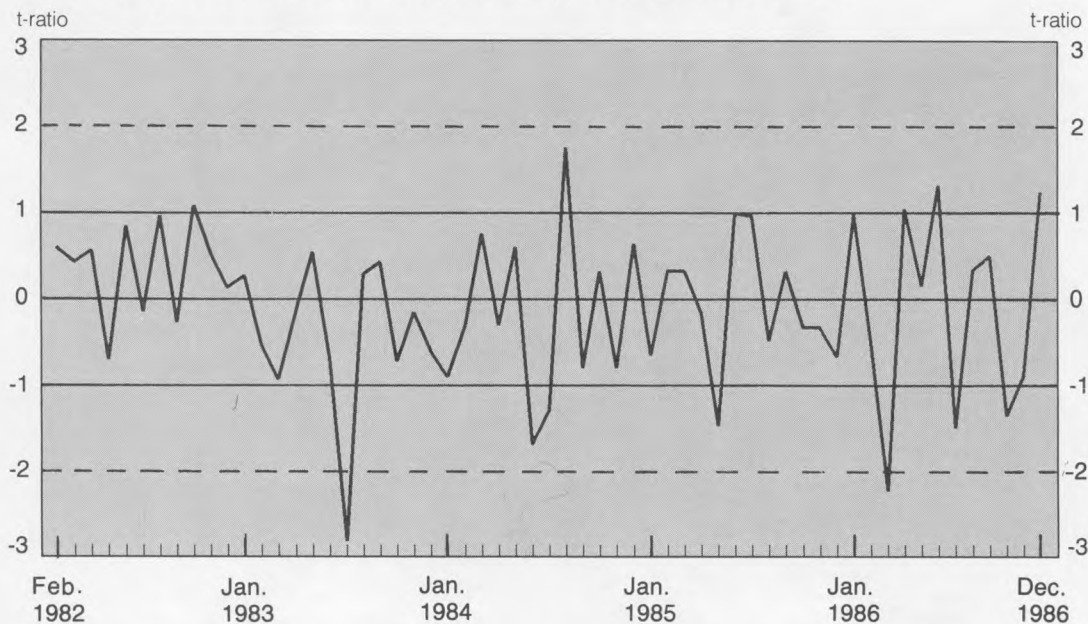
Conclusion

Small sample sizes for specific subpopulations in the national CPS yield relatively large variances for the reported unemployment rates. This can lead to a problem in using the rates as indicators of aggregate economic distress because changes in the rate which look large may be attributed to sampling error. This is an especially acute problem in using the reported unemployment rates for minority teens.

The analysis of the reported unemployment rates for the 11 survey States for April 1986 indicates that economists and planners should not use the unemployment rate to make finely detailed distinctions among the States. Confidence intervals are too wide to place much weight on finely drawn differences between States.

The analysis of longitudinal data for the State of Ohio indicates that most of the movement in the unemployment rate is spurious. In Ohio, the rate must change from 0.7

Chart 1. Difference between Ohio's month-to-month unemployment rates using values of two-tailed t-tests, February 1982-December 1986



NOTE: Dashed grid indicates 95 percent critical values, solid grid indicates 66 percent critical values

percent to 1.3 percent before it can be called statistically significant. This would be a minimum for States with either smaller populations or lower unemployment rates.

The CPS showed that 423,000 Ohioans were unemployed in April 1986. The coefficient of variation indicates that there are 2 chances in 3 that the unemployment rate was in a range from 7.4 percent to 8.6 percent.⁹ The reported rate in Ohio was 8.0 percent. If the next month's rate was within this range, then the new rate would not be statistically different from the old. This means that the change in the unemployment rate would have to exceed ± 0.6 percent for the

new rate to lie outside of April's interval (the May rate was 8.1 percent).

The unemployment rate remains the best point estimate of local labor market activity, but it should be used cautiously. A large amount of the change in the monthly unemployment rate appears, both cross-sectionally and longitudinally, to be attributed to random error. There is nothing wrong with the definition of unemployment that has been captured by the unemployment rate, or in the way data are collected by the CPS. The problem is with the way in which the rate is used and interpreted. □

FOOTNOTES

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¹ A procedure developed by the Bureau of the Census is used to calculate the standard errors of the reported unemployment rates for the 11 survey States. See Charles D. Jones, "CPS Variances—Parameters Needed to Calculate State, Census Region, and Division Variances" (Bureau of the Census, 1985), unpublished memorandum. The 11 States are California, Florida, Illinois, Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, and Texas. See Kathleen Creighton and Robert Wilkinson, "Redesign of the Sample for the Current Population Survey," *Employment and Earnings*, April 1984, pp. 7-10.

The Current Population Survey is used to calculate annual labor market statistics for all of the States and the District of Columbia. The annual figures can usually be found in the May issue of *Employment and Earnings*. Unofficial estimates of annual averages of employment, unemployment, and the unemployment rate for metropolitan areas and a few central cities are published in *Geographic Profile of Employment and Unemployment, 1985*, Bulletin 2266 (Bureau of Labor Statistics, 1986).

² The utility of labor market data is judged by three standards: the ability to (1) measure labor market capacity; (2) estimate the position of the economy in the business cycle; and (3) provide information on aggregate economic distress. See Glen C. Cain, "The unemployment rate as an economic indicator," *Monthly Labor Review*, March 1979, pp. 24-35; and Julius Shiskin, "Employment and unemployment: the doughnut or the hole?" *Monthly Labor Review*, February 1976, pp. 3-10. Cain provides persuasive evidence that the unemployment rate performs best as a coincident cyclical indicator. As a cyclical indicator, change in the rate is more important than its absolute position. Others have indicated that it performs least well by the third standard. For example, see Terry F. Buss, "Unemployment Rates and Their Implications for Human Resource Planning," *Journal of Economic and Social Measurement*, No. 14, 1986, pp. 1-18; John C. Ries, "Unemployment in 1982: Beyond the Official Labor Force Statistics," *New England Economic Review*, May-June 1984, pp. 29-37; and Diane Werneke, "Measuring Economic Hardship in the Labor Market," *American Economic Review*, May 1979, pp. 43-47.

³ These results were obtained using a t-test for the difference between two means, evaluated at the 95-percent critical value. The standard error for month-to-month change in the unemployment rate was used in the denominator of the statistic. Solve the following for u_1 :

$$|u_1 - u_2|/s = \pm 1.96$$

where: u_1 is the next month's rate,
 u_2 is the current month's rate, and
 s is the standard error of month-to-month change in the rate.

⁴ See Creighton and Wilkinson, "Redesign of the Sample."

⁵ Each month's reported unemployment rate has its own standard deviation and coefficient of variation (CV). To determine if the amount of dispersion was relatively constant over the period, the mean level of dispersion was measured by calculating the average coefficient of variation over the period. To measure the amount of variance in the standard error over the time series, the CV of each month's CV was calculated. This last measure assumes that each month's rate is independent from the previous rates. This is not strictly true, as unemployment rates are serially correlated. The CV of each month's CV should be read as a rough indication of the amount of month-to-month dispersion in the data.

⁶ The correlation coefficient of the variance of month-to-month changes in the unemployment rate will be larger than that of month-to-month changes in the level of unemployment due to the behavior of entrants to the labor force. The number employed is fairly stable over the business cycle, compared with the number unemployed. Monthly fluctuations in the unemployment rate are more heavily influenced by flows into, or out of, unemployment from not-in-the-labor-force than into, or out of, employment. This implies that changes in the unemployment rate will be partially dampened by the relative stability of the number employed in the denominator of the statistic. This, in turn, implies that the monthly variances of the unemployment rate will be more closely correlated than those of the number unemployed.

However, it is expected that the difference in the two correlation coefficients will be extremely small. Two pieces of evidence are offered. First, if movements in the variance of the unemployment rate are dampened by the presence of the employed in the denominator, the average monthly coefficient of variation and the coefficient of variation of the monthly coefficients of variation of the rate would differ from that of the level of unemployment. Monthly Ohio data indicate that this is not true:

	<u>Unemployment rate</u>	<u>Number unemployed</u>	<u>Number employed</u>
Average CV	5.90	5.99	1.15
CV of CVs	9.64	9.34	3.33

The average of the monthly coefficients of variation for the unemployment rate is very close to that of the number unemployed, as is the coefficient of variation of the monthly coefficients of variation. Secondly, the standard deviation of changes in the monthly unemployment rate and the deviation of levels of the rate for the United States are equal. This implies that standard errors for the levels are close substitutes for changes.

The t-test used was of the form:

$$[u_1 - u_2]/[\text{var}_1 + \text{var}_2 - 2r(\text{var}_1 * \text{var}_2)^{.5}]^{.5}$$

where: u_1 is the month's unemployment rate,
 u_2 is the previous month's rate,
 var_1 is the variance in the month's unemployment rate,

var_2 is the variance of the previous month's rate, and
 r is the correlation of the variances of the monthly levels of
unemployment.

See Ohio Bureau of Employment Services, *Labor Market Review* (various issues).

⁷ Conceding that the t-test used is biased in favor of accepting the null hypothesis, the data can be reexamined to see the effect of lowering the critical values. It has little impact on the results. If the critical value were lowered from 1.96, the 95-percent level, to 1.90, no additional observations would become significant. If the critical value were reduced from 1.00, the 66-percent value, to 0.95, four additional observations would become significant. In both cases, the results are below those expected if the events were purely random. If the behavior were random, we would expect to see significant results in 3 observations out of 59, with 95-percent confidence. This is equivalent to 1 month out of 20. Instead, the rates in only 2 months were significantly different from the previous month's rate,

1 in 30. The same is true at the 66-percent level. If the data were random, between 19 and 20 observations would be significant, 1 month in 4. Instead, only 12 are observed, 1 month in 5.

⁸ The upper and lower critical values, at both 95- and 66-percent levels of confidence, were calculated for each month using the t-test of the difference in means, using the formula shown in footnote 6. The average of the difference between the upper bound and the reported unemployment rate was calculated.

⁹ These results were obtained using the formula shown in footnote 6. The 66-percent critical value can be interpreted as meaning that if the observed rate exceeds the critical rate, there are 2 chances out of 3 that the observed rate is different from the previous month's rate. This corresponds to plus or minus one standard deviation from the observed rate. If the 95-percent critical values were used, the range would be from 6.9 to 9.1 percent and the change in the next month's unemployment rate would have to exceed ± 1.1 percent.

A note on communications

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

Technical Note



BLS publishes average exchange rate and foreign currency price indexes

WILLIAM ALTERMAN, DAVID S. JOHNSON,
AND JOHN GOTH

To facilitate analysis of price trends in U.S. international trade, the Bureau of Labor Statistics has begun producing several new index series on a quarterly basis. The new index series comprise: (1) nominal average exchange rate indexes; (2) nominal foreign currency price indexes; and, (3) real foreign currency price indexes.

Information on how the export and import price indexes, currently published by the BLS in dollar terms, change when presented in foreign currency terms adds significantly to their usefulness in analyzing U.S. price competitiveness. For example, movements in an import price index in foreign currency terms might be used to observe fluctuations in the revenues received by exporters to the United States, while a U.S. export price index in foreign currency terms could show the price movement of U.S. exports as viewed by the foreign buyer.

The foreign currency price indexes measure U.S. export and import price trends in foreign currency terms, and the average exchange rate indexes measure the change in the price of trade-weighted baskets of currencies against the dollar. These indexes have been designed to match the export and import price index series published by BLS at the 2-digit, 1-digit, all-export, and all-import levels according to the Standard Industrial Trade Classification (SITC), Rev. II system. The nominal average exchange rate index series, which are calculated from the first quarter of 1985, exclude those countries whose inflation rates have varied significantly from that of the United States. The nominal foreign currency price index series are calculated by multiplying the nominal average exchange rate index for a specific SITC category by the corresponding SITC export or import dollar price index published by BLS. The nominal series contain exchange rate data from 41 countries. (See exhibit 1.) The real foreign currency price index series, which are calculated from the first quarter of 1977, use aggregate foreign

consumer price index data to deflate the nominal foreign currency price index series, and are produced with a one quarter lag because of the difficulty in obtaining foreign CPI data on a timely basis. The real foreign currency price index series contain exchange rate data from 64 countries.

The export and import nominal average exchange rate, nominal foreign currency price, and real foreign currency price indexes are calculated using a weighted geometric mean:

$$AERI_{y,t}^{n=41} = 100 \left\{ \prod_{i=1}^n (ER_{i,t}/ER_{i,0})^{W_{i,y}} \right\}$$

$$NFCPI_{y,t}^{n=41} = USPI * AERI_{y,t}^{n=41}$$

$$RFCPI_{y,t}^{n=64} = NFCPI_{y,t}^{n=64} / \prod_{i=1}^n (CPI_{i,t})^{W_{i,t}}$$

where:

- AERI = nominal average exchange rate index;
- NFCPI = nominal foreign currency price index;
- RFCPI = real foreign currency price index;
- $ER_{i,t}/ER_{i,0}$ = foreign currency per dollar exchange rate relative for country i in period t to the relative in base period 0 ;
- USPI = United States import or export price index;
- $CPI_{i,t}$ = consumer price index for country i in period t ;
- $W_{i,y}$ = normalized unilateral (export or import) trade weight of country i in SITC category y ;
- y = SITC export or import group for which the index is calculated;
- t = index reference period;
- i = a particular country; and
- n = total number of countries.

The export and import weights used in the BLS average exchange rate and foreign currency price index series are based on 1985 trade values collected by the Bureau of the Census. The 7-digit Schedule B values (from *U.S. Exports-Schedule B Commodity by Country*, Report FT-410) and the 7-digit Tariff Schedules United States Annotated (TSUSA) values (from *U.S. Imports for Consumption and General Imports*, Report FT-246) were mapped to the 5-digit SITC level by country. The 5-digit SITC export and import trade values were then aggregated by country up to the 2-digit,

William Alterman is a supervisory economist and David S. Johnson and John Goth are economists in the Division of International Prices, Office of Prices and Living Conditions, Bureau of Labor Statistics.

1-digit, all-export, and all-import levels. To match the weight structure of the SITC export and import price indexes published by BLS, military and commercial aircraft export trade values were excluded from the SITC 79 export weight category, and all export and import trade values were excluded from SITC 9 except for the SITC 971 export and import weight categories. Separate export and import trade weights are used to calculate the separate export and import index series:

$$MW_{i,y} = M_{i,y} \div \sum_{j=1}^n M_{j,y}$$

$$XW_{i,y} = X_{i,y} \div \sum_{j=1}^n X_{j,y}$$

where:

$MW_{i,y}$ = normalized unilateral import weight for country i in SITC category y ;

$XW_{i,y}$ = normalized unilateral export weight for country i in SITC category y ;

$M_{i,y}$ = imports from country i in SITC category y ; and

$X_{i,y}$ = exports to country i in SITC category y .

As mentioned above, these weights refer to U.S. import and export trade only for the year 1985 and therefore do not reflect the change in the structure of U.S. trade over time. One would expect that the depreciation of the dollar against other currencies would eventually be accompanied by a change in the relative weights among the United States' trade partners. For example, with the depreciation of the dollar against the yen, we might expect imports to decrease from Japan but to increase from other Pacific Rim countries. Therefore, for periods other than 1985, the importance of some trade partners may be either underweighted or overweighted relative to that of other U.S. trade partners.

The trade partners included in the index series were selected on the basis of: (1) their importance in U.S. trade; (2) their exchange rate practices; (3) their rate of inflation; and (4) the availability of data. Countries with a relatively insignificant amount of trade in an import or export product weight category were not included so long as at least 75 percent of trade was otherwise covered in that category. In most cases, trade coverage was over 90 percent in each category. A master list of countries that met this specification was then compiled and was further pruned on the basis of the remaining specifications for selecting countries to be used in the index series. Countries with "nonmarket" economies, whose exchange rates do not reflect market forces, were excluded. Countries using multitiered exchange rate systems were excluded if the rate structure did not mesh easily with the SITC export or import weight categories or if historical exchange rate series were not available. Excluded from the nominal series were those countries whose annual rates of inflation (as measured by the Con-

sumer Price Index) deviated more than 10 percent from the U.S. rate of inflation in 1985, 1986, or 1987. The actual inflation differentials were used for the years 1985 and 1986, whereas the differential rates were estimated for 1987 using the exponential smoothing forecast method.¹ Those countries which do not produce consumer price indexes were excluded from both the nominal index series and the real foreign currency price index series. The beginning point of the nominal series will be moved forward one year on an annual basis. At the same time, the above method will be used to determine which countries are to be included or excluded from the nominal exchange rate series.

The International Monetary Fund publication, *Exchange Arrangements & Exchange Restrictions*, and the *World Currency Yearbook* were very helpful in resolving problems connected with the exchange rate practices of U.S. trade partners.² Other problems were resolved through personal communication with professionals specializing in the economic activities of these countries. The 41 countries used in the nominal exchange rate and foreign currency price index series account for 79 percent of total trade. For an individual product category to be published, the nominal index series had to include at least 50 percent of the import or export trade in that category. The 64 countries used in the real foreign currency price index series account for 93 percent of total trade. To be published, a real foreign currency price index category had to include at least 65 percent of the import or export trade in that category.

Exchange rate data are from the International Financial Statistics (IFS) data base of the International Monetary Fund and from the Bank of America. The Bank of America data are received on a more timely basis and are used to update the current quarter exchange rates which are lacking in the IFS data base. Monthly exchange rate averages for the final month of each quarter are used.

Foreign consumer price data are also taken from the IFS data base. Data which are not found in that source are extracted from the information banks of Data Resources, Inc., a private economic research firm. Because of problems in receiving foreign consumer price data on a timely basis, the Bureau's real index series are lagged one quarter behind the nominal index series. However, the most recent published quarterly data still do not include all 64 countries mapped to the real foreign currency price index series. Because the basket of countries used in the real index series varies during some quarters, the real foreign currency price index series are calculated as chained indexes.

Average exchange rate indexes have been produced by the U.S. Federal Reserve Board of Governors, the Morgan Guaranty Trust Co., the International Monetary Fund, the Atlanta Federal Reserve Bank, the U.S. Department of Commerce, the U.S. Department of Treasury, the International Trade Commission, the Dallas Federal Reserve Bank, and Manufacturers Hanover Trust, among others. These indexes differ from one another according to (1) the type of

Exhibit 1. Countries represented in real and nominal BLS foreign currency price index series for U.S. imports and exports

Europe	Asia	Latin America	Oceania
X Austria	X Bangladesh	Argentina	X Australia
X Belgium	X Hong Kong	Brazil	New Zealand
X Denmark	X India	Chile	
X Finland	X Indonesia	Colombia	Africa
X France	X Japan	Costa Rica	X Botswana
X Germany	X Korea	Ecuador	X Cote D'Ivoire
Greece	X Malaysia	El Salvador	X Gabon
Iceland	X Pakistan	X Honduras	X Kenya
X Ireland	X Philippines	Mexico	Liberia
X Italy	X Singapore	X Panama	X Nigeria
X Netherlands	X Taiwan	Venezuela	South Africa
X Norway	X Thailand		Swaziland
Portugal		The Caribbean	Uganda
X Spain		X Bahamas	
X Sweden		Dominican Republic	
X Switzerland		Haiti	
X United Kingdom		Jamaica	
Yugoslavia		X Trinidad	
North America		Middle East	
X Canada		Israel	
		X Jordan	
		X Kuwait	
		X Morocco	
		X Saudi Arabia	
		Turkey	

X = country included in nominal index series.

weight used (bilateral trade, multilateral, elasticity-based, production-based, and so forth); (2) the commodity coverage of the weights (manufactured products only, all commodities or some other system); (3) the reference periods chosen for the weights (fixed-period weights, moving period weights, and so forth); (4) the number of trading partners included (for example, industrial countries only, all countries, or selected industrial and nonindustrial countries; and, (5) the calculation methodology. The above indexes can appear in nominal (undeflated) form or real form (deflated by the differential inflation rates between the base country and comparison countries). The major difference between these other index series and the BLS series is that the BLS series are specially designed to examine U.S. export and

import price movements in foreign currency terms at detailed export and import product category levels. For example, for SITC 73 (Metalworking Machinery), separate import and export index series are calculated for the nominal average exchange rate, nominal foreign currency price, and real foreign currency price index series.

THE EXCHANGE RATE and foreign currency price indexes will be included in the quarterly press release published by the BLS Division of International Prices. For further information, please call (202) 272-5020 or write to William Alterman, Bureau of Labor Statistics, Room 3302, 600 E Street, N.W., Washington, DC 20212.

— FOOTNOTES —

ACKNOWLEDGMENT: Special thanks to Jeffrey Smith of the Index Number Research Branch for his assistance in the preparation of this technical note.

¹ Inflation differentials were calculated using log change as a percent change measure of the foreign CPI to U.S. CPI ratio between two periods. Any country with a log change greater than 0.1 (10 percent) was eliminated

from the nominal series.

² See *Annual Report on Exchange Arrangements and Exchange Restrictions, 1986* (Washington, International Monetary Fund, 1986); and Philip P. Covitt, ed., *1984 World Currency Yearbook* (Sharon, CT, Grey House Publishing, Inc., 1985.)

Major Agreements Expiring Next Month

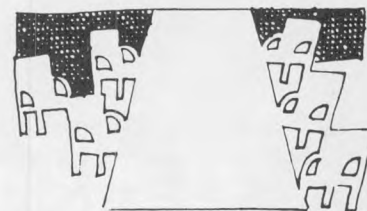


This list of selected collective bargaining agreements expiring in January is based on information collected by the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification.

Industry or activity	Employer and location	Labor organization ¹	Number of workers
Private			
Mining	Bituminous Coal Operators Association (Interstate)	Mine Workers	105,000
Construction	National Electrical Contractors Association, Northwest Line Constructors (Interstate)	Electrical Workers (IBEW)	1,200
	Plumbing and Mechanical Contractors Association (Honolulu, HI)	Plumbers	1,000
Food products	Sugar companies negotiating committee (Hawaii)	Longshoremen's and Warehousemen's Union (Ind.)	6,500
Textiles	Dan River Inc. (Danville, VA)	Textile Workers	7,500
Chemicals	American Cyanimid Co., Lederle Laboratory (Pearl River, NY)	Chemical Workers	1,600
Petroleum	Atlantic Richfield Co. and Arco Pipe Line Co. (Interstate)	Oil, Chemical and Atomic Workers	3,200
	American Oil Co. (Interstate)	Oil, Chemical and Atomic Workers	4,800
	Ashland Oil Co. (Interstate)	Oil, Chemical and Atomic Workers	1,250
	Chevron, formerly Gulf Oil Co. (Interstate)	Oil, Chemical and Atomic Workers	5,450
	Mobil Oil Corp. (Interstate)	Oil, Chemical and Atomic Workers	2,000
	Shell Oil Co. (Interstate)	Oil, Chemical and Atomic Workers	4,500
	Texaco, Inc. (Interstate)	Oil, Chemical and Atomic Workers	7,100
	Union Oil Co. of California (Interstate)	Oil, Chemical and Atomic Workers	1,900
Primary metals	Phillips Petroleum (Interstate)	Oil, Chemical and Atomic Workers	1,000
	American Insulated Wire Corp. (Interstate)	Electrical Workers (IBEW)	1,000
Machinery	Danly Machine Corp. (Cicero, IL)	Steelworkers	1,200
Electrical products	Eureka Co., Division of National Union Electric Co. (Bloomington, IL)	Machinists	1,100
Transportation equipment	Kelsey-Hayes Co. (Romulus, MI)	Auto Workers	1,200
	Jeep Corp. (Toledo, OH)	Auto Workers	6,000
Miscellaneous manufacturing	Milton Bradley Co. (Springfield, MA)	Retail, Wholesale, Department Store Union	1,100
Utilities	Northern Illinois Gas Co. (Illinois)	Electrical Workers (IBEW)	1,750
Retail trade	Wm. Filene's Sons Co. (Boston, MA)	Food and Commercial Workers	3,700
	Atlantic and Pacific Tea Co. (Michigan)	Food and Commercial Workers	1,700
	Southern California Food Employers Council (California)	Service Employees	1,400
Services	Yale University, clerical and technical (New Haven, CT)	Hotel Employees and Restaurant Employees	2,600
	Yale University, service and maintenance (New Haven, CT)	Hotel Employees and Restaurant Employees	1,000
Public			
Law enforcement	California: Los Angeles County deputy probation officers	State, County and Municipal Employees	2,250
	Los Angeles County supervisory peace officers	Professional Peace Officers Association (Ind.)	1,100
Fire protection	Los Angeles County Fire Department	Fire Fighters	1,450
Education	Michigan: Detroit Board of Education, paraprofessionals	Detroit Association of Educational Employees (Ind.)	1,400
	Ohio: Toledo Board of Education, teachers	Teachers	2,500

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

Developments in Industrial Relations



GM-UAW settlement

General Motors Corp. (GM) settled with the United Auto Workers (UAW) on terms similar to those the union negotiated with Ford Motor Co., despite GM's initial contention that it required special provisions to overcome a cost advantage held by Ford. The advantage, GM said, results from the fact that Ford buys a higher percentage of its automotive parts from subcontractors than GM does, giving Ford an edge because purchased parts are generally less costly than parts manufactured by Ford or GM. A GM proposal to counter the cost disparity by establishing production bonuses was rejected by the UAW. The bonuses would have varied from plant to plant, based on quantity and quality of output, with employees in parts plants being eligible for smaller payments than those in assembly plants.

The UAW broke off concurrent negotiations with the companies, and focused on Ford, settling in September (see *Monthly Labor Review*, November 1987, pp. 31-33). Subsequently, GM Chairman Roger Smith opened the door to a settlement by indicating that he believed that the new job security program at Ford contained enough flexibility to permit temporary layoffs when sales are slow. The reopened negotiations between GM and UAW resulted in a settlement for the 335,000 workers without the threat of a work stoppage.

The new job security program at GM, Secure Employment Numbers, differs only in name from the Guaranteed Employment Numbers program at Ford. In operation, the programs are essentially identical, except that GM's financial commitment is \$1.3 billion, compared with \$500 million at Ford, because the GM program covers more workers.

Similarly, both settlements provided for the same increase in payments to the regular Supplemental Unemployment Benefits fund—to a range of 24 to 34 cents per straight time hour worked (varying according to the fund level) from a 21- to 33-cent range—but GM's contingent liability to the Advance Credit Account was increased by \$250 million, compared with \$75 million at Ford. This account is drawn on if the regular fund becomes depleted.

Workers' security was also enhanced by a new GM commitment not to close any plants during the 3-year agreement

term, except for closings that had been announced prior to the start of negotiations in July. These closings, scheduled to be completed by 1991, involve 16 plants and 37,000 employees. (Ford also agreed to a "no-closing" provision in 1987 and, unlike GM, had also agreed to a closing ban in the 1984 settlement. To some extent, Ford's earlier acceptance of a closing ban resulted from the fact that it had moved earlier than GM to slim down its operations in the face of the intense international competition that has developed in the industry in the 1980's.)

From GM's view, the major advantage of the new job security program is a UAW commitment to joint efforts to improve production output and quality, mirroring the initiative at Ford. The program, to be directed by a national committee and local committees, will examine a variety of methods for improving operations, such as adopting work-team concepts, revising job duties, and cutting absenteeism.

In the economic area, the profit-sharing formula at GM was revised to match the improved formula at Ford. Under the 1984 agreements, Ford's formula was more liberal than GM's, contributing to average payouts per employee that totaled \$5,300 at Ford and \$900 at GM over the 1984-86 period.

Nabisco pact rewards attendance

A settlement between Nabisco Brands, Inc. and the Bakery, Confectionery and Tobacco Workers provided for wage increases totaling \$1.50 an hour and a new attendance bonus plan. The wage increases, which apply to more than 8,000 workers at 13 plants in 10 States, are 50 cents retroactive to September 1, 1987, 25 cents effective on September 1, 1988, and March 1, 1989, and 50 cents on September 11, 1989.

The attendance plan provides for annual payments in December based on each employee's record during the preceding 12 months. The reward is \$10 for perfect attendance in the first month, followed by progressively larger amounts for each succeeding month of perfect attendance, to a maximum total of \$500 for the entire 12 months. This plan replaced one that gave employees a maximum of 3 days of pay or 3 days of paid time off per year. Reportedly, Nabisco was not satisfied with that plan because most eligible employees chose the time off, which hampered production.

A company official said that it will also benefit from negotiated changes in work rules that will increase output.

"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.

Benefit changes included a two-step increase in the normal pension to \$750 a month, from \$650; a two-step increase in sickness and accident benefits to \$160 a week, from \$140; and a 25-cent-an-hour increase in Nabisco's financing of the health insurance plan, which was modified to cover organ transplants.

Clothing workers accept 3-year accord

More than 45,000 employees in the men's and boys' apparel industry were covered by a settlement between the Clothing Manufacturers Association and the Amalgamated Clothing and Textile Workers Union. The manufacturers did not win the elimination of a contract ban on purchasing apparel abroad, but Association President John R. Meinert still hailed the accord because its longer duration—3 years, compared with 2 years for the preceding agreement—would give the industry more time to “plan its strategy” for countering increasing foreign sales in the United States.

Union President Jack Sheinkman said that the domestic apparel and textile industries have been growing about 1 percent a year, while imports have been rising 17 percent a year, leading the bargaining parties to establish a joint committee to press the Congress to adopt limits on imports. He also said that the union had refused to end a contract provision prohibiting Association companies from contracting out work to nonunion firms.

Wage terms of the new contract include increases of 30 cents immediately, 30 cents in October 1988, and 25 cents in October 1989, bringing base pay to \$7.45 an hour. There were no wage increases under the previous agreement, but the workers did receive lump-sum payments of \$500 in December 1985 and \$600 in December 1986.

One benefit change was adoption of a provision for up to 6 weeks of unpaid parental leave every 2 years for the birth or serious illness of a child. The parent taking the leave will be guaranteed a job at the end of the leave and health insurance will be maintained during the leave.

Other benefit changes included adoption of prescription drug and vision care plans; increased life and disability insurance; improved funeral leave; and retention of vacation rights for employees laid off and then re-employed in the same geographic market area. The settlement covers approximately 700 shops in a number of States, with the largest concentration in the New York City area.

Oregon employees settle after 8-day strike

The first major strike by employees of the State of Oregon ended when members of the Oregon Public Employees Union agreed to a contract running to June 30, 1989. The overall costs of the contract negotiated by the unit of the Service Employees International Union were comparable to those of the same-duration contracts negotiated by eight other unions, although there were variations in components

of the accords, such as in the size and effective dates of wage increases.

In the 8-day Service Employees stoppage, which reportedly was triggered by a disagreement with the State on how to distribute pay equity adjustments from a fund established earlier by the legislature, not all 16,500 employees were out for the entire period. Instead, the stoppage was staggered on an agency-by-agency basis to minimize the financial impact on individual employees.

The Service Employees accord provided for a 2-percent pay raise retroactive to July 1, 1987, and a 4-percent raise on January 1, 1989. The portion of the \$22.6 million fund allocated to Service Employees-represented employees was used to provide additional adjustments to 5,500 workers. Of the 5,500 workers, 4,000 received either 5- or 10-percent adjustments. Similar adjustments for some workers, ranging as high as 25 percent, were also provided by settlements with the other unions, such as the State, County and Municipal Employees, which represents a total of 5,200 workers.

