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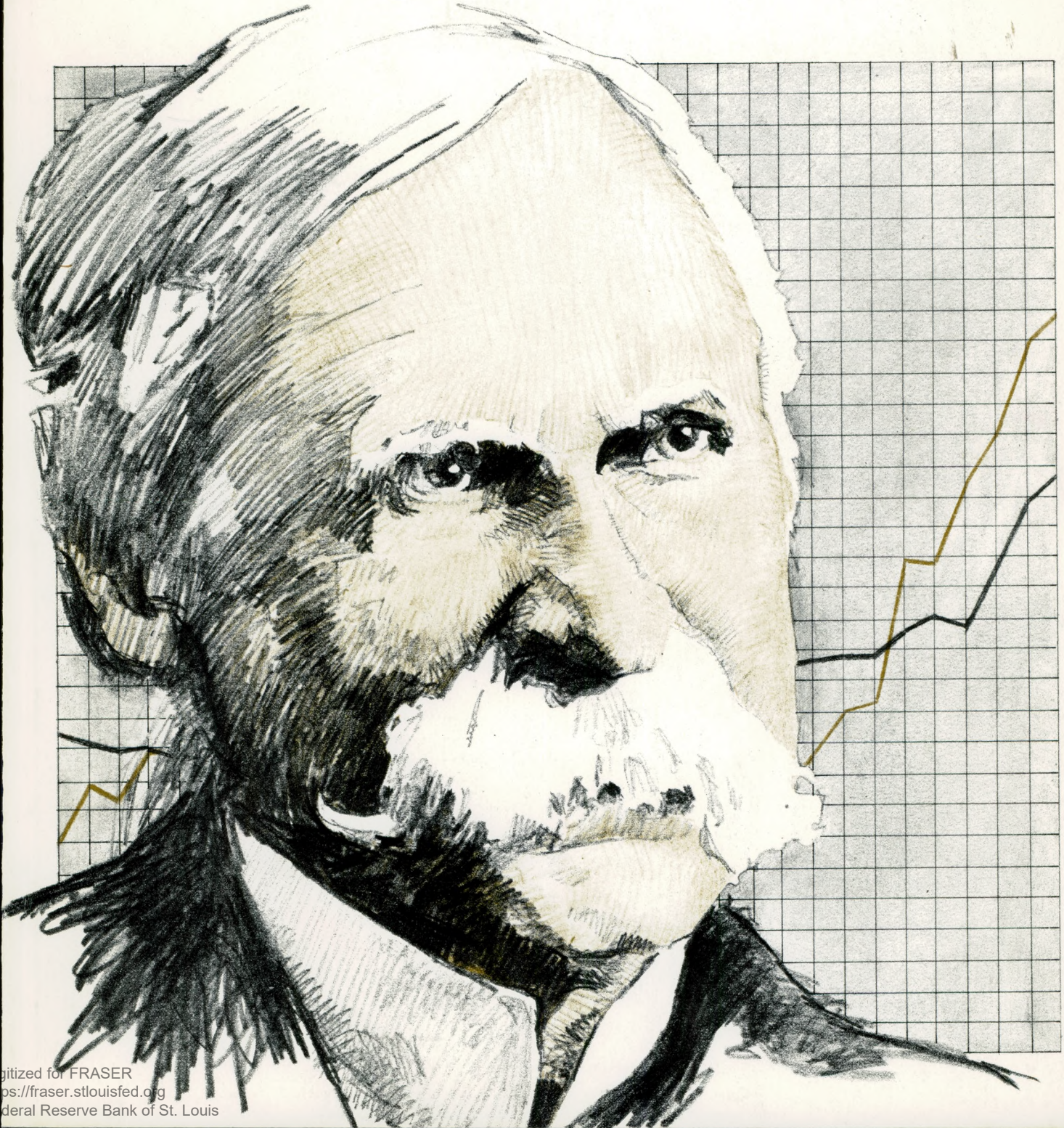
MONTHLY LABOR REVIEW

U.S. Department of Labor
Bureau of Labor Statistics
June 1984

In this issue:
Earnings differences between men and women,
a new analysis of hours at work,
and BLS' role in the Current Population Survey.



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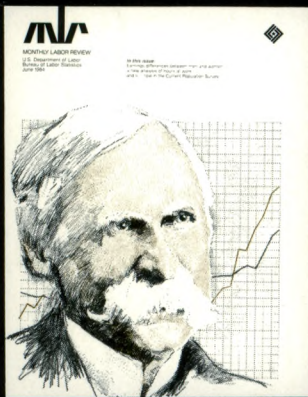
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Raymond J. Donovan, Secretary
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MONTHLY LABOR REVIEW

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Robert W. Fisher, Executive Editor

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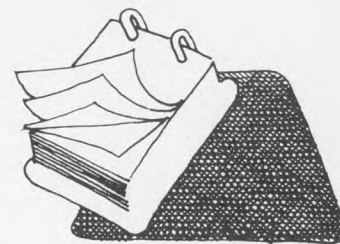
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Labor Month In Review



UNEMPLOYMENT IN THE WEST.

Joblessness in the United States and Europe generally hit its highest postwar levels during the recent worldwide recession. With the United States recovering and signs of recovery appearing in Europe, policymakers and economic analysts are increasingly turning their attention to the *kind* of unemployment—structural or cyclical—that persists in the industrialized world, the causes of unemployment, and what policies are likely to alleviate it without fanning inflation fires.

The Council on Foreign Relations recently solicited and published the views of four prominent analysts on unemployment issues in Western economies. Some excerpts follow:

Marina v. N. Whitman, Vice President and Chief Economist of General Motors Corporation: In both Europe and the United States, the magnitude and persistence of the unemployment problem have produced analytical confusion and policy vacillation. The confidence of policymakers in the effectiveness of traditional Keynesian countercyclical measures has been shaken. Policies of demand stimulus, which were, for the most part, an effective antidote to high unemployment during the 1950's and 1960's, fell into disfavor in the late 1970's as spiraling inflation beset the global economy.

The reluctance to employ more stimulative macroeconomic policies may reflect a widespread perception that our current unemployment problems are to a significant extent structural in origin. Although there is a wide range of opinion in both Europe and the United States regarding the relative importance of cyclical and structural factors in the persistence of high unemployment, there is also general agreement that a significant part of the problem, particularly the universally sharp rise in unemployment since 1979, is cyclical in origin. Economic

growth alone cannot solve all of our employment problems. But economic expansion could, at a minimum, reverse much of the sharp rise in unemployment during the past four years.

Growth is also the best solvent for structural rigidities. And it would be the most effective means to help fund programs that address specific structural problems, such as youth unemployment.

Raymond Barre, former French Prime Minister, currently a Deputy in the National Assembly: Both in Europe and the United States an important and, without doubt, *a growing part of unemployment is structural*: the jobless cannot be absorbed into the labor market even in a period of high economic activity.

My analysis suggests that both the United States and Europe will have to face some lasting difficulties with respect to unemployment. In both cases, the sharp slowing down of growth that has taken place since the first oil shock produced deleterious effects on the labor market. However, it seems that the disequilibrium in the U.S. labor market is essentially due to the rapid growth of the work force and to the instability of employment, while in Europe it is due to the weakness in the capacity to create jobs and in the excessive rigidity of adjustment mechanisms in the labor market.

James Tobin, Sterling Professor of Economics, Yale University: Unemployment in the 24 nations of the Organization for Economic Cooperation and Development (OECD) rose from 5.5 percent of the labor force in 1979 to 10 percent in 1983.

The prospects of reducing unemployment to 1979 rates, let alone 1973 rates, are dismal for the remainder of the 1980's. For the governments of the major locomotives of the world economy—Canada, France, West Ger-

many, Italy, Japan, the United Kingdom, and the United States—significant reduction of unemployment is not a high joint or individual priority. The prevailing attitudes, among both governors and governed, are fatalism and complacency.

Macroeconomic expansion is the key to progress against unemployment. It will not solve all the problems. The pathology of urban neighborhoods cannot be cured by monetary and fiscal policy. Macro policies and general prosperity will not restore the old high-wage jobs in smokestack industries in the American Midwest or the Ruhr. There is plenty of room and need for intelligent public policies to treat these difficult cases. But they will be hopeless unless general prosperity and growth are restored.