Contracts with all unions established an “array of benefits” health insurance program giving each employee the option of selecting from various plans and receiving the difference in cash if the plan costs less than the State's financing obligation. The settlements with all of the unions covered a total of 25,000 workers.

Police offered incentives to delay retirement

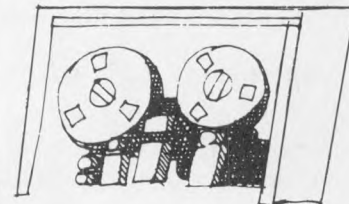
Length-of-service pay allowances were adopted in a 3-year agreement between the District of Columbia and the Fraternal Order of Police. The annual allowances, payable only to officers with 20 years of service, were intended to induce them to delay retiring. According to the city, 2,351 of the 3,880 officers will attain the 20 years' pension eligibility requirement by 1992.

The accord gives all officers wage increases totaling 9 percent over the 3-year term; improves optical, dental, and legal benefits; credits officers with 1.5 times the amount of planned paid time off they are unable to take because of duty requirements; and guarantees that officers accused of using deadly force in the line of duty will be returned to duty immediately after being cleared in an internal investigation, rather than having to await the outcome of a grand jury investigation.

Despite this settlement, the seven unions representing 15,500 other District of Columbia workers declared that bargaining was at an impasse, triggering a mediation process. If this does not lead to settlements, binding arbitration follows.

The 1987 round of bargaining for all union-represented employees is the third since the District of Columbia separated its employees from the Federal Government in 1980.

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Schedule of release dates for BLS statistical series

Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Productivity and costs: Nonfarm business and manufacturing					February 4	4th quarter	2; 42-44
Nonfinancial corporations	December 3	3rd quarter					2; 42-44
Employment situation	December 4	November	January 19	December	February 17	January	1; 4-21
Producer Price Index	December 11	November	January 15	December	February 12	January	2; 33-35
Consumer Price Index	December 18	November	January 20	December	February 26	January	2; 30-32
Real earnings	December 18	November	January 20	December	February 26	January	14-17
Major collective bargaining settlements			January 26	4th quarter			3; 25-28
Employment Cost Index			January 26	4th quarter			1-3; 22-24
U.S. Import and Export Price Indexes			January 28	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 1987 issue of the *Review*, to reflect experience through 1986.

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 1977 = 100, the hourly rate expressed in 1977 dollars is \$2 ($\$3/150 \times 100 = \2). The \$2 (or any other resulting values) are described as "real," "constant," or "1977" dollars.

Additional information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule preceding these general notes. More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in *Employment and Earnings*, a monthly publication of the Bureau. More data from the household survey are published in the 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 AND UNEMPLOYMENT DATA

(Tables 1; 4-21)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 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 1986.

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 290,000 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 average weekly hours which was 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 1987 data, published in the July 1987 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 1985; seasonally adjusted data have been revised back to January 1982. These revisions were published in the *Supplement to Employment and Earnings* (Bureau of Labor Statistics, 1987). Unadjusted data from April 1986 forward, and seasonally adjusted data from January 1983 forward are subject to revision in future benchmarks.

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

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 national data from the establishment survey are published monthly in the BLS periodical, *Employment and Earnings*. Earlier comparable unadjusted and seasonally adjusted data are published in *Employment, Hours, and Earnings, United States, 1909-84*, Bulletin 1312-12 (Bureau of Labor Statistics, 1985) and its annual supplement. For a detailed discussion of the methodology of the survey, see *BLS Handbook of Methods*, Bulletin 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 1982-84 buying habits of about 80 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners

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

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

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

Notes on the data

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

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

Additional sources of information

For a discussion of the general method for computing the CPI, see *BLS Handbook of Methods, 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*, July 1982, pp. 9-14. An overview of the recently introduced revised CPI, reflecting 1982-84 expenditure patterns, is contained in *The Consumer Price Index: 1987 Revision*, Report 736 (Bureau of Labor Statistics, 1987).

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

Producer Price Indexes

Description of the series

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

Notes on the data

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

The Bureau has completed the first major stage of its comprehensive overhaul of the theory, methods, and procedures used to construct the Producer Price Indexes. Changes include the replacement of judgment sampling with probability sampling techniques; expansion to systematic

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

Additional sources of information

For a discussion of the methodology for computing Producer Price Indexes, see *BLS Handbook of Methods*, Bulletin 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, the United Kingdom; 16 and over in Canada, Australia, Japan, Germany, the Netherlands, and prior to 1973, the United Kingdom; and 14 and over in Italy. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

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

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

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 1971), refer to manufacturing and mining less energy-related products and the figures for the Netherlands exclude petroleum refining from 1969 to 1976. For all countries, manufacturing includes the activities of government enterprises.

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

Additional sources of information

For additional information, see the *BLS Handbook of Methods*, Bulletin 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	1985	1986	1985		1986				1987	
			III	IV	I	II	III	IV	I	II
Employment data										
Employment status of the civilian noninstitutionalized population (household survey) ¹										
Labor force participation rate	64.8	65.3	64.7	64.9	65.1	65.2	65.3	65.4	65.5	65.5
Employment-population ratio	60.1	60.7	60.1	60.3	60.5	60.6	60.8	60.9	61.1	61.5
Unemployment rate	7.2	7.0	7.2	7.1	7.1	7.1	6.9	6.9	6.7	6.2
Men	7.0	6.9	7.0	6.9	6.9	7.0	6.9	6.9	6.7	6.3
16 to 24 years	14.1	13.7	14.0	14.2	13.5	14.2	13.7	13.4	13.4	13.1
25 years and over	5.3	5.4	5.3	5.2	5.3	5.3	5.4	5.4	5.2	4.8
Women	7.4	7.1	7.4	7.3	7.3	7.2	6.9	6.8	6.6	6.1
16 to 24 years	13.0	12.8	12.9	13.1	13.1	13.1	12.6	12.5	12.6	11.8
25 years and over	5.9	5.5	5.9	5.6	5.7	5.7	5.4	5.3	5.1	4.6
Unemployment rate, 15 weeks and over	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.7
Employment, nonagricultural (payroll data), in thousands: ¹										
Total	97,519	99,610	97,775	98,444	98,901	99,321	99,804	100,397	101,133	101,708
Private sector	81,125	82,900	81,303	81,905	82,299	82,670	83,119	83,498	84,183	84,675
Goods-producing	24,859	24,681	24,788	24,788	24,767	24,702	24,629	24,624	24,733	24,757
Manufacturing	19,260	18,994	19,183	19,133	19,086	19,003	18,939	18,953	18,979	19,015
Service-producing	72,660	74,930	72,987	73,656	74,134	74,619	75,175	75,773	76,399	76,951
Average hours:										
Private sector	34.9	34.8	34.9	34.9	34.9	34.8	34.7	34.7	34.8	34.8
Manufacturing	40.5	40.7	40.6	40.8	40.7	40.7	40.7	40.8	41.0	40.9
Overtime	3.3	3.4	3.3	3.4	3.4	3.4	3.5	3.5	3.6	3.7
Employment Cost Index										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers)	4.3	3.6	1.6	.6	1.1	.7	1.1	.6	.9	.7
Private industry workers	3.9	3.2	1.3	.6	1.1	.8	.7	.6	1.0	.7
Goods-producing ²	3.4	3.1	.6	.6	1.1	.9	.6	.5	.5	.7
Service-producing ²	4.4	3.2	1.8	.5	1.1	.6	.8	.6	1.3	.7
State and local government workers	5.7	5.2	3.4	.7	1.0	.6	2.8	.8	.8	.3
Workers by bargaining status (private industry):										
Union	2.6	2.1	.8	.5	1.0	.2	.5	.3	.5	.5
Nonunion	4.6	3.6	1.4	.6	1.2	.9	.8	.7	1.1	.7

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	1985	1986	1985		1986				1987		
			III	IV	I	II	III	IV	I	II	
Compensation data^{1, 2}											
Employment Cost Index--compensation (wages, salaries, benefits):											
Civilian nonfarm	4.3	3.6	1.6	0.6	1.1	0.7	1.1	0.6	0.9	0.7	
Private nonfarm	3.9	3.2	1.3	.6	1.1	.8	.7	.6	1.0	.7	
Employment Cost Index--wages and salaries											
Civilian nonfarm	4.4	3.5	1.7	.6	1.0	.8	1.1	.6	1.0	.5	
Private nonfarm	4.1	3.1	1.3	.6	1.0	.9	.7	.5	1.0	.7	
Price data¹											
Consumer Price Index (All urban consumers): All items	3.8	1.1	.7	.9	-.4	.6	.7	.3	1.4	1.3	
Producer Price Index:											
Finished goods	1.8	-2.3	-1.4	2.5	-3.1	.5	-.7	1.1	.8	1.4	
Finished consumer goods	1.5	-3.6	-1.4	2.5	-4.1	.4	-.7	.8	.9	1.8	
Capital equipment	2.7	2.1	-1.4	2.5	.2	.6	-.7	2.0	.1	.4	
Intermediate materials, supplies, components	-3	-4.4	-.5	.4	-2.9	-.9	-.2	-.4	1.4	1.8	
Crude materials	-5.6	-9.0	-4.5	4.3	-7.6	-1.5	-.5	.6	4.2	5.6	
Productivity data³											
Output per hour of all persons:											
Business sector	1.8	1.9	2.5	1.9	2.8	2.3	1.3	1.5	.2	.4	
Nonfarm business sector	1.2	1.6	1.7	1.0	2.3	1.9	1.1	1.5	-.1	.3	
Nonfinancial corporations ⁴	2.1	1.6	3.3	2.3	2.6	1.8	.7	1.5	0	.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--					
	1986				1987		1986				1987	
	I	II	III	IV	I	II	I	II	III	IV	I	II
Average hourly compensation: ¹												
All persons, business sector	4.8	4.4	3.7	3.3	2.8	2.8	3.2	3.5	3.0	3.6	1.4	3.3
All employees, nonfarm business sector	4.5	4.1	3.6	3.4	2.7	2.7	3.9	2.9	2.8	4.0	1.1	3.0
Employment Cost Index--compensation:												
Civilian nonfarm ²	1.1	.7	1.1	.6	.9	.7	4.1	4.0	3.6	3.6	3.4	3.3
Private nonfarm	1.1	.8	.7	.6	1.0	.7	3.8	3.8	3.2	3.2	3.1	3.0
Union	1.0	.2	.5	.3	.5	.5	2.9	2.5	2.3	2.1	1.6	1.9
Nonunion	1.2	.9	.8	.7	1.1	.7	4.2	4.2	3.5	3.6	3.6	3.4
State and local governments	1.0	.6	2.8	.8	.8	.3	5.5	5.8	5.2	5.2	5.0	4.7
Employment Cost Index--wages and salaries:												
Civilian nonfarm ²	1.0	.8	1.1	.6	1.0	.5	4.2	4.1	3.5	3.5	3.5	3.2
Private nonfarm	1.0	.9	.7	.5	1.0	.7	3.9	3.7	3.1	3.1	3.2	3.0
Union .....	.7	.4	.6	.2	.4	.5	3.2	2.5	2.3	2.0	1.7	1.7
Nonunion	1.1	.9	.7	.7	1.2	.8	4.3	4.1	3.4	3.5	3.5	3.3
State and local governments	1.0	.4	3.2	.7	.8	.2	5.5	5.7	5.4	5.4	5.2	5.0
Total effective wage adjustments ³ .....	.6	.7	.5	.5	.4	1.0	3.1	2.9	2.3	2.3	2.0	2.2
From current settlements	(⁴)	.2	.1	.2	(⁴)	.1	.6	.5	.5	.5	.4	.3
From prior settlements .....	.4	.6	.5	.2	.3	.7	1.7	1.8	1.6	1.7	1.5	1.6
From cost-of-living provision .....	.2	(⁴)	(⁴)	.1	.1	.2	.8	.7	.2	.2	.1	.3
Negotiated wage adjustments from settlements: ³												
First-year adjustments .....	.8	1.3	.8	2.0	1.2	2.6	2.0	1.6	1.2	1.2	1.2	1.5
Annual rate over life of contract	1.5	2.0	1.5	2.1	1.8	2.9	2.5	2.2	1.7	1.8	1.8	2.0
Negotiated wage and benefit adjustments from settlements: ⁵												
First-year adjustment .....	.6	.7	.7	2.7	1.7	4.2	2.3	1.4	.9	1.1	1.2	1.9
Annual rate over life of contract	1.2	1.6	1.2	2.4	2.4	3.9	2.5	2.0	1.4	1.6	1.7	2.1

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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
TOTAL															
Noninstitutional population ^{1, 2}	179,912	182,293	182,713	182,935	183,114	183,297	183,575	183,738	183,915	184,079	184,259	184,421	184,605	184,738	184,904
Labor force ²	117,167	119,540	119,988	120,163	120,426	120,336	120,782	121,089	120,958	121,070	121,719	121,235	121,672	122,038	121,604
Participation rate ³	65.1	65.6	65.7	65.7	65.7	65.7	65.8	65.9	65.8	65.8	66.1	65.7	65.9	66.1	65.8
Total employed ²	108,856	111,303	111,703	111,941	112,183	112,387	112,759	113,122	113,104	113,570	114,173	113,975	114,447	114,817	114,515
Employment-population ratio ⁴	60.5	61.1	61.1	61.2	61.3	61.3	61.4	61.6	61.5	61.7	62.0	61.8	62.0	62.2	61.9
Resident Armed Forces ¹	1,706	1,706	1,716	1,749	1,751	1,750	1,748	1,740	1,736	1,735	1,726	1,718	1,720	1,736	1,743
Civilian employed	107,150	109,597	109,987	110,192	110,432	110,637	111,011	111,382	111,368	111,835	112,447	112,257	112,727	113,081	112,772
Agriculture	3,179	3,163	3,142	3,162	3,215	3,161	3,145	3,236	3,284	3,290	3,335	3,178	3,219	3,092	3,170
Nonagricultural industries	103,971	106,434	106,845	107,030	107,217	107,476	107,866	108,146	108,084	108,545	109,112	109,079	109,508	109,989	109,602
Unemployed	8,312	8,237	8,285	8,222	8,243	7,949	8,023	7,967	7,854	7,500	7,546	7,260	7,224	7,221	7,089
Unemployment rate ⁵	7.1	6.9	6.9	6.8	6.8	6.6	6.6	6.6	6.5	6.2	6.2	6.0	5.9	5.9	5.8
Not in labor force	62,744	62,752	62,725	62,772	62,688	62,961	62,793	62,649	62,957	63,009	62,540	63,187	62,933	62,700	63,300
Men, 16 years and over															
Noninstitutional population ^{1, 2}	86,025	87,349	87,556	87,682	87,773	87,868	88,020	88,099	88,186	88,271	88,361	88,442	88,534	88,598	88,683
Labor force ²	65,967	66,973	67,128	67,130	67,407	67,425	67,672	67,764	67,644	67,603	67,816	67,556	67,656	67,925	67,736
Participation rate ³	76.7	76.7	76.7	76.6	76.8	76.7	76.9	76.9	76.7	76.6	76.7	76.4	76.4	76.4	76.4
Total employed ²	61,447	62,443	62,528	62,565	62,833	62,986	63,187	63,335	63,282	63,417	63,562	63,471	63,715	63,918	63,939
Employment-population ratio ⁴	71.4	71.5	71.4	71.4	71.6	71.7	71.8	71.9	71.8	71.8	71.9	71.8	72.0	72.1	72.1
Resident Armed Forces ¹	1,556	1,551	1,560	1,590	1,592	1,593	1,591	1,584	1,575	1,575	1,566	1,559	1,561	1,575	1,581
Civilian employed	59,891	60,892	60,968	60,975	61,241	61,393	61,596	61,751	61,707	61,842	61,996	61,912	62,154	62,343	62,358
Unemployed	4,521	4,530	4,600	4,565	4,574	4,439	4,484	4,429	4,362	4,186	4,254	4,085	3,941	4,007	3,798
Unemployment rate ⁵	6.9	6.8	6.9	6.8	6.8	6.6	6.6	6.5	6.4	6.2	6.3	6.0	5.8	5.9	5.6
Women, 16 years and over															
Noninstitutional population ^{1, 2}	93,886	94,944	95,156	95,253	95,341	95,429	95,556	95,639	95,729	95,808	95,898	95,979	96,071	96,140	96,221
Labor force ²	51,200	52,568	52,860	53,033	53,019	52,911	53,110	53,325	53,314	53,467	53,903	53,679	54,016	54,113	53,868
Participation rate ³	54.5	55.4	55.6	55.7	55.6	55.4	55.6	55.8	55.7	55.8	56.2	55.9	56.2	56.3	56.0
Total employed ²	47,409	48,861	49,175	49,376	49,350	49,401	49,572	49,787	49,822	50,153	50,611	50,504	50,733	50,899	50,576
Employment-population ratio ⁴	50.5	51.5	51.7	51.8	51.8	51.8	51.9	52.1	52.0	52.3	52.8	52.6	52.8	52.9	52.6
Resident Armed Forces ¹	150	155	156	159	159	157	157	156	161	160	160	159	159	161	162
Civilian employed	47,259	48,706	49,019	49,217	49,191	49,244	49,415	49,631	49,661	49,993	50,451	50,345	50,574	50,738	50,414
Unemployed	3,791	3,707	3,685	3,657	3,669	3,510	3,538	3,538	3,492	3,314	3,292	3,175	3,283	3,213	3,291
Unemployment rate ⁵	7.4	7.1	7.0	6.9	6.9	6.6	6.7	6.6	6.6	6.2	6.1	5.9	6.1	5.9	6.1

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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
TOTAL															
Civilian noninstitutional population ¹	178,206	180,587	180,997	181,186	181,363	181,547	181,827	181,998	182,179	182,344	182,533	182,703	182,885	183,002	183,161
Civilian labor force	115,461	117,834	118,272	118,414	118,675	118,586	119,034	119,349	119,222	119,335	119,993	119,517	119,952	120,302	119,861
Participation rate	64.8	65.3	65.3	65.4	65.4	65.3	65.5	65.6	65.4	65.4	65.7	65.4	65.6	65.7	65.4
Employed	107,150	109,597	109,987	110,192	110,432	110,637	111,011	111,382	111,368	111,835	112,447	112,257	112,727	113,081	112,772
Employment-population ratio ²	60.1	60.7	60.8	60.8	60.9	60.9	61.1	61.2	61.1	61.3	61.6	61.4	61.6	61.8	61.6
Unemployed	8,312	8,237	8,285	8,222	8,243	7,949	8,023	7,967	7,854	7,500	7,546	7,260	7,224	7,221	7,089
Unemployment rate	7.2	7.0	7.0	6.9	6.9	6.7	6.7	6.7	6.6	6.3	6.3	6.1	6.0	6.0	5.9
Not in labor force	62,744	62,752	62,725	62,772	62,688	62,961	62,793	62,649	62,957	63,009	62,540	63,187	62,933	62,700	63,300
Men, 20 years and over															
Civilian noninstitutional population ¹	77,195	78,523	78,722	78,802	78,874	78,973	79,132	79,216	79,303	79,387	79,474	79,536	79,625	79,668	79,740
Civilian labor force	60,277	61,320	61,412	61,409	61,703	61,826	61,948	61,973	61,983	61,976	62,156	62,057	62,116	62,053	62,045
Participation rate	78.1	78.1	78.0	77.9	78.2	78.3	78.2	78.2	78.1	78.2	78.1	78.0	78.0	77.9	77.8
Employed	56,562	57,569	57,607	57,595	57,883	58,101	58,227	58,325	58,410	58,567	58,721	58,620	58,793	58,819	58,957
Employment-population ratio ²	73.3	73.3	73.2	73.1	73.4	73.6	73.6	73.6	73.7	73.8	73.9	73.7	73.8	73.8	73.9
Agriculture	2,278	2,292	2,286	2,297	2,303	2,289	2,254	2,300	2,411	2,411	2,441	2,307	2,343	2,254	2,355
Nonagricultural industries	54,284	55,277	55,321	55,298	55,580	55,812	55,974	56,024	55,999	56,155	56,280	56,313	56,450	56,564	56,601
Unemployed	3,715	3,751	3,805	3,814	3,820	3,725	3,720	3,648	3,573	3,409	3,436	3,437	3,323	3,235	3,089
Unemployment rate	6.2	6.1	6.2	6.2	6.2	6.0	6.0	5.9	5.8	5.5	5.5	5.5	5.4	5.2	5.0
Women, 20 years and over															
Civilian noninstitutional population ¹	86,506	87,567	87,779	87,856	87,933	88,016	88,150	88,237	88,321	88,395	88,464	88,546	88,632	88,685	88,785
Civilian labor force	47,283	48,589	48,920	49,014	49,043	48,923	49,161	49,348	49,355	49,466	49,774	49,714	49,971	49,989	49,882
Participation rate	54.7	55.5	55.7	55.8	55.8	55.6	55.8	55.9	55.9	56.0	56.3	56.1	56.4	56.4	56.2
Employed	44,154	45,556	45,905	46,020	46,067	46,058	46,261	46,475	46,498	46,751	47,094	47,126	47,288	47,324	47,179
Employment-population ratio ²	51.0	52.0	52.3	52.4	52.4	52.3	52.5	52.7	52.6	52.9	53.2	53.2	53.4	53.4	53.1
Agriculture	596	614	614	612	675	621	628	641	589	587	634	615	619	603	585
Nonagricultural industries	43,558	44,943	45,291	45,408	45,392	45,437	45,633	45,835	45,909	46,164	46,460	46,512	46,669	46,722	46,594
Unemployed	3,129	3,032	3,015	2,994	2,976	2,865	2,900	2,873	2,857	2,715	2,680	2,588	2,683	2,664	2,703
Unemployment rate	6.6	6.2	6.2	6.1	6.1	5.9	5.9	5.8	5.8	5.5	5.4	5.2	5.4	5.3	5.4
Both sexes, 16 to 19 years															
Civilian noninstitutional population ¹	14,506	14,496	14,496	14,527	14,557	14,558	14,545	14,546	14,555	14,562	14,595	14,621	14,628	14,649	14,637
Civilian labor force	7,901	7,926	7,940	7,991	7,929	7,837	7,926	8,028	7,884	7,894	8,063	7,746	7,865	8,260	7,933
Participation rate	54.5	54.7	54.8	55.0	54.5	53.8	54.5	55.2	54.2	54.2	55.2	53.0	53.8	56.4	54.2
Employed	6,434	6,472	6,475	6,577	6,482	6,478	6,524	6,582	6,460	6,518	6,633	6,511	6,647	6,939	6,636
Employment-population ratio ²	44.4	44.6	44.7	45.3	44.5	44.5	44.9	45.2	44.4	44.8	45.4	44.5	45.4	47.4	45.3
Agriculture	305	258	242	253	237	251	264	295	284	292	261	257	258	236	230
Nonagricultural industries	6,129	6,215	6,233	6,324	6,245	6,227	6,260	6,287	6,176	6,226	6,372	6,254	6,389	6,703	6,406
Unemployed	1,468	1,454	1,465	1,414	1,447	1,359	1,402	1,446	1,424	1,376	1,430	1,235	1,218	1,321	1,297
Unemployment rate	18.6	18.3	18.5	17.7	18.2	17.3	17.7	18.0	18.1	17.4	17.7	15.9	15.5	16.0	16.3
White															
Civilian noninstitutional population ¹	153,679	155,432	155,723	155,856	155,979	156,111	156,313	156,431	156,561	156,676	156,811	156,930	157,058	157,134	157,242
Civilian labor force	99,926	101,801	102,158	102,297	102,455	102,503	102,746	102,893	102,797	102,894	103,573	103,106	103,272	103,614	103,278
Participation rate	65.0	65.5	65.6	65.6	65.7	65.7	65.7	65.8	65.7	65.7	66.1	65.7	65.8	65.9	65.7
Employed	93,736	95,660	96,000	96,147	96,281	96,533	96,717	96,995	96,998	97,340	98,050	97,716	97,958	98,299	97,995
Employment-population ratio ²	61.0	61.5	61.6	61.7	61.7	61.8	61.9	62.0	62.0	62.1	62.5	62.3	62.4	62.6	62.3
Unemployed	6,191	6,140	6,158	6,150	6,174	5,970	6,029	5,898	5,799	5,554	5,524	5,390	5,314	5,315	5,283
Unemployment rate	6.2	6.0	6.0	6.0	6.0	5.8	5.9	5.7	5.6	5.4	5.3	5.2	5.1	5.1	5.1
Black															
Civilian noninstitutional population ¹	19,664	19,989	20,056	20,089	20,120	20,152	20,187	20,218	20,249	20,279	20,312	20,341	20,373	20,396	20,426
Civilian labor force	12,364	12,654	12,652	12,720	12,719	12,707	12,831	12,957	12,844	12,743	12,860	12,863	13,047	13,194	13,027
Participation rate	62.9	63.3	63.1	63.3	63.2	63.1	63.6	64.1	63.4	62.8	63.3	63.2	64.0	64.7	63.8
Employed	10,501	10,814	10,799	10,895	10,910	10,968	10,997	11,101	11,053	11,090	11,080	11,223	11,401	11,563	11,427
Employment-population ratio ²	53.4	54.1	53.8	54.2	54.2	54.4	54.5	54.9	54.6	54.7	54.6	55.2	56.0	56.7	55.9
Unemployed	1,864	1,840	1,853	1,825	1,809	1,739	1,833	1,855	1,791	1,653	1,779	1,640	1,647	1,630	1,599
Unemployment rate	15.1	14.5	14.6	14.3	14.2	13.7	14.3	14.3	13.9	13.0	13.8	12.7	12.6	12.4	12.3

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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Hispanic origin															
Civilian noninstitutional population ¹	11,915	12,344	12,432	12,469	12,505	12,540	12,653	12,692	12,732	12,770	12,809	12,848	12,887	12,925	12,965
Civilian labor force	7,698	8,076	8,179	8,200	8,226	8,320	8,431	8,457	8,392	8,484	8,586	8,452	8,411	8,544	8,568
Participation rate	64.6	65.4	65.8	65.8	65.8	66.3	66.6	66.6	65.9	66.4	67.0	65.8	65.3	66.1	66.1
Employed	6,888	7,219	7,286	7,345	7,437	7,446	7,538	7,644	7,639	7,701	7,838	7,730	7,744	7,864	7,869
Employment-population ratio ²	57.8	58.5	58.6	58.9	59.5	59.4	59.6	60.2	60.0	60.3	61.2	60.2	60.1	60.8	60.7
Unemployed	811	857	893	855	789	874	893	813	753	783	748	722	667	680	699
Unemployment rate	10.5	10.6	10.9	10.4	9.6	10.5	10.6	9.6	9.0	9.2	8.7	8.5	7.9	8.0	8.2

¹ The population figures are not seasonally adjusted.