Shirley Williams, a Professorial Fellow at the Policy Studies Institute, London: Perhaps the most serious—and the least tangible—consequence of mass unemployment is the effect on the standing and reputation of the free world. The staggering economic achievement of the democracies in the three postwar decades nullified the appeal of communism in the West and attracted the new generation in the Soviet bloc itself. No war fought against a communist enemy in Vietnam, or Yemen, or Cuba has won the hearts and the minds of the people; but Western economic success, within the political context of democracy, managed to do that. Now that achievement is at risk. Unemployment in Western Europe is expected to continue at one in ten or one in eight for some years to come, even assuming the U.S. recovery is not slowed down.

The full study, *Unemployment and Growth in the Western Economies*, edited by Andrew J. Pierre and with an introduction by Robert D. Hormats, is available from The Council on Foreign Relations, Inc., 58 East 68th Street, New York, New York 10021. □

A new BLS survey measures the ratio of hours worked to hours paid

Hours at work accounted for about 93 percent of the hours paid for production and nonsupervisory workers in 1982, according to a new annual survey which includes only the time required to be on the job site thereby excluding paid holidays, sick leave, and vacations

KENT KUNZE

For many years the Bureau of Labor Statistics has been collecting data on the hours of production and nonsupervisory workers in nonagricultural establishments. These hours, reported in the Current Employment Statistics survey, measure hours paid and thus include paid holidays, sick leave, and vacations. In 1982, the Bureau of Labor Statistics began collecting data on *hours at work* of nonsupervisory and production workers in nonagricultural business establishments. These hours include the time an employee is required to be on the job site or at the prescribed place of work and thus exclude holidays, sick leave, and vacations. However, in addition to the actual time the worker is engaged in productive activities, this definition includes short rest periods, coffee breaks, standby or ready time, downtime, portal-to-portal time (if paid), washup time (if paid), travel time from job site to job site within the working day, travel time away from home if it cuts across the working day, and paid training periods.¹ In 1982, the most recent year for which data are available, hours at work accounted for about 93 percent of hours paid for production and nonsupervisory employees.

The Hours at Work Survey measures the relationship between hours at work and hours paid in order to provide the Bureau with the necessary data to construct measures of labor input which more closely meet the conceptual re-

quirements for productivity measurement: the actual flow of hours devoted to the production of output.² This new

Table 1. Ratio of hours at work to hours paid, by industry, 1981 and 1982

Industry	1981	1982	Change
Nonagricultural business	.924	.926	.002
Mining	.937	.925	-.012
Construction	.978	.982	.004
Manufacturing	.912	.909	-.003
Durable	.907	.905	-.002
Lumber and wood	.935	.929	-.006
Furniture and fixtures	.941	.931	-.010
Stone, clay, and glass	.906	.903	-.003
Primary metals	.891	.879	-.012
Fabricated metals	.919	.912	-.007
Machinery (excluding electrical)	.900	.906	.006
Electrical machinery	.906	.899	-.007
Transportation equipment	.893	.898	.005
Instruments	.907	.904	-.003
Miscellaneous manufacturing	.927	.921	-.006
Nondurable	.920	.916	-.004
Food and kindred products	.927	.924	-.003
Tobacco	.892	.853	-.039
Textile mills	.943	.937	-.006
Apparel	.948	.939	-.009
Paper	.883	.890	.007
Printing and publishing	.905	.915	.010
Chemicals	.895	.882	-.013
Petroleum and coal products	.899	.892	-.007
Rubber and plastic products	.918	.906	-.012
Leather	.931	.930	-.001
Transportation	.875	.871	-.004
Communications	.887	.883	-.004
Electric, gas, and sanitary services	.876	.873	-.003
Wholesale trade	.934	.936	.002
Retail trade	.947	.959	.012
Finance, insurance, and real estate	.914	.905	-.009
Services	.920	.936	.016

Kent Kunze is an economist in the Office of Productivity and Technology, Bureau of Labor Statistics. Computation of tables was provided by the Bureau's Division of Federal/State Monthly Surveys.

survey, therefore, represents another enhancement and expansion of BLS's productivity measurement program.

Major findings

- Based on the first survey years, the major findings are:
- The overall change in the ratio of hours at work to hours paid from 1981 to 1982 was only 0.2 percent for production and nonsupervisory workers in nonagricultural business.
- The overall hours at work to hours paid ratio increased from 1981 to 1982, with the increases largely concentrated outside the manufacturing sector. There were decreases in 20 of 29 industries.
- There is a definite seasonal pattern in the hours at work to hours paid ratio; the ratio is largest in the first quarter of the year and smallest in the third.
- Some industries have hours at work to hours paid ratios which are significantly different from the average.
- There is an inverse relationship between establishment size (number of employees) and the hours at work to hours paid ratio.

Data for the successive years are not sufficient for indicating trends or cyclical behavior in the ratio of hours at work to hours paid. Nevertheless, the implications for the

BLS productivity measures in these years are important. The change in output per hour (labor productivity) for employees in nonfarm business during 1981-82 was 0.4 percent. This figure becomes 0.2 percent when adjusted for the change in the hours of work to hours paid ratio. The change in multifactor productivity for 1981-82 was -1.9 percent in nonfarm business; when adjusted for the ratio it is -2.0 percent.

Survey background

The Bureau of Labor Statistics has long recognized the need for timely data on hours at work, which do not include paid leave time or holidays, in order to measure change in productivity. The appropriate measure of labor as a factor input for productivity measurement is the total hours which workers spend on the production of goods and services—hours worked. For this purpose, the hours of vacation, holiday, or sick leave should not be included.

At present, total hours of labor input are calculated by aggregating measures of employment and average weekly hours at the two-digit Standard Industrial Classification (SIC) industry level. These measures of employment and average weekly hours are derived from two monthly surveys, the Current Employment Statistics survey and the Current Population Survey. Both surveys collect data for the week (pay period) which includes the 12th of the month.

Table 2. Ratio of hours at work to hours paid for production and nonsupervisory workers, by firm size and industry, 1981 and 1982

Industry	Size of firm (employees)							
	1981				1982			
	Fewer than 50	50-499	500-2,499	More than 2,500	Fewer than 50	50-499	500-2,499	More than 2,500
Nonagricultural business	.944	.925	.892	.866	.952	.926	.905	.863
Mining	.972	.928	.910	.897	.960	.933	.873	.815
Construction	.976	.986	(1)	(1)	.978	.983	.997	(1)
Manufacturing	.943	.925	.893	.880	.942	.920	.893	.876
Durable	.949	.922	.885	.878	.943	.917	.886	.876
Lumber and wood	.959	.928	.911	(1)	.947	.929	.882	.796
Furniture and fixtures	.957	.938	.939	.942	.950	.935	.912	.932
Stone, clay, and glass	.950	.904	.882	.855	.957	.891	.881	.871
Primary metals	.945	.924	.874	.866	.916	.909	.889	.829
Fabricated metals	.952	.928	.890	.846	.945	.920	.878	.864
Machinery (excluding electrical)	.946	.906	.880	.861	.942	.917	.889	.875
Electrical machinery	.961	.927	.877	.900	.940	.921	.886	.872
Transportation equipment	.919	.930	.882	.880	.954	.920	.875	.894
Instruments	.937	.915	.891	.903	.935	.904	.893	.903
Miscellaneous manufacturing	.940	.930	.912	.873	.940	.917	.903	.868
Nondurable	.933	.927	.905	.888	.940	.922	.902	.873
Food and kindred products	.955	.931	.908	(1)	.953	.928	.908	.841
Tobacco	.940	.913	.887	.865	.935	.941	.883	.796
Textile mills	.982	.940	.946	.908	.956	.948	.924	.927
Apparel	.950	.952	.921	.907	.957	.938	.927	.937
Paper	.916	.892	.866	.864	.938	.893	.879	.840
Printing and publishing	.895	.910	.911	.870	.932	.911	.908	.876
Chemicals	.924	.908	.873	.891	.904	.893	.872	.873
Petroleum and coal products	.947	.907	.891	.870	.960	.900	.876	.810
Rubber and plastic products	.955	.917	.902	(1)	.930	.903	.898	.892
Leather	.947	.934	.912	.916	.947	.931	.915	(1)
Transportation	.923	.894	.873	.794	.944	.910	.852	.781
Communications	.928	.901	.846	.860	.948	.899	.863	.869
Electric, gas, and sanitary services	.897	.889	.855	.860	.911	.869	.865	.870
Wholesale trade	.940	.931	.878	.824	.940	.931	.925	.865
Retail trade	.967	.920	.921	.896	.968	.953	.947	.933
Finance, insurance, and real estate	.932	.919	.879	.851	.917	.896	.897	.920
Services	.919	.927	.918	(1)	.952	.924	.937	.843

¹No response.

Table 3. Ratio of hours at work to hours paid and change in the ratio for production and nonsupervisory workers, by quarter and industry, 1981 and 1982

Industry	1981				1982				Change, 1981-82			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Nonagricultural business	.934	.933	.915	.919	.941	.930	.908	.921	.007	-.003	-.007	.002
Mining	.955	.946	.924	.924	.947	.919	.904	.923	-.008	-.027	-.020	-.001
Construction	.983	.990	.980	.959	.989	.990	.981	.981	.006	0	.001	.022
Manufacturing	.933	.915	.894	.907	.934	.912	.888	.900	.001	-.003	-.006	-.007
Durable	.928	.911	.888	.902	.929	.907	.880	.896	.001	-.004	-.008	-.006
Lumber and wood	.959	.928	.923	.929	.955	.931	.914	.928	-.004	.003	-.009	-.001
Furniture and fixtures	.958	.939	.933	.939	.957	.930	.914	.921	-.001	-.009	-.019	-.018
Stone, clay, and glass	.916	.914	.901	.899	.924	.899	.881	.894	.008	-.015	-.020	-.005
Primary metals	.918	.893	.873	.885	.906	.875	.852	.864	-.012	-.018	-.021	-.021
Fabricated metals	.935	.913	.921	.919	.942	.904	.893	.908	.007	-.009	-.028	-.011
Machinery (excluding electrical)	.925	.912	.866	.889	.936	.924	.861	.894	.011	.012	-.005	.005
Electrical machinery	.929	.920	.866	.901	.918	.900	.872	.892	-.011	.020	-.006	-.009
Transportation equipment	.914	.892	.892	.888	.915	.896	.890	.886	.001	.004	-.002	-.002
Instruments	.927	.915	.875	.907	.928	.918	.867	.894	.001	.003	-.008	-.013
Miscellaneous manufacturing	.946	.925	.911	.927	.949	.916	.896	.920	.003	-.009	-.015	-.007
Nondurable	.941	.921	.903	.915	.941	.920	.900	.904	.000	-.001	-.003	-.011
Food and kindred products	.945	.930	.903	.928	.940	.927	.918	.905	-.005	-.003	.015	-.023
Tobacco	.951	.857	.895	.872	.933	.832	.844	.818	-.018	-.025	-.051	-.054
Textile mills	.970	.938	.929	.933	.967	.936	.918	.929	-.003	-.002	-.011	-.004
Apparel	.971	.950	.938	.938	.970	.956	.920	.932	-.001	.006	-.018	-.006
Paper	.897	.884	.876	.873	.921	.892	.867	.878	.024	.008	-.009	.005
Printing and publishing	.923	.918	.873	.907	.938	.924	.901	.906	.015	.006	.028	-.001
Chemicals	.917	.898	.883	.886	.907	.881	.862	.877	-.010	-.017	-.021	-.009
Petroleum and coal products	.917	.900	.890	.890	.905	.901	.884	.871	-.012	.001	-.006	-.019
Rubber and plastics	.939	.908	.908	.920	.937	.909	.886	.888	-.002	.001	-.022	-.032
Leather	.960	.934	.902	.931	.959	.928	.907	.927	-.001	-.006	.005	-.004
Transportation	.900	.895	.873	.876	.861	.847	.839	.846	-.039	-.048	-.034	-.030
Communications	.908	.902	.875	.889	.888	.885	.858	.864	-.020	-.017	-.017	-.025
Electric, gas, and sanitary services	.888	.891	.862	.858	.893	.889	.860	.852	.005	-.002	-.002	-.006
Wholesale trade	.943	.939	.925	.929	.959	.944	.922	.931	.016	-.005	-.003	.002
Retail trade	.958	.950	.931	.947	.974	.967	.951	.966	.016	-.017	-.020	-.019
Finance, insurance, and real estate	.919	.926	.903	.899	.915	.910	.870	.901	-.004	-.016	-.033	.002
Services	.913	.933	.920	.916	.947	.941	.915	.931	.034	.008	-.005	-.015

Hours of employees covered by the Current Employment Statistics survey (which includes approximately 180,000 establishments) represent approximately 85 percent of the total hours used in the BLS measure of productivity in the business sector. These hours are hours paid, and because paid leave hours are not used in the actual production of output, a bias in the productivity growth rate can occur if there is a year-to-year divergence in the ratio of hours at work to hours paid.³

The remaining 15 percent of total hours in the private business sector which are not covered by the Current Employment Statistics survey (the farm sector, the self-employed, and unpaid family workers) come from the Current Population Survey data which are collected each month from approximately 65,000 households. In this survey, the number of hours "worked" during the survey week is requested for employed persons.⁴

Results

Nonagricultural business. The ratio of hours at work to hours paid for nonagricultural business establishments changed from .924 in 1981 to .926 in 1982. These ratios imply that the average production or nonsupervisory worker gets 19.5 days of paid leave per year, or slightly less than 4 weeks if 5 working days per week are assumed. This is, coincidentally, approximately equal to the number of national holidays (9) plus 10 days (two 5-day weeks) of paid leave.⁵

Industry. The hours at work to hours paid ratios also vary considerably by industry and size of firm. (See table 1.) For example, construction workers had a ratio in 1982 of .982, which indicates less than 1 week of paid leave per year. (The highest ratio recorded for either year is .990 for the second quarter of 1981 in the construction industry.) In contrast, the hours at work to hours paid ratios for nonsupervisory workers in the transportation (.871) and utilities (.873) industries represent more than 6 weeks of paid leave time.

The variation of the hours at work to hours paid ratio was less within manufacturing than for all manufacturing industries. In 1982, the ratios within manufacturing ranged from .940 in apparel to .853 in tobacco. The average for all manufacturing (.909) was slightly less than 5 weeks of paid leave time. The year-to-year changes in manufacturing extend from the -.039 in tobacco to .010 in printing and publishing.

While the change between 1981 and 1982 for the economy as a whole was positive (and small), the 1981-82 changes among the industries varied much more, ranging from -.039 in tobacco to .016 in services. Also, the change for the manufacturing sector was negative.⁶ While this was a minute change (-.003), 16 of the 20 industries in manufacturing experienced decreases in the ratio between 1981 and 1982.⁷ (The exceptions were machinery, transportation equipment, paper, and printing and publishing.)

Outside of manufacturing, the hours at work to hours paid

ratio also fell in most industries (5 of 9). However, there were large increases in the ratio in both the retail trade (.012) and the service industries (.016), which together account for more than 48 percent of employment outside manufacturing and 38 percent of nonfarm business employment. Also, the service industry was 1 of only 3 industries to experience an increase in employment in 1982 (the other two were mining and finance, insurance, and real estate). The construction (.004) and the wholesale trade (.002) industries also had increases in the hours at work to hours paid ratio.

Establishment size. Based on the survey results, there is also a clear inverse relation between firm size and the hours at work to hours paid ratio: employees of smaller firms receive less paid leave. (See table 2.) Furthermore, this relationship seems to hold for all industries. In 1982, 5 percent of the hours paid were paid leave in establishments with fewer than 50 employees; 7 percent of the hours paid were for leave hours in establishments having between 50 and 499 employees; 10 percent, for establishments with 500 to 2,500 employees; and 14 percent, for establishments with more than 2,500 employees. The pattern was the same in 1981.

Seasonal change. Another source of variation in the hours at work to hours paid ratio is seasonal change. (See table 3.) In general, the first and second quarters have higher ratios than the third and fourth quarters with the third quarter usually posting the lowest ratio. This is expected, as there are more holidays in the third and fourth quarters than in the earlier quarters (6 of the 9 holidays are after July 1) and during the third quarter (July through September) the majority of workers take vacations. In first-quarter 1982, for the nonagricultural sector, the ratio was .944; in the second quarter, .930; in the third, .908; and in the fourth, .921. The pattern was more pronounced in 1982 than in 1981. This seasonal pattern was also apparent in the manufacturing sector and the separate industries.

Productivity measures

The magnitude of the change in the hours at work to hours paid ratio, while it may be small when observed by itself, has an appreciable effect in relation to productivity growth. An annual change of 0.2 percentage point over several years would be a significant trend in relation to the currently measured annual rate of growth in productivity. Labor productivity (output per hour) increased at an annual rate of 2.4 percent from 1948 to 1983 in the business sector.