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

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

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

6. Selected employment indicators, monthly data seasonally adjusted

(In thousands)

Selected categories	Annual average		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
CHARACTERISTIC															
Civilian employed, 16 years and over	107,150	109,597	109,987	110,192	110,432	110,637	111,011	111,382	111,368	111,835	112,447	112,257	112,727	113,081	112,772
Men	59,891	60,892	60,968	60,975	61,241	61,393	61,596	61,751	61,707	61,842	61,996	61,912	62,154	62,343	62,358
Women	47,259	48,706	49,019	49,217	49,191	49,244	49,415	49,631	49,661	49,993	50,451	50,345	50,574	50,738	50,414
Married men, spouse present ..	39,248	39,658	39,691	39,780	39,952	40,093	40,102	39,913	40,100	39,967	40,029	40,057	40,241	40,260	40,370
Married women, spouse present ..	26,336	27,144	27,249	27,323	27,333	27,400	27,525	27,817	27,965	28,213	28,495	28,458	28,426	28,196	27,988
Women who maintain families ..	5,597	5,837	5,926	6,016	6,041	6,005	5,985	5,906	5,933	5,972	5,921	5,939	6,013	6,108	6,164
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,535	1,547	1,521	1,562	1,582	1,621	1,650	1,647	1,739	1,589	1,695	1,614	1,619	1,566	1,615
Self-employed workers	1,458	1,447	1,460	1,451	1,425	1,400	1,370	1,454	1,418	1,505	1,442	1,386	1,429	1,363	1,417
Unpaid family workers	185	169	159	164	198	152	136	126	150	175	170	165	154	159	134
Nonagricultural industries:															
Wage and salary workers	95,871	98,299	98,692	98,846	98,869	99,164	99,550	99,748	99,834	100,112	100,834	100,420	100,838	101,334	101,221
Government	16,031	16,342	16,333	16,264	16,457	16,443	16,412	16,532	16,568	16,484	16,710	16,956	16,931	16,760	16,915
Private industries	79,841	81,957	82,359	82,582	82,412	82,721	83,138	83,216	83,265	83,628	84,124	83,464	83,907	84,574	84,306
Private households	1,249	1,235	1,229	1,216	1,183	1,189	1,269	1,204	1,227	1,266	1,266	1,146	1,224	1,172	1,088
Other	78,592	80,722	81,130	81,366	81,229	81,532	81,869	82,012	82,038	82,362	82,858	82,318	82,683	83,402	83,218
Self-employed workers	7,811	7,881	7,939	7,993	8,179	8,056	8,192	8,187	8,050	8,117	8,142	8,328	8,205	8,216	8,184
Unpaid family workers	289	255	275	265	252	239	246	255	273	268	275	274	268	250	300
PERSONS AT WORK PART TIME¹															
All industries:															
Part time for economic reasons ..	5,590	5,588	5,544	5,740	5,563	5,596	5,505	5,780	5,456	5,391	5,282	5,184	5,508	5,262	5,241
Slack work	2,430	2,456	2,472	2,481	2,510	2,444	2,473	2,535	2,440	2,322	2,223	2,317	2,456	2,515	2,212
Could only find part-time work ..	2,819	2,800	2,772	2,826	2,714	2,867	2,695	2,828	2,698	2,746	2,665	2,579	2,722	2,494	2,702
Voluntary part time	13,489	13,935	13,922	14,178	14,021	13,877	14,170	14,061	14,167	13,862	14,573	15,054	14,422	14,634	14,313
Nonagricultural industries:															
Part time for economic reasons ..	5,334	5,345	5,303	5,450	5,319	5,342	5,201	5,459	5,164	5,110	5,029	4,918	5,235	4,998	4,968
Slack work	2,273	2,305	2,314	2,314	2,366	2,286	2,281	2,340	2,218	2,137	2,071	2,155	2,295	2,306	2,038
Could only find part-time work ..	2,730	2,719	2,710	2,739	2,626	2,765	2,599	2,742	2,595	2,662	2,594	2,477	2,634	2,433	2,628
Voluntary part time	13,038	13,502	13,520	13,736	13,567	13,455	13,750	13,597	13,682	13,399	14,069	14,485	13,946	14,168	13,930

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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
CHARACTERISTIC															
Total, all civilian workers	7.2	7.0	7.0	6.9	6.9	6.7	6.7	6.7	6.6	6.3	6.3	6.1	6.0	6.0	5.9
Both sexes, 16 to 19 years	18.6	18.3	18.5	17.7	18.2	17.3	17.7	18.0	18.1	17.4	17.7	15.9	15.5	16.0	16.3
Men, 20 years and over	6.2	6.1	6.2	6.2	6.2	6.0	6.0	5.9	5.8	5.5	5.5	5.5	5.4	5.2	5.0
Women, 20 years and over	6.6	6.2	6.2	6.1	6.1	5.9	5.9	5.8	5.8	5.5	5.4	5.2	5.4	5.3	5.4
White, total	6.2	6.0	6.0	6.0	6.0	5.8	5.9	5.7	5.6	5.4	5.3	5.2	5.1	5.1	5.1
Both sexes, 16 to 19 years	15.7	15.6	15.9	15.4	16.0	15.1	15.0	15.2	15.5	14.9	15.2	13.6	13.0	14.0	14.5
Men, 16 to 19 years	16.5	16.3	16.6	15.7	16.3	15.5	16.1	16.0	17.1	16.7	17.3	14.5	13.0	15.4	15.3
Women, 16 to 19 years	14.8	14.9	15.1	15.2	15.7	14.6	13.8	14.3	13.9	13.1	13.1	12.7	13.0	12.5	13.6
Men, 20 years and over	5.4	5.3	5.4	5.4	5.4	5.3	5.3	5.2	5.1	4.8	4.7	4.9	4.7	4.5	4.4
Women, 20 years and over	5.7	5.4	5.3	5.2	5.2	5.0	5.1	4.9	4.8	4.6	4.5	4.4	4.5	4.4	4.5
Black, total	15.1	14.5	14.6	14.3	14.2	13.7	14.3	14.3	13.9	13.0	13.8	12.7	12.6	12.4	12.3
Both sexes, 16 to 19 years	40.2	39.3	38.4	35.8	36.0	36.5	39.5	38.9	37.6	38.0	39.0	33.3	31.5	29.2	29.7
Men, 16 to 19 years	41.0	39.3	38.6	37.8	35.0	36.1	36.5	38.3	36.5	39.3	40.3	31.5	31.5	32.6	30.9
Women, 16 to 19 years	39.2	39.2	38.3	33.8	37.0	36.9	43.2	39.5	38.8	36.5	37.6	35.1	31.4	25.3	28.7
Men, 20 years and over	13.2	12.9	13.4	13.1	12.9	11.8	12.2	12.0	11.5	10.9	12.5	11.5	11.3	10.7	10.0
Women, 20 years and over	13.1	12.4	12.4	12.4	12.5	12.3	12.8	12.9	13.0	11.5	11.6	11.1	11.4	11.3	11.9
Hispanic origin, total	10.5	10.6	10.9	10.4	9.6	10.5	10.6	9.6	9.0	9.2	8.7	8.5	7.9	8.0	8.2
Married men, spouse present	4.3	4.4	4.3	4.6	4.5	4.3	4.2	4.2	4.1	4.1	3.9	4.0	3.8	3.7	3.6
Married women, spouse present	5.6	5.2	5.1	5.0	5.0	4.8	4.8	4.8	4.5	4.4	4.1	4.0	4.2	4.3	4.2
Women who maintain families	10.4	9.8	9.8	8.9	9.7	9.8	9.8	9.5	9.7	9.3	9.6	9.7	9.4	9.0	8.8
Full-time workers	6.8	6.6	6.6	6.6	6.6	6.3	6.4	6.3	6.2	5.9	5.9	5.9	5.7	5.6	5.4
Part-time workers	9.3	9.1	9.3	9.2	9.1	8.8	9.0	8.7	9.2	8.6	8.7	6.9	7.9	8.2	8.5
Unemployed 15 weeks and over	2.0	1.9	2.0	1.8	1.9	1.8	1.8	1.8	1.7	1.7	1.8	1.7	1.6	1.6	1.6
Labor force time lost ¹	8.1	7.9	7.9	7.8	7.7	7.6	7.6	7.6	7.4	7.3	7.2	7.1	6.9	6.8	6.7
INDUSTRY															
Nonagricultural private wage and salary workers	7.2	7.0	7.0	7.0	7.0	6.8	6.7	6.6	6.5	6.2	6.3	6.2	6.1	5.9	5.9
Mining	9.5	13.5	13.9	14.5	14.5	14.1	14.0	12.4	9.3	11.1	12.9	10.8	7.8	8.9	7.0
Construction	13.1	13.1	12.9	13.8	15.1	13.7	12.2	11.6	12.5	11.9	12.1	11.6	10.7	11.2	12.1
Manufacturing	7.7	7.1	7.0	7.3	7.1	6.9	6.8	6.8	6.9	6.2	6.4	5.6	6.0	5.5	5.7
Durable goods	7.6	6.9	6.5	7.2	6.6	6.4	6.8	6.8	6.7	6.2	6.3	5.3	6.1	5.5	5.6
Nondurable goods	7.8	7.4	7.7	7.3	7.9	7.7	6.8	6.9	7.3	6.2	6.6	6.0	5.9	5.5	5.9
Transportation and public utilities	5.1	5.1	4.7	5.2	4.4	4.6	4.8	4.0	4.6	4.8	4.4	5.0	4.4	4.3	4.0
Wholesale and retail trade	7.6	7.6	7.6	7.4	7.2	7.2	7.5	7.2	7.3	7.0	6.9	7.2	6.8	7.0	6.4
Finance and service industries	5.6	5.5	5.6	5.4	5.4	5.1	5.2	5.4	4.9	4.7	4.8	4.8	5.1	4.6	4.9
Government workers	3.9	3.6	3.5	3.7	3.6	3.3	3.6	3.7	3.4	3.6	3.3	3.4	3.4	3.9	3.4
Agricultural wage and salary workers	13.2	12.5	12.9	11.9	10.1	11.5	11.6	11.2	10.7	9.0	8.7	8.8	11.3	10.8	8.3

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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Total, 16 years and over	7.2	7.0	7.0	6.9	6.9	6.7	6.7	6.7	6.6	6.3	6.3	6.1	6.0	6.0	5.9
16 to 24 years	13.6	13.3	13.6	13.0	12.9	12.9	13.1	13.1	12.9	12.6	12.6	12.2	11.7	11.6	11.7
16 to 19 years	18.6	18.3	18.5	17.7	18.2	17.3	17.7	18.0	18.1	17.4	17.7	15.9	15.5	16.0	16.3
16 to 17 years	21.0	20.2	20.0	19.3	20.6	18.8	20.1	20.3	20.0	19.2	21.4	18.8	17.1	18.0	17.4
18 to 19 years	17.0	17.0	17.2	16.5	16.7	16.3	16.2	16.6	16.5	16.3	15.0	13.7	13.9	14.7	15.4
20 to 24 years	11.1	10.7	11.1	10.5	10.2	10.7	10.7	10.5	10.2	10.1	9.8	10.2	9.8	9.1	9.3
25 years and over	5.6	5.4	5.4	5.5	5.5	5.2	5.2	5.1	5.1	4.8	4.8	4.6	4.7	4.7	4.6
25 to 54 years	5.8	5.7	5.6	5.7	5.8	5.5	5.6	5.5	5.4	5.0	5.0	4.9	5.0	5.0	4.7
55 years and over	4.1	3.9	4.0	4.1	3.8	3.5	3.2	3.0	3.4	3.4	3.7	3.2	3.1	3.2	3.4
Men, 16 years and over	7.0	6.9	7.0	7.0	6.9	6.7	6.8	6.7	6.6	6.3	6.4	6.2	6.0	6.0	5.7
16 to 24 years	14.1	13.7	14.3	13.2	13.4	13.4	13.4	13.6	13.2	13.2	13.4	12.6	11.9	12.4	11.9
16 to 19 years	19.5	19.0	19.1	18.2	18.3	17.8	18.5	18.6	19.3	19.2	20.0	16.4	15.5	18.0	17.3
16 to 17 years	21.9	20.8	21.0	19.8	21.3	19.1	21.4	21.2	20.2	21.5	23.2	18.7	16.6	20.6	18.3
18 to 19 years	17.9	17.7	17.5	17.0	16.2	17.0	16.9	17.0	18.6	17.5	17.7	14.4	13.8	16.3	16.0
20 to 24 years	11.4	11.0	11.9	10.7	10.9	11.3	10.7	11.1	10.1	10.1	10.0	10.7	10.0	9.3	9.1
25 years and over	5.3	5.4	5.4	5.5	5.5	5.2	5.4	5.1	5.1	4.8	4.9	4.7	4.7	4.7	4.4
25 to 54 years	5.6	5.6	5.5	5.7	5.7	5.5	5.7	5.4	5.4	5.0	5.1	5.0	4.9	4.9	4.6
55 years and over	4.1	4.1	4.2	4.4	4.1	4.0	3.5	3.3	3.6	3.7	4.1	3.4	3.4	3.4	3.2
Women, 16 years and over	7.4	7.1	7.0	6.9	6.9	6.7	6.7	6.7	6.6	6.2	6.1	5.9	6.1	6.0	6.1
16 to 24 years	13.0	12.8	12.8	12.7	12.4	12.4	12.7	12.4	12.5	12.0	11.7	11.7	11.6	10.7	11.6
16 to 19 years	17.6	17.6	17.7	17.2	18.2	16.8	16.8	17.4	16.7	15.6	15.4	15.4	15.4	13.9	15.4
16 to 17 years	20.0	19.6	18.8	18.6	19.8	18.4	18.7	19.2	19.7	16.7	19.6	18.9	17.7	15.3	16.5
18 to 19 years	16.0	16.3	16.9	16.0	17.2	15.7	15.3	16.1	14.2	15.1	12.4	13.0	14.0	12.9	14.6
20 to 24 years	10.7	10.3	10.2	10.3	9.4	10.0	10.6	9.8	10.3	10.1	9.7	9.7	9.5	8.9	9.5
25 years and over	5.9	5.5	5.5	5.4	5.5	5.2	5.1	5.1	5.0	4.7	4.7	4.4	4.7	4.7	4.7
25 to 54 years	6.2	5.9	5.8	5.7	5.8	5.5	5.5	5.6	5.4	5.0	4.9	4.7	5.0	5.0	4.9
55 years and over	4.1	3.6	3.6	3.6	3.4	2.9	2.7	2.6	3.2	3.0	3.0	2.8	2.6	2.9	3.7

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

(Numbers in thousands)

Reason for unemployment	Annual average		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Job losers	4,139	4,033	4,044	3,984	3,947	3,890	3,971	3,839	3,822	3,732	3,611	3,565	3,522	3,339	3,321
On layoff	1,157	1,090	1,029	1,072	1,073	1,078	1,118	998	1,011	958	906	901	918	850	810
Other job losers	2,982	2,943	3,015	2,912	2,874	2,812	2,854	2,842	2,811	2,774	2,705	2,664	2,604	2,489	2,511
Job leavers	877	1,015	1,041	1,027	1,056	1,036	891	1,046	1,000	923	906	949	1,007	1,006	995
Reentrants	2,256	2,160	2,145	2,190	2,119	2,019	2,054	2,042	2,111	1,940	2,018	1,969	1,913	1,997	1,885
New entrants	1,039	1,029	1,038	972	1,076	1,015	1,084	1,040	956	911	1,018	798	801	829	883
PERCENT OF UNEMPLOYED															
Job losers	49.8	48.9	48.9	48.7	48.1	48.9	49.6	48.2	48.4	49.7	47.8	49.0	48.6	46.6	46.9
On layoff	13.9	13.2	12.4	13.1	13.1	13.5	14.0	12.5	12.8	12.8	12.0	12.4	12.7	11.9	11.4
Other job losers	35.9	35.7	36.5	35.6	35.1	35.3	35.7	35.6	37.0	35.8	36.6	36.0	34.7	35.4	
Job leavers	10.6	12.3	12.6	12.6	12.9	13.0	11.1	13.1	12.7	12.3	12.0	13.0	13.9	14.0	14.0
Reentrants	27.1	26.2	25.9	26.8	25.8	25.4	25.7	25.6	26.8	25.8	26.7	27.0	26.4	27.9	26.6
New entrants	12.5	12.5	12.6	11.9	13.1	12.8	13.6	13.1	12.1	12.1	13.5	11.0	11.1	11.6	12.5
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.6	3.4	3.4	3.4	3.3	3.3	3.3	3.2	3.2	3.1	3.0	3.0	2.9	2.8	2.8
On layoff .....	.8	.9	.9	.9	.9	.9	.7	.9	.8	.8	.8	.8	.8	.8	.8
Other job losers	2.0	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.8	1.6	1.7	1.6	1.6	1.7	1.6
Job leavers .....	.9	.9	.9	.8	.9	.9	.9	.9	.8	.8	.8	.7	.7	.7	.7

10. Duration of unemployment, monthly data seasonally adjusted

(Numbers in thousands)

Weeks of unemployment	Annual average		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Less than 5 weeks	3,498	3,448	3,415	3,418	3,382	3,355	3,416	3,361	3,383	3,143	3,349	3,065	3,168	3,197	3,230
5 to 14 weeks	2,509	2,557	2,524	2,563	2,613	2,389	2,530	2,477	2,447	2,232	2,118	2,114	2,141	2,170	1,932
15 weeks and over	2,305	2,232	2,373	2,168	2,217	2,171	2,200	2,131	2,050	2,075	2,101	2,055	1,907	1,884	1,920
15 to 26 weeks	1,025	1,045	1,110	950	1,045	1,023	1,022	1,008	945	1,025	1,003	998	945	814	909
27 weeks and over	1,280	1,187	1,263	1,218	1,172	1,148	1,178	1,123	1,105	1,049	1,098	1,057	962	1,070	1,011
Mean duration in weeks	15.6	15.0	15.5	15.2	14.8	15.0	15.0	14.6	14.9	14.9	14.9	14.8	14.0	14.3	14.2
Median duration in weeks	6.8	6.9	7.1	7.0	7.0	7.1	7.0	6.6	6.6	7.0	6.5	6.7	6.7	6.4	5.7

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

State	Aug. 1986	Aug. 1987	State	Aug. 1986	Aug. 1987
Alabama	9.9	7.2	Montana	6.8	5.8
Alaska	9.8	9.1	Nebraska	4.1	4.1
Arizona	7.3	6.0	Nevada	5.2	5.6
Arkansas	8.3	7.6	New Hampshire	2.5	2.1
California	6.7	5.4			
Colorado	7.1	6.4	New Jersey	4.5	3.9
Connecticut	3.6	3.2	New Mexico	9.1	8.3
Delaware	3.9	2.8	New York	5.9	4.3
District of Columbia	7.6	6.1	North Carolina	5.1	4.2
Florida	5.9	5.7	North Dakota	5.2	3.8
Georgia	5.9	5.0			
Hawaii	4.9	3.7	Ohio	8.0	6.9
Idaho	9.1	7.1	Oklahoma	9.5	6.6
Illinois	7.9	6.8	Oregon	7.7	5.4
Indiana	6.2	5.8	Pennsylvania	6.3	5.2
			Rhode Island	3.9	3.5
Iowa	6.4	4.6			
Kansas	5.2	4.2	South Carolina	6.1	4.9
Kentucky	8.6	7.4	South Dakota	3.8	3.8
Louisiana	13.8	10.3	Tennessee	7.7	6.6
Maine	4.4	3.0	Texas	9.1	8.3
Maryland	4.2	3.9	Utah	5.7	6.1
Massachusetts	3.7	2.8			
Michigan	7.9	8.3	Vermont	3.9	2.9
Minnesota	4.2	4.6	Virginia	4.7	4.1
Mississippi	12.4	9.8	Washington	7.7	6.3
Missouri	6.0	6.0	West Virginia	10.6	9.1
			Wisconsin	6.1	4.8
			Wyoming	7.6	6.5

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

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

(In thousands)

State	Aug. 1986	July 1987	Aug. 1987 ^P	State	Aug. 1986	July 1987	Aug. 1987 ^P
Alabama	1,459.6	1,490.0	1,491.2	Nebraska	654.6	662.2	663.2
Alaska	236.4	226.1	224.1	Nevada	476.5	505.5	507.0
Arizona	1,329.7	1,341.3	1,342.6	New Hampshire	496.6	510.9	514.7
Arkansas	815.2	830.1	837.0				
California	11,252.3	11,599.7	11,616.9	New Jersey	3,519.0	3,612.3	3,606.6
Colorado	1,394.0	1,388.9	1,390.2	New Mexico	529.0	535.1	534.4
Connecticut	1,598.4	1,644.5	1,643.0	New York	7,910.7	8,106.8	8,123.8
Delaware	308.6	316.3	319.1	North Carolina	2,710.0	2,792.0	2,803.8
District of Columbia	654.5	662.0	660.0	North Dakota	249.2	251.9	251.1
Florida	4,535.0	4,737.3	4,733.5				
Georgia	2,689.4	2,747.1	2,752.6	Ohio	4,488.4	4,576.6	4,596.8
Hawaii	438.6	451.1	450.9	Oklahoma	1,119.4	1,123.2	1,124.4
Idaho	333.3	336.7	337.7	Oregon	1,063.1	1,098.7	1,106.2
Illinois	4,803.6	4,873.0	4,883.6	Pennsylvania	4,822.5	4,935.2	4,941.1
Indiana	2,236.9	2,299.7	2,315.2	Rhode Island	443.5	446.3	450.1
Iowa	1,074.5	1,097.9	1,096.6	South Carolina	1,342.6	1,377.2	1,386.4
Kansas	981.1	987.8	988.0	South Dakota	253.9	255.4	255.0
Kentucky	1,274.8	1,294.5	1,298.1	Tennessee	1,937.8	1,999.3	2,001.9
Louisiana	1,499.6	1,486.9	1,483.6	Texas	6,522.6	6,474.0	6,466.5
Maine	493.6	500.7	508.5	Utah	631.4	637.9	640.8
Maryland	1,965.1	1,994.5	1,990.1				
Massachusetts	2,981.2	3,043.2	3,049.7	Vermont	235.3	239.0	238.7
Michigan	3,628.9	3,640.0	3,665.2	Virginia	2,568.5	2,638.8	2,634.5
Minnesota	1,902.4	1,948.3	1,961.6	Washington	1,782.4	1,836.8	1,847.1
Mississippi	834.7	851.0	852.9	West Virginia	598.0	604.1	599.9
Missouri	2,141.2	2,143.3	2,149.6	Wisconsin	2,032.7	2,067.3	2,067.9
Montana	277.4	273.6	275.1	Wyoming	202.2	196.7	196.9
				Puerto Rico	703.7	758.2	732.7
				Virgin Islands	37.8	38.7	38.1

^P = preliminary

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

because of the continual updating of the database.

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

(In thousands)

Industry	Annual average		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. ^P	Sept. ^P
TOTAL	97,519	99,610	100,039	100,209	100,415	100,567	100,919	101,150	101,329	101,598	101,708	101,818	102,126	102,278	102,410
PRIVATE SECTOR	81,125	82,900	83,241	83,337	83,515	83,643	83,983	84,215	84,352	84,560	84,677	84,787	85,106	85,226	85,364
GOODS-PRODUCING	24,859	24,681	24,620	24,611	24,630	24,630	24,708	24,743	24,749	24,759	24,752	24,761	24,850	24,885	24,912
Mining	927	783	739	735	730	724	718	719	722	729	735	738	744	752	756
Oil and gas extraction	583	457	419	416	412	406	405	406	408	416	420	425	430	434	435
Construction	4,673	4,904	4,948	4,942	4,946	4,936	5,034	5,038	5,032	5,019	4,999	5,008	5,002	5,007	4,974
General building contractors	1,253	1,293	1,291	1,289	1,289	1,277	1,311	1,309	1,291	1,272	1,267	1,266	1,261	1,263	1,248
Manufacturing	19,260	18,994	18,933	18,934	18,954	18,970	18,956	18,986	18,995	19,011	19,018	19,015	19,104	19,126	19,182
Production workers	13,092	12,895	12,851	12,849	12,879	12,906	12,884	12,916	12,925	12,939	12,946	12,958	13,020	13,040	13,099
Durable goods	11,490	11,244	11,181	11,169	11,174	11,175	11,157	11,179	11,176	11,175	11,175	11,176	11,195	11,244	11,279
Production workers	7,644	7,432	7,382	7,369	7,385	7,393	7,370	7,398	7,399	7,406	7,409	7,421	7,425	7,478	7,512
Lumber and wood products	697	711	716	718	723	728	731	733	734	736	738	735	740	737	739
Furniture and fixtures	494	497	499	499	499	499	500	501	502	504	509	510	518	518	521
Stone, clay, and glass products	588	586	584	581	582	584	586	588	586	586	584	582	582	583	583
Primary metal industries	808	753	732	733	733	733	726	733	739	743	742	746	750	754	769
Blast furnaces and basic steel products	303	275	260	262	260	259	254	261	266	272	272	275	277	279	284
Fabricated metal products	1,465	1,431	1,424	1,421	1,419	1,422	1,422	1,419	1,423	1,420	1,420	1,424	1,424	1,425	1,429
Machinery, except electrical	2,174	2,060	2,031	2,022	2,015	2,011	2,007	2,018	2,015	2,022	2,025	2,028	2,033	2,043	2,054
Electrical and electronic equipment	2,197	2,123	2,118	2,120	2,119	2,118	2,111	2,106	2,099	2,092	2,087	2,080	2,088	2,093	2,098
Transportation equipment	1,980	2,015	2,015	2,013	2,023	2,018	2,014	2,022	2,022	2,011	2,011	2,010	1,995	2,027	2,017
Motor vehicles and equipment	884	865	857	850	858	853	851	859	854	847	843	842	814	847	837
Instruments and related products	720	707	703	702	700	698	697	695	694	694	693	693	695	694	698
Miscellaneous manufacturing industries	367	362	359	360	361	364	363	364	366	364	366	368	370	370	371
Nondurable goods	7,770	7,750	7,752	7,765	7,780	7,795	7,799	7,807	7,819	7,836	7,843	7,839	7,909	7,882	7,903
Production workers	5,449	5,463	5,469	5,480	5,494	5,513	5,514	5,518	5,526	5,533	5,537	5,537	5,595	5,562	5,587
Food and kindred products	1,603	1,617	1,619	1,621	1,627	1,631	1,628	1,630	1,635	1,642	1,633	1,634	1,644	1,633	1,631
Tobacco manufactures	64	59	58	58	59	58	58	58	57	56	57	57	57	56	54
Textile mill products	702	705	707	709	714	715	718	722	725	724	727	729	736	733	737
Apparel and other textile products	1,121	1,106	1,102	1,104	1,101	1,110	1,106	1,101	1,103	1,104	1,107	1,108	1,130	1,109	1,114
Paper and allied products	678	674	675	677	678	679	678	679	678	677	677	676	678	677	683
Printing and publishing	1,428	1,457	1,465	1,469	1,472	1,474	1,479	1,483	1,485	1,493	1,497	1,498	1,504	1,507	1,507
Chemicals and allied products	1,044	1,023	1,021	1,020	1,020	1,017	1,018	1,018	1,017	1,018	1,022	1,014	1,026	1,032	1,033
Petroleum and coal products	179	169	167	166	165	163	164	164	164	164	164	164	164	165	167
Rubber and misc. plastics products	786	790	791	794	797	800	803	805	807	809	809	810	815	818	824
Leather and leather products	165	151	147	147	147	148	147	147	148	149	150	149	155	152	153
SERVICE-PRODUCING	72,660	74,930	75,419	75,598	75,785	75,937	76,211	76,407	76,580	76,839	76,956	77,057	77,276	77,393	77,498
Transportation and public utilities	5,238	5,244	5,255	5,251	5,278	5,286	5,304	5,315	5,333	5,348	5,344	5,350	5,363	5,377	5,385
Transportation	3,003	3,041	3,050	3,053	3,071	3,078	3,089	3,097	3,112	3,124	3,120	3,128	3,133	3,146	3,154
Communication and public utilities	2,235	2,203	2,205	2,198	2,207	2,208	2,215	2,218	2,221	2,224	2,224	2,222	2,230	2,231	2,231
Wholesale trade	5,717	5,735	5,736	5,731	5,728	5,725	5,741	5,757	5,766	5,772	5,775	5,781	5,797	5,805	5,806
Durable goods	3,388	3,383	3,383	3,379	3,380	3,383	3,386	3,391	3,397	3,397	3,401	3,405	3,418	3,420	3,425
Nondurable goods	2,329	2,351	2,353	2,352	2,348	2,342	2,355	2,366	2,369	2,375	2,374	2,376	2,379	2,385	2,381
Retail trade	17,356	17,845	17,939	17,980	18,009	18,007	18,080	18,140	18,136	18,197	18,205	18,226	18,274	18,254	18,324
General merchandise stores	2,324	2,363	2,374	2,385	2,379	2,363	2,358	2,373	2,380	2,385	2,390	2,387	2,407	2,408	2,425
Food stores	2,775	2,873	2,892	2,901	2,906	2,916	2,929	2,940	2,944	2,953	2,956	2,960	2,959	2,964	2,971
Automotive dealers and service stations	1,890	1,943	1,958	1,960	1,963	1,970	1,978	1,979	1,979	1,978	1,978	1,983	1,985	1,984	1,987
Eating and drinking places	5,709	5,879	5,911	5,919	5,927	5,938	5,946	5,956	5,964	5,962	5,976	5,982	5,985	5,991	6,007
Finance, insurance, and real estate	5,955	6,297	6,374	6,395	6,418	6,451	6,480	6,501	6,526	6,558	6,576	6,586	6,608	6,628	6,626
Finance	2,977	3,152	3,193	3,204	3,212	3,227	3,235	3,243	3,256	3,272	3,276	3,280	3,291	3,296	3,295
Insurance	1,833	1,945	1,971	1,980	1,990	1,999	2,012	2,016	2,022	2,032	2,037	2,037	2,043	2,051	2,050
Real estate	1,146	1,200	1,210	1,211	1,216	1,225	1,233	1,242	1,248	1,254	1,263	1,269	1,274	1,281	1,281
Services	22,000	23,099	23,317	23,369	23,452	23,544	23,670	23,759	23,842	23,926	24,025	24,083	24,214	24,277	24,311
Business services	4,457	4,781	4,835	4,861	4,877	4,912	4,950	4,984	5,020	5,044	5,083	5,086	5,105	5,134	5,155
Health services	6,299	6,551	6,615	6,644	6,661	6,691	6,721	6,748	6,773	6,800	6,822	6,853	6,887	6,920	6,942
Government	16,394	16,711	16,798	16,872	16,900	16,924	16,936	16,935	16,977	17,038	17,031	17,031	17,020	17,052	17,046
Federal	2,875	2,899	2,902	2,897	2,900	2,904	2,912	2,916	2,922	2,933	2,935	2,936	2,936	2,940	2,960
State	3,832	3,888	3,890	3,907	3,915	3,927	3,929	3,927	3,930	3,943	3,947	3,932	3,952	3,970	3,975
Local	9,687	9,923	10,006	10,068	10,085	10,093	10,095	10,092	10,125	10,162	10,149	10,164	10,132	10,142	10,111

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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. ^P	Sept. ^P
PRIVATE SECTOR	34.9	34.8	34.7	34.7	34.8	34.6	34.7	34.9	34.8	34.7	34.9	34.8	34.8	34.9	34.6
MANUFACTURING	40.5	40.7	40.8	40.7	40.8	40.8	40.9	41.1	40.9	40.6	41.0	41.0	41.0	41.0	40.4
Overtime hours	3.3	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.5	3.8	3.7	3.8	3.8	3.6
Durable goods	41.2	41.3	41.4	41.3	41.4	41.4	41.6	41.7	41.5	41.2	41.6	41.5	41.6	41.6	40.8
Overtime hours	3.5	3.5	3.6	3.5	3.5	3.6	3.7	3.7	3.7	3.6	3.9	3.8	3.8	4.0	3.6
Lumber and wood products	39.9	40.3	40.3	40.4	40.8	40.6	40.8	41.3	40.9	40.6	41.0	40.6	40.6	40.4	39.3
Furniture and fixtures	39.4	39.8	40.0	39.9	39.8	39.9	40.2	40.2	40.0	39.1	39.9	40.0	40.0	40.1	39.3
Stone, clay, and glass products	41.9	42.2	42.4	42.3	41.9	42.2	42.5	42.8	42.5	41.9	42.3	42.0	42.2	42.1	41.8
Primary metal industries	41.5	41.9	42.1	42.3	42.4	42.5	42.6	42.6	42.6	42.3	43.1	43.1	43.4	43.7	43.0
Blast furnaces and basic steel products	41.1	41.7	41.9	42.4	42.5	42.6	42.7	42.3	42.3	42.4	43.3	43.5	44.1	44.3	44.1
Fabricated metal products	41.3	41.3	41.5	41.3	41.4	41.2	41.6	41.6	41.5	41.2	41.6	41.5	41.4	41.5	40.6
Machinery except electrical	41.5	41.6	41.7	41.7	41.7	41.7	42.0	42.2	42.0	41.8	42.2	42.2	42.4	42.2	41.5
Electrical and electronic equipment	40.6	41.0	41.2	41.0	41.0	41.0	41.0	41.1	40.9	40.6	40.8	41.1	41.1	41.0	40.3
Transportation equipment	42.6	42.3	42.4	42.1	42.2	42.1	42.3	42.5	42.3	41.9	42.2	41.9	41.7	41.8	41.2
Motor vehicles and equipment	43.5	42.6	42.7	42.1	42.4	42.4	42.9	43.0	42.9	42.1	42.5	42.0	41.9	41.8	41.3
Instruments and related products	41.0	41.0	40.7	40.9	41.1	41.1	41.2	41.3	41.3	41.0	41.5	41.5	41.6	41.8	40.8
Nondurable goods	39.6	39.9	39.9	39.9	40.0	40.0	40.1	40.3	40.1	39.7	40.2	40.2	40.3	40.3	39.9
Overtime hours	3.1	3.3	3.3	3.4	3.5	3.5	3.5	3.5	3.5	3.3	3.7	3.6	3.7	3.7	3.7
Food and kindred products	40.0	40.0	39.8	39.8	40.0	39.8	40.0	40.1	40.0	39.8	40.1	40.1	39.9	40.3	40.1
Textile mill products	39.7	41.1	41.4	41.4	41.4	41.6	41.6	42.0	42.1	41.4	42.0	42.1	42.4	42.1	40.9
Apparel and other textile products	36.4	36.7	36.8	36.8	36.9	37.0	37.0	37.4	37.0	36.1	37.2	37.1	37.3	37.4	36.0
Paper and allied products	43.1	43.2	42.9	43.1	43.2	43.2	43.4	43.3	43.0	43.0	43.5	43.3	43.5	43.4	43.9
Printing and publishing	37.8	38.0	38.0	38.0	38.0	38.0	37.9	38.1	37.9	37.7	37.9	38.1	38.1	37.9	38.1
Chemicals and allied products	41.9	41.9	41.8	42.0	42.3	42.1	42.2	42.2	42.0	42.2	42.1	42.0	42.2	42.4	42.8
Petroleum and coal products	43.0	43.8	43.5	43.7	43.8	43.6	44.6	44.0	44.1	43.9	44.3	43.3	44.4	43.1	43.0
TRANSPORTATION AND PUBLIC UTILITIES	39.5	39.2	39.1	39.1	39.2	38.9	39.0	39.2	39.0	39.0	39.2	38.8	39.2	39.2	39.2
WHOLESALE TRADE	37.8	37.7	38.2	38.3	38.3	38.2	38.3	38.3	38.1	38.2	38.3	38.2	38.1	38.3	38.0
RETAIL TRADE	29.4	29.2	29.1	29.1	29.2	28.9	29.0	29.3	29.3	29.5	29.4	29.2	29.3	29.5	29.6
SERVICES	32.5	32.5	32.4	32.4	32.5	32.4	32.4	32.6	32.5	32.4	32.5	32.5	32.5	32.6	32.5

^P = preliminary

benchmark adjustment.