Table 4. Percent change in output per hour for nonfarm and manufacturing employees from same quarter a year ago, adjusted for change in hours at work, 1981-82

Industry	Quarter							
	I		II		III		IV	
	Unad-justed	Adjusted	Unad-justed	Adjusted	Unad-justed	Adjusted	Unad-justed	Adjusted
Nonfarm business	-0.1	-0.8	0.3	0.6	0.1	0.8	1.5	1.3
Manufacturing	0.1	0.0	0.2	0.5	1.5	2.1	3.6	4.3
Durable	-0.3	-0.4	-0.2	0.2	1.4	2.2	3.4	4.0
Nondurable	0.7	0.7	0.7	0.8	1.6	1.9	3.9	5.0

A 0.2-percentage-point adjustment to this rate of growth of output per hour is a difference of over 8 percent.⁸

Change in the hours at work to hours paid ratio inversely affects productivity growth rates based on hours paid: an increase in the ratio means that hours at work rose faster than hours paid so that (given no change in output) productivity based on hours at work would increase more slowly. Conversely, a decrease in the ratio will cause the annual rate of growth of productivity to rise.

The effects of a change in the hours at work to hours paid ratio are different for a labor versus a multifactor productivity measure.⁹ For the labor productivity measure (output per hour) the effect is equal to the percentage change in the ratio. For example, the 1981-82 change is 0.2 percentage point, so the annual rate of growth in output per hour for the nonfarm business sector would be 0.2 percentage point less than presently reported.

In contrast, the effect on the rate of growth of multifactor productivity is smaller than the change in the hours at work to hours paid ratio because labor (hours) is only one of two factor inputs. The change in the multifactor productivity growth rate is equal to the product of labor's share of income (about 65 percent) and the percentage change in the hours at work to hours paid ratio. From 1981 to 1982, this was about 0.1 percentage point.

Although sufficient data are not available to develop seasonal factors for the hours at work to hours paid ratios, the changes from the same quarter a year ago can be measured. Table 4 shows both the presently published and adjusted output per hour measures for the same quarter a year ago for both manufacturing and nonfarm business. As indicated by the table, there are substantial adjustments in the output per hour measures when the changes in the hours at work to hours paid ratio are applied to the growth rates from the same quarter a year ago. □

FOOTNOTES

¹ *Report of the Task Force on Hours Worked* (Bureau of Labor Statistics, 1976).

² *Trends in Multifactor Productivity, 1948-81* (Bureau of Labor Statistics, 1983), pp. 31 and 66-68.

³ Early studies by the Bureau of Labor Statistics using data from the

now discontinued Survey of Employer Expenditure for Employee Compensation showed that hours paid were increasing 1 percent faster annually than hours at work between 1967 and 1977. See *Report of the Task Force*.

⁴ Though the Current Population Survey (CPS) hours are an hours "worked" concept, it has been noted that there is a great possibility of response error.

because the respondent is frequently a nonworking member of the household. Consequently, the Current Employment Statistics survey and not the cps is the primary source of hours for productivity measurement. See *Report of the Task Force*, pp. 25-26.

⁵These ratios are not, however, adjusted for the number of days worked in a normal week or the composition of part- and full-time employees. Hence, for persons who work more or less than 5 days a week on average, the number of days of leave time will vary accordingly. That is, a person who only works 2.5 days a week could still have the same hours at work to hours paid ratio, but would, on average, get only half as many paid leave days.

⁶Even though the 1981 response rate was relatively low, an analysis of the establishments, which reported for both years, suggests that the findings of the first year are well within the acceptable range of possible error.

⁷The decrease in the hours at work to hours paid ratio for manufacturing industries may indicate that employees who earn the least amount of paid leave are laid off first, while firms retain the senior employees who receive the most leave. This may also account for the rise in the hours at work to hours paid ratio in the service industry which experienced an increase in employment and therefore an increase in the proportion of employees with little seniority.

⁸Considering that the annual growth rate of output per hour was only 0.9 percent between 1973 and 1983 in the business sector, the relative importance of the hours at work to hours paid adjustment may be even greater.

⁹For an explanation of the multifactor productivity measure, see Jerome A. Mark and William H. Waldorf, "Multifactor productivity: a new BLS measure," *Monthly Labor Review*, December 1983, pp. 3-15.

APPENDIX: Survey design

The establishments included in the Hours at Work Survey are a stratified random sample of the Unemployment Insurance reporting system: the ES-202 file. The file, which consists of approximately 4.5 million establishments, covers more than 95 percent of nonagricultural employment. Between 4,000 and 4,500 establishments are randomly selected for the survey. Sample stratification is by industry and number of employees at the establishment.

The Hours at Work Survey is conducted annually by mail.

There are three mailings (beginning in February of each year) with selected telephone followup. Using two questionnaires (one for manufacturing, mining, and construction, and one for all other industries), establishments are asked to record the total number of hours paid and the total number of hours at work for the previous year, by quarter, for all production and nonsupervisory workers. Ratios of hours at work to hours paid are calculated by quarter, establishment size, and industry (two-digit Standard Industrial Classification (SIC) industries within manufacturing and one-digit SIC industries elsewhere).

In the first year (which is referred to as the 1981 survey, the year for which the information was collected), the usable response rate was 48 percent for all industries. The rate was much higher for manufacturing industries (53 percent) than for nonmanufacturing (table A). The lowest response was in the communications industry (19 percent); the highest was in primary metals and furniture industries (64 percent).

Following the first survey, a response analysis with followup interviews was conducted for 150 establishments. This consisted of a personal interview, by Bureau of Labor Statistics personnel, with the establishment's representative responsible for keeping the hours or payroll records. Questions asked concerned the nature and extent of the hours records. Information derived from this response analysis survey resulted in new questionnaires designed to aid respondents in reporting the correct data. Also, new followup procedures for contacting respondents were implemented which helped to increase the number of respondents and improve the accuracy of the responses. Consequently, for the second year, the response rate was a remarkably high 80 percent for all industries, and 83 percent for manufacturing. Again, the lowest response rate was in the communications industry (55 percent). The highest response was in the stone, clay, and glass industry (90 percent).

Table A. Hours at work survey, usable response rate by industry, 1981 and 1982

(In percent)

Industry	1981	1982
Nonagricultural business	48	80
Mining	36	76
Construction	36	80
Manufacturing	53	83
Durable	57	85
Lumber and wood	56	88
Furniture and fixtures	64	86
Stone, clay, and glass	51	90
Primary metals	64	87
Fabricated metals	59	85
Machinery (excluding electrical)	61	83
Electrical machinery	50	80
Transportation equipment	62	77
Instruments	50	87
Miscellaneous manufacturing	51	84
Nondurable	49	80
Food products	47	79
Tobacco	54	76
Textile mills	54	88
Apparel products	42	74
Paper products	62	83
Printing and publishing	41	78
Chemicals	53	79
Petroleum and coal products	38	74
Rubber and plastic products	46	88
Leather and leather goods	52	82
Transportation	44	77
Communications	19	55
Electric, gas, and sanitary services	59	78
Wholesale trade	33	79
Retail trade	31	76
Finance, insurance, and real estate	34	72
Services	36	71

The Current Population Survey: a historical perspective and BLS' role

BLS assumed major responsibility for the CPS in 1959 and since then there have been increases in sample size, changes in and additions of questions, and refinements in the household survey's concept, but, in general, the basic concepts have remained the same since the survey's beginnings in 1940



JOHN E. BREGGER

The Current Population Survey is probably the oldest continuous monthly sample survey of households in the world. Its roots go back to March 1940, when the Works Progress Administration, an independent agency established during the Great Depression of the 1930's, initiated a small, household survey that would measure the level and change in the size of the labor force, employment, and unemployment. In the ensuing period, the survey has grown to its present size of 60,000 households, and more information is now collected. But the 44 years have seen few changes in the basic concepts used to measure employment and unemployment, and a remarkably comparable set of historical data is available for public use. This article describes the history of the Current Population Survey, with particular emphasis on its development in the past quarter century, over which time the Bureau of Labor Statistics has had primary responsibility for the survey.

The 1940-59 period

During the Great Depression it became obvious to policymakers that accurate statistical information on unemployment and related problems was unavailable. Estimates of employment existed through the survey of nonagricultural

establishments that had been conducted by BLS since 1915, and counts of "gainful workers" were obtained in the decennial censuses. But throughout the worst years of the depression, no one knew how many unemployed persons there were, much less their characteristics. (Later, it was estimated that the jobless rate had been as high as 25 percent.¹) The problem of obtaining more accurate estimates of unemployment was first addressed with the 1937 Census of Unemployment, a postcard survey covering the entire country.² This survey presented numerous problems, because no statistical controls were possible, such as for non-response, but it whetted appetites for more data, leading to the first sample survey of the population in December 1939.³ The first 3 months of the survey were a testing period, and March 1940 is generally credited as the beginning date of what was then called the "Monthly Report of Unemployment." This date coincided with the 1940 census of population, which also, for the first time, asked questions on the labor force, employment, and unemployment based on a new *activity* concept.