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

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

Industry	Annual average		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. ^P	Sept. ^P
PRIVATE SECTOR	\$8.57	\$8.76	\$8.82	\$8.82	\$8.88	\$8.86	\$8.90	\$8.92	\$8.92	\$8.91	\$8.93	\$8.92	\$8.91	\$8.94	\$9.06
Seasonally adjusted	-	-	8.78	8.82	8.86	8.84	8.86	8.88	8.91	8.91	8.95	8.94	8.96	9.02	9.02
MINING	11.98	12.44	12.52	12.50	12.57	12.63	12.66	12.56	12.51	12.43	12.42	12.44	12.31	12.35	12.48
CONSTRUCTION	12.32	12.47	12.59	12.68	12.66	12.77	12.58	12.51	12.59	12.55	12.60	12.61	12.57	12.67	12.80
MANUFACTURING	9.54	9.73	9.73	9.72	9.78	9.85	9.84	9.84	9.85	9.87	9.87	9.87	9.87	9.86	10.02
Durable goods	10.10	10.29	10.29	10.27	10.33	10.40	10.38	10.39	10.39	10.39	10.40	10.42	10.40	10.41	10.53
Lumber and wood products	8.22	8.33	8.35	8.32	8.35	8.32	8.27	8.31	8.28	8.34	8.37	8.44	8.46	8.46	8.48
Furniture and fixtures	7.17	7.46	7.55	7.53	7.55	7.65	7.61	7.58	7.58	7.58	7.64	7.66	7.67	7.74	7.80
Stone, clay, and glass products	9.84	10.05	10.11	10.10	10.14	10.17	10.17	10.15	10.13	10.23	10.26	10.29	10.33	10.31	10.44
Primary metal industries	11.67	11.86	11.82	11.75	11.80	11.82	11.76	11.78	11.82	11.96	11.96	11.97	11.97	11.92	12.11
Blast furnaces and basic steel products	13.33	13.73	13.76	13.63	13.68	13.74	13.55	13.59	13.66	13.84	13.80	13.83	13.70	13.63	13.82
Fabricated metal products	9.70	9.89	9.88	9.88	9.94	10.02	9.98	9.99	9.99	9.98	9.97	10.00	9.95	9.95	10.03
Machinery, except electrical	10.29	10.59	10.61	10.58	10.62	10.67	10.64	10.68	10.72	10.70	10.70	10.76	10.74	10.77	10.84
Electrical and electronic equipment	9.46	9.65	9.70	9.67	9.73	9.82	9.84	9.84	9.84	9.82	9.83	9.84	9.89	9.90	9.96
Transportation equipment	12.71	12.81	12.82	12.82	12.88	12.96	12.93	12.88	12.86	12.80	12.85	12.88	12.83	12.90	13.12
Motor vehicles and equipment	13.39	13.45	13.42	13.42	13.44	13.56	13.58	13.49	13.49	13.40	13.42	13.47	13.36	13.42	13.74
Instruments and related products	9.17	9.47	9.54	9.56	9.63	9.65	9.64	9.67	9.67	9.67	9.69	9.70	9.74	9.79	9.84
Miscellaneous manufacturing	7.30	7.54	7.58	7.57	7.62	7.69	7.69	7.68	7.66	7.67	7.72	7.74	7.72	7.71	7.78
Nondurable goods	8.71	8.94	8.96	8.96	9.02	9.07	9.09	9.08	9.09	9.14	9.13	9.11	9.16	9.11	9.32
Food and kindred products	8.57	8.74	8.65	8.69	8.79	8.88	8.90	8.91	8.93	8.95	8.96	8.91	8.88	8.81	8.95
Tobacco manufactures	11.96	12.85	12.29	12.14	12.67	12.93	12.97	13.44	13.80	14.28	14.53	15.57	14.85	14.10	12.97
Textile mill products	6.70	6.93	7.02	7.02	7.05	7.10	7.10	7.11	7.12	7.12	7.13	7.15	7.14	7.17	7.24
Apparel and other textile products	5.73	5.84	5.91	5.87	5.87	5.90	5.94	5.93	5.93	5.94	5.89	5.91	5.89	5.90	6.04
Paper and allied products	10.83	11.18	11.23	11.25	11.27	11.34	11.26	11.26	11.27	11.37	11.40	11.41	11.48	11.41	11.71
Printing and publishing	9.71	9.99	10.12	10.09	10.11	10.15	10.14	10.16	10.17	10.14	10.19	10.19	10.25	10.31	10.49
Chemicals and allied products	11.56	11.98	12.03	12.08	12.17	12.20	12.18	12.21	12.24	12.30	12.31	12.27	12.37	12.32	12.57
Petroleum and coal products	14.06	14.18	14.18	14.19	14.32	14.41	14.57	14.51	14.50	14.50	14.52	14.43	14.48	14.51	14.84
Rubber and miscellaneous plastics products	8.54	8.73	8.72	8.73	8.77	8.82	8.83	8.79	8.80	8.82	8.84	8.87	8.93	8.90	9.07
Leather and leather products	5.83	5.92	5.95	5.95	5.98	5.98	6.04	6.01	6.06	6.12	6.05	6.04	5.98	6.01	6.21
TRANSPORTATION AND PUBLIC UTILITIES	11.40	11.70	11.77	11.77	11.90	11.90	11.89	11.93	11.90	11.94	11.95	11.91	12.00	12.01	12.10
WHOLESALE TRADE	9.16	9.35	9.37	9.36	9.47	9.47	9.49	9.55	9.53	9.53	9.57	9.57	9.57	9.61	9.64
RETAIL TRADE	5.94	6.03	6.06	6.06	6.08	6.07	6.09	6.09	6.08	6.09	6.09	6.08	6.07	6.06	6.20
FINANCE, INSURANCE, AND REAL ESTATE	7.94	8.35	8.39	8.39	8.57	8.48	8.60	8.75	8.72	8.71	8.72	8.68	8.69	8.79	8.80
SERVICES	7.90	8.16	8.19	8.23	8.33	8.32	8.37	8.43	8.41	8.40	8.38	8.35	8.33	8.39	8.51

- 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		1986				1987								
	1985	1986	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. ^P	Sept. ^P
PRIVATE SECTOR															
Current dollars	\$299.09	\$304.85	\$306.94	\$306.05	\$308.14	\$308.33	\$306.16	\$307.74	\$308.63	\$308.29	\$310.76	\$312.20	\$312.74	\$315.58	\$314.38
Seasonally adjusted	-	-	304.67	306.05	308.33	305.86	307.44	309.91	310.07	309.18	312.36	311.11	311.81	314.80	312.09
Constant (1977) dollars	170.42	171.07	171.47	170.88	171.86	171.87	169.52	169.74	169.48	168.28	169.17	169.21	169.14	169.76	-
MINING	519.93	524.97	527.09	526.25	520.40	535.51	538.05	527.52	522.92	519.57	526.61	527.46	518.25	526.11	520.42
CONSTRUCTION	464.46	466.38	484.72	480.57	462.09	469.94	467.98	460.37	470.87	469.37	485.10	480.44	485.20	489.06	464.64
MANUFACTURING															
Current dollars	386.37	396.01	398.93	395.60	400.98	408.78	401.47	401.47	402.87	398.75	403.68	405.66	400.72	403.27	406.81
Constant (1977) dollars	220.15	222.23	222.87	220.88	223.64	227.86	222.30	221.44	221.24	217.78	219.75	219.87	216.72	216.93	-
Durable goods	416.12	424.98	428.06	424.15	429.73	439.92	430.77	431.19	432.22	427.03	431.60	434.51	426.40	429.93	431.73
Lumber and wood products	327.98	335.70	340.68	337.79	337.34	337.79	331.63	337.39	337.00	338.60	345.68	348.57	341.78	344.32	337.50
Furniture and fixtures	282.50	296.91	305.78	304.97	303.51	314.42	302.88	299.41	301.68	294.10	301.78	306.40	300.66	311.92	310.44
Stone, clay, and glass products	412.30	424.11	434.73	430.26	423.85	427.14	421.04	423.26	425.46	430.68	439.13	437.33	439.03	439.21	442.66
Primary metal industries	484.31	496.93	497.62	493.50	500.32	508.26	500.98	503.01	505.90	508.30	514.28	517.10	514.71	514.94	520.73
Blast furnaces and basic steel products	547.86	572.54	575.17	569.73	580.03	589.45	575.88	577.58	581.92	593.74	598.92	605.75	602.80	596.99	608.08
Fabricated metal products	400.61	408.46	411.01	408.04	413.50	422.84	414.17	413.59	414.59	408.18	412.76	417.00	405.96	410.94	408.22
Machinery, except electrical	427.04	440.54	442.44	439.07	444.98	456.68	446.88	449.63	452.38	445.12	449.40	455.15	447.86	450.19	449.86
Electrical and electronic equipment	384.08	395.65	400.61	396.47	402.82	413.42	404.42	402.46	402.46	395.75	399.10	404.42	399.56	403.92	402.38
Transportation equipment	541.45	541.86	542.29	537.16	546.11	562.46	549.53	546.11	547.84	536.32	542.27	539.67	526.03	528.90	539.23
Motor vehicles and equipment	582.47	572.97	570.35	562.30	568.51	595.28	585.30	577.37	582.77	566.82	571.69	567.09	549.10	546.19	564.71
Instruments and related products	375.97	388.27	389.23	389.09	398.68	407.23	397.17	399.37	401.31	394.54	399.23	402.55	398.37	405.31	401.47
Miscellaneous manufacturing	287.62	298.58	299.41	301.29	305.56	309.14	303.76	301.06	301.04	297.60	302.62	304.18	299.54	303.77	305.75
Nondurable goods	344.92	356.71	359.30	358.40	363.51	368.24	362.69	362.29	363.60	361.03	366.11	367.13	366.40	368.04	373.73
Food and kindred products	342.80	349.60	349.46	347.60	353.36	357.86	354.22	351.05	352.74	351.74	359.30	357.29	354.31	358.57	364.27
Tobacco manufactures	444.91	480.59	470.71	473.46	481.46	483.58	481.19	486.53	525.78	536.93	571.03	624.36	527.18	513.24	457.84
Textile mill products	265.99	284.82	293.44	292.03	294.69	299.62	293.94	295.78	299.04	291.21	298.75	303.16	297.02	303.29	299.01
Apparel and other textile products	208.57	214.33	217.49	216.60	218.36	220.66	218.59	220.00	219.41	212.65	219.11	221.03	217.93	220.66	217.44
Paper and allied products	466.77	482.98	485.14	484.88	489.12	500.09	488.68	484.18	483.48	486.64	493.62	494.05	495.94	492.91	517.58
Printing and publishing	367.04	379.62	387.60	384.43	387.21	392.81	381.26	384.05	386.46	381.26	384.16	384.16	387.45	392.81	402.82
Chemicals and allied products	484.36	501.96	502.85	504.94	516.01	519.72	514.00	514.04	515.30	519.06	518.25	516.57	518.30	518.67	538.00
Petroleum and coal products	604.58	621.08	625.34	622.94	630.08	628.28	645.45	629.73	636.55	635.10	637.43	624.82	645.81	628.28	647.02
Rubber and miscellaneous plastics products	350.99	360.55	362.75	362.30	365.71	373.09	367.33	364.79	365.20	360.74	366.86	370.77	366.13	369.35	372.78
Leather and leather products	216.88	218.45	218.37	218.96	221.86	227.84	225.29	223.57	227.25	224.60	233.53	237.37	230.83	233.19	223.56
TRANSPORTATION AND PUBLIC UTILITIES	450.30	458.64	461.38	460.21	467.67	465.29	457.77	465.27	462.91	463.27	466.05	465.68	472.80	474.40	475.53
WHOLESALE TRADE	351.74	359.04	358.87	359.42	363.65	363.65	361.57	361.95	361.19	363.09	366.53	367.49	366.53	369.02	367.28
RETAIL TRADE	174.64	176.08	176.35	175.74	176.32	178.46	172.35	174.78	175.71	177.83	178.44	179.97	182.10	183.01	183.52
FINANCE, INSURANCE, AND REAL ESTATE	289.02	303.94	303.72	305.40	312.81	309.52	312.18	318.50	316.54	316.17	316.54	315.95	314.58	320.84	316.80
SERVICES	256.75	265.20	265.36	266.65	269.89	269.57	269.51	273.13	272.48	271.32	271.51	272.21	273.22	276.87	275.72

- 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					
	Sept. 1986	July 1987	Aug. 1987 ^P	Sept. 1987 ^P	Sept. 1986	May 1987	June 1987	July 1987	Aug. 1987 ^P	Sept. 1987 ^P
PRIVATE SECTOR (in current dollars)	170.1	172.7	173.2	175.0	169.8	172.9	172.9	173.2	174.1	174.7
Mining ¹	181.8	181.8	182.0	183.7	-	-	-	-	-	-
Construction	153.8	153.5	154.7	156.2	151.9	154.1	155.0	154.3	154.7	154.4
Manufacturing	172.3	174.9	174.5	176.5	172.7	174.4	174.7	174.7	175.3	176.9
Transportation and public utilities	172.2	175.4	175.8	177.5	171.7	176.2	175.6	176.4	176.7	176.8
Wholesale trade ¹	172.9	176.6	177.3	177.9	-	-	-	-	-	-
Retail trade	159.5	160.3	160.4	163.0	159.0	160.2	160.3	160.9	161.5	162.5
Finance, insurance, and real estate ¹	180.4	186.8	189.1	189.0	-	-	-	-	-	-
Services	175.4	179.1	180.3	182.4	174.7	179.9	179.9	180.5	182.3	181.7
PRIVATE SECTOR [in constant (1977) dollars]	95.0	93.4	93.2	-	95.0	94.0	93.8	93.7	93.7	-

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:												
1985	55.9	47.0	52.4	47.3	53.2	46.8	53.8	53.8	47.8	53.2	54.3	57.3
1986	53.2	48.1	48.1	53.5	52.4	46.8	52.4	56.2	55.1	53.2	59.7	59.7
1987	53.5	56.8	58.6	58.4	58.6	55.7	68.6	53.0	64.9	-	-	-
Over 3-month span:												
1985	51.1	48.4	42.4	46.5	44.3	49.7	47.0	48.6	45.9	47.6	55.1	56.5
1986	49.7	44.9	45.7	48.4	47.6	45.4	48.4	55.1	55.9	58.1	58.6	60.3
1987	58.6	59.5	61.1	61.6	61.4	67.3	64.9	72.4	-	-	-	-
Over 6-month span:												
1985	46.5	46.5	43.2	44.3	44.3	45.1	43.0	44.3	49.2	49.2	47.3	45.9
1986	47.6	47.6	43.0	43.2	45.4	48.4	47.3	53.0	59.2	58.9	57.8	58.9
1987	61.9	62.7	58.9	67.3	66.5	71.9	-	-	-	-	-	-
Over 12-month span:												
1985	44.6	44.1	43.8	40.8	41.6	41.6	42.2	42.4	43.8	44.3	44.1	42.4
1986	43.2	44.1	46.2	45.7	47.8	49.5	49.5	51.6	54.9	52.2	55.1	56.5
1987	62.2	65.1	67.3	-	-	-	-	-	-	-	-	-

- 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	1978	1979	1980	1981	1982	1983	1984	1985	1986
Noninstitutional population	163,541	166,460	169,349	171,775	173,939	175,891	178,080	179,912	182,293
Labor force:									
Total (number)	103,882	106,559	108,544	110,315	111,872	113,226	115,241	117,167	119,540
Percent of population	63.5	64.0	64.1	64.2	64.3	64.4	64.7	65.1	65.6
Employed:									
Total (number)	97,679	100,421	100,907	102,042	101,194	102,510	106,702	108,856	111,303
Percent of population	59.7	60.3	59.6	59.4	58.2	58.3	59.9	60.5	61.1
Resident Armed Forces	1,631	1,597	1,604	1,645	1,668	1,676	1,697	1,706	1,706
Civilian									
Total	96,048	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597
Agriculture	3,387	3,347	3,364	3,368	3,401	3,383	3,321	3,179	3,163
Nonagricultural industries	92,661	95,477	95,938	97,030	96,125	97,450	101,685	103,971	106,434
Unemployed:									
Total (number)	6,202	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237
Percent of labor force	6.0	5.8	7.0	7.5	9.5	9.5	7.4	7.1	6.9
Not in labor force (number)	59,659	59,900	60,806	61,460	62,067	62,665	62,839	62,744	62,752

20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total employment	86,697	89,823	90,406	91,156	89,566	90,200	94,496	97,519	99,610
Private sector	71,026	73,876	74,166	75,126	73,729	74,330	78,472	81,125	82,900
Goods-producing	25,585	26,461	25,658	25,497	23,813	23,334	24,727	24,859	24,681
Mining	851	958	1,027	1,139	1,128	952	966	927	783
Construction	4,229	4,463	4,346	4,188	3,905	3,948	4,383	4,673	4,904
Manufacturing	20,505	21,040	20,285	20,170	18,781	18,434	19,378	19,260	18,994
Service-producing	61,113	63,363	64,748	65,659	65,753	66,866	69,769	72,660	74,930
Transportation and public utilities	4,923	5,136	5,146	5,165	5,082	4,954	5,159	5,238	5,244
Wholesale trade	4,969	5,204	5,275	5,358	5,278	5,268	5,555	5,717	5,735
Retail trade	14,573	14,989	15,035	15,189	15,179	15,613	16,545	17,356	17,845
Finance, insurance, and real estate	4,724	4,975	5,160	5,298	5,341	5,468	5,689	5,955	6,297
Services	16,252	17,112	17,890	18,619	19,036	19,694	20,797	22,000	23,099
Government	15,672	15,947	16,241	16,031	15,837	15,869	16,024	16,394	16,711
Federal	2,753	2,773	2,866	2,772	2,739	2,774	2,807	2,875	2,899
State	3,474	3,541	3,610	3,640	3,640	3,662	3,734	3,832	3,888
Local	9,446	9,633	9,765	9,619	9,458	9,434	9,482	9,687	9,923

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	1978	1979	1980	1981	1982	1983	1984	1985	1986
Private sector									
Average weekly hours	35.8	35.7	35.3	35.2	34.8	35.0	35.2	34.9	34.8
Average hourly earnings (in dollars)	5.69	6.16	6.66	7.25	7.68	8.02	8.32	8.57	8.76
Average weekly earnings (in dollars)	203.70	219.91	235.10	255.20	267.26	280.70	292.86	299.09	304.85
Mining									
Average weekly hours	43.4	43.0	43.3	43.7	42.7	42.5	43.3	43.4	42.2
Average hourly earnings (in dollars)	7.67	8.49	9.17	10.04	10.77	11.28	11.63	11.98	12.44
Average weekly earnings (in dollars)	332.88	365.07	397.06	438.75	459.88	479.40	503.58	519.93	524.97
Construction									
Average weekly hours	36.8	37.0	37.0	36.9	36.7	37.1	37.8	37.7	37.4
Average hourly earnings (in dollars)	8.66	9.27	9.94	10.82	11.63	11.94	12.13	12.32	12.47
Average weekly earnings (in dollars)	318.69	342.99	367.78	399.26	426.82	442.97	458.51	464.46	466.38
Manufacturing									
Average weekly hours	40.4	40.2	39.7	39.8	38.9	40.1	40.7	40.5	40.7
Average hourly earnings (in dollars)	6.17	6.70	7.27	7.99	8.49	8.83	9.19	9.54	9.73
Average weekly earnings (in dollars)	249.27	269.34	288.62	318.00	330.26	354.08	374.03	386.37	396.01
Transportation and public utilities									
Average weekly hours	40.0	39.9	39.6	39.4	39.0	39.0	39.4	39.5	39.2
Average hourly earnings (in dollars)	7.57	8.16	8.87	9.70	10.32	10.79	11.12	11.40	11.70
Average weekly earnings (in dollars)	302.80	325.58	351.25	382.18	402.48	420.81	438.13	450.30	458.64
Wholesale trade									
Average weekly hours	38.8	38.8	38.5	38.5	38.3	38.5	38.5	38.4	38.4
Average hourly earnings (in dollars)	5.88	6.39	6.96	7.56	8.09	8.55	8.89	9.16	9.35
Average weekly earnings (in dollars)	228.14	247.93	267.96	291.06	309.85	329.18	342.27	351.74	359.04
Retail trade									
Average weekly hours	31.0	30.6	30.2	30.1	29.9	29.8	29.8	29.4	29.2
Average hourly earnings (in dollars)	4.20	4.53	4.88	5.25	5.48	5.74	5.85	5.94	6.03
Average weekly earnings (in dollars)	130.20	138.62	147.38	158.03	163.85	171.05	174.33	174.64	176.08
Finance, insurance, and real estate									
Average weekly hours	36.4	36.2	36.2	36.3	36.2	36.2	36.5	36.4	36.4
Average hourly earnings (in dollars)	4.89	5.27	5.79	6.31	6.78	7.29	7.63	7.94	8.35
Average weekly earnings (in dollars)	178.00	190.77	209.60	229.05	245.44	263.90	278.50	289.02	303.94
Services									
Average weekly hours	32.8	32.7	32.6	32.6	32.6	32.7	32.6	32.5	32.5
Average hourly earnings (in dollars)	4.99	5.36	5.85	6.41	6.92	7.31	7.59	7.90	8.16
Average weekly earnings (in dollars)	163.67	175.27	190.71	208.97	225.59	239.04	247.43	256.75	265.20

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

(June 1981 = 100)

Series	1985		1986				1987			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1987	
Civilian workers ²	128.4	129.2	130.6	131.5	133.0	133.8	135.0	135.9	137.5	1.2	3.4
Workers, by occupational group:											
White-collar workers	130.7	131.6	133.1	134.2	136.0	136.9	138.5	139.3	141.2	1.4	3.8
Blue-collar workers	124.4	124.9	126.2	126.8	127.8	128.4	129.1	130.1	131.3	.9	2.7
Service occupations	130.9	131.8	133.1	133.7	135.4	136.6	138.0	138.5	139.9	1.0	3.3
Workers, by industry division:											
Goods-producing	124.9	125.5	126.9	128.1	128.8	129.5	130.2	131.1	132.2	.8	2.6
Manufacturing	125.5	126.0	127.7	128.7	129.3	130.1	130.7	131.5	132.7	.9	2.6
Service-producing	130.7	131.5	132.9	133.7	135.6	136.5	138.1	138.9	140.8	1.4	3.8
Services	136.4	137.1	138.8	139.4	142.4	143.6	145.2	145.8	149.2	2.3	4.8
Health services	-	-	-	-	-	-	-	-	-	1.3	4.3
Hospitals	-	-	-	-	-	-	-	-	-	1.7	4.6
Public administration ³	134.2	134.8	136.8	138.0	140.6	141.6	144.1	144.7	146.4	1.2	4.1
Nonmanufacturing	129.7	130.6	131.9	132.8	134.6	135.4	136.9	137.8	139.6	1.3	3.7
Private industry workers	126.8	127.5	128.9	129.9	130.8	131.6	132.9	133.8	135.1	1.0	3.3
Workers, by occupational group:											
White-collar workers	128.8	129.8	131.3	132.5	133.5	134.3	136.1	137.0	138.5	1.1	3.7
Professional specialty and technical occupations	-	-	-	-	-	-	-	-	-	1.4	3.9
Executive, administrative, and managerial occupations	-	-	-	-	-	-	-	-	-	1.4	4.8
Sales occupations	-	-	-	-	-	-	-	-	-	.0	1.5
Administrative support occupations, including clerical	-	-	-	-	-	-	-	-	-	1.1	3.9
Blue-collar workers	124.0	124.4	125.7	126.3	127.2	127.8	128.4	129.5	130.6	.8	2.7
Precision production, craft, and repair occupation	-	-	-	-	-	-	-	-	-	1.1	2.8
Machine operators, assemblers, and inspectors	-	-	-	-	-	-	-	-	-	.5	2.7
Transportation and material moving occupations	-	-	-	-	-	-	-	-	-	.7	2.6
Handlers, equipment cleaners, helpers, and laborers	-	-	-	-	-	-	-	-	-	.9	2.2
Service occupations	128.8	129.5	130.9	131.1	132.3	133.5	134.7	135.2	135.9	.5	2.7
Workers, by industry division:											
Goods-producing	124.6	125.3	126.7	127.8	128.6	129.2	129.9	130.8	131.9	.8	2.6
Construction	-	-	-	-	-	-	-	-	-	.8	3.1
Manufacturing	125.5	126.0	127.7	128.7	129.3	130.1	130.7	131.5	132.7	.9	2.6
Durables	-	-	-	-	-	-	-	-	-	.7	2.3
Nondurables	-	-	-	-	-	-	-	-	-	1.3	3.3
Service-producing	128.7	129.4	130.8	131.6	132.7	133.5	135.3	136.3	137.7	1.0	3.8
Transportation and public utilities	-	-	-	-	-	-	-	-	-	.5	2.7
Transportation	-	-	-	-	-	-	-	-	-	.2	2.2
Public utilities	-	-	-	-	-	-	-	-	-	1.0	3.4
Wholesale and retail trade	-	-	-	-	-	-	-	-	-	.5	3.3
Wholesale trade	-	-	-	-	-	-	-	-	-	.6	4.3
Retail trade	-	-	-	-	-	-	-	-	-	.5	2.8
Finance, insurance, and real estate	-	-	-	-	-	-	-	-	-	.3	2.7
Service	-	-	-	-	-	-	-	-	-	2.0	5.2
Health services	-	-	-	-	-	-	-	-	-	1.1	4.3
Hospitals	-	-	-	-	-	-	-	-	-	1.7	4.7
Nonmanufacturing	127.6	128.4	129.7	130.6	131.7	132.4	134.1	135.1	136.4	1.0	3.6
State and local government workers	136.5	137.5	138.9	139.7	143.6	144.7	145.9	146.3	149.7	2.3	4.2
Workers, by occupational group:											
White-collar workers	137.6	138.6	140.0	140.5	145.0	146.0	147.2	147.5	151.2	2.5	4.3
Blue-collar workers	131.9	132.7	134.7	136.3	138.5	139.5	140.8	141.3	143.3	1.4	3.5
Workers, by industry division:											
Services	137.9	139.1	140.4	140.8	145.5	146.6	147.3	147.6	151.8	2.8	4.3
Hospitals and other services ⁴	134.1	135.2	136.8	137.9	139.4	141.1	142.5	143.3	145.1	1.3	4.1
Health services	-	-	-	-	-	-	-	-	-	2.1	4.4
Schools	139.1	140.3	141.5	141.7	147.6	148.4	148.9	149.1	154.1	3.4	4.4
Elementary and secondary	140.9	142.0	143.0	143.2	149.4	150.3	150.5	150.7	156.5	3.8	4.8
Public administration ⁵	134.2	134.8	136.8	138.0	140.6	141.6	144.1	144.7	146.4	1.2	4.1

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

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

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

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

⁵ - Data not available.

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

(June 1981 = 100)

Series	1985		1986				1987			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1987	
Civilian workers ¹	126.3	127.0	128.3	129.3	130.7	131.5	132.8	133.5	135.2	1.3	3.4
Workers, by occupational group:											
White-collar workers	128.8	129.8	131.2	132.4	134.1	135.0	136.6	137.3	139.4	1.5	4.0
Blue-collar workers	122.0	122.3	123.4	124.1	125.0	125.6	126.2	127.1	128.3	.9	2.6
Service occupations	128.0	128.6	129.8	130.0	131.7	132.8	134.2	134.7	136.0	1.0	3.3
Workers, by industry division											
Goods-producing	122.5	123.1	124.4	125.6	126.3	127.0	127.8	128.5	129.8	1.0	2.8
Manufacturing	123.2	123.8	125.3	126.5	127.2	127.9	128.7	129.5	130.8	1.0	2.8
Service-producing	128.6	129.4	130.7	131.5	133.4	134.2	135.8	136.5	138.5	1.5	3.8
Services	134.2	134.8	136.4	137.0	139.9	141.1	142.7	143.4	146.8	2.4	4.9
Health services	-	-	-	-	-	-	-	-	-	1.5	4.7
Hospitals	-	-	-	-	-	-	-	-	-	1.8	4.9
Public administration ²	131.4	132.0	133.8	134.6	137.5	138.1	140.5	141.0	142.6	1.1	3.7
Nonmanufacturing	127.6	128.4	129.6	130.4	132.2	133.0	134.5	135.2	137.1	1.4	3.7
Private industry workers	124.9	125.6	126.8	127.9	128.8	129.5	130.8	131.7	133.0	1.0	3.3
Workers, by occupational group:											
White-collar workers	127.3	128.3	129.6	131.1	132.0	132.7	134.6	135.4	137.0	1.2	3.8
Professional specialty and technical occupations	131.2	131.5	132.7	134.0	135.4	136.4	138.4	139.1	141.2	1.5	4.3
Executive, administrative, and managerial occupations	127.7	128.4	130.5	132.1	132.4	133.5	135.6	136.4	138.6	1.6	4.7
Sales occupations	119.3	122.5	122.4	124.3	125.2	124.9	126.7	127.1	127.0	-.1	1.4
Administrative support occupations, including clerical	127.1	127.9	129.6	130.8	131.7	132.7	134.3	135.5	137.1	1.2	4.1
Blue-collar workers	121.7	122.0	123.1	123.7	124.5	125.1	125.6	126.6	127.7	.9	2.6
Precision production, craft, and repair occupations	123.7	123.8	125.3	125.7	126.7	127.4	127.9	128.8	130.2	1.1	2.8
Machine operators, assemblers, and inspectors	121.1	121.6	122.6	123.6	124.1	124.9	125.5	126.7	127.5	.6	2.7
Transportation and material moving occupations	117.7	117.8	118.0	118.9	119.8	120.1	120.5	121.5	122.3	.7	2.1
Handlers, equipment cleaners, helpers, and laborers	118.6	119.8	120.0	120.3	120.9	121.4	121.9	122.6	123.7	.9	2.3
Service occupations	126.3	126.6	128.0	128.0	128.9	130.1	131.4	131.9	132.6	.5	2.9
Workers, by industry division:											
Goods-producing	122.3	122.9	124.2	125.4	126.1	126.8	127.5	128.3	129.6	1.0	2.8
Construction	117.3	117.9	118.3	119.8	120.5	120.8	121.7	122.7	123.8	.9	2.7
Manufacturing	123.2	123.8	125.3	126.5	127.2	127.9	128.7	129.5	130.8	1.0	2.8
Durables	122.7	123.4	124.8	125.8	126.4	127.2	127.7	128.7	129.7	.8	2.6
Nondurables	124.0	124.6	126.1	127.9	128.5	129.3	130.5	131.0	132.8	1.4	3.3
Service-producing	127.0	127.8	129.0	129.9	130.9	131.6	133.4	134.3	135.7	1.0	3.7
Transportation and public utilities	124.8	125.2	126.3	126.6	127.3	127.5	128.1	129.3	130.0	.5	2.1
Transportation	-	-	-	-	-	-	-	-	-	.4	1.6
Public utilities	-	-	-	-	-	-	-	-	-	.6	2.8
Wholesale and retail trade	122.7	123.7	124.5	125.8	126.5	126.9	127.9	129.9	130.6	.5	3.2
Wholesale trade	127.7	128.3	129.7	131.2	131.8	133.1	134.8	137.2	137.8	.4	4.6
Retail trade	120.8	121.9	122.5	123.7	124.4	124.4	125.2	127.1	127.8	.6	2.7
Finance, insurance, and real estate	124.1	126.5	126.6	128.0	129.0	130.0	133.5	131.5	131.8	.2	2.2
Services	133.9	134.1	136.2	136.9	138.2	139.5	141.8	142.8	145.9	2.2	5.6
Health services	-	-	-	-	-	-	-	-	-	1.4	5.0
Hospitals	-	-	-	-	-	-	-	-	-	1.8	5.3
Nonmanufacturing	125.9	126.6	127.7	128.7	129.7	130.4	131.9	132.8	134.2	1.1	3.5
State and local government workers	133.2	134.2	135.5	136.0	140.4	141.4	142.5	142.8	146.1	2.3	4.1
Workers, by occupational group											
White-collar workers	134.3	135.3	136.6	137.0	141.8	142.8	143.9	144.1	147.7	2.5	4.2
Blue-collar workers	127.9	128.4	130.4	131.9	134.5	135.1	136.3	136.9	139.0	1.5	3.3
Workers, by industry division											
Services	134.5	135.6	136.8	137.1	142.1	143.3	143.9	144.2	148.2	2.8	4.3
Hospitals and other services ³	130.2	130.9	132.4	133.3	135.8	137.3	138.6	139.4	141.2	1.3	4.0
Health services	-	-	-	-	-	-	-	-	-	1.9	3.8
Schools	135.8	137.0	138.0	138.2	144.1	145.1	145.5	145.6	150.3	3.2	4.3
Elementary and secondary	137.5	138.5	139.4	139.4	145.7	146.4	146.5	146.6	152.0	3.7	4.3
Public administration ²	131.4	132.0	133.8	134.6	137.5	138.1	140.5	141.0	142.6	1.1	3.7

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

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

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

- Data not available.