The activity concept refers to a person's labor market status being determined by what he or she was doing during a specified time (which has come to be a specific week). Prior to the 1937 postcard census, the labor force concept used was the "gainful-worker" measure. This referred to persons who were reporting themselves as having an occupation from which they had earned money or a money

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equivalent, or in which they had assisted in the production of goods, regardless of whether they had worked or looked for work at the time of the census.⁴ Consideration of these responses was useful when interest was focused on broad measures of potential labor supply and available skills. However, it was not particularly useful as a measure of current labor force utilization, because it included not only currently employed persons but also some people who were either unemployed or not in the labor force. The activity concept solved this problem, and, beginning with the post-card census and continuing in the Works Progress Administration-initiated survey, it was established that the population could be divided into employed, unemployed, or not in the labor force. Only the amount and type of detail collected and the degree of sophistication of the questions have changed since then, although there have been many changes in the survey and sample design. The conceptual framework has been revised only around the edges: There has been no change in the notions that employment means that one is working (more precisely, has a job), that unemployment requires that a job is being sought, and that absence of either activity means a person is not in the labor force.

The Works Progress Administration retained responsibility for the survey throughout 1940 and 1941, but as the agency began to be phased out of existence it became clear that the survey needed a permanent home. The Bureau of Labor Statistics, Census Bureau, and Social Security Administration were all candidates, and in August 1942 the Bureau of the Budget (now the Office of Management and Budget) selected the Census Bureau.⁵ By October 1943, the Bureau of Census had thoroughly revised the sample, converted it to a full probability basis, and expanded the number of primary sampling units. Within 2 years, the sample size was increased from about 8,000 to 23,000 housing units.⁶ The name was changed as well, to the "Monthly Report on the Labor Force," and still later (1948) it became known as the Current Population Survey (CPS).

The Census Bureau continued to introduce improvements into the survey over the next 15 years, including further sample expansions, sampling refinements, and the notion of collecting special information once a year on an *ad hoc* basis through supplements. Among the changes were the use of the decennial censuses as the basis for revising the sampling frame and population controls and the introduction of the 4-8-4 rotation system for sample households (that is, a household is in the sample for 4 months, out for 8, and returns for 4 more months). By 1959, there were some 35,000 households covered monthly in 330 areas throughout the Nation.

1959—BLS takes over

In a memorandum dated November 19, 1958, issued by the Bureau of the Budget, then Secretaries Lewis Strauss of the Department of Commerce and James Mitchell of the Department of Labor agreed to a BLS-Census Bureau swap

of responsibilities. The BLS gave up its role in construction statistics, associated with contracts awarded, building permits, housing starts, and construction activity series; the Census Bureau gave up the responsibility for the content, analysis, and publication of the "Monthly Report on the Labor Force." The memorandum indicated that "the BLS will purchase from the Census Bureau the collection and tabulation services," assume "the budget responsibility for the employment and unemployment statistics portion," and that the Census Bureau would retain responsibility for conducting specific CPS supplements and issuing those reports.⁷ The effective date of this transfer of duties was July 1, 1959.

Up to the time of the transfer, the employment and unemployment statistics were issued under *Current Population Reports* series P-57, entitled "The Monthly Report on the Labor Force." Typically 16 pages, this report combined analysis and tabular material and was sold by the Census Bureau for 15 cents a copy. Summary statistics in advance of this report were issued jointly by the Departments of Commerce and Labor in a "Combined Employment and Unemployment Release" and included material not only from the CPS but also data on nonagricultural payroll employment (from BLS) and State insured unemployment (from the then Bureau of Employment Security). After the transfer, BLS continued the tradition of a combined release of data from these three programs with its own "Monthly Report on the Labor Force" and also began to include the household survey statistics in its monthly magazine *Employment and Earnings*. Indeed, it was undoubtedly the desire to centralize the control and analysis of data from separate sources—but particularly the household and establishment surveys⁸—that led to the transfer of functions.

As time passed, a number of changes occurred in the publication format and amount of detail derived from the CPS. For example, because CPS data were generally available earlier than the establishment data, they were issued in summary detail in a news release entitled "Summary Employment and Unemployment Figures." About a week later, the "Monthly Report on the Labor Force" was published, covered by another news release, "The Employment Situation." This second news release averaged about four pages, with summary text and one table of highlights, while the "Monthly Report on the Labor Force" grew to some 20 pages that included text, charts, data from both surveys, and explanatory material.

In 1966, improvements in the processing of the establishment survey made it possible to release the two sets of data together, and "The Employment Situation" became the vehicle for this issuance. At the same time, the "Monthly Report on the Labor Force" was discontinued as a separate publication but was retained as part of *Employment and Earnings*, which was retitled *Employment and Earnings and Monthly Report on the Labor Force*. (In 1969, "Monthly Report on the Labor Force" was dropped from the title.)

Along with the changes in the mode of issuance of these reports and releases came improvements in the detail presented. One important advance was in the area of seasonal adjustment of data series. In the 1950's, the overall unemployment rate had been the only statistic that was adjusted for seasonality. Therefore, all analysis was based on unadjusted data. Analyses in those days contained frequent references to weather conditions and also to labor force and other changes that typically occurred at the given time of year and whether a particular monthly movement was more or less than usual. The advent of computers gave rise to the possibility of extensive seasonal adjustment, which eliminated much of this problem and clarified analytical interpretations. It also facilitated a better understanding of cyclical movements, as economic comparisons could be made more easily between pairs of months for periods other than 1-year intervals.

Changes since the takeover

Growth in sample size. Since the transfer of functions between BLS and the Census, the number of surveyed households has been expanded on four occasions and reduced twice. The count remained at 35,000 occupied households from 1956 through the end of 1966. Then, households that had been used in a separate panel survey for testing questionnaire changes during 1964–66 were added to increase the count to 50,000.⁹ An important reason for increasing the sample size was to improve the reliability of data on detailed worker groups, such as that pertaining to race, sex, and age. The size was subsequently reduced slightly to 47,000 in the early 1970's, as a result of a redesign of the sample following the 1970 census of population. However, certain sampling refinements resulted in *increased* data reliability; for example, area coverage was increased from 333 to 449 primary sampling units.¹⁰

Later in the 1970's, demands for State and area data increased markedly, commensurate with expanded uses of subnational labor force data. A variety of legislative mandates, including the Comprehensive Employment and Training Act, required unemployment data for States and areas as a basis for distributing billions of dollars in revenue-sharing monies. The Current Population Survey as constituted at that time was essentially a national sample designed to produce national data. Prior to 1976, subnational data deemed sufficiently reliable to warrant publication, even on an annual average basis, covered only 10 States.

BLS solved this problem by expanding the number of sample households for the less-populated States; this was done in stages. In 1976, 9,000 additional households were sampled, with all of the expansion in 23 smaller States. Another 9,000 households were added to the survey in 1980, this time in 40 States. Initially, these 18,000 households were used to boost data reliability for State and sub-State estimation but subsequently were added to the national sample, also in stages. The national sample size thus became

56,000 occupied households in 1978 and 65,000 in 1980. There was a final sample increase of 6,000 households in 1981, designed to improve the reliability of data for 30 specific metropolitan areas, 10 of their central cities, and the balance of State estimates for those States containing these areas. (This last increase was never used for national estimates.)

In 1982, with the advent of Federal budget stringencies, it became necessary to cut back on some of these added households. After a careful review of the needs for State and local labor force estimates, BLS at that time decided that the final 6,000 addition plus half of the 1980 addition would have to be rescinded. Thus, a total of 11,000 surveyed households was eliminated, and the monthly sample size became the current figure of 60,000 occupied households, representing 629 areas in 1,148 counties and independent cities. Because the expansions had not materially improved the reliability of national estimates—in that they concentrated on the less-populated States—this reduction in households did not reduce national data reliability.

Conceptual and other changes. As indicated earlier, the advent of monthly household survey enumeration in the labor force field brought with it the notion of activity as a basis for categorizing the population into discrete employment status groupings. This conceptual basis has been sustained throughout the ensuing 44 years. There have been changes in the wording of some of the questions to improve understanding on the part of survey respondents and thus produce better results, refinements in the concept, and the addition of questions to elicit more information about the population, but the basic concepts have remained the same.

Over time, the statistics that have generated the greatest interest have been the level and rate of unemployment. Unemployment is basically defined as being without a job, looking for one, and being currently available for work. Exhibit 1, the questionnaire currently used in the survey, shows how the unemployed are identified through questions 22 (yes), 22A, and 22E. Persons on layoff and those waiting to start a job within 30 days need not have looked for work to be counted as unemployed; they are identified in questions 21 and 21A. Contrast this with the primary question (corresponding to question 22) asked in 1945: "Was . . . looking for work last week?" Layoffs were not identified until 1947. Prior to 1945, interviewers did not even ask specific questions directly to respondents but were instructed to determine if, for example, they had jobs or were seeking them. By 1947, the "last week" was dropped—it had been specified for all previous questions associated with jobholding—and the question became: "Was . . . looking for work?" In the early years, persons on a temporary layoff (less than 30 days) and those awaiting the start of a new job (also within 30 days) were included among the employed. But, following recommendations by a 1955 study commission,¹¹ both groups were shifted into the unemployed category be-

Exhibit 1. Extract from Current Population Survey Interviewer Schedule

<p>18. LINE NUMBER</p>	<p>20. Did ... do any work at all LAST WEEK, not counting work around the house? (Note: If farm or business operator in hh., ask about unpaid work.)</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> (Go to 21)</p>	<p>21. (If in 19, skip to 21A.) Did ... have a job or business from which he/she was temporarily absent or on layoff LAST WEEK?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> (Go to 22)</p>	<p>22. (If LK in 19, Skip to 22A.) Has ... been looking for work during the past 4 weeks?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> (Go to 24)</p>	<p>24. INTERVIEWER CHECK ITEM (Rotation number) First digit of SEGMENT number is: 1, 3, 4, 5, 7 or 8 (Skip to 26) 2 or 6 (Go to 24A)</p>	<p>25. INTERVIEWER CHECK ITEM (Rotation number) First digit of SEGMENT number is: 1, 3, 4, 5, 7 or 8 (Skip to 26) 2 or 6 (Go to 25A)</p>
<p>19. What was ... doing most of LAST WEEK — Working Keeping house Going to school or something else? Working (Skip to 20A) ... WK With a job but not at work ... J Looking for work ... LK Keeping house ... H Going to school ... S Unable to work (Skip to 24) ... U Retired ... R Other (Specify) ... OT</p>	<p>20A. How many hours did ... work LAST WEEK at all jobs? 1-34 (Go to 20C) 35-48 (Go to 20D)</p> <p>20B. INTERVIEWER CHECK ITEM 49+ (Skip to item 23) 1-34 (Go to 20C) 35-48 (Go to 20D)</p> <p>20D. Did ... lose any time or take any time off LAST WEEK for any reason such as illness, holiday or slack work? Yes <input type="checkbox"/> No <input type="checkbox"/> How many hours did ... take off?</p>	<p>21A. Why was ... absent from work LAST WEEK? Own illness ... On vacation ... Bad weather ... Labor dispute ... New job to begin within 30 days ... Temporary layoff (Under 30 days) ... Indefinite layoff (30 days or more or no def. recall date) ... Other (Specify) ...</p> <p>21B. Is ... getting wages or salary for any of the time off LAST WEEK? Yes ... No ... Self-employed ...</p> <p>21C. Does ... usually work 35 hours or more a week at this job? Yes <input type="checkbox"/> No <input type="checkbox"/> How many extra hours did ... work?</p>	<p>22A. What has ... been doing in the last 4 weeks to find work? (Mark all methods used; do not read list.) Checked with — pub. employ. agency ... pvt. employ. agency ... employer directly ... friends or relatives ... Placed or answered ads ... Nothing (Skip to 24) ... Other (Specify in notes, e.g., CETA, union or prof. register, etc.) ...</p> <p>22B. Why did ... start looking for work? Was it because ... lost or quit a job at that time (pause) or was there some other reason? Lost job ... Quit job ... Left school ... Wanted temporary work ... Other (Specify in notes) ...</p> <p>22C. 1) How many weeks has ... been looking for work? 2) How many weeks ago did ... start looking for work? 3) How many weeks ago was ... laid off?</p> <p>22D. Has ... been looking for full-time or part-time work? Full <input type="checkbox"/> Part <input type="checkbox"/></p> <p>22E. Is there any reason why ... could not take a job LAST WEEK? Yes <input type="checkbox"/> No <input type="checkbox"/> Already has a job ... Temporary illness ... Going to school ... Other (Specify in notes) ...</p> <p>22F. When did ... last work at a full-time job or business lasting 2 consecutive weeks or more? Within last 12 months (Specify) ... One to five years ago ... More than 5 years ago ... Never worked full-time 2 wks. or more ... Never worked at all ... (SKIP to 23. If layoff entered in 21A, enter job, either full or part time, from which laid off. Else enter last full time job lasting 2 weeks or more, or "never worked.")</p>	<p>24A. When did ... last work for pay at a regular job or business, either full- or part-time? Within past 12 months ... 1 up to 2 years ago ... 2 up to 3 years ago ... 3 up to 4 years ago ... 4 up to 5 years ago ... 5 or more years ago ... Never worked ...</p> <p>24B. Why did ... leave that job? Personal, family (incl. pregnancy) or school ... Health ... Retirement or old age ... Seasonal job completed ... Slack work or business conditions ... Temporary nonseasonal job completed ... Unsatisfactory work arrangements (Hours, pay, etc.) ... Other ...</p> <p>24C. Does ... want a regular job now, either full- or part-time? Yes ... Maybe — it depends (Specify in notes) ... No ... Don't know ...</p> <p>24D. What are the reasons ... is not looking for work? (Mark each reason mentioned) Believes no work available in line of work or area ... Couldn't find any work ... Lacks nec. schooling, training, skills or experience ... Employers think too young or too old ... Other pers. handicap in finding job ... Can't arrange child care ... Family responsibilities ... In school or other training ... Ill health, physical disability ... Other (Specify in notes) ... Don't know ...</p>	<p>25A. How many hours per week does ... USUALLY work at this job? Within past 12 months ... 1 up to 2 years ago ... 2 up to 3 years ago ... 3 up to 4 years ago ... 4 up to 5 years ago ... 5 or more years ago ... Never worked ...</p> <p>25B. Is ... paid by the hour on this job? Yes ... No ...</p> <p>25C. How much does ... earn per hour? Dollars ... Cents ...</p> <p>25D. How much does ... USUALLY earn per week at this job BEFORE deductions? Include any overtime pay, commissions, or tips usually received. \$...</p> <p>25E. On this job, is ... a member of a labor union or of an employee association similar to a union? Yes ... No ...</p> <p>25F. On this job, is ... covered by a union or employee association contract? Yes ... No ...</p>
<p>20C. Does ... USUALLY work 35 hours or more a week at this job? Yes <input type="checkbox"/> No <input type="checkbox"/> What is the reason ... worked less than 35 hours LAST WEEK? Slack work ... Material shortage ... Plant or machine repair ... New job started during week ... Job terminated during week ... Could find only part-time work ... Holiday (Legal or religious) ... Labor dispute ... Bad weather ... Own illness ... On vacation ... Too busy with housework, school, personal bus., etc. ... Did not want full-time work ... Full-time work week under 35 hours ... Other reason (Specify) ... (Skip to 23 and enter job worked at last week)</p>					
<p>20E. Did ... work any overtime or at more than one job LAST WEEK? Yes <input type="checkbox"/> No <input type="checkbox"/> How many extra hours did ... work? (Correct 20A and 20B as necessary if extra hours not already included and skip to 23.) (Skip to 23)</p>	<p>20F. INDUSTRY OCCUPATION</p> <p>OFFICE WORKER: O A, O B, O C, O D, O E, O F, O G, O H, O I, O J, O K, O L, O M</p> <p>NON-FARM WORKER: O N, O P, O Q, O R, O S, O T, O U, O V, O W, O X, O Y, O Z</p>	<p>23. DESCRIPTION OF JOB OR BUSINESS</p> <p>23A. For whom did ... work? (Name of company, business, organization or other employer.)</p> <p>23B. What kind of business or industry is this? (For example: TV and radio mfg., retail shoe store, State Labor Dept., farm.)</p> <p>23C. What kind of work was ... doing? (For example: electrical engineer, stock clerk, typist, farmer.)</p> <p>23D. What were ...'s most important activities or duties at this job? (For example: types, keeps account books, files, sells cars, operates printing press, finishes concrete.)</p>	<p>23E. Was this person An employee of PRIVATE Co, bus., or individual for wages, salary or comm. ... P A FEDERAL government employee ... F A STATE government employee ... S A LOCAL government employee ... L Self-empl. in OWN bus., prof. practice, or farm Is the business incorporated? Yes ... I No ... SE Working WITHOUT PAY in fam. bus. or farm ... WP NEVER WORKED ... NEV</p>	<p>24E. Does ... intend to look for work of any kind in the next 12 months? Yes ... It depends (Specify in notes) ... No ... Don't know ... (If entry in 24B, describe job in 23, otherwise, skip to 26)</p>	<p>23F. INTERVIEWER CHECK ITEM Entry (or NA) in item 20A ... Entry (or NA) in item 21B ... All other cases ... (Skip to 26)</p>

gining in 1957. (Historical data were revised back to 1947.) Many changes in the questionnaire occurred in 1967, resulting from recommendations made by the President's Committee to Appraise Employment and Unemployment Statistics (often called the Gordon Committee after its chair, Professor Robert A. Gordon) in its 1962 report, *Measuring Employment and Unemployment*.¹² Changes affecting un-

employment counts included moving to a 4-week search period from the implied 1 week, the requirement of at least one specific search method (to avoid "state of mind" situations), and the addition of an "availability test" to insure that jobless individuals were searching for a current job as opposed to one in the future. At the same time, the minimum age for labor force eligibility was raised from 14 to 16 years