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

(June 1981 = 100)

Series	1985		1986				1987			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1987	
COMPENSATION											
Workers, by bargaining status¹											
Union	126.5	127.1	128.4	128.7	129.4	129.8	130.5	131.2	132.0	0.6	2.0
Goods-producing	124.6	125.2	126.4	126.7	127.3	127.5	128.0	128.7	129.5	.6	1.7
Service-producing	129.5	130.2	131.6	131.9	132.8	133.4	134.4	135.2	135.9	.5	2.3
Manufacturing	125.0	125.5	127.0	126.9	127.5	127.9	128.0	128.7	129.5	.6	1.6
Nonmanufacturing	127.8	128.6	129.7	130.4	131.2	131.5	132.6	133.5	134.3	.6	2.4
Nonunion	126.8	127.5	129.0	130.2	131.2	132.1	133.6	134.6	136.1	1.1	3.7
Goods-producing	124.4	125.1	126.7	128.2	129.1	130.0	130.8	131.8	133.1	1.0	3.1
Service-producing	128.3	129.0	130.4	131.4	132.5	133.4	135.3	136.4	137.9	1.1	4.1
Manufacturing	125.7	126.3	128.1	129.7	130.4	131.4	132.2	133.2	134.6	1.1	3.2
Nonmanufacturing	127.3	128.1	129.5	130.4	131.6	132.5	134.3	135.3	136.8	1.1	4.0
Workers, by region¹											
Northeast	128.8	129.9	131.6	133.3	134.2	135.2	137.4	138.6	140.3	1.2	4.5
South	126.5	127.2	128.7	129.6	130.7	131.4	132.1	133.2	134.2	.8	2.7
Midwest (formerly North Central)	124.2	124.6	125.9	126.2	127.3	128.1	129.1	130.2	131.2	.8	3.1
West	129.1	129.8	130.8	131.6	132.1	132.8	134.1	134.2	135.8	1.2	2.8
Workers, by area size¹											
Metropolitan areas	127.3	128.1	129.5	130.5	131.4	132.2	133.5	134.4	135.8	1.0	3.3
Other areas	123.9	123.9	125.5	126.4	127.2	127.9	129.0	130.2	131.3	.8	3.2
WAGES AND SALARIES											
Workers, by bargaining status¹											
Union	124.1	124.7	125.6	126.1	126.9	127.2	127.7	128.3	129.1	.6	1.7
Goods-producing	122.2	122.7	123.4	124.1	124.5	124.8	125.0	125.8	126.5	.6	1.6
Service-producing	127.1	127.8	129.0	129.3	130.5	130.9	131.7	132.2	132.9	.5	1.8
Manufacturing	122.8	123.3	124.2	124.6	125.0	125.5	125.6	126.2	127.0	.6	1.6
Nonmanufacturing	125.3	125.9	126.9	127.4	128.5	128.7	129.5	130.1	130.8	.5	1.8
Nonunion	125.2	125.9	127.3	128.5	129.4	130.3	131.8	132.8	134.3	1.1	3.8
Goods-producing	122.3	123.0	124.5	126.1	127.0	127.8	128.8	129.6	131.1	1.2	3.2
Service-producing	126.9	127.7	128.9	129.9	130.8	131.7	133.6	134.6	136.2	1.2	4.1
Manufacturing	123.7	124.4	126.1	127.7	128.5	129.5	130.6	131.5	133.0	1.1	3.5
Nonmanufacturing	125.9	126.6	127.8	128.9	129.8	130.6	132.4	133.4	134.9	1.1	3.9
Workers, by region¹											
Northeast	126.8	128.1	129.2	131.3	132.3	133.1	135.4	136.6	138.3	1.2	4.5
South	124.8	125.4	126.8	127.8	128.8	129.4	130.1	131.1	132.1	.8	2.6
Midwest (formerly North Central)	122.5	122.9	124.2	124.4	125.3	126.2	127.4	128.5	129.6	.9	3.4
West	126.6	127.1	128.1	128.9	129.3	130.1	131.2	131.1	133.1	1.5	2.9
Workers, by area size¹											
Metropolitan areas	125.5	126.3	127.4	128.5	129.4	130.2	131.6	132.4	133.7	1.0	3.3
Other areas	121.9	122.0	123.6	124.5	125.0	125.6	126.6	127.8	129.1	1.0	3.3

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							
	1985	1986	1985	1986				1987 ^P		
			IV	I	II	III	IV	I	II	III
Specified adjustments:										
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:										
First year of contract	2.6	1.1	2.0	0.6	0.7	0.7	2.7	1.7	4.1	2.5
Annual rate over life of contract	2.7	1.6	1.4	1.2	1.6	1.2	2.4	2.4	3.9	2.1
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract	2.3	1.2	2.1	.8	1.3	.8	2.0	1.2	2.6	2.1
Annual rate over life of contract	2.7	1.8	1.9	1.5	2.0	1.5	2.1	1.8	2.9	2.0
Effective adjustments:										
Total effective wage adjustment ³	3.3	2.3	.5	.6	.7	.5	.5	.4	1.0	.9
From settlements reached in period .....	.7	.5	.1	(⁴)	.2	.1	.2	(⁴)	.1	.2
Deferred from settlements reached in earlier periods	1.8	1.7	.2	.4	.6	.5	.2	.3	.7	.6
From cost-of-living-adjustments clauses .....	.7	.2	.1	.2	(⁴)	(⁴)	.1	.1	.2	.1

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

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

compensation or wages.

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

⁴ Between -0.05 and 0.05 percent.

^P = preliminary.

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

Measure	Average for four quarters ending--							
	1985	1986				1987 ^P		
	IV	I	II	III	IV	I	II	III
Specified total compensation adjustments, settlements covering 5,000 workers or more, all industries:								
First year of contract	2.6	2.3	1.4	0.9	1.1	1.2	1.9	2.8
Annual rate over life of contract	2.7	2.5	2.0	1.4	1.6	1.7	2.1	2.6
Specified wage adjustments, settlements covering 1,000 workers or more:								
All industries								
First year of contract	2.3	2.0	1.6	1.2	1.2	1.2	1.5	2.1
Contracts with COLA clauses	1.6	1.6	1.8	2.2	1.9	2.0	1.8	2.1
Contracts without COLA clauses	2.7	2.2	1.5	.8	.9	.9	1.4	2.0
Annual rate over life of contract	2.7	2.5	2.2	1.7	1.8	1.8	2.0	2.2
Contracts with COLA clauses	2.5	2.5	2.5	2.0	1.7	1.8	1.7	1.7
Contracts without COLA clauses	2.8	2.5	2.1	1.6	1.8	1.8	2.2	2.6
Manufacturing								
First year of contract .....	.8	.8	.1	-1.0	-1.2	-1.6	-.9	1.1
Contracts with COLA clauses .....	.8	.8	.7	1.1	1.3	1.3	1.3	2.2
Contracts without COLA clauses .....	.9	.9	-.4	-2.0	-2.8	-3.5	-2.9	-.2
Annual rate over life of contract	1.8	1.8	1.4	.3	.2	(²)	.2	1.0
Contracts with COLA clauses	2.1	2.1	2.0	1.1	.9	.8	.8	1.0
Contracts without COLA clauses	1.6	1.5	.9	-.1	-.2	-.6	-.3	1.1
Nonmanufacturing								
First year of contract	3.3	2.8	2.6	2.1	2.0	2.2	2.3	2.5
Contracts with COLA clauses	3.6	3.5	3.4	2.7	2.1	2.2	2.1	2.1
Contracts without COLA clauses	3.3	2.7	2.4	1.9	2.0	2.2	2.4	2.6
Annual rate over life of contract	3.3	3.0	2.8	2.3	2.3	2.4	2.6	2.8
Contracts with COLA clauses	3.6	3.6	3.3	2.5	2.1	2.2	2.2	2.4
Contracts without COLA clauses	3.3	2.8	2.6	2.2	2.4	2.6	2.8	2.9
Construction								
First year of contract	1.5	1.6	2.3	2.3	2.2	2.4	2.7	3.0
Contracts with COLA clauses	(¹)	(¹)	1.1	1.4	1.4	1.6	3.7	(¹)
Contracts without COLA clauses	(¹)	(¹)	2.4	2.4	2.3	2.4	2.7	(¹)
Annual rate over life of contract	2.1	2.2	2.5	2.6	2.5	2.5	2.9	3.2
Contracts with COLA clauses	(¹)	(¹)	1.2	1.6	1.6	1.4	3.8	(¹)
Contracts without COLA clauses	(¹)	(¹)	2.6	2.6	2.5	2.6	2.9	(¹)

¹ Data do not meet publication standards.

² Between -0.05 and 0.05 percent.

^P = preliminary.

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

Effective wage adjustment	Average for four quarters ending--						
	1986				1987 ^P		
	I	II	III	IV	I	II	III
For all workers:¹							
Total	3.1	2.9	2.3	2.3	2.0	2.2	2.6
From settlements reached in period .....	.6	.5	.5	.5	.4	.3	.5
Deferred from settlements reached in earlier period	1.7	1.8	1.6	1.7	1.5	1.6	1.7
From cost-of-living-adjustments clauses .....	.8	.7	.2	.2	.1	.3	.4
For workers receiving changes:							
Total	4.0	3.8	3.1	2.8	2.5	2.8	3.2
From settlements reached in period	2.9	2.5	1.7	1.6	1.2	1.0	1.9
Deferred from settlements reached in earlier period	3.5	3.4	3.8	3.9	3.7	3.5	3.3
From cost-of-living-adjustments clauses	2.5	2.0	1.0	1.0	.6	1.8	2.3

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 ¹		First 6 months 1987
	1985	1986	
Specified adjustments:			
Total compensation ¹ adjustments, ² settlements covering 5,000 workers or more:			
First year of contract	4.2	6.2	5.7
Annual rate over life of contract	5.1	6.0	4.9
Wage adjustments, settlements covering 1,000 workers or more:			
First year of contract	4.6	5.7	5.2
Annual rate over life of contract	5.4	5.7	5.4
Effective adjustments:			
Total effective wage adjustment ³	5.7	5.5	1.6
From settlements reached in period	4.1	2.4	.4
Deferred from settlements reached in earlier periods	1.6	3.0	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.

29. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1986			1987									
	1985	1986	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	54	69	5	2	1	2	5	3	2	3	8	5	2	5	1
In effect during period	61	72	18	9	6	7	7	5	5	7	12	13	11	13	12
Workers involved:															
Beginning in period (in thousands)	323.9	533.1	44.3	8.7	3.0	7.3	37.6	12.2	2.7	7.8	16.1	8.4	17.4	42.9	1.3
In effect during period (in thousands)	584.1	899.5	109.9	67.8	49.4	47.6	41.6	16.2	8.9	14.7	26.6	26.2	38.0	69.7	54.5
Days idle:															
Number (in thousands)	7,079.0	11,861.0	1,423.7	933.2	1,873.6	828.6	194.1	104.4	151.3	223.7	295.7	483.0	403.2	1,115.0	370.1
Percent of estimated working time ¹ .....	.03	.05	.06	.05	.04	.04	.01	.01	.01	.01	.01	.02	.02	.05	.02

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		1986					1987							
	1985	1986	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:															
All items	322.2	328.4	330.5	330.8	331.1	333.1	334.4	335.9	337.7	338.7	340.1	340.8	342.7	344.4	345.3
All items (1957-59=100)	374.7	381.9	384.4	384.7	385.1	387.4	388.9	390.7	392.7	393.9	395.6	396.3	398.5	400.5	401.6
Food and beverages	302.0	311.8	315.6	316.4	317.0	320.5	321.6	321.6	322.5	324.0	325.4	325.1	325.4	326.4	326.9
Food	309.8	319.7	323.7	324.6	325.2	328.9	330.1	330.0	331.0	332.5	334.1	333.6	333.8	334.9	335.3
Food at home	296.8	305.3	309.5	309.9	310.2	315.2	316.6	315.8	316.9	318.8	320.4	319.1	319.0	319.8	319.9
Cereals and bakery products	317.0	325.8	328.4	328.5	329.5	331.5	332.7	333.2	335.6	336.5	337.0	338.4	338.8	338.9	339.5
Meats, poultry, fish, and eggs	263.4	275.1	284.9	286.3	287.3	289.2	286.4	286.5	285.9	288.5	290.7	293.1	294.6	296.6	294.7
Dairy products	258.0	258.4	260.0	261.2	262.2	263.3	264.7	263.7	263.2	264.3	263.7	263.2	264.2	266.0	267.2
Fruits and vegetables	325.7	328.7	328.6	327.8	328.5	344.3	355.2	352.5	360.6	365.7	372.8	359.3	352.5	352.5	353.8
Other foods at home	361.1	373.6	374.4	373.9	372.2	378.7	380.0	378.6	377.6	377.5	376.4	375.9	377.0	376.6	377.7
Sugar and sweets	398.8	411.1	413.4	412.4	411.8	415.8	415.8	417.2	417.4	417.7	419.3	418.8	419.6	420.6	420.9
Fats and oils	294.4	287.8	284.6	285.4	286.0	293.2	290.3	294.6	291.8	293.3	291.4	292.9	292.6	291.2	290.1
Nonalcoholic beverages	451.7	478.2	477.5	476.9	470.2	482.6	481.9	475.4	469.8	467.9	462.6	458.5	458.8	462.3	463.3
Other prepared foods	294.2	301.9	304.7	303.9	305.2	308.4	312.1	311.3	313.2	313.5	314.5	315.4	315.9	316.9	317.2
Food away from home	346.6	360.1	364.0	365.8	367.1	368.6	369.6	370.9	371.5	372.3	373.8	374.9	375.9	377.4	378.4
Alcoholic beverages	229.5	239.7	240.6	240.5	240.8	242.5	243.2	243.6	244.3	245.0	245.9	246.7	247.3	247.8	248.4
Housing	349.9	360.2	363.0	361.7	362.1	363.9	365.1	366.4	367.7	368.9	371.3	372.5	374.9	375.4	375.2
Shelter	382.0	402.9	409.5	410.2	410.4	412.3	414.0	415.9	418.0	419.2	420.2	422.1	425.1	426.2	428.6
Renters' costs (12/82=100)	115.4	121.9	124.0	124.3	124.2	125.3	125.8	126.4	127.1	127.3	127.9	129.3	130.1	129.8	129.4
Rent, residential	264.6	280.0	284.6	285.6	286.0	287.1	288.0	288.3	288.8	289.4	289.6	291.2	293.1	294.5	295.4
Other renters' costs	398.4	416.2	427.3	425.5	418.2	428.3	430.8	438.7	446.1	446.1	453.1	465.9	467.7	458.0	448.0
Homeowners' costs (12/82=100)	113.1	119.4	121.3	121.5	121.6	122.0	122.5	123.0	123.6	124.0	124.2	124.4	125.4	126.0	127.1
Owners' equivalent rent (12/82=100)	113.2	119.4	121.3	121.5	121.6	122.0	122.5	123.0	123.6	124.1	124.2	124.4	125.4	126.0	127.2
Household insurance (12/82=100)	112.4	119.2	120.6	121.1	121.6	121.8	122.0	122.2	122.4	123.0	123.6	124.5	125.1	125.5	125.8
Maintenance and repairs	368.9	373.8	379.0	377.1	380.0	382.1	381.9	383.4	382.4	381.9	385.0	392.4	391.3	390.5	390.9
Maintenance and repair services	421.1	430.9	437.5	433.7	433.1	437.7	436.1	439.4	437.1	435.3	440.5	452.8	451.5	450.8	451.0
Maintenance and repair commodities	269.6	269.7	273.0	272.9	278.3	277.7	278.8	278.5	277.7	279.6	280.2	281.9	281.3	280.4	281.0
Fuel and other utilities	393.6	384.7	379.1	371.1	371.0	373.7	374.8	374.9	374.2	377.5	387.6	388.1	391.1	389.8	381.3
Fuels	488.1	463.1	450.3	437.8	438.1	443.7	445.1	444.6	442.0	448.7	470.8	468.9	473.6	471.6	452.6
Fuel oil, coal, and bottled gas	619.5	501.5	451.9	452.0	460.6	487.9	503.2	500.6	500.5	497.7	498.6	497.9	502.3	501.0	507.0
Gas (piped) and electricity	452.7	446.7	441.4	426.7	425.3	428.8	428.9	428.7	425.9	433.3	456.8	454.8	459.4	457.4	436.6
Other utilities and public services	240.7	253.1	257.1	255.4	254.9	254.9	255.6	256.2	257.0	257.2	256.6	259.9	259.3	260.2	
Household furnishings and operations	247.2	250.4	251.6	251.2	252.4	253.1	253.5	254.3	255.2	254.9	254.9	255.1	255.4	255.8	255.6
Housefurnishings	200.1	201.1	202.2	201.4	202.5	203.0	203.2	203.8	204.7	203.7	203.6	203.9	204.2	204.6	203.9
Housekeeping supplies	313.6	319.5	319.8	320.4	322.9	324.6	325.3	327.7	328.2	330.1	330.5	330.1	329.5	330.4	331.7
Housekeeping services	338.9	346.6	348.5	348.5	349.3	349.8	350.6	351.0	352.2	353.1	353.0	353.8	354.3	354.6	355.3
Apparel and upkeep	206.0	207.8	213.2	213.1	210.9	207.1	208.4	215.2	218.7	218.0	214.5	210.5	214.7	222.2	226.3
Apparel commodities	191.6	192.0	197.6	197.4	194.9	199.1	199.2	199.1	202.6	201.8	198.1	194.0	198.3	206.0	209.9
Men's and boys' apparel	197.9	200.0	204.3	205.3	202.3	199.2	199.9	203.5	205.6	207.1	205.3	203.0	204.1	208.4	211.0
Women's and girls' apparel	169.5	168.0	176.4	175.0	171.7	166.6	167.8	177.0	182.2	179.6	173.7	168.3	175.0	186.2	191.0
Infants' and toddlers' apparel	299.7	312.7	312.0	307.0	312.7	301.8	304.5	319.6	319.1	316.4	308.0	301.2	304.8	313.6	324.9
Footwear	212.1	211.2	215.1	215.1	214.0	209.9	211.0	216.5	219.2	220.8	218.8	214.3	215.9	219.1	222.4
Other apparel commodities	215.5	217.9	219.8	221.1	220.0	223.2	226.0	227.0	227.0	226.7	230.6	231.9	234.2	236.4	237.3
Apparel services	320.9	334.6	338.3	339.0	339.5	342.5	343.2	344.7	344.7	346.8	347.4	348.7	348.2	348.4	351.0
Transportation	319.9	307.5	302.6	304.3	304.8	308.5	310.0	310.6	313.3	314.6	316.7	318.5	320.2	320.4	321.9
Private transportation	314.2	299.5	294.1	295.8	295.9	299.8	301.3	301.9	304.8	306.3	308.6	310.5	312.0	312.1	313.8
New vehicles	214.9	224.1	226.7	230.2	231.7	232.3	229.9	229.9	230.6	231.2	231.8	231.0	230.6	233.0	233.0
New cars	215.2	224.4	227.1	230.7	232.2	233.0	230.2	229.4	230.4	231.3	232.0	232.7	232.1	231.6	233.8
Used cars	379.7	363.2	360.6	361.0	356.6	354.6	356.9	363.0	371.6	378.6	383.0	385.5	385.7	383.3	388.0
Motor fuel	373.8	292.1	263.2	260.9	261.9	275.8	288.1	290.0	297.2	299.7	306.0	311.2	319.5	318.4	315.2
Gasoline	373.3	291.4	262.6	260.2	261.2	275.1	287.5	289.4	296.7	299.3	305.5	310.8	319.1	317.9	314.6
Maintenance and repair	351.4	363.1	365.7	368.4	370.7	371.3	373.0	373.0	376.1	376.1	376.3	376.8	378.6	380.7	382.0
Other private transportation	287.6	303.9	307.6	311.6	312.0	314.9	314.0	314.4	315.1	315.9	317.6	318.8	318.6	319.7	324.1
Other private transportation commodities	202.6	201.6	198.9	200.0	200.4	202.2	201.8	202.3	200.8	202.3	202.3	201.6	202.6	204.2	205.0
Other private transportation services	312.8	333.9	339.3	344.1	344.5	347.7	346.7	347.0	348.6	349.1	351.3	353.2	352.6	353.5	359.1
Public transportation	402.8	426.4	428.7	431.7	437.5	438.9	439.8	441.4	440.8	439.6	438.1	438.3	442.8	445.1	442.0
Medical care	403.1	433.5	442.3	444.6	446.8	449.6	452.4	455.0	457.3	458.9	461.3	464.1	466.1	467.8	469.8
Medical care commodities	256.7	273.6	277.5	278.2	280.8	282.4	283.9	286.3	287.5	289.6	291.5	293.4	294.6	295.8	297.4
Medical care services	435.1	468.6	478.8	481.5	483.4	486.5	489.6	492.1	494.7	496.0	498.4	501.5	503.6	505.4	507.4
Professional services	367.3	390.9	398.0	399.8	401.0	403.7	406.8	409.6	412.5	413.9	416.7	418.9	420.6	422.8	424.4
Hospital and related services	224.0	237.4	242.3	243.8	245.0	246.7	248.1	249.0	250.1	251.0	251.8	254.6	256.4	257.1	258.8
Entertainment	265.0	274.1	276.5	277.4	277.4	278.3	278.7	279.8	281.3	282.0	282.3	283.5	283.9	285.2	287.1
Entertainment commodities	260.6	265.9	266.7	267.6	267.4	268.1	268.1	269.9	270.8	271.7	271.8	272.8	272.5	272.6	274.0
Entertainment services	271.8	286.3	290.8	291.8	292.2	293.3	294.1	294.5	296.6	297.2	297.6	299.1	300.1	302.6	305.2
Other goods and services	326.6	346.4	354.6	354.9	355.2	358.1	359.7	360.3	361.1	362.0	362.9	365.1	366.6	373.9	375.5
Tobacco products	328.5														

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		1986			1987									
	1985	1986	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Apparel commodities	191.3	191.5	197.1	196.6	194.5	190.5	191.5	198.3	202.1	201.2	197.5	193.6	197.4	205.0	209.3
Men's and boys' apparel	198.2	199.7	203.6	204.6	202.1	198.6	198.9	201.9	204.3	205.7	204.0	201.7	203.1	207.2	210.4
Women's and girls' apparel	171.3	169.4	178.1	176.2	173.1	168.2	169.2	178.6	184.4	181.8	175.8	170.4	176.6	188.0	192.9
Infants' and toddlers' apparel	311.7	329.4	329.2	323.8	329.3	319.1	322.2	337.3	336.3	334.7	324.2	318.3	320.9	330.5	344.1
Footwear	212.5	211.8	215.3	215.6	214.9	211.1	212.4	217.7	220.0	221.3	219.4	215.5	217.2	219.9	223.7
Other apparel commodities	203.1	206.1	207.9	208.9	207.8	210.1	212.1	214.1	213.9	213.1	217.0	217.6	219.4	222.6	223.9
Apparel services	318.5	332.0	335.6	336.2	336.6	339.7	340.5	341.8	343.6	343.3	347.8	344.8	344.2	344.6	347.2
Transportation	321.6	307.6	302.2	304.0	304.2	308.2	309.9	310.8	313.9	315.5	317.9	319.7	321.4	321.7	323.2
Private transportation	317.4	301.5	295.7	297.5	297.5	301.6	303.4	304.2	307.4	309.1	311.7	313.6	315.2	315.4	317.1
New vehicles	214.2	223.3	225.7	229.4	230.7	231.2	228.9	229.0	229.0	229.5	229.0	230.3	229.5	229.2	231.6
New cars	214.5	223.6	226.3	230.0	231.4	232.0	229.3	228.5	229.5	230.3	230.9	231.6	230.9	230.4	232.7
Used cars	379.7	363.2	360.6	361.0	356.6	354.7	357.0	363.1	371.7	378.7	383.0	385.4	385.6	387.1	387.7
Motor fuel	375.4	293.1	264.0	262.0	263.2	277.7	289.5	291.3	298.7	301.2	307.3	313.0	321.4	320.0	316.7
Gasoline	375.0	292.5	263.4	261.3	262.5	277.1	288.9	290.7	298.3	300.7	307.2	312.6	321.0	319.6	316.1
Maintenance and repair	352.6	364.7	367.2	369.7	372.3	373.4	375.1	374.9	377.9	378.1	378.3	378.8	380.6	382.6	383.7
Other private transportation	287.7	302.2	305.2	309.5	309.9	312.6	311.5	311.7	312.1	312.9	314.7	315.8	315.4	316.4	321.5
Other private transportation commodities	204.7	203.9	201.1	202.3	202.8	204.3	204.0	204.3	202.6	204.0	204.4	203.8	204.7	206.0	206.8
Other private transportation services	312.3	330.9	335.4	340.7	341.0	344.0	342.6	342.9	344.1	344.6	346.9	348.7	347.7	348.5	355.2
Public transportation	391.7	416.3	418.9	421.1	425.8	426.7	427.2	428.7	428.9	428.9	426.9	426.9	430.7	433.0	430.4
Medical care	401.2	431.0	439.7	441.7	443.9	446.7	449.7	452.3	454.9	456.6	459.3	462.1	464.2	466.2	468.4
Medical care commodities	256.3	272.8	276.6	277.0	279.8	281.4	282.9	285.1	286.2	288.2	290.5	292.1	293.2	294.4	296.1
Medical care services	432.7	465.7	475.6	478.2	480.1	483.2	486.5	489.2	492.1	493.6	496.2	499.4	501.7	503.9	506.1
Professional services	367.7	391.4	398.4	400.2	401.5	404.2	407.4	410.2	413.3	414.7	417.5	419.7	421.5	424.0	426.6
Hospital and related services	221.2	234.2	239.1	240.4	241.6	243.2	244.6	245.4	246.4	247.4	248.2	250.9	252.8	253.5	255.4
Entertainment	260.1	268.7	271.1	272.1	272.3	272.9	273.4	274.4	276.0	276.9	277.0	278.2	278.5	279.7	281.4
Entertainment commodities	254.2	259.5	260.6	261.7	261.7	262.2	262.3	263.7	264.7	265.9	265.9	266.8	266.8	266.9	267.9
Entertainment services	271.6	286.0	290.7	291.6	292.0	292.7	293.9	294.2	296.6	297.2	297.4	299.0	299.9	302.4	305.1
Other goods and services	322.7	341.7	348.8	349.2	349.5	352.8	354.6	355.1	356.0	356.9	357.8	360.5	361.9	368.3	369.8
Tobacco products	328.1	350.7	356.8	356.9	357.2	364.7	368.0	369.2	370.0	370.5	372.3	379.7	380.5	382.1	383.4
Personal care	279.6	289.0	290.8	291.2	291.3	293.2	294.1	293.9	294.7	296.4	296.4	297.3	298.2	299.1	299.9
Toilet goods and personal care appliances	279.0	288.6	290.5	290.5	290.3	292.0	293.2	293.6	294.9	294.9	294.8	296.1	296.6	297.4	298.4
Personal care services	280.5	289.8	291.6	292.4	292.7	294.9	295.4	295.5	296.2	298.4	298.8	299.1	300.4	301.5	302.0
Personal and educational expenses	399.3	430.7	448.7	449.4	450.0	452.0	453.7	454.3	455.5	456.1	457.3	458.4	460.6	475.3	477.5
School books and supplies	355.7	384.8	396.7	396.9	397.1	406.5	409.3	409.6	410.1	410.5	410.6	410.7	411.4	423.7	427.0
Personal and educational services	410.1	442.0	461.3	462.1	462.8	464.3	465.9	466.6	467.8	468.5	469.8	471.0	473.4	488.5	490.6
All items	318.5	323.4	325.0	325.4	325.7	327.7	329.0	330.5	332.3	333.4	334.9	335.6	337.4	339.1	340.0
Commodities	286.5	283.1	282.6	283.1	283.3	285.5	287.0	288.6	290.7	291.6	292.4	292.5	293.9	295.7	296.8
Food and beverages	301.8	311.6	315.4	316.2	316.8	320.3	321.3	321.2	322.1	323.5	325.0	324.8	325.1	326.2	326.6
Commodities less food and beverages	274.9	264.2	261.1	261.5	261.5	262.9	264.6	267.2	269.9	270.6	270.9	271.2	273.3	275.4	276.9
Nondurables less food and beverages	283.8	265.6	260.2	259.7	259.9	262.3	266.0	270.0	273.7	274.2	274.1	274.1	277.9	281.7	283.4
Apparel commodities	191.3	191.5	197.1	196.6	194.5	190.5	191.5	198.3	202.1	201.2	197.5	193.6	197.4	205.0	209.3
Nondurables less food, beverages, and apparel	334.2	306.7	296.0	295.6	296.9	304.4	310.2	311.5	315.0	316.5	319.5	322.8	326.2	326.5	326.0
Durables	265.2	264.0	264.0	265.3	265.0	265.4	264.5	265.3	266.8	267.8	268.5	269.1	269.0	269.1	270.2
Services	377.3	395.7	401.0	401.0	401.5	403.3	404.5	405.9	407.3	408.8	411.4	412.8	415.3	416.9	417.6
Rent of shelter (12/84=100)	103.2	109.0	110.8	111.0	111.1	111.5	111.9	112.5	113.0	113.4	113.5	114.0	114.9	115.2	115.9
Household services less rent of shelter (12/84=100)	102.6	103.9	103.8	102.0	101.8	102.3	102.5	102.5	102.4	103.2	105.7	105.9	106.6	106.3	104.2
Transportation services	332.2	350.1	353.8	357.9	359.5	361.7	361.3	361.6	363.2	363.5	364.7	365.9	366.3	367.6	371.6
Medical care services	432.7	465.7	475.6	478.2	480.1	483.2	486.5	489.2	492.1	493.6	496.2	499.4	501.7	503.9	506.1
Other services	310.1	326.9	333.8	334.7	335.1	336.4	337.5	338.0	339.4	340.3	340.9	342.0	343.3	349.7	351.8
Special indexes:															
All items less food	319.4	323.0	324.0	324.2	324.4	326.0	327.4	329.3	331.3	332.3	333.7	334.6	336.8	338.5	339.6
All items less shelter	303.4	305.1	305.7	305.9	306.3	308.4	309.6	311.0	312.8	313.9	315.6	315.9	317.4	319.2	319.7
All items less homeowners' costs (12/84=100)	101.8	102.8	103.2	103.2	103.4	104.0	104.5	104.9	105.5	105.9	106.4	106.6	107.1	107.7	107.8
All items less medical care	314.3	318.0	319.3	319.6	319.8	321.8	323.0	324.5	326.2	327.3	328.8	329.3	331.1	332.8	333.7
Commodities less food	272.8	262.9	260.0	260.3	260.4	261.8	263.5	265.9	268.5	269.2	269.5	269.8	271.8	273.8	275.3
Nondurables less food	279.0	262.7	257.8	257.4	257.6	259.9	263.3	266.9	270.4	270.8	270.9	270.9	274.4	277.8	279.4
Nondurables less food and apparel	320.3	296.9	287.4	287.0	288.2	294.8	299.7	300.9	303.9	305.3	307.9	310.8	313.8	314.1	313.8
Nondurables	293.9	289.8	289.0	289.2	289.6	292.5	294.9	296.9	299.2	300.1	300.9	300.8	302.9	305.3	306.4
Services less rent of shelter (12/84=100)	102.6	107.1	108.2	108.1	108.3	108.8	109.0	109.2	109.5	109.9	111.1	111.5	112.0	112.5	112.2
Services less medical care	369.0	385.9	390.6	390.4	390.7	392.5	393.5	394.7	396.1	397.5	400.1	401.4	403.8	405.4	405.9
Energy	426.3	367.5	344.8	338.5	339.2	349.8	356.9	357.7	360.8	364.9	378.6	380.6	387.5	385.8	375.2
All items less energy	309.9	321.2	325.3	326.3	326.5	327.8	328.7	330.2	331.9	332.8	333.2	333.8	335.2	337.2	339.1
All items less food and energy	308.7	320.3	324.4	325.4	325.6	326.3	327.1	329.0	330.9	331.6	331.8	332.6	334.2	336.4	338.6
Commodities less food and energy	256.8	259.8	261.7	262.4	262.1	261.7	262.0	264.6	266.6	267.1	266.7	266.3	267.5	270.0	272.0
Energy commodities	410.9	322.9	290.9	289.1	291.1	307.2	319.9	321.5	328.9	331.2	337.7	343.1	351.8	350.4	347.3
Services less energy	371.1	391.9	398.2	399.6	400.2	401.9	403.2	404.7	406.5	407.5					

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		1986					1987							
	1985	1986	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
All items	322.2	328.4	330.5	330.8	331.1	333.1	334.4	335.9	337.7	338.7	340.1	340.8	342.7	344.4	345.3
Commodities	286.7	283.9	283.6	284.0	284.2	286.3	287.7	289.5	291.4	292.3	292.8	292.8	294.2	296.1	297.3
Food and beverages	302.0	311.8	315.6	316.4	317.0	320.5	321.6	321.6	322.5	324.0	325.4	325.1	325.4	326.4	326.9
Commodities less food and beverages	274.6	264.7	262.1	262.4	262.4	263.7	265.2	267.9	270.4	270.9	270.9	271.0	273.0	275.4	276.9
Nondurables less food and beverages	282.1	265.2	260.4	260.0	260.0	261.8	265.4	269.7	273.2	273.5	273.2	272.8	276.6	280.7	282.5
Apparel commodities	191.6	192.0	197.6	197.4	194.9	190.9	192.1	199.1	202.6	201.8	198.1	194.0	198.3	206.0	209.9
Nondurables less food, beverages, and apparel	333.3	307.3	297.2	296.7	298.0	304.8	310.3	311.9	315.0	316.4	319.1	322.0	325.2	325.7	325.4
Durables	270.7	270.2	270.5	271.8	271.7	272.4	271.2	271.7	273.0	273.6	274.2	274.9	274.6	274.6	276.0
Services	381.5	400.5	406.1	406.1	406.6	408.6	409.9	411.2	412.8	414.2	416.7	418.3	420.7	422.4	423.1
Rent of shelter (12/82=100)	113.9	120.2	122.2	122.4	122.5	123.1	123.6	124.1	124.8	125.1	125.4	126.0	126.9	127.2	128.0
Household services less rent of shelter (12/82=100)	111.2	112.8	112.9	111.0	110.8	111.3	111.5	111.5	111.4	112.3	114.8	115.1	115.8	115.5	113.5
Transportation services	337.0	356.3	360.5	364.4	366.2	368.5	368.5	369.0	370.5	370.5	371.6	372.9	373.8	375.2	378.1
Medical care services	435.1	468.6	478.8	481.5	483.4	486.5	489.6	492.1	494.7	496.0	498.4	501.5	503.6	505.4	507.4
Other services	314.1	331.8	339.5	340.3	340.8	342.2	343.1	343.7	345.0	345.9	346.6	347.7	349.2	355.6	357.9
Special indexes:															
All items less food	323.3	328.6	330.2	330.4	330.6	332.2	333.6	335.4	337.3	338.3	339.6	340.5	342.7	344.6	345.6
All items less shelter	303.9	306.7	307.8	308.0	308.3	310.3	311.5	312.9	314.6	315.6	317.1	317.4	319.0	320.9	321.4
All items less homeowners' costs (12/82=100)	109.7	111.2	111.7	111.8	111.9	112.7	113.1	113.6	114.2	114.6	115.1	115.3	115.9	116.5	116.6
All items less medical care	317.7	322.6	324.4	324.5	324.8	326.7	328.0	329.4	331.2	332.2	333.5	334.1	336.0	337.7	338.6
Commodities less food	272.5	263.4	260.9	261.2	261.2	262.5	264.0	266.5	268.9	269.4	269.5	269.6	271.6	273.8	275.4
Nondurables less food	277.2	262.2	257.8	257.4	257.5	259.2	262.6	266.4	269.6	270.0	269.8	269.9	273.1	276.8	278.4
Nondurables less food and apparel	319.2	297.1	288.1	287.7	288.9	294.9	299.6	301.0	303.7	305.0	307.4	309.9	312.7	313.2	313.1
Nondurables	293.2	289.6	289.0	289.2	289.5	292.1	294.6	296.8	299.1	300.0	300.5	300.1	302.3	304.9	306.0
Services less rent of shelter (12/82=100)	113.5	118.7	120.1	120.0	120.2	120.8	121.1	121.3	121.6	122.1	123.2	123.7	124.2	124.9	124.6
Services less medical care	373.3	390.6	395.7	395.4	395.8	397.6	398.8	400.0	401.5	402.9	405.4	406.8	409.3	410.9	411.5
Energy	426.5	370.3	348.6	341.7	342.4	352.2	359.2	360.0	362.4	366.9	380.6	382.4	388.9	387.4	376.7
All items less energy	314.8	327.0	331.4	332.3	332.6	334.0	334.9	336.5	338.2	339.0	339.5	340.1	341.6	343.6	345.4
All items less food and energy	314.4	327.1	331.6	332.5	332.8	333.6	334.5	336.4	338.3	338.9	339.1	339.9	341.7	343.9	346.1
Commodities less food and energy	259.7	263.2	265.5	266.1	265.8	265.5	265.7	268.4	270.3	270.7	270.1	269.6	270.9	273.6	275.6
Energy commodities	409.9	322.4	290.6	288.5	290.5	306.1	319.2	320.9	328.0	330.2	336.4	341.4	349.9	348.7	346.0
Services less energy	375.9	397.1	403.7	405.0	405.7	407.5	408.9	410.4	412.3	413.2	414.1	416.0	418.3	420.2	422.6
Purchasing power of the consumer dollar:															
1967=\$1.00	31.0	30.5	30.3	30.2	30.2	30.0	29.9	29.8	29.6	29.5	29.4	29.3	29.2	29.0	29.0
1957-59=\$1.00	26.7	26.2	26.0	26.0	26.0	25.8	25.7	25.6	25.5	25.4	25.3	25.2	25.1	25.0	24.9
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:															
All items	318.5	323.4	325.0	325.4	325.7	327.7	329.0	330.5	332.3	333.4	334.9	335.6	337.4	339.1	340.0
All items (1957-59=100)	370.4	376.1	378.0	378.4	378.8	381.1	382.6	384.4	386.5	387.8	389.5	390.3	392.4	394.3	395.4
Food and beverages	301.8	311.6	315.4	316.2	316.8	320.3	321.3	321.2	322.1	323.5	325.0	324.8	325.1	326.2	326.6
Food	309.3	319.2	323.3	324.2	324.8	328.4	329.5	329.4	330.2	331.8	333.4	333.1	333.4	334.5	334.8
Food at home	295.3	303.7	307.9	308.4	308.7	313.4	314.6	313.8	314.9	316.8	318.5	317.5	317.4	318.3	318.3
Cereals and bakery products	315.4	324.2	326.8	327.0	328.0	330.0	331.2	331.6	334.1	334.8	335.4	336.8	337.1	337.4	338.1
Meats, poultry, fish, and eggs	262.7	274.4	284.4	285.8	286.6	288.5	285.8	285.6	285.2	287.9	290.0	292.5	293.9	296.1	294.3
Dairy products	256.9	257.1	258.6	259.9	260.9	262.0	263.6	262.4	262.0	263.1	262.5	261.9	262.9	264.7	266.0
Fruits and vegetables	320.3	323.8	322.9	322.2	323.4	338.2	348.2	346.0	353.6	358.5	366.7	354.1	347.1	346.7	347.6
Other foods at home	361.5	373.5	374.4	373.9	372.2	378.9	380.0	378.8	377.8	377.9	376.8	376.3	377.5	377.1	378.1
Sugar and sweets	398.3	410.5	412.8	411.9	411.2	414.9	414.8	416.5	416.5	417.1	418.7	418.3	419.3	420.1	420.4
Fats and oils	293.9	287.2	284.1	284.5	285.5	292.6	289.9	293.9	291.3	292.6	290.7	292.2	291.9	290.6	289.7
Nonalcoholic beverages	453.2	478.1	477.7	477.1	470.3	483.7	482.5	476.9	471.3	470.0	464.5	460.5	461.0	460.9	464.6
Other prepared foods	295.7	303.2	305.9	305.3	306.6	309.7	313.3	312.6	314.5	314.9	315.8	316.7	318.7	318.1	318.3
Food away from home	349.7	363.4	367.3	369.2	370.5	372.2	373.2	374.3	374.8	375.6	378.1	378.2	379.2	380.9	381.9
Alcoholic beverages	232.6	242.5	243.5	243.4	243.9	245.4	246.2	246.5	247.2	247.8	248.6	249.2	249.8	250.2	250.9
Housing	343.3	353.2	355.6	354.3	354.8	356.3	357.5	358.8	360.0	361.1	363.5	364.6	367.0	367.5	367.1
Shelter	370.4	390.7	397.1	397.8	398.1	399.6	401.2	403.2	405.1	406.3	406.9	408.7	411.7	413.0	415.4
Renters' costs (12/84=100)	103.6	109.5	111.4	111.7	111.6	112.3	112.7	113.3	113.8	114.0	114.2	115.3	116.0	116.2	116.0
Rent, residential	263.7	279.1	283.6	284.6	285.1	286.1	287.0	287.3	288.3	288.3	288.5	290.0	291.9	293.2	294.0
Other renters' costs	397.9	416.0	426.7	424.8	417.3	424.9	427.6	439.0	448.1	449.2	453.1	467.0	468.8	462.0	451.7
Homeowners' costs (12/84=100)	103.1	108.8	110.5	110.7	110.8	111.1	111.6	112.1	112.7	113.1	113.2	113.4	114.3	114.8	115.9
Owners' equivalent rent (12/84=100)	103.0	108.8	110.5	110.7	110.8	111.1	111.5	112.1	112.7	113.1	113.2	113.4	114.3	114.8	115.9
Household insurance (12/84=100)	103.2	109.4	110.8	111.3	111.7	111.9	112.1	112.4	112.5	113.1	113.8	114.6	115.1	115.5	115.8
Maintenance and repairs	364.1	369.4	373.1	372.4	374.6	377.3	376.9	378.5	378.0	378.0	380.9	386.4	385.7	384.6	384.8
Maintenance and repair services	415.0	425.3	431.1	428.2	428.1	434.5	432.5	436.8	435.7	433.2	438.3	449.8	448.7	447.9	446.5
Maintenance and repair commodities	261.1	262.5	264.3	265.0	268.0	267.6	268.4	267.9	267.9	269.7	270.5	270.7	270.4	269.4	270.6
Fuel and other utilities	394.7	385.4	379.3	371.3	371.1	373.9	374.9	375.1	374.3	377.5	388.0	388.3	391.5	390.0	381.1
Fuels	487.5	462.7	449.2	437.1	437.3	442.7	443.7	443.2	440.7	446.9	470.0	467.6	472.6	470.5	450.5
Fuel oil, coal, and bottled gas	622.0	504.5	454.8	455.0	463.5	489.3	503.9	501.4	501.1	498.2	499.4	498.4	502.7	501.5	507.2
Gas (piped) and electricity	451.6	445.6	439.6	425.3	423.8	427.4	427.0	424.4	431.2	455.4	453.0	457.8	455.7	434.2	
Other utilities and public services	241.6	253.8	257.8	255.8	255.3										

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						
			1986		1987					1986		1987				
			Oct.	Nov.	June	July	Aug.	Sept.	Oct.	Oct.	Nov.	June	July	Aug.	Sept.	Oct.
U.S. city average	M	-	330.5	330.8	340.1	340.8	342.7	344.4	345.3	325.0	325.4	334.9	335.6	337.4	339.1	340.0
Region and area size³																
Northeast urban	M	12/77	176.4	-	182.4	182.7	184.1	185.1	185.9	173.5	-	179.5	179.9	181.2	182.1	183.0
Size A - More than 1,200,000	M	12/77	174.2	-	180.5	180.7	182.1	183.5	184.1	169.7	-	176.1	176.3	177.7	179.0	179.7
Size B - 500,000 to 1,200,000	M	12/77	178.0	-	182.0	182.5	183.3	183.2	185.7	174.6	-	179.0	179.5	180.3	180.2	182.4
Size C - 50,000 to 500,000	M	12/77	183.8	-	189.7	190.9	192.5	192.2	192.3	188.1	-	194.1	195.1	196.6	197.0	197.2
North Central urban	M	12/77	176.5	-	182.4	182.6	184.0	184.8	184.6	172.4	-	178.3	178.6	179.8	180.6	180.5
Size A - More than 1,200,000	M	12/77	180.3	-	186.6	186.9	188.2	189.2	188.5	174.5	-	180.7	181.0	182.3	183.3	182.6
Size B - 360,000 to 1,200,000	M	12/77	174.0	-	180.2	180.2	182.0	182.4	182.7	169.5	-	175.5	175.6	177.4	177.8	178.3
Size C - 50,000 to 360,000	M	12/77	172.3	-	177.8	178.2	179.6	180.8	181.4	168.7	-	174.0	174.3	175.5	176.6	177.3
Size D - Nonmetropolitan (less than 50,000)	M	12/77	171.7	-	176.1	176.7	177.1	176.7	177.1	172.7	-	177.4	178.2	178.5	178.3	178.8
South urban	M	12/77	177.5	-	182.1	182.6	183.2	184.0	184.7	176.3	-	181.0	181.6	182.1	183.0	183.6
Size A - More than 1,200,000	M	12/77	177.6	-	182.6	183.3	184.0	184.7	185.4	176.9	-	182.1	182.7	183.3	184.2	184.8
Size B - 450,000 to 1,200,000	M	12/77	180.0	-	183.7	184.1	184.8	186.3	186.7	175.7	-	179.6	180.0	180.6	182.1	182.5
Size C - 50,000 to 450,000	M	12/77	175.8	-	180.8	181.4	181.7	182.0	182.6	176.3	-	181.6	182.2	182.5	182.9	183.3
Size D - Nonmetropolitan (less than 50,000)	M	12/77	175.4	-	179.1	179.9	180.0	181.1	182.1	175.9	-	179.7	180.6	180.9	181.9	182.8
West urban	M	12/77	180.4	-	184.5	184.7	185.6	186.7	187.4	177.8	-	181.9	182.1	183.0	183.9	184.6
Size A - More than 1,250,000	M	12/77	184.2	-	187.9	188.1	189.2	190.3	191.0	179.0	-	182.8	182.9	183.9	184.9	185.6
Size B - 330,000 to 1,250,000	M	12/77	179.2	-	183.9	184.0	184.3	185.8	187.0	179.3	-	184.0	184.2	184.6	185.9	187.1
Size C - 50,000 to 330,000	M	12/77	173.1	-	176.4	176.6	177.1	177.9	178.5	171.2	-	174.2	174.6	175.2	175.9	176.5
Size classes:																
A	M	12/86	-	-	103.0	103.2	103.8	104.4	104.6	-	-	103.1	103.3	103.9	104.5	104.7
B	M	12/77	178.3	-	182.7	183.0	183.9	184.8	185.8	175.1	-	179.6	179.9	180.8	181.7	182.6
C	M	12/77	175.9	-	181.0	181.5	182.4	182.9	183.4	175.7	-	180.8	181.4	182.2	182.9	183.4
D	M	12/77	174.5	-	178.8	179.5	179.7	180.3	181.0	175.1	-	179.6	180.3	180.7	181.3	182.1
Selected local areas																
Chicago, IL - Northwestern IN	M	-	328.7	331.3	345.0	346.1	348.8	349.9	343.9	313.4	316.1	328.9	330.0	332.5	333.5	328.2
Los Angeles-Long Beach, Anaheim, CA	M	-	336.2	333.8	344.2	344.1	346.7	348.6	350.4	328.3	326.3	336.3	336.2	338.8	340.4	342.1
New York, NY - Northeastern NJ	M	-	327.8	327.5	340.6	340.7	343.7	346.4	347.4	318.7	318.6	331.7	331.6	334.4	337.4	338.3
Philadelphia, PA-NJ	M	-	324.7	324.1	339.0	339.1	342.2	342.8	344.1	326.1	325.4	340.4	340.7	343.9	344.2	345.8
San Francisco-Oakland, CA	M	-	347.7	-	353.5	356.0	356.9	358.5	359.9	341.1	-	347.3	349.3	349.9	351.4	353.2
Baltimore, MD	1	-	-	333.4	-	343.8	-	346.0	-	-	330.4	-	341.9	-	344.3	-
Boston, MA	1	-	-	329.3	-	338.0	-	347.2	-	-	325.9	-	336.3	-	345.5	-
Cleveland, OH	1	-	352.1	352.7	-	361.4	-	367.5	-	329.3	329.6	-	337.9	-	343.4	-
Miami, FL	1	11/77	-	175.8	-	180.5	-	181.3	-	-	176.1	-	180.9	-	181.6	-
St. Louis, MO-IL	1	-	-	323.8	-	334.7	-	339.5	-	-	319.0	-	331.0	-	335.7	-
Washington, DC-MD-VA	1	-	-	334.0	-	343.1	-	347.8	-	-	335.9	-	345.4	-	350.8	-
Dallas-Ft. Worth, TX	2	-	345.9	-	354.1	-	356.0	-	360.5	338.5	-	347.4	-	349.5	-	353.8
Detroit, MI	2	-	324.3	325.3	330.2	-	333.5	-	339.3	313.6	314.7	319.7	-	322.7	-	327.8
Houston, TX	2	-	334.0	-	341.5	-	344.0	-	346.5	331.7	-	339.7	-	341.7	-	345.1
Pittsburgh, PA	2	-	331.8	-	338.9	-	341.7	-	344.1	310.6	-	317.8	-	320.3	-	322.2

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

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

M - Every month.
 1 - January, March, May, July, September, and November.
 2 - February, April, June, August, October, and December.

³ Regions are defined as the four Census regions.
 - Data not available.

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

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

Series	1978	1979	1980	1981	1982	1983	1984	1985	1986
Consumer Price Index for All Urban Consumers:									
All items:									
Index	195.4	217.4	246.8	272.4	289.1	298.4	311.1	322.2	328.4
Percent change	7.7	11.3	13.5	10.4	6.1	3.2	4.3	3.6	1.9
Food and beverages:									
Index	206.3	228.5	248.0	267.3	278.2	284.4	295.1	302.0	311.8
Percent change	9.7	10.8	8.5	7.8	4.1	2.2	3.8	2.3	3.2
Housing:									
Index	202.8	227.6	263.3	293.5	314.7	323.1	336.5	349.9	360.2
Percent change	8.7	12.2	15.7	11.5	7.2	2.7	4.1	4.0	2.9
Apparel and upkeep:									
Index	159.6	166.6	178.4	186.9	191.8	196.5	200.2	206.0	207.8
Percent change	3.5	4.4	7.1	4.8	2.6	2.5	1.9	2.9	.9
Transportation:									
Index	185.5	212.0	249.7	280.0	291.5	298.4	311.7	319.9	307.5
Percent change	4.7	14.3	17.8	12.1	4.1	2.4	4.5	2.6	-3.9
Medical care:									
Index	219.4	239.7	265.9	294.5	328.7	357.3	379.5	403.1	433.5
Percent change	8.4	9.3	10.9	10.8	11.6	8.7	6.2	6.2	7.5
Entertainment:									
Index	176.6	188.5	205.3	221.4	235.8	246.0	255.1	265.0	274.1
Percent change	5.3	6.7	8.9	7.8	6.5	4.3	3.7	3.9	3.4
Other goods and services:									
Index	183.3	196.7	214.5	235.7	259.9	288.3	307.7	326.6	346.4
Percent change	6.4	7.3	9.0	9.9	10.3	10.9	6.7	6.1	6.1
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	195.3	217.7	247.0	272.3	288.6	297.4	307.6	318.5	323.4
Percent change	7.6	11.5	13.5	10.2	6.0	3.0	3.4	3.5	1.5

33. Producer Price Indexes, by stage of processing

(1967 = 100)

Grouping	Annual average		1986		1987									
	1985	1986	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Finished goods	293.7	289.7	290.7	290.4	291.8	292.3	292.6	294.9	295.8	296.2	297.8	297.2	296.7	298.2
Finished consumer goods	291.8	284.9	285.1	284.8	286.2	287.1	287.5	290.1	291.3	291.9	293.8	293.0	292.7	293.5
Finished consumer goods excluding foods	271.2	278.1	283.1	282.9	280.1	280.8	280.3	283.2	286.6	286.7	287.6	283.6	286.0	284.1
Finished consumer goods excluding foods	297.3	283.5	281.2	280.8	284.4	285.3	286.3	288.6	288.6	289.5	292.0	292.9	291.1	293.5
Nondurable goods less food	339.3	311.2	302.2	302.1	307.7	310.5	312.2	314.7	314.9	316.3	320.2	322.2	320.5	319.4
Durable goods	241.5	246.8	253.5	252.8	253.2	250.7	250.6	252.5	252.1	252.1	252.3	251.3	249.4	257.6
Capital equipment	300.5	306.4	310.4	310.1	311.2	310.7	310.5	311.8	311.8	311.4	312.1	312.1	311.0	314.7
Intermediate materials, supplies, and components	318.7	307.6	304.8	305.0	307.0	308.9	309.3	311.0	313.1	315.2	317.1	318.2	318.9	320.0
Materials and components for manufacturing	299.5	296.1	296.4	296.4	297.8	298.7	299.5	301.4	303.2	304.5	306.4	306.6	308.0	310.7
Materials for food manufacturing	258.8	251.0	253.2	253.2	251.1	251.6	250.4	255.3	261.9	260.8	262.0	258.5	261.9	259.4
Materials for nondurable manufacturing	285.9	279.1	278.0	278.3	281.3	283.1	283.9	286.9	288.1	291.5	293.1	292.3	294.0	297.8
Materials for durable manufacturing	320.2	313.8	314.9	313.9	315.8	316.2	317.8	320.3	324.0	325.2	329.7	332.5	334.9	341.2
Components for manufacturing	291.5	294.4	294.9	295.2	295.8	296.1	297.0	297.0	297.1	297.2	298.0	298.3	298.5	299.4
Materials and components for construction	315.2	317.4	317.5	316.9	317.1	317.9	318.7	319.3	319.9	320.9	321.8	323.8	325.4	326.8
Processed fuels and lubricants	548.9	430.2	392.8	395.5	406.7	418.5	416.0	421.3	429.3	440.8	449.5	457.4	450.1	442.0
Containers	311.2	314.9	319.0	319.2	320.7	323.6	324.9	325.4	325.5	326.2	326.1	326.8	329.6	331.0
Supplies	284.2	287.3	288.0	288.2	289.0	289.5	289.6	290.5	292.0	292.8	293.2	293.3	294.5	295.9
Crude materials for further processing ...	306.1	280.3	279.2	277.0	284.2	287.2	288.6	295.3	302.9	303.7	307.8	307.7	305.4	304.3
Foodstuffs and feedstuffs	235.0	231.0	236.8	233.5	227.6	229.9	229.6	240.1	251.7	247.0	243.1	240.1	238.8	237.7
Crude nonfood materials	459.2	386.8	370.3	370.6	394.2	398.5	402.0	405.3	409.4	416.8	431.0	434.1	430.3	428.9
Special groupings														
Finished goods, excluding foods	299.0	291.1	290.7	290.4	293.2	293.6	294.3	296.3	296.3	296.7	298.6	299.3	297.7	300.5
Finished energy goods	720.9	518.5	453.7	454.6	477.4	489.6	495.5	507.4	506.9	514.3	527.5	534.0	521.8	514.5
Finished goods less energy	269.2	275.6	280.0	279.6	279.7	279.5	279.5	281.2	282.2	282.2	283.1	282.0	282.3	284.3
Finished consumer goods less energy	261.3	267.9	272.4	272.0	271.8	271.7	271.8	273.6	274.9	275.0	276.0	274.6	275.3	276.8
Finished goods less food and energy	268.7	274.9	279.1	278.7	279.8	279.3	279.5	280.7	280.7	280.7	281.6	281.8	281.1	284.7
Finished consumer goods less food and energy	252.1	258.4	262.6	262.2	263.4	262.9	263.3	264.4	264.5	264.6	265.7	265.9	265.5	269.1
Consumer nondurable goods less food and energy	246.2	253.0	254.9	254.7	256.4	257.2	257.9	258.4	258.8	258.9	260.7	261.6	262.3	262.5
Intermediate materials less foods and feeds	325.0	313.3	310.3	310.5	312.8	314.7	315.3	316.9	318.5	320.7	322.8	324.2	324.6	325.9
Intermediate foods and feeds	232.8	230.3	231.0	231.5	229.5	230.0	227.6	231.9	240.4	241.1	241.1	237.7	241.4	240.5
Intermediate energy goods	528.3	414.4	378.3	380.7	391.3	402.6	400.3	405.3	412.2	423.2	431.7	439.3	432.5	424.8
Intermediate goods less energy	304.0	303.5	304.1	304.1	305.2	306.1	306.8	308.2	309.8	310.9	312.2	312.6	314.1	316.3
Intermediate materials less foods and energy	305.2	304.4	304.9	304.8	306.2	307.2	308.1	309.3	310.5	311.7	313.2	314.0	315.3	317.8
Crude energy materials	748.1	575.8	537.0	533.2	578.0	584.4	590.1	594.1	597.4	606.3	629.5	632.6	615.4	604.9
Crude materials less energy	233.2	229.2	233.3	231.5	228.1	230.4	230.6	238.9	248.7	247.2	246.0	244.8	246.8	248.4
Crude nonfood materials less energy	249.7	245.6	244.4	247.1	250.3	252.8	254.4	257.4	263.2	270.2	276.4	280.0	291.2	300.1

34. Producer Price indexes, by durability of product

(1967 = 100)

Grouping	Annual average		1986		1987									
	1985	1986	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Total durable goods	297.3	300.0	302.4	302.1	302.9	302.8	303.4	304.3	304.7	305.0	306.2	306.9	307.4	310.9
Total nondurable goods	317.2	298.8	294.8	294.7	298.2	300.7	301.1	304.4	307.7	309.5	312.0	312.0	311.5	310.7
Total manufactures	304.3	297.6	297.1	297.2	299.5	300.7	300.8	303.0	304.4	305.3	306.8	307.5	307.5	309.6
Durable	298.1	300.8	303.3	302.9	303.7	303.5	304.1	305.0	305.3	305.4	306.3	306.9	307.1	310.3
Nondurable	310.5	294.0	290.5	291.0	294.7	297.4	297.0	300.5	303.0	304.8	306.8	307.7	307.5	308.4
Total raw or slightly processed goods	327.9	305.6	300.6	298.6	301.6	303.6	305.9	308.4	313.9	315.9	320.0	318.3	317.8	314.0
Durable	252.2	252.0	254.4	255.4	258.8	260.9	261.1	262.1	267.8	277.2	286.3	292.5	302.8	318.7
Nondurable	332.4	308.6	303.1	300.9	303.9	305.8	308.3	310.9	316.4	317.9	321.7	319.5	318.3	313.2

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

(1967 = 100)

Index	1978	1979	1980	1981	1982	1983	1984	1985	1986
Finished goods:									
Total	195.9	217.7	247.0	269.8	280.7	285.2	291.1	293.7	289.7
Consumer goods	194.9	217.9	248.9	271.3	281.0	284.6	290.3	291.8	284.9
Capital equipment	199.2	216.5	239.8	264.3	279.4	287.2	294.0	300.5	306.4
Intermediate materials, supplies, and components:									
Total	215.6	243.2	280.3	306.0	310.4	312.3	320.0	318.7	307.6
Materials and components for manufacturing	208.7	234.4	265.7	286.1	289.8	293.4	301.8	299.5	296.1
Materials and components for construction	224.7	247.4	268.3	287.6	293.7	301.8	310.3	315.2	317.4
Processed fuels and lubricants	295.3	364.8	503.0	595.4	591.7	564.8	566.2	548.9	430.2
Containers	202.8	226.8	254.5	276.1	285.6	286.6	302.3	311.2	314.9
Supplies	198.5	218.2	244.5	263.8	272.1	277.1	283.4	284.2	287.3
Crude materials for further processing:									
Total	234.4	274.3	304.6	329.0	319.5	323.6	330.8	306.1	280.3
Foodstuffs and feedstuffs	216.2	247.9	259.2	257.4	247.8	252.2	259.5	235.0	231.0
Nonfood materials except fuel	272.3	330.0	401.0	482.3	473.9	477.4	484.5	459.2	386.8
Fuel	426.8	507.6	615.0	751.2	886.1	931.5	931.3	909.6	817.2

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

(June 1977=100, unless otherwise indicated)