(not a Commission recommendation) in order to conform to age requirements regarding school attendance and work eligibility. In addition, those persons who *volunteered* that they would have looked for work except for the belief that there were no jobs available in their line of work or in the community were no longer counted as unemployed; this change was made in keeping with the specific search method requirement. Also, persons who had a job but were "with a job but not at work" (such as on strike or vacation) and *volunteered* that they had looked for another job during their absence from their current job were switched from the unemployed to the employed count. Neither of these last two changes was thought to have greatly affected survey results.¹³

Note the emphasis on the word *volunteered*. One of the Gordon Committee's tenets was that "reliance on subjective attitudes and volunteered information should be minimized."¹⁴ The changes that it recommended and that were instituted following a period of extensive testing by the BLS and Census Bureau during 1964-66 clarified several hitherto gray areas in the measurement of unemployment. Specifically, to be counted as unemployed, a person had to be: (1) without a job, (2) be available for one "now" (excluding temporary illness), and (3) indicate one or more search methods used sometime in the prior 4 weeks. Thus, the use of activity as a basis for labor force classification was strengthened.

While the Gordon Committee suggested the elimination of volunteered discouragement from the unemployed count, it also recommended that more information be obtained on the entire group of persons not in the labor force. The result was the series of questions now numbered 24. (See exhibit 1.) Labor force discouragement is identified primarily through questions 24C and 24D. Data on this important group have been collected regularly since 1967 and published on a quarterly basis. More recently, another presidential study group—the National Commission on Employment and Unemployment Statistics, chaired by Professor Sar Levitan—examined closely the measurement of labor market discouragement, among a number of other issues. Though ultimately concurring that discouraged workers should not be included among the unemployed, the Commission did recommend that several changes be made in their definition, foremost of which was a requirement of some previous job search, which it specified to be within the prior 6 months (but not, of course, within the last 4 weeks).¹⁵ This recommendation was accepted by Secretaries of Labor Ray Marshall and Raymond J. Donovan,¹⁶ but, owing to the lack of funding to carry out adequate testing, it has not as yet been introduced into the survey.

Data and analytical advances

As indicated, one of the reasons that the responsibility for the Current Population Survey was transferred to the BLS was to integrate the analytical functions. The Bureau

already had a well-respected journal, the *Monthly Labor Review*, which has served as the vehicle for much of the analysis of CPS data. Numerous articles by BLS staff covering various aspects of labor force behavior and trends have appeared in the *Review*; for example, a review of employment and unemployment developments is published annually.¹⁷ The range of topics drawing on CPS data has been extraordinarily diverse, reflecting the diversity of the survey itself. Thus, there have been articles on the employment situation of specific worker groups, for example, youth, the elderly, women, blacks, and Hispanics; on trends for specific economic sectors: agriculture, self-employment, and various occupational or industrial groups; and on worker characteristics such as educational attainment, job tenure, or moonlighting. The focus may be a snapshot of conditions at a specific time, a study of secular trends, or an analysis of cyclical developments. Techniques of analysis range from relatively simple, cross-sectional comparisons to more complex quantitative procedures. Many of the articles, and particularly those based on CPS supplements, also have been reprinted as Special Labor Force Reports. Beginning with the first one issued in 1960 on the subject of educational attainment of workers,¹⁸ there have been 252 of these reports published (as of February 1984). In most cases, these reprinted reports contain special tabular material that does not appear in the articles.

Responsibility for CPS supplements has been shared by the BLS and the Census Bureau over the years. Indeed, the CPS has also been available for other agencies to purchase space for special inquiries, and the Departments of Agriculture and Health and Human Services have been frequent users of the survey, taking advantage of the fact that, although it is primarily designed for the collection of employment and unemployment statistics, it is also a general population survey. At present, the Census Bureau uses the survey to obtain data on annual income of persons and families; educational attainment, fertility, birth expectations, and migration of the population; and school enrollment of youth. The Bureau of Labor Statistics obtains data annually on the work experience of the population (in conjunction with the income supplement), the status of school-age youth and recent school graduates and dropouts, educational attainment of workers, and the marital and family status of workers. Through 1981, BLS also obtained annual supplemental information on multiple jobholders, work schedules, and absences from work. On a less frequent, sometimes even *ad hoc* basis, data have been obtained from BLS-sponsored supplements on job and occupational tenure, occupational mobility, work history and job search of the unemployed, and how workers got their jobs. Most recently, a special supplement was conducted in January 1984 on displaced workers.

Much effort has gone into expanding the amount of statistical detail published—and also the amount available for special analyses or for users—principally in "The Em-

ployment Situation'' news releases and in *Employment and Earnings*. In addition to this expansion of monthly detail, new data series have been added on a quarterly basis, covering such features as family status of workers, weekly earnings of individuals and families, Hispanics, veterans, metropolitan areas, poverty areas, and persons not in the labor force (including discouraged workers). For the convenience of users, BLS has provided additional published reports on a quarterly basis—for women, minorities, and workers' earnings. Chartbooks have also been issued on an occasional basis.¹⁹ A major achievement has been the issuance of a two-volume historical databook.²⁰ In order to clarify the survey, the data, and the concepts, BLS has prepared a number of special technical reports, including *How the Government Measures Unemployment*,²¹ which has been updated and reissued on several occasions.

The data on weekly wage and salary earnings referred to earlier (see questions 25A–25D in exhibit 1) became a part of the monthly survey questionnaire in 1979, after having been previously collected through a CPS supplement. More recently, BLS has added survey questions eliciting information on the union affiliation of employed persons (25E and 25F); publication of these data has not yet been initiated but will probably begin within a year. Another addition to the monthly questionnaire, not shown in the exhibit, asks persons who are 16 to 24 years old whether they are currently enrolled in school and, if so, whether they attend college or high school on a full- or part-time basis. This resulted from a recommendation by the National Commission on Employment and Unemployment Statistics,²² and, as with the union membership information, these data have not as yet been published. In both cases, however, BLS will begin publishing the data on a continuing basis as soon as the survey results have been carefully reviewed for accuracy and consistency.

The future of CPS

Between April 1984 and July 1985, an entirely new sample is being phased in, based on information and materials from the 1980 census of population. Redesigns are routine, in the sense that this process has occurred following every decennial census since the survey's inception. However, the current redesign is not routine but, rather, has involved an extensive reexamination of the entire survey process. Perhaps the biggest change is that, heretofore, the CPS has had a national sample design. But as previously discussed, the demands for subnational data that arose in the 1970's needed to be accommodated. In the sampling design now being introduced, the national sample will be the combination of 51 individual samples—each State plus the District of Columbia.

Further changes in the questionnaire are being contemplated, but implementation, if feasible, would first require testing and evaluation. Past experience, particularly with the introduction of the new questionnaire in 1967, has made

it clear that survey revisions cannot be made without extensive testing in a survey panel that is separate and distinct from the CPS. We have learned, for example, that changes in wording or in seemingly irrelevant areas can affect the important measures of employment and unemployment. Thus, the plan to revise the definition of discouragement cannot be put into place until after full testing.