Category	1974 SITC	1985				1986				1987		
		Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
ALL COMMODITIES (9/83=100)		97.5	97.5	96.5	96.7	97.0	96.7	95.1	96.2	97.2	99.9	100.2
Food (3/83=100)	0	95.8	94.0	90.2	93.6	90.5	89.5	77.2	81.2	79.8	83.4	79.5
Meat (3/83=100)	01	103.9	104.7	106.1	112.2	111.5	114.7	122.0	122.6	123.4	129.0	127.9
Fish (3/83=100)	03	101.0	103.6	102.6	101.8	102.2	106.2	111.2	116.9	118.5	122.9	126.3
Grain and grain preparations (3/80=100)	04	92.4	90.3	82.6	87.1	82.1	79.1	59.0	64.8	62.9	66.5	62.1
Vegetables and fruit (3/83=100)	05	119.5	120.2	126.9	118.9	115.3	125.8	131.4	131.9	130.8	130.8	123.1
Feedstuffs for animals (3/83=100)	08	72.8	68.6	75.7	83.4	88.5	85.5	90.2	87.4	85.7	93.7	92.4
Misc. food products (3/83=100)	09	110.6	109.2	108.1	107.7	106.0	104.7	106.6	108.2	108.6	110.0	109.4
Beverages and tobacco (6/83=100)	1	99.9	100.1	99.7	98.6	95.6	96.5	96.3	101.6	101.7	104.0	104.4
Beverages (9/83=100)	11	104.0	105.3	101.8	100.9	101.9	103.0	102.2	102.9	104.7	104.8	104.4
Tobacco and tobacco products (6/83=100)	12	99.5	99.6	99.5	98.4	95.1	95.9	95.8	101.4	101.4	104.0	104.5
Crude materials (6/83=100)	2	97.5	96.8	93.3	92.5	95.8	95.6	92.3	94.8	97.1	106.3	109.1
Raw hides and skins (6/80=100)	21	121.0	126.2	129.0	139.9	138.9	148.9	138.0	148.3	168.8	191.2	189.1
Oilseeds and oleaginous fruit (9/77=100)	22	71.0	71.2	64.2	63.9	66.9	65.8	64.5	62.9	60.4	68.6	64.3
Crude rubber (including synthetic and reclaimed) (9/83=100)	23	106.4	106.3	107.1	106.0	106.0	106.1	105.3	104.4	106.2	107.5	109.0
Wood	24	128.7	125.7	124.5	128.1	128.7	128.7	129.7	135.5	139.0	146.2	174.0
Pulp and waste paper (6/83=100)	25	100.5	96.1	93.8	92.7	98.8	109.7	119.8	121.2	133.0	138.7	142.6
Textile fibers	26	102.4	105.8	103.6	97.7	101.6	98.6	74.7	92.2	99.7	115.0	119.2
Crude fertilizers and minerals	27	165.6	167.9	169.4	165.5	168.0	166.1	164.3	162.8	155.6	155.1	149.8
Metalliferous ores and metal scrap	28	89.2	82.0	80.1	78.7	83.4	80.5	84.6	80.7	82.2	90.7	99.7
Mineral fuels	3	100.1	99.2	97.6	96.6	91.9	86.7	85.7	84.7	85.6	84.4	85.6
Animal and vegetable oils, fats, and waxes	4	142.0	144.5	114.5	101.4	90.8	84.4	76.5	86.8	88.9	94.5	94.1
Fixed vegetable oils and fats (6/83=100)	42	152.9	164.8	128.8	108.7	95.4	95.3	80.8	87.0	89.1	94.7	94.3
Chemicals (3/83=100)	5	97.0	96.8	97.1	96.6	96.5	95.4	93.1	92.2	96.6	103.1	104.1
Organic chemicals (12/83=100)	51	93.8	96.5	97.1	95.4	93.5	89.3	88.0	89.4	99.5	114.3	111.1
Fertilizers, manufactured (3/83=100)	56	92.5	87.9	89.8	90.0	88.6	84.0	77.4	68.7	75.4	80.4	88.0
Intermediate manufactured products (9/81=100)	6	99.4	99.2	99.2	99.1	100.3	101.2	102.2	102.7	104.4	106.8	108.5
Leather and furskins (9/79=100)	61	82.5	79.2	75.9	78.5	77.8	82.5	84.2	88.0	96.3	101.1	99.7
Rubber manufactures	62	150.2	149.0	148.3	148.7	151.0	150.4	151.3	152.1	153.9	155.2	155.2
Paper and paperboard products (6/78=100)	64	155.0	151.6	149.6	148.2	152.2	158.7	165.3	167.9	174.4	177.7	182.5
Iron and steel (3/82=100)	67	95.5	95.3	95.9	98.2	98.4	99.4	100.2	100.1	101.5	101.5	102.4
Nonferrous metals (9/81=100)	68	79.7	79.6	79.8	78.2	80.2	79.1	79.4	78.8	80.3	90.1	94.6
Metal manufactures, n.e.s. (3/82=100)	69	105.4	105.2	105.4	104.4	105.3	105.5	105.6	105.7	105.7	105.6	106.2
Machinery and transport equipment, excluding military and commercial aircraft (12/78=100)	7	142.3	142.9	143.1	143.3	144.0	144.2	144.6	145.5	146.2	146.7	147.1
Power generating machinery and equipment (12/78=100)	71	165.3	167.4	167.1	167.5	169.1	169.2	169.5	171.4	173.0	171.7	173.4
Machinery specialized for particular industries (9/78=100)	72	155.0	155.7	156.0	156.2	155.5	154.7	155.0	155.7	154.7	155.9	156.5
Metalworking machinery (6/78=100)	73	153.4	155.1	156.3	158.4	159.0	158.9	160.4	161.8	165.0	165.8	167.8
General industrial machines and parts n.e.s. 9/78=100)	74	152.4	152.0	152.4	152.2	152.3	153.3	154.4	155.3	157.7	157.8	157.9
Office machines and automatic data processing equipment	75	100.9	100.0	99.9	99.4	99.9	99.2	98.9	98.1	96.1	96.0	95.5
Telecommunications, sound recording and reproducing equipment	76	133.3	133.3	134.1	134.5	136.5	137.0	137.8	139.7	141.3	140.8	141.2
Electrical machinery and equipment	77	114.9	116.1	115.3	113.8	115.1	114.2	114.4	114.9	117.0	117.4	117.6
Road vehicles and parts (3/80=100)	78	133.1	133.9	133.8	135.0	135.5	136.4	136.5	137.9	138.0	138.5	138.9
Other transport equipment, excl. military and commercial aviation	79	195.5	196.6	199.3	200.7	203.3	206.8	207.4	209.7	211.4	214.7	215.7
Other manufactured articles	8	99.5	100.4	100.3	100.3	102.6	103.4	104.1	104.3	105.3	107.3	107.7
Apparel (9/83=100)	84	104.7	104.7	105.0	105.3	-	-	-	110.0	-	-	-
Professional, scientific, and controlling instruments and apparatus	87	175.5	178.3	178.7	178.8	182.1	183.8	183.8	184.8	186.4	188.5	190.2
Photographic apparatus and supplies, optical goods, watches and clocks (12/77=100)	88	128.0	129.1	127.5	128.5	131.6	132.9	132.7	132.0	133.4	133.1	129.5
Miscellaneous manufactured articles, n.e.s.	89	92.4	93.1	93.1	92.4	95.6	95.6	97.6	97.7	98.1	102.1	103.0
Gold, non-monetary (6/83=100)	971	69.1	75.4	77.4	77.5	81.8	82.2	97.5	94.5	98.2	108.4	110.0

- Data not available.

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

(June 1977 = 100, unless otherwise indicated)

Category	1974 SITC	1985		1986				1987		
		Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
ALL COMMODITIES (9/82=100)		92.9	94.2	88.5	83.2	83.9	86.0	91.6	95.3	96.9
Food (9/77=100)	0	94.9	102.8	113.4	104.7	109.1	105.3	100.2	102.0	102.8
Meat	01	120.6	131.2	122.7	118.5	126.9	134.4	132.1	135.9	142.9
Dairy products and eggs (6/81=100)	02	99.1	100.5	106.7	107.1	109.4	111.5	116.8	119.6	118.9
Fish	03	129.7	132.7	139.3	144.8	149.6	157.1	161.6	167.4	174.4
Bakery goods, pasta products, grain and grain preparations (9/77=100)	04	136.3	141.9	146.9	149.2	154.0	155.3	161.0	165.2	161.2
Fruits and vegetables	05	120.2	131.3	119.4	119.4	127.1	125.5	120.5	125.4	124.5
Sugar, sugar preparations, and honey (3/82=100)	06	123.1	111.9	124.6	121.6	123.9	124.3	126.0	128.6	128.0
Coffee, tea, cocoa	07	54.4	64.6	85.9	69.2	71.8	61.0	50.9	49.3	48.3
Beverages and tobacco	1	158.0	162.1	163.2	165.5	165.8	168.0	170.8	174.1	174.4
Beverages	11	156.0	159.1	161.8	163.9	165.5	168.2	171.5	174.6	175.6
Crude materials	2	91.5	91.2	94.2	95.3	98.1	98.5	103.1	105.6	108.6
Crude rubber (inc. synthetic & reclaimed) (3/84=100)	23	68.9	73.2	78.8	75.5	76.9	78.5	79.1	84.5	89.4
Wood (9/81=100)	24	101.6	99.4	104.3	106.3	109.4	107.2	115.0	112.0	119.2
Pulp and waste paper (12/81=100)	25	76.8	75.8	74.9	79.9	86.0	92.8	100.5	104.6	105.6
Crude fertilizers and crude minerals (12/83=100)	27	102.7	102.1	101.5	100.0	100.4	100.2	99.5	98.5	97.3
Metalliferous ores and metal scrap (3/84=100)	28	89.5	90.1	94.5	95.6	98.2	95.4	98.0	100.0	102.9
Crude vegetable and animal materials, n.e.s.	29	102.5	102.5	103.6	104.4	104.8	104.7	113.4	120.3	113.6
Fuels and related products (6/82=100)	3	79.8	79.1	55.3	37.5	33.6	38.4	49.7	54.8	56.4
Petroleum and petroleum products (6/82=100)	33	80.3	80.1	54.7	36.1	32.1	37.9	49.9	55.2	57.3
Fats and oils (9/83=100)	4	57.6	50.6	41.4	39.3	35.5	51.6	50.8	54.5	61.3
Vegetable oils (9/83=100)	42	56.2	48.9	39.3	37.4	33.5	50.0	49.2	52.6	59.4
Chemicals (9/82=100)	5	94.5	94.2	94.6	93.3	93.4	93.2	95.9	98.7	99.5
Medicinal and pharmaceutical products (3/84=100)	54	95.3	96.7	102.9	104.9	110.0	110.1	116.2	120.3	118.8
Manufactured fertilizers (3/84=100)	56	80.8	78.5	79.2	79.7	77.4	79.7	81.8	83.6	98.8
Chemical materials and products, n.e.s. (9/84=100)	59	96.9	97.8	99.9	100.3	101.0	102.8	104.3	105.0	108.2
Intermediate manufactured products (12/77=100)	6	133.6	133.4	134.0	135.6	138.8	139.4	142.2	147.4	152.9
Leather and furskins	61	137.0	141.3	141.6	143.0	147.4	143.3	149.5	156.6	159.6
Rubber manufactures, n.e.s.	62	137.3	138.1	136.5	137.7	138.1	138.1	140.8	140.5	138.4
Cork and wood manufactures	63	123.4	124.0	130.8	134.3	137.4	142.7	144.3	151.6	157.5
Paper and paperboard products	64	157.8	156.5	157.1	157.1	157.5	164.8	165.2	165.0	175.0
Textiles	65	126.5	128.1	131.2	132.9	135.1	135.3	138.8	140.4	142.8
Nonmetallic mineral manufactures, n.e.s.	66	157.6	162.2	164.2	169.6	178.2	180.2	183.1	190.3	195.1
Iron and steel (9/78=100)	67	119.1	118.3	117.3	118.1	119.0	118.5	122.3	127.1	132.1
Nonferrous metals (12/81=100)	68	83.7	80.4	79.4	78.9	83.5	81.6	82.4	90.9	97.5
Metal manufactures, n.e.s.	69	119.5	121.6	124.4	127.8	129.1	129.1	133.4	134.5	136.0
Machinery and transport equipment (6/81=100)	7	103.5	107.2	111.5	115.3	118.1	120.2	123.9	126.1	126.4
Machinery specialized for particular industries (9/78=100)	72	101.4	104.9	112.1	115.4	120.1	121.0	127.5	130.0	130.0
Metalworking machinery (3/80=100)	73	94.2	98.1	105.0	107.7	110.7	115.7	122.4	126.1	129.6
General industrial machinery and parts, n.e.s. (6/81=100)	74	94.3	98.0	103.8	109.0	112.8	113.9	120.5	123.0	122.2
Office machines and automatic data processing equipment (3/80=100)	75	90.3	93.7	96.9	101.3	102.5	102.4	103.2	106.4	106.8
Telecommunications, sound recording and reproducing apparatus (3/80=100)	76	88.3	88.6	89.4	91.6	93.7	93.9	94.6	95.5	95.8
Electrical machinery and equipment (12/81=100)	77	81.4	83.1	84.5	87.5	89.5	91.7	93.6	94.8	94.2
Road vehicles and parts (6/81=100)	78	112.7	117.8	123.4	127.1	129.8	133.2	137.0	139.2	139.6
Misc. manufactured articles (3/80=100)	8	99.6	100.8	103.3	104.8	109.5	109.6	114.3	118.1	119.8
Plumbing, heating, and lighting fixtures (6/80=100)	81	117.8	115.0	120.1	123.5	125.5	125.5	125.5	130.6	131.1
Furniture and parts (6/80=100)	82	142.1	142.7	147.0	142.2	145.8	146.9	148.9	153.3	156.1
Clothing (9/77=100)	84	134.5	134.5	133.4	135.3	137.8	139.1	145.5	150.9	154.0
Footwear	85	142.1	142.7	147.0	142.2	145.8	146.9	148.9	153.3	156.1
Professional, scientific, and controlling instruments and apparatus (12/79=100)	87	98.8	102.4	106.4	112.5	118.3	118.0	125.6	129.5	127.0
Photographic apparatus and supplies, optical goods, watches, and clocks (3/80=100)	88	91.1	94.5	99.3	103.2	106.9	107.6	111.8	114.4	113.2
Misc. manufactured articles, n.e.s. (6/82=100)	89	96.4	97.9	102.1	103.4	112.3	111.0	116.9	121.8	124.6
Gold, non-monetary (6/82=100)	971	101.1	101.0	106.7	107.3	126.9	123.3	128.0	141.5	143.5

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

(September 1983 = 100 unless otherwise indicated)

Category	Per-centage of 1980 trade value	1985		1986				1987		
		Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Foods, feeds, and beverages	16.294	76.2	77.5	75.5	74.7	66.0	68.4	67.1	71.3	67.9
Raw materials	30.696	96.5	95.9	96.0	94.9	93.3	94.8	98.2	103.1	105.9
Raw materials, nondurable	21.327	98.7	97.9	97.5	96.1	93.7	95.4	99.4	104.7	106.1
Raw materials, durable	9.368	91.1	91.0	92.5	91.9	92.5	93.2	95.1	99.2	105.3
Capital goods (12/82=100)	30.186	106.6	106.6	107.4	107.5	107.7	108.3	108.9	109.4	109.8
Automotive vehicles, parts and engines (12/82=100)	7.483	108.1	109.2	109.5	110.4	110.8	111.8	111.9	112.1	112.5
Consumer goods	7.467	101.9	101.4	103.7	104.5	104.5	105.7	106.9	107.1	107.5
Durables	3.965	100.4	99.5	101.8	101.8	102.1	102.7	103.9	103.6	104.3
Nondurables	3.501	103.3	103.3	105.5	107.2	106.9	108.5	109.8	110.5	110.5

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

(December 1982=100)

Category	Per-centage of 1980 trade value	1985		1986				1987		
		Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Foods, feeds, and beverages	7.477	99.0	106.0	115.8	108.2	112.3	109.2	104.7	106.6	107.5
Petroleum and petroleum products, excl. natural gas	31.108	80.9	80.5	55.4	36.8	32.6	38.3	50.5	55.8	57.9
Raw materials, excluding petroleum	19.205	95.4	93.9	94.5	94.0	95.3	94.9	96.9	100.5	103.5
Raw materials, nondurable	9.391	93.5	91.8	91.1	89.7	89.5	89.7	91.8	94.5	95.5
Raw materials, durable	9.814	97.4	96.2	98.1	98.7	101.4	100.3	102.3	106.8	112.1
Capital goods	13.164	97.6	100.0	102.8	106.7	109.4	110.7	115.3	117.8	118.2
Automotive vehicles, parts and engines	11.750	106.4	111.4	115.6	119.0	121.0	123.9	126.2	128.0	127.9
Consumer goods	14.250	101.0	102.4	104.5	106.5	110.1	110.6	114.3	117.5	119.2
Durable	5.507	98.9	100.7	103.4	106.5	111.2	111.6	114.8	117.5	119.0
Nondurable	8.743	103.9	104.7	106.0	106.6	108.6	109.2	113.7	117.6	119.4

40. U.S. export price indexes by Standard Industrial Classification¹

Industry group	1985		1986				1987		
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Manufacturing:									
Food and kindred products (6/83=100)	96.7	98.1	97.0	95.0	95.2	97.6	99.0	104.1	103.6
Lumber and wood products, except furniture (6/83=100)	98.3	101.2	101.5	101.2	102.1	105.7	109.8	113.0	133.1
Furniture and fixtures (9/83=100)	107.1	108.4	109.2	109.7	110.1	110.4	113.4	114.0	114.1
Paper and allied products (3/81=100)	93.2	92.1	95.7	101.5	106.1	108.7	113.7	116.7	120.3
Chemicals and allied products (12/84=100)	99.7	99.2	98.9	98.3	96.2	95.9	100.1	106.3	107.6
Petroleum and coal products (12/83=100)	102.0	99.1	93.5	83.1	83.1	82.2	83.5	86.8	87.1
Primary metal products (3/82=100)	88.1	87.9	89.8	89.8	90.7	89.9	91.7	97.4	100.1
Machinery, except electrical (9/78=100)	140.6	140.5	140.6	140.3	140.5	140.7	141.0	141.2	141.3
Electrical machinery (12/80=100)	111.9	111.2	112.6	112.3	112.6	113.6	115.2	115.3	115.8
Transportation equipment (12/78=100)	162.6	164.1	165.1	167.1	167.4	169.4	170.0	171.2	172.3
Scientific instruments; optical goods; clocks (6/77=100)	156.2	156.7	159.7	161.2	161.5	162.3	163.3	164.6	164.7

¹ SIC - based classification.

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

Industry group	1985		1986				1987		
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Manufacturing:									
Food and kindred products (6/77=100)	114.2	115.1	117.7	115.6	118.0	122.4	122.7	125.9	128.5
Textile mill products (9/82=100)	100.4	101.8	104.7	106.4	107.1	108.0	111.7	113.6	116.2
Apparel and related products (6/77=100)	133.9	134.4	133.4	135.1	137.8	139.3	146.0	150.9	154.1
Lumber and wood products, except furniture (6/77=100)	117.5	115.8	122.1	124.8	127.9	127.9	134.5	135.0	141.7
Furniture and fixtures (6/80=100)	97.7	98.2	101.2	103.5	105.4	105.6	109.6	110.2	111.5
Paper and allied products (6/77=100)	138.7	137.4	137.6	139.4	142.2	150.3	154.0	155.7	163.1
Chemicals and allied products (9/82=100)	93.3	95.8	98.6	102.1	103.8	102.4	104.7	105.7	106.1
Rubber and miscellaneous plastic products (12/80=100)	96.6	97.5	100.9	100.6	101.9	102.1	104.4	105.8	105.0
Leather and leather products	142.3	144.0	145.8	144.6	147.7	148.7	151.8	156.2	159.8
Primary metal products (6/81=100)	84.3	82.6	82.0	82.4	84.9	84.0	85.4	91.3	96.0
Fabricated metal products (12/84=100)	101.0	102.6	104.9	108.5	110.3	111.1	115.5	116.2	118.1
Machinery, except electrical (3/80=100)	96.6	100.0	105.5	109.0	112.5	114.2	119.1	122.1	122.5
Electrical machinery (9/84=100)	94.5	95.8	97.0	100.2	102.6	104.0	105.7	106.9	106.5
Transportation equipment (6/81=100)	114.8	119.6	123.9	128.0	130.4	133.2	136.5	138.4	138.8
Scientific instruments; optical goods; clocks (12/79=100)	94.6	98.8	103.9	109.1	113.7	113.7	119.1	122.1	120.4
Miscellaneous manufactured commodities (9/82=100)	96.6	98.7	99.9	101.7	106.9	108.1	110.3	113.8	116.4

¹ SIC - based classification.

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

(1977=100)

Item	Quarterly Indexes											
	1985				1986				1987			
	I	II	III	IV	I	II	III	IV	I	II	III	
Business:												
Output per hour of all persons	106.5	107.2	108.2	107.9	109.5	109.7	109.6	109.6	109.7	110.1	110.9	
Compensation per hour	172.4	174.6	177.0	179.3	180.7	182.2	183.6	185.2	185.8	187.3	189.3	
Real compensation per hour	98.5	98.6	99.4	99.7	100.1	101.3	101.4	101.6	100.7	100.3	100.4	
Unit labor costs	161.9	162.8	163.6	166.1	165.0	166.2	167.5	169.0	169.4	170.2	170.7	
Unit nonlabor payments	158.7	160.4	161.8	160.2	163.1	163.9	165.7	162.4	166.0	168.6	169.7	
Implicit price deflator	160.8	162.0	163.0	164.0	164.3	165.4	166.9	166.7	168.2	169.6	170.3	
Nonfarm business:												
Output per hour of all persons	105.2	105.7	106.4	105.9	107.7	107.7	107.5	107.5	107.6	108.0	108.7	
Compensation per hour	172.2	174.1	176.2	178.3	180.0	181.3	182.6	184.4	184.9	186.3	188.1	
Real compensation per hour	98.4	98.3	98.9	99.2	99.7	100.8	100.9	101.2	100.2	99.7	99.7	
Unit labor costs	163.6	164.7	165.7	168.3	167.2	168.4	169.8	171.5	171.8	172.5	173.1	
Unit nonlabor payments	159.5	161.5	163.4	160.8	164.7	165.2	167.0	163.9	167.4	169.2	170.6	
Implicit price deflator	162.2	163.6	164.9	165.7	166.4	167.3	168.8	168.8	170.3	171.4	172.2	
Nonfinancial corporations:												
Output per hour of all employees	107.0	107.7	109.2	108.9	109.8	109.7	109.9	110.5	109.7	109.9	-	
Compensation per hour	169.9	171.8	173.8	175.7	177.2	178.4	179.5	181.0	180.8	182.0	-	
Real compensation per hour	97.0	97.0	97.6	97.7	98.2	99.1	99.2	99.3	98.0	97.4	-	
Total unit costs	163.6	164.3	163.7	166.0	166.3	167.2	168.5	168.7	169.7	170.9	-	
Unit labor costs	158.9	159.5	159.1	161.4	161.5	162.6	163.2	163.8	164.8	165.6	-	
Unit nonlabor costs	177.5	178.7	177.5	179.4	180.7	180.6	184.2	183.2	184.1	186.6	-	
Unit profits	132.0	132.2	142.5	128.7	129.7	129.5	130.6	127.7	132.2	132.9	-	
Unit nonlabor payments	161.6	162.5	165.2	161.6	162.8	162.7	165.4	163.7	165.9	167.8	-	
Implicit price deflator	159.8	160.5	161.2	161.5	161.9	162.7	164.0	163.8	165.2	166.3	-	
Manufacturing:												
Output per hour of all persons	121.3	124.1	125.3	126.1	127.6	128.4	129.3	129.8	130.8	132.9	134.4	
Compensation per hour	173.3	176.1	178.0	180.2	181.0	182.1	183.1	184.3	183.9	184.8	185.4	
Real compensation per hour	99.0	99.5	99.9	100.2	100.3	101.2	101.2	101.2	99.6	98.9	98.3	
Unit labor costs	142.9	142.0	142.1	142.9	141.9	141.8	141.7	142.0	140.5	139.0	138.0	

Data not available.

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

(1977 = 100)

Item	1960	1970	1973	1976	1978	1980	1981	1982	1983	1984	1985	1986
Private business												
Productivity:												
Output per hour of all persons	67.3	88.4	95.9	98.4	100.8	99.2	100.6	100.3	103.1	105.7	107.6	109.7
Output per unit of capital services	102.1	101.9	105.3	97.2	102.0	94.2	92.4	86.7	88.4	92.8	92.8	92.8
Multifactor productivity	78.1	92.9	99.1	98.0	101.2	97.4	97.7	95.3	97.7	101.0	102.2	103.4
Output	55.3	80.2	93.0	94.5	105.8	106.6	108.9	105.4	109.9	119.2	124.0	128.1
Inputs:												
Hours of all persons	82.2	90.8	96.9	96.1	105.0	107.5	108.2	105.2	106.7	112.8	115.2	116.8
Capital services	54.2	78.7	88.3	97.2	103.8	113.1	117.8	121.7	124.4	128.5	133.6	138.0
Combined units of labor and capital input	70.8	86.3	93.8	96.5	104.5	109.4	111.5	110.7	112.6	118.1	121.3	123.8
Capital per hour of all persons	65.9	86.7	91.1	101.2	98.8	105.3	108.8	115.7	116.6	113.9	116.0	118.2
Private nonfarm business												
Productivity:												
Output per hour of all persons	70.7	89.2	96.4	98.5	100.8	98.7	99.6	99.1	102.5	104.7	105.9	107.6
Output per unit of capital services	103.6	102.8	106.0	97.3	101.9	93.4	91.1	85.1	87.3	91.3	90.8	90.5
Multifactor productivity	80.9	93.7	99.6	98.1	101.2	96.9	96.7	94.1	97.0	99.9	100.5	101.4
Output	54.4	79.9	92.9	94.4	106.0	106.6	108.4	104.8	110.1	119.3	123.7	127.6
Inputs:												
Hours of all persons	77.0	89.6	96.3	95.8	105.1	108.0	108.8	105.7	107.4	114.0	116.8	118.5
Capital services	52.5	77.8	87.6	97.0	104.0	114.1	119.0	123.2	126.1	130.6	136.3	141.0
Combined units of labor and capital input	67.3	85.3	93.3	96.2	104.7	110.0	112.2	111.4	113.5	119.4	123.1	125.8
Capital per hour of all persons	68.2	86.8	91.0	101.3	98.9	105.6	109.4	116.5	117.4	114.6	116.7	119.0
Manufacturing												
Productivity:												
Output per hour of all persons	62.2	80.8	93.4	97.1	101.5	101.4	103.6	105.9	112.0	118.1	124.2	128.8
Output per unit of capital services	102.5	98.6	111.4	96.2	102.1	91.2	89.2	81.8	86.9	95.7	97.8	99.3
Multifactor productivity	71.9	85.2	97.9	96.8	101.7	98.7	99.8	99.2	105.1	112.2	117.0	120.6
Output	52.5	78.6	96.3	93.1	106.0	103.2	104.8	98.4	104.7	117.5	122.5	125.9
Inputs:												
Hours of all persons	84.4	97.3	103.1	95.9	104.4	101.7	101.1	92.9	93.5	99.5	98.7	97.8
Capital services	51.2	79.7	86.4	96.7	103.7	113.1	117.5	120.3	120.6	122.8	125.3	126.8
Combined units of labor and capital inputs	73.0	92.2	98.4	96.1	104.2	104.5	105.0	99.2	99.7	104.7	104.8	104.4
Capital per hour of all persons	60.7	82.0	83.8	100.9	99.4	111.2	116.2	129.4	129.0	123.5	127.0	129.7

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

(1977 = 100)

Item	1960	1970	1973	1975	1977	1979	1980	1981	1982	1983	1984	1985	1986
Business:													
Output per hour of all persons	67.6	88.4	95.9	95.7	100.0	99.6	99.3	100.7	100.3	103.0	105.6	107.5	109.5
Compensation per hour	33.6	57.8	70.9	85.2	100.0	119.1	131.5	143.7	154.9	161.5	168.0	175.9	182.8
Real compensation per hour	68.9	90.2	96.7	95.9	100.0	99.4	96.7	95.7	97.3	98.2	98.0	99.1	101.0
Unit labor costs	49.7	65.4	73.9	89.0	100.0	119.5	132.5	142.7	154.5	156.7	159.1	163.6	166.9
Unit nonlabor payments	46.4	59.4	72.5	88.2	100.0	112.5	118.7	134.6	136.6	146.4	156.5	160.3	163.8
Implicit price deflator	48.5	63.2	73.4	88.7	100.0	117.0	127.6	139.8	148.1	153.0	158.2	162.4	165.8
Nonfarm business:													
Output per hour of all persons	71.0	89.3	96.4	96.0	100.0	99.3	98.8	99.8	99.2	102.5	104.6	105.8	107.5
Compensation per hour	35.3	58.2	71.2	85.6	100.0	118.9	131.3	143.6	154.8	161.5	167.8	175.2	182.0
Real compensation per hour	72.3	90.8	97.1	96.4	100.0	99.2	96.6	95.7	97.2	98.2	97.9	98.7	100.6
Unit labor costs	49.7	65.2	73.9	89.2	100.0	119.7	132.9	144.0	156.0	157.6	160.4	165.6	169.3
Unit nonlabor payments	46.3	60.0	69.3	86.7	100.0	110.5	118.5	133.5	136.5	148.3	156.4	161.3	165.2
Implicit price deflator	48.5	63.4	72.3	88.3	100.0	116.5	127.8	140.3	149.2	154.3	159.0	164.1	167.8
Nonfinancial corporations:													
Output per hour of all employees	73.4	91.1	97.5	96.7	100.0	99.8	99.1	99.6	100.4	103.5	106.0	108.2	109.9
Compensation per hour	36.9	59.2	71.6	85.9	100.0	118.7	131.1	143.3	154.3	159.9	165.8	172.8	178.9
Real compensation per hour	75.5	92.4	97.6	96.7	100.0	99.1	96.4	95.5	96.9	97.3	96.7	97.4	98.9
Total unit costs	49.4	64.8	72.7	90.3	100.0	118.2	133.4	147.7	159.5	159.5	160.8	164.4	167.7
Unit labor costs	50.2	65.0	73.4	88.8	100.0	119.0	132.3	143.8	153.8	154.5	156.5	159.7	162.8
Unit nonlabor costs	47.0	64.2	70.7	94.9	100.0	115.8	136.7	159.1	176.4	174.3	173.6	178.3	182.2
Unit profits	59.8	52.3	65.6	77.0	100.0	94.5	85.2	98.1	78.5	110.9	136.5	133.9	129.3
Unit nonlabor payments	51.5	60.1	68.9	88.6	100.0	108.4	118.6	137.8	142.1	152.1	160.6	162.7	163.7
Implicit price deflator	50.7	63.3	71.9	88.7	100.0	115.4	127.6	141.7	149.8	153.7	157.9	160.7	163.1
Manufacturing:													
Output per hour of all persons	62.2	80.8	93.4	92.9	100.0	101.4	101.4	103.6	105.9	112.0	118.1	124.2	128.8
Compensation per hour	36.5	57.4	68.8	85.1	100.0	118.6	132.4	145.2	157.5	162.4	168.0	176.9	182.7
Real compensation per hour	74.8	89.5	93.8	95.9	100.0	99.1	97.4	96.7	98.9	98.8	98.0	99.6	100.9
Unit labor costs	58.7	71.0	73.7	91.7	100.0	117.0	130.6	140.1	148.7	145.0	142.2	142.4	141.8
Unit nonlabor payments	60.0	64.1	70.7	87.5	100.0	98.9	97.8	111.8	114.0	128.5	138.6	134.7	137.9
Implicit price deflator	59.1	69.0	72.8	90.5	100.0	111.7	121.0	131.8	138.6	140.2	141.2	140.2	140.7

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

Country	Annual average		1986				1987		
	1985	1986	I	II	III	IV	I	II	III
Total labor force basis									
United States	7.1	6.9	7.0	7.0	6.8	6.8	6.6	6.1	5.9
Canada	10.4	9.5	9.7	9.5	9.6	9.4	9.6	9.0	8.8
Australia	8.2	8.0	7.9	7.7	8.2	8.3	8.3	8.1	-
Japan	2.6	2.8	2.7	2.8	2.9	2.9	3.0	3.1	-
France	10.2	10.4	10.2	10.4	10.6	10.6	11.0	11.0	10.9
Germany	7.7	7.4	7.6	7.5	7.4	7.2	7.3	7.4	7.5
Italy ^{1, 2}	5.9	6.2	6.1	6.2	5.9	6.5	6.6	6.6	6.6
Sweden	2.8	2.6	2.7	2.6	2.6	2.6	2.0	1.9	-
United Kingdom	11.2	11.1	11.1	11.2	11.1	10.9	10.6	10.2	9.7
Civilian labor force basis									
United States	7.2	7.0	7.1	7.1	6.9	6.9	6.7	6.2	6.0
Canada	10.5	9.6	9.7	9.6	9.7	9.4	9.6	9.1	8.8
Australia	8.3	8.1	8.0	7.8	8.3	8.4	8.3	8.2	-
Japan	2.6	2.8	2.7	2.8	2.9	2.9	3.0	3.1	-
France	10.4	10.7	10.5	10.7	10.8	10.8	11.2	11.3	11.2
Germany	7.9	7.6	7.8	7.7	7.5	7.4	7.4	7.5	7.6
Italy ^{1, 2}	6.0	6.3	6.2	6.3	6.0	6.6	6.7	6.7	6.8
Sweden	2.8	2.7	2.8	2.6	2.6	2.6	2.0	1.9	-
United Kingdom	11.2	11.1	11.2	11.2	11.2	10.9	10.7	10.3	9.8

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 about

double the Italian unemployment rate shown.

- Data not available.

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

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

(Numbers in thousands)

Employment status and country	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Labor force										
United States	99,009	102,251	104,962	106,940	108,670	110,204	111,550	113,544	115,461	117,834
Canada	10,500	10,895	11,231	11,573	11,904	11,958	12,183	12,399	12,639	12,870
Australia	6,358	6,443	6,519	6,693	6,810	6,910	6,997	7,133	7,272	7,562
Japan	53,820	54,610	55,210	55,740	56,320	56,980	58,110	58,480	58,820	59,410
France	22,300	22,460	22,670	22,800	22,930	23,160	23,130	23,290	23,340	23,480
Germany	25,870	26,000	26,250	26,520	26,650	26,710	26,740	26,890	27,090	27,280
Italy	20,510	20,570	20,850	21,120	21,320	21,410	21,590	21,670	21,800	21,990
Netherlands	4,950	5,010	5,100	5,310	5,520	5,570	5,600	5,620	5,710	-
Sweden	4,168	4,203	4,262	4,312	4,327	4,350	4,369	4,385	4,418	4,437
United Kingdom	26,050	26,260	26,350	26,520	26,590	26,740	26,790	27,180	27,370	27,460
Participation rate¹										
United States	62.3	63.2	63.7	63.8	63.9	64.0	64.0	64.4	64.8	65.3
Canada	61.6	62.7	63.4	64.1	64.8	64.1	64.4	64.8	65.2	65.7
Australia	62.7	61.9	61.6	62.1	61.9	61.7	61.4	61.5	61.8	63.0
Japan	62.5	62.8	62.7	62.6	62.6	62.7	63.1	62.7	62.3	62.1
France	57.6	57.5	57.5	57.2	57.1	57.1	56.6	56.6	56.2	56.2
Germany	53.4	53.3	53.3	53.2	52.9	52.7	52.5	52.6	52.8	53.2
Italy	48.2	47.8	48.0	48.2	48.3	47.7	47.5	47.3	47.2	47.5
Netherlands	49.0	48.8	49.0	50.2	51.4	51.2	50.9	50.5	50.7	-
Sweden	65.9	66.1	66.6	66.9	66.8	66.8	66.7	66.6	66.9	67.2
United Kingdom	62.7	62.8	62.6	62.5	62.2	62.3	62.1	62.6	62.7	62.5
Employed										
United States	92,017	96,048	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597
Canada	9,651	9,987	10,395	10,708	11,006	10,644	10,734	11,000	11,311	11,634
Australia	6,000	6,038	6,111	6,284	6,416	6,415	6,300	6,490	6,670	6,952
Japan	52,720	53,370	54,040	54,600	55,060	55,620	56,550	56,870	57,260	57,740
France	21,180	21,250	21,300	21,330	21,200	21,240	21,170	20,980	20,900	20,970
Germany	24,970	25,130	25,470	25,750	25,560	25,130	24,750	24,800	24,960	25,210
Italy	19,670	19,720	19,930	20,200	20,280	20,250	20,320	20,390	20,490	20,610
Netherlands	4,700	4,750	4,830	4,980	5,010	4,980	4,890	4,930	5,110	-
Sweden	4,093	4,109	4,174	4,226	4,219	4,213	4,218	4,249	4,293	4,319
United Kingdom	24,400	24,610	24,940	24,670	23,800	23,710	23,600	24,000	24,300	24,400
Employment-population ratio²										
United States	57.9	59.3	59.9	59.2	59.0	57.8	57.9	59.5	60.1	60.7
Canada	56.6	57.5	58.7	59.3	59.9	57.0	56.7	57.4	58.4	59.4
Australia	59.2	58.0	57.8	58.3	58.4	57.3	55.3	56.0	56.6	57.9
Japan	61.2	61.3	61.4	61.3	61.2	61.2	61.4	61.0	60.6	60.4
France	54.7	54.4	54.0	53.5	52.8	52.3	51.8	51.0	50.4	50.2
Germany	51.6	51.5	51.7	51.7	50.8	49.6	48.6	48.5	48.7	49.1
Italy	48.3	45.9	45.9	46.1	45.9	45.2	44.7	44.5	44.4	44.6
Netherlands	46.5	46.3	46.4	47.0	46.6	45.8	44.5	44.3	45.7	-
Sweden	64.8	64.6	65.3	65.6	65.1	64.7	64.4	64.5	65.0	65.4
United Kingdom	58.7	58.8	59.2	58.1	55.7	55.3	54.7	55.3	55.7	55.6
Unemployed										
United States	6,991	6,202	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237
Canada	849	908	836	865	898	1,314	1,448	1,399	1,328	1,236
Australia	358	405	408	409	394	495	697	642	602	610
Japan	1,100	1,240	1,170	1,140	1,260	1,360	1,560	1,610	1,560	1,670
France	1,120	1,210	1,370	1,470	1,730	1,920	1,960	2,310	2,440	2,510
Germany	900	870	780	770	1,090	1,580	1,990	2,090	2,130	2,070
Italy	840	850	920	920	1,040	1,160	1,270	1,280	1,310	1,380
Netherlands	250	260	270	330	510	590	710	690	600	-
Sweden	75	94	88	86	108	137	151	136	125	118
United Kingdom	1,660	1,650	1,420	1,850	2,790	3,030	3,190	3,180	3,070	3,060
Unemployment rate										
United States	7.1	6.1	5.8	7.1	7.6	9.7	9.6	7.5	7.2	7.0
Canada	8.1	8.3	7.4	7.5	7.5	11.0	11.9	11.3	10.5	9.6
Australia	5.6	6.3	6.3	6.1	5.8	7.2	10.0	9.0	8.3	8.1
Japan	2.0	2.3	2.1	2.0	2.2	2.4	2.7	2.8	2.6	2.8
France	5.0	5.4	6.0	6.4	7.5	8.3	8.5	9.9	10.4	10.7
Germany	3.5	3.3	3.0	2.9	4.1	5.9	7.4	7.8	7.9	7.6
Italy	4.1	4.1	4.4	4.4	4.9	5.4	5.9	5.9	6.0	6.3
Netherlands	5.1	5.2	5.3	6.2	9.2	10.6	12.7	12.3	10.5	-
Sweden	1.8	2.2	2.1	2.0	2.5	3.1	3.5	3.1	2.8	2.7
United Kingdom	6.4	6.3	5.4	7.0	10.5	11.3	11.9	11.7	11.2	11.1

¹ Labor force as a percent of the civilian working-age population.
² Employment as a percent of the civilian working-age population.

- Data not available.

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

(1977 = 100)

Item and country	1960	1970	1973	1974	1975	1976	1978	1979	1980	1981	1982	1983	1984	1985	1986
Output per hour															
United States	62.2	80.8	93.4	90.6	92.9	97.1	101.5	101.4	101.4	103.6	105.9	112.0	116.6	121.7	126.0
Canada	50.7	75.6	90.3	91.7	88.6	94.8	101.1	102.0	98.2	102.9	100.4	106.9	110.2	112.7	112.1
Japan	23.2	64.8	83.1	86.5	87.7	94.3	108.0	114.8	122.7	127.2	135.0	142.3	152.5	163.7	168.2
Belgium	32.8	59.9	78.2	82.6	85.9	95.1	106.3	112.3	119.7	128.1	135.7	144.7	149.8	153.3	-
Denmark	37.2	65.5	83.2	86.0	94.6	98.2	101.5	106.5	112.3	114.2	114.6	120.2	118.9	117.2	116.6
France	36.4	69.6	82.2	85.2	88.5	95.0	105.7	110.3	112.0	116.4	123.5	128.8	133.8	138.3	140.9
Germany	40.3	71.2	84.0	87.4	90.1	96.5	103.1	108.2	108.6	111.0	112.6	119.1	123.5	128.9	131.4
Italy	36.5	72.7	90.9	95.3	91.1	98.9	103.0	110.5	116.9	121.0	123.4	126.6	134.7	136.8	138.4
Netherlands	32.4	64.3	81.5	88.1	86.2	95.8	106.4	112.3	113.9	116.9	119.4	127.5	141.2	145.6	-
Norway	54.6	81.7	94.6	97.7	96.8	99.7	101.8	107.1	106.7	107.0	109.8	117.2	123.9	125.2	122.1
Sweden	42.3	80.7	94.8	98.8	100.2	101.7	102.8	110.9	112.7	113.2	116.5	125.5	131.0	134.5	136.4
United Kingdom	55.5	79.7	95.6	97.4	95.2	99.5	101.5	102.4	101.7	107.0	113.6	123.0	129.5	134.2	138.2
Output															
United States	52.5	78.6	96.3	91.7	84.9	93.1	106.0	108.1	103.2	104.8	98.4	104.7	116.0	120.4	124.4
Canada	41.3	73.5	93.5	96.3	89.9	96.5	104.6	108.5	103.6	107.4	95.6	101.0	108.4	113.6	115.4
Japan	19.2	69.9	91.9	91.7	86.2	94.8	106.7	113.9	124.1	129.8	137.3	148.2	165.4	179.3	182.1
Belgium	41.6	78.0	95.7	99.5	92.0	99.4	101.6	104.4	107.3	106.0	110.5	112.1	114.1	115.1	-
Denmark	49.2	82.0	95.9	97.4	95.0	99.6	99.7	105.4	110.1	106.6	108.3	115.6	120.0	123.6	127.0
France	35.4	73.3	88.6	91.8	90.0	96.1	103.4	106.1	106.6	105.9	106.0	107.4	108.4	108.6	108.1
Germany	50.0	86.6	96.1	95.4	91.0	98.0	101.8	106.6	106.6	104.9	102.4	103.6	106.4	111.7	114.5
Italy	37.4	78.0	90.5	96.3	86.9	97.9	101.8	108.6	115.4	114.3	111.6	109.2	113.7	115.5	119.3
Netherlands	44.8	84.4	95.8	100.0	92.7	99.0	102.8	106.1	106.6	106.7	105.0	107.0	112.9	115.3	-
Norway	55.1	86.9	99.5	104.0	101.0	101.4	98.2	100.3	98.8	97.7	97.4	97.2	102.6	105.2	107.0
Sweden	52.6	92.5	100.3	105.7	106.1	106.1	97.3	103.6	104.0	100.6	100.1	105.2	111.5	113.8	114.4
United Kingdom	71.2	95.0	104.8	103.5	96.3	98.2	100.6	100.5	91.7	86.2	86.4	88.9	92.4	95.2	96.0
Total hours															
United States	84.4	97.3	103.1	101.2	91.4	95.9	104.4	106.5	101.7	101.1	92.9	93.5	99.5	98.9	98.7
Canada	81.4	97.2	103.6	105.0	101.5	101.8	103.4	106.3	105.5	104.3	95.1	94.5	98.3	100.8	103.0
Japan	82.7	107.9	110.7	106.1	98.2	100.6	98.8	99.3	101.2	102.0	101.7	104.2	108.5	109.6	108.3
Belgium	127.1	130.2	122.3	120.4	107.1	104.6	95.5	93.0	89.6	82.8	81.4	77.5	76.2	75.1	-
Denmark	132.4	125.1	115.2	113.2	100.4	101.4	98.3	99.0	98.1	93.4	94.5	96.2	101.0	105.5	108.9
France	97.2	105.3	107.8	107.8	101.7	101.2	97.8	96.2	95.2	91.0	85.8	83.4	81.0	78.5	76.7
Germany	123.8	121.7	114.4	109.2	101.0	101.6	98.7	98.5	98.1	94.6	91.0	87.0	86.2	86.7	87.2
Italy	102.3	107.4	99.6	101.0	95.4	99.0	98.8	98.2	98.7	94.5	90.4	86.2	84.4	84.4	86.2
Netherlands	138.4	131.2	117.6	113.5	107.6	103.3	96.6	94.4	93.6	91.2	88.0	83.9	79.9	79.2	-
Norway	101.0	106.4	105.1	106.5	104.3	101.7	96.5	93.6	92.6	91.3	88.6	82.9	82.8	84.0	87.6
Sweden	124.4	114.6	105.7	107.0	105.9	104.3	94.6	93.4	92.3	88.9	85.9	83.9	85.1	84.6	83.9
United Kingdom	128.3	119.1	109.5	106.3	101.2	98.7	99.1	98.1	90.2	80.6	76.1	72.3	71.3	71.0	69.5
Compensation per hour															
United States	36.5	57.4	68.8	76.2	85.1	92.1	108.2	118.6	132.4	145.2	157.5	162.4	168.2	176.7	181.9
Canada	27.5	47.9	60.3	69.1	78.9	90.3	107.6	118.6	131.3	151.1	167.3	177.4	188.0	195.9	202.2
Japan	8.9	33.9	55.1	72.3	84.2	90.7	106.6	113.4	120.7	129.8	136.6	140.7	144.9	152.0	157.3
Belgium	13.8	34.9	53.5	65.2	79.0	89.5	107.8	117.5	130.4	144.5	150.7	159.8	173.1	183.7	-
Denmark	12.6	36.3	56.1	67.9	81.0	90.4	110.2	123.1	135.9	149.6	162.9	174.2	184.3	194.4	202.6
France	15.1	36.6	52.3	62.0	76.7	88.9	113.5	129.3	148.2	171.5	202.3	227.0	246.9	262.5	274.0
Germany	18.8	48.0	67.5	76.9	84.5	91.3	107.8	116.1	125.6	134.5	141.0	148.4	155.5	162.8	171.0
Italy	8.3	26.1	43.7	54.5	70.2	84.2	114.5	134.7	160.2	197.1	237.3	276.4	307.4	339.5	353.9
Netherlands	12.5	39.0	60.5	71.9	82.2	91.9	108.4	117.0	123.6	129.1	137.5	144.0	151.0	159.0	-
Norway	15.8	37.9	54.5	63.6	77.2	88.8	110.0	116.0	128.0	142.8	156.0	173.5	188.3	204.8	220.5
Sweden	14.7	38.5	54.2	63.8	77.3	91.5	111.4	120.1	133.6	148.1	158.9	173.3	189.7	208.9	223.1
United Kingdom	15.2	31.5	48.3	57.7	77.3	89.3	116.4	138.8	168.3	192.5	212.3	227.7	243.9	261.3	282.4
Unit labor costs: National currency basis															
United States	58.7	71.0	73.7	84.1	91.7	94.9	106.6	117.0	130.6	140.1	148.7	145.0	144.2	145.1	144.3
Canada	54.2	63.4	66.8	75.3	89.1	95.3	106.5	116.2	133.7	146.7	166.5	166.0	170.6	173.8	180.4
Japan	38.4	52.3	66.4	83.6	96.0	96.2	98.7	98.8	98.4	102.0	101.2	98.9	95.0	92.9	93.5
Belgium	42.0	58.2	68.4	78.9	91.9	94.2	101.4	104.7	109.0	112.8	111.1	110.5	115.6	119.8	-
Denmark	33.8	55.4	67.4	79.0	85.6	92.1	108.6	115.7	121.0	131.1	142.2	144.9	155.1	166.0	173.8
France	41.6	52.6	63.6	72.8	86.7	93.6	107.4	117.3	132.3	147.4	163.8	176.2	184.5	189.8	194.4
Germany	46.6	67.4	80.3	88.0	93.8	94.6	104.5	107.3	115.7	121.2	125.2	124.6	125.9	126.3	130.2
Italy	22.8	36.0	48.1	57.2	77.1	85.1	111.2	121.9	137.0	162.9	192.4	218.3	228.2	248.2	255.7
Netherlands	38.5	60.7	74.3	81.6	95.4	96.0	101.8	104.1	108.5	110.4	115.2	113.0	106.9	109.2	-
Norway	29.0	46.4	57.6	65.2	79.7	89.1	108.1	108.2	120.0	133.4	142.1	148.0	152.0	163.5	180.5
Sweden	34.8	47.7	57.2	64.6	77.1	90.0	108.4	108.3	118.6	130.9	136.3	138.1	144.8	155.3	163.6
United Kingdom	27.4	39.5	50.5	59.3	81.2	89.8	114.7	135.5	165.4	179.9	186.9	185.1	188.4	194.7	204.4
Unit labor costs: U.S. dollar basis															
United States	58.7	71.0	73.7	84.1	91.7	94.9	106.6	117.0	130.6	140.1	148.7	145.0	144.2	145.1	144.3
Canada	59.4	64.5	71.0	81.8	93.1	102.7	99.3	105.4	121.5	130.0	143.4	143.1	139.9	135.2	137.9
Japan	28.5	39.1	65.6	76.8	86.7	86.9	126.8	121.3	116.8	123.8	108.8	111.5	107.2	104.3	148.7
Belgium	30.2	42.0	63.1	72.7	89.7	87.5	115.6	127.9	133.7	109.2	86.9	77.4	71.7	72.3	-
Denmark	29.5	44.4	67.2	77.9	89.6	91.5	118.4	132.0	129.0	110.3	102.3	95.1	89.9	94.0	128.9
France	41.7	46.8	70.4	74.5	99.5	96.3	117.3	135.5	154.1	133.2	122.4	113.7	103.8	103.9	138.0
Germany	25.9	42.9	70.4	79.1	88.7	87.3	121.0	135.9	147.9	124.9	119.7	113.3	102.7	99.6	139.2
Italy	32.5	50.6	73.1	77.6	104.3	90.5	115.6	129.5	141.4	126.3	125.4	126.8	114.7	114.8	151.4
Netherlands	25.1	41.2	65.6	74.6	92.8	89.1	115.7	127.4	134.2	108.9	105.8				

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								
	1978	1979	1980	1981	1982	1983	1984	1985	1986
PRIVATE SECTOR³									
Total cases	9.4	9.5	8.7	8.3	7.7	7.6	8.0	7.9	7.9
Lost workday cases	4.1	4.3	4.0	3.8	3.5	3.4	3.7	3.6	3.6
Lost workdays	63.5	67.7	65.2	61.7	58.7	58.5	63.4	64.9	65.8
Agriculture, forestry, and fishing³									
Total cases	11.6	11.7	11.9	12.3	11.8	11.9	12.0	11.4	11.2
Lost workday cases	5.4	5.7	5.8	5.9	5.9	6.1	6.1	5.7	5.6
Lost workdays	80.7	83.7	82.7	82.8	86.0	90.8	90.7	91.3	93.6
Mining									
Total cases	11.5	11.4	11.2	11.6	10.5	8.4	9.7	8.4	7.4
Lost workday cases	6.4	6.8	6.5	6.2	5.4	4.5	5.3	4.8	4.1
Lost workdays	143.2	150.5	163.6	146.4	137.3	125.1	160.2	145.3	125.9
Construction									
Total cases	16.0	16.2	15.7	15.1	14.6	14.8	15.5	15.2	15.2
Lost workday cases	6.4	6.8	6.5	6.3	6.0	6.3	6.9	6.8	6.9
Lost workdays	109.4	120.4	117.0	113.1	115.7	118.2	128.1	128.9	134.5
General building contractors:									
Total cases	15.9	16.3	15.5	15.1	14.1	14.4	15.4	15.2	14.9
Lost workday cases	6.3	6.8	6.5	6.1	5.9	6.2	6.9	6.8	6.6
Lost workdays	105.3	111.2	113.0	107.1	112.0	113.0	121.3	120.4	122.7
Heavy construction contractors:									
Total cases	16.6	16.6	16.3	14.9	15.1	15.4	14.9	14.5	14.7
Lost workday cases	6.2	6.7	6.3	6.0	5.8	6.2	6.4	6.3	6.3
Lost workdays	110.9	123.1	117.6	106.0	113.1	122.4	131.7	127.3	132.9
Special trade contractors:									
Total cases	15.8	16.0	15.5	15.2	14.7	14.8	15.8	15.4	15.6
Lost workday cases	6.6	6.9	6.7	6.6	6.2	6.4	7.1	7.0	7.2
Lost workdays	111.0	124.3	118.9	119.3	118.6	119.0	130.1	133.3	140.4
Manufacturing									
Total cases	13.2	13.3	12.2	11.5	10.2	10.0	10.6	10.4	10.6
Lost workday cases	5.6	5.9	5.4	5.1	4.4	4.3	4.7	4.6	4.7
Lost workdays	84.9	90.2	86.7	82.0	75.0	73.5	77.9	80.2	85.2
Durable goods									
Lumber									
Total cases	22.6	20.7	18.6	17.6	16.9	18.3	19.6	18.5	18.9
Lost workday cases	11.1	10.8	9.5	9.0	8.3	9.2	9.9	9.3	9.7
Lost workdays	178.8	175.9	171.8	158.4	153.3	163.5	172.0	171.4	177.2
Furniture and fixtures:									
Total cases	17.5	17.6	16.0	15.1	13.9	14.1	15.3	15.0	15.2
Lost workday cases	6.9	7.1	6.6	6.2	5.5	5.7	6.4	6.3	6.3
Lost workdays	95.9	99.6	97.6	91.9	85.6	83.0	101.5	100.4	103.0
Stone, clay, and glass products:									
Total cases	16.8	16.8	15.0	14.1	13.0	13.1	13.6	13.9	13.6
Lost workday cases	7.8	8.0	7.1	6.9	6.1	6.0	6.6	6.7	6.5
Lost workdays	126.3	133.7	128.1	122.2	112.2	112.0	120.8	127.8	126.0
Primary metal industries:									
Total cases	17.0	17.3	15.2	14.4	12.4	12.4	13.3	12.6	13.6
Lost workday cases	7.5	8.1	7.1	6.7	5.4	5.4	6.1	5.7	6.1
Lost workdays	123.6	134.7	128.3	121.3	101.6	103.4	115.3	113.8	125.5
Fabricated metal products:									
Total cases	19.3	19.9	18.5	17.5	15.3	15.1	16.1	16.3	16.0
Lost workday cases	8.0	8.7	8.0	7.5	6.4	6.1	6.7	6.9	6.8
Lost workdays	112.4	124.2	118.4	109.9	102.5	96.5	104.9	110.1	115.5
Machinery, except electrical:									
Total cases	14.4	14.7	13.7	12.9	10.7	9.8	10.7	10.8	10.7
Lost workday cases	5.4	5.9	5.5	5.1	4.2	3.6	4.1	4.2	4.2
Lost workdays	75.1	83.6	81.3	74.9	66.0	58.1	65.8	69.3	72.0
Electric and electronic equipment:									
Total cases	8.7	8.6	8.0	7.4	6.5	6.3	6.8	6.4	6.4
Lost workday cases	3.3	3.4	3.3	3.1	2.7	2.6	2.8	2.7	2.7
Lost workdays	50.3	51.9	51.8	48.4	42.2	41.4	45.0	45.7	49.8
Transportation equipment:									
Total cases	11.5	11.6	10.6	9.8	9.2	8.4	9.3	9.0	9.6
Lost workday cases	5.1	5.5	4.9	4.6	4.0	3.6	4.2	3.9	4.1
Lost workdays	78.0	85.9	82.4	78.1	72.2	64.5	68.8	71.6	79.1
Instruments and related products:									
Total cases	6.9	7.2	6.8	6.5	5.6	5.2	5.4	5.2	5.3
Lost workday cases	2.6	2.8	2.7	2.7	2.3	2.1	2.2	2.2	2.3
Lost workdays	37.0	40.0	41.8	39.2	37.0	35.6	37.5	37.9	42.2
Miscellaneous manufacturing industries:									
Total cases	11.8	11.7	10.9	10.7	9.9	9.9	10.5	9.7	10.2
Lost workday cases	4.5	4.7	4.4	4.4	4.1	4.0	4.3	4.2	4.3
Lost workdays	66.4	67.7	67.9	68.3	69.9	66.3	70.2	73.2	70.9

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								
	1978	1979	1980	1981	1982	1983	1984	1985	1986
Nondurable goods									
Food and kindred products:									
Total cases	19.4	19.9	18.7	17.8	16.7	16.5	16.7	16.7	16.5
Lost workday cases	8.9	9.5	9.0	8.6	8.0	7.9	8.1	8.1	8.0
Lost workdays	132.2	141.8	136.8	130.7	129.3	131.2	131.6	138.0	137.8
Tobacco manufacturing:									
Total cases	8.7	9.3	8.1	8.2	7.2	6.5	7.7	7.3	6.7
Lost workday cases	4.0	4.2	3.8	3.9	3.2	3.0	3.2	3.0	2.5
Lost workdays	58.6	64.8	45.8	56.8	44.6	42.8	51.7	51.7	45.6
Textile mill products:									
Total cases	10.2	9.7	9.1	8.8	7.6	7.4	8.0	7.5	7.8
Lost workday cases	3.4	3.4	3.3	3.2	2.8	2.8	3.0	3.0	3.1
Lost workdays	61.5	61.3	62.8	59.2	53.8	51.4	54.0	57.4	59.3
Apparel and other textile products:									
Total cases	6.5	6.5	6.4	6.3	6.0	6.4	6.7	6.7	6.7
Lost workday cases	2.2	2.2	2.2	2.2	2.1	2.4	2.5	2.6	2.7
Lost workdays	32.4	34.1	34.9	35.0	36.4	40.6	40.9	44.1	49.4
Paper and allied products:									
Total cases	13.5	13.5	12.7	11.6	10.6	10.0	10.4	10.2	10.5
Lost workday cases	5.7	6.0	5.8	5.4	4.9	4.5	4.7	4.7	4.7
Lost workdays	103.3	108.4	112.3	103.6	99.1	90.3	93.8	94.6	99.5
Printing and publishing:									
Total cases	7.0	7.1	6.9	6.7	6.6	6.6	6.5	6.3	6.5
Lost workday cases	2.9	3.1	3.1	3.0	2.8	2.9	2.9	2.9	2.9
Lost workdays	43.8	45.1	46.5	47.4	45.7	44.6	46.0	49.2	50.8
Chemicals and allied products:									
Total cases	7.8	7.7	6.8	6.6	5.7	5.5	5.3	5.1	6.3
Lost workday cases	3.3	3.5	3.1	3.0	2.5	2.5	2.4	2.3	2.7
Lost workdays	50.9	54.9	50.3	48.1	39.4	42.3	40.8	38.8	49.4
Petroleum and coal products:									
Total cases	7.9	7.7	7.2	6.7	5.3	5.5	5.1	5.1	7.1
Lost workday cases	3.4	3.6	3.5	2.9	2.5	2.4	2.4	2.4	3.2
Lost workdays	58.3	62.0	59.1	51.2	46.4	46.8	53.5	49.9	67.5
Rubber and miscellaneous plastics products:									
Total cases	17.1	17.1	15.5	14.6	12.7	13.0	13.6	13.4	14.0
Lost workday cases	8.1	8.2	7.4	7.2	6.0	6.2	6.4	6.3	6.6
Lost workdays	125.5	127.1	118.6	117.4	100.9	101.4	104.3	107.4	118.2
Leather and leather products:									
Total cases	11.7	11.5	11.7	11.5	9.9	10.0	10.5	10.3	10.5
Lost workday cases	4.7	4.9	5.0	5.1	4.5	4.4	4.7	4.6	4.8
Lost workdays	72.5	76.2	82.7	82.6	86.5	87.3	94.4	88.3	83.4
Transportation and public utilities									
Total cases	10.1	10.0	9.4	9.0	8.5	8.2	8.8	8.6	8.2
Lost workday cases	5.7	5.9	5.5	5.3	4.9	4.7	5.2	5.0	4.8
Lost workdays	102.3	107.0	104.5	100.6	96.7	94.9	105.1	107.1	102.1
Wholesale and retail trade									
Total cases	7.9	8.0	7.4	7.3	7.2	7.2	7.4	7.4	7.7
Lost workday cases	3.2	3.4	3.2	3.1	3.1	3.1	3.3	3.2	3.3
Lost workdays	44.9	49.0	48.7	45.3	45.5	47.8	50.5	50.7	54.0
Wholesale trade:									
Total cases	8.9	8.8	8.2	7.7	7.1	7.0	7.2	7.2	7.2
Lost workday cases	3.9	4.1	3.9	3.6	3.4	3.2	3.5	3.5	3.6
Lost workdays	57.5	59.1	58.2	54.7	52.1	50.6	55.5	59.8	62.5
Retail trade:									
Total cases	7.5	7.7	7.1	7.1	7.2	7.3	7.5	7.5	7.8
Lost workday cases	2.8	3.1	2.9	2.9	2.9	3.0	3.2	3.1	3.2
Lost workdays	39.7	44.7	44.5	41.1	42.6	46.7	48.4	47.0	50.5
Finance, insurance, and real estate									
Total cases	2.1	2.1	2.0	1.9	2.0	2.0	1.9	2.0	2.0
Lost workday cases .....	.8	.9	.8	.8	.9	.9	.9	.9	.9
Lost workdays	12.5	13.3	12.2	11.6	13.2	12.8	13.6	15.4	17.1
Services									
Total cases	5.5	5.5	5.2	5.0	4.9	5.1	5.2	5.4	5.3
Lost workday cases	2.4	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.5
Lost workdays	36.2	38.1	35.8	35.9	35.8	37.0	41.1	45.4	43.0

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:
 $(N/EH) \times 200,000$, 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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