In addition to the discouragement measurement change, consideration is being given to two comparatively minor changes that can be expected to affect the composition of unemployment. One of the ways the unemployed are classified is by their "reason for unemployment"—that is, whether they lost their last job, left it, or entered the labor force. Within the job-loser category are persons on layoff (who expect recall to their former job) and persons who have permanently lost their job (other job losers). As was discussed by Robert W. Bednarzik in "Layoff and permanent job losses: workers' traits and cyclical patterns," there is a strong suspicion that the extent of unemployment stemming from worker layoffs is overstated.²³ Through a test conducted by the BLS and the Census Bureau in 1982, it was learned that while the term "on layoff," as used in questions 21 and 21A, is intended to refer to a job from which a person has been suspended *with the expectation of recall*, the nonstatistical community—including some survey respondents—interpret the word more broadly to mean that a job was lost, *whether or not recall was anticipated*.²⁴ The concept of layoff that is meant to be measured with question 21 must be specified more precisely for the respondent, so that persons reporting themselves on layoff will fit the definition intended in the survey. A rewording of the question would move some unemployed from the layoff to the other job-losers category, in which persons are searching for work, but only adequate testing could determine the extent of the change. Moreover, a few of those currently classified as being on layoff may not have sought work in the prior 4 weeks and, if so, would properly be classified as not in the labor force.

The second possible candidate for change in the unemployment area concerns "persons expecting to start a new job within 30 days." As described earlier, this category was included among the employed prior to 1957 and then shifted into the unemployed beginning that year. Current thinking is that the concept need not exist at all. Once again, reporting depends upon *volunteered* responses, violating an important Gordon Committee dictum. If there were a specific question—as the Canadian government discovered when it added one to its own labor force survey²⁵—there would be a much larger group than the 100,000 or so count we obtain on average. But most persons in this situation realize that they do not possess a job until they are in it. Preliminary research indicates that the bulk of the persons in this category report recent job search, in any case. Thus, eliminating the concept will also eliminate yet another volunteered response group in the survey as well as a jobseeking exception but probably

not affect the counts in any way. Because separate test panels can be quite expensive as well as difficult to institute, considerably more time will be necessary before implementation of this or the other two changes can be accomplished, if they can be carried out at all.

ALL OF THESE EFFORTS—the ongoing collection and analysis, data expansion, survey redesign, questionnaire testing, special supplement planning, and so forth—would not be possible without full cooperation between the Bureau of Labor Statistics and the Census Bureau. This has been the case on a continuing basis from the first day that BLS entered

the picture 25 years ago as the survey's prime sponsor. A steering committee composed of BLS and Census representatives meets monthly to resolve problems and monitor progress. Working groups on specific issues come into existence as the need arises. But the key to its successful operation has been the almost daily contact between members of both Bureaus' staffs. All recognize that the survey is important, and both agencies have historically geared their efforts to its continued accuracy and improvement. It is because of this joint commitment that the Current Population Survey has been sustained as a vitally important statistical vehicle for measuring the economic health of our Nation and its people. □

—FOOTNOTES—

¹ See Stanley Lebergott, "Labor Force, Employment, and Unemployment, 1929-39: Estimating Methods," *Monthly Labor Review*, July 1948. The Lebergott estimates were adopted as "official" and are published as such in BLS and Census Bureau publications. Lebergott subsequently made estimates of unemployment back to 1900 in *Manpower and Economic Growth* (New York, McGraw Hill Book Co., 1964).

² See Gertrude Bancroft, *The American Labor Force* (New York, John Wiley and Sons, Inc., 1958), p. 183. The census was conducted on Nov. 16, 1937, by the Bureau of the Census, with the cooperation of the Post Office Department.

³ See Lester R. Frankel and J. Stevens Stock, "On the Sample Survey of Unemployment," *Journal of the American Statistical Association*, March 1942, pp. 77-80.

⁴ See Gertrude Bancroft, *The American Labor Force*, p. 156. Also see John D. Durand, *The Labor Force in the United States, 1890-1960* (New York, Social Science Research Council, 1948), pp. 12-13.

⁵ See A. Ross Eckler, *The Bureau of the Census* (New York, Praeger Publishers, 1972), pp. 70-71.

⁶ See Department of Commerce, Bureau of the Census, *The Current Population Survey: Design and Methodology*, Technical Paper 40 (Washington, U.S. Government Printing Office, 1977), p. 2.

⁷ Executive Office of the President, Bureau of the Budget, Memorandum for Secretary Strauss and Secretary Mitchell, subject: "Construction and Labor Force Statistics," Nov. 19, 1958.

⁸ The insured unemployment statistics are no longer published in *Employment and Earnings*, having been replaced by State and area estimates of labor force and unemployment.

⁹ See Robert L. Stein, "New Definitions for Employment and Unemployment," *Employment and Earnings and Monthly Report on the Labor Force*, February 1967, pp. 3-27.

¹⁰ *The Current Population Survey: Design and Methodology*, p. 4.

¹¹ See "Interim Report of the Review of Concepts Subcommittee of the Committee on Labor Supply, Employment and Unemployment Statistics, Joint Economic Committee, 84th Cong., 1st sess., Nov. 7 and 8, 1955, p. 7.

¹² President's Committee to Appraise Employment and Unemployment Statistics, *Measuring Employment and Unemployment* (Washington, U.S. Government Printing Office, 1962).

¹³ An indication of the impact of these changes appears in Robert L. Stein, "New Definitions for Employment and Unemployment."

¹⁴ *Measuring Employment and Unemployment*, p. 15.

¹⁵ National Commission on Employment and Unemployment Statistics, *Counting the Labor Force* (Washington, U.S. Government Printing Office, Labor Day 1979), pp. 44-49, 56. For a summary of the Commission's recommendations, see Robert L. Stein, "National Commission recommends changes in labor force statistics," *Monthly Labor Review*, April 1980, pp. 11-21.

¹⁶ See *Interim Report of the Secretary of Labor on the Recommendations of the National Commission on Employment and Unemployment Statistics*, transmitted to the Congress on Mar. 3, 1980, and *Final Report of the Secretary of Labor on the Recommendations of the National Commission on Employment and Unemployment Statistics*, transmitted to the Congress on Oct. 26, 1981.

¹⁷ See, for example, Eugene H. Becker and Norman Bowers, "Employment and unemployment improvements widespread in 1983," *Monthly Labor Review*, February 1984.

¹⁸ Arnold Katz, "Educational Attainment of Workers, 1959," Special Labor Force Report No. 1 (reprinted from the February 1960 issue of the *Monthly Labor Review*).

¹⁹ Two examples are *Women at Work: A Chartbook*, Bulletin 2168 (Washington, Bureau of Labor Statistics, April 1983) and *Workers Without Jobs: A Chartbook on Unemployment*, Bulletin 2174 (Washington, Bureau of Labor Statistics, July 1983).

²⁰ *Labor Force Statistics Derived From the Current Population Survey: A Databook*, Bulletin 2096, September 1982.

²¹ *How the Government Measures Unemployment*, Report 505 (Washington, Bureau of Labor Statistics, 1977).

²² *Counting the Labor Force*, pp. 89-90.

²³ Robert W. Bednarzik, "Layoffs and permanent job losses: workers' traits and cyclical patterns," *Monthly Labor Review*, September 1983, p. 11.

²⁴ Robert W. Bednarzik, "Layoffs and permanent job losses."

²⁵ See "New Job to Start at a Future Date," *The Labour Force* (Statistics Canada, Cat. No. 71-001, March 1977).

Earnings differences between men and women: an introductory note

JANICE SHACK-MARQUEZ

On average, women earn less than two-thirds as much as men. Depending upon which median earnings data set is used, estimates range from 60 to 65 percent, a differential that has persisted at approximately the same level over several decades. Survey data on specific occupations in establishments show a smaller, but nevertheless persistent, gap as well.

What accounts for this earnings gap? Three explanations have been proposed in the literature: (1) differences in the productive or labor market characteristics of men and women, (2) differences in the distribution of men and women among different jobs, and (3) discrimination in the labor market.

Variations in characteristics

Women may earn less than men because they bring to the labor market different productive capacities than men. For example, they may not have invested as heavily in education and training to develop labor market skills and thus may be less productive in the labor market.

Empirical studies exploring the productiveness hypothesis have generally been able to explain only a small proportion—usually less than 20 percent—of the earnings differential by controlling for a variety of individual productive characteristics, such as education and age. They also control for personal characteristics such as marital status and race.¹ Thus, a substantial proportion of the earnings gap between men and women remains unexplained.

For purposes of explaining the gap, one problem with most data sets on individual earnings is the absence of work histories for individuals (or their actual labor force experience). It is well known that experience is positively related to earnings. Because of family responsibilities, many women interrupt their careers, and it is important to quantify the effect of interruptions on earnings paths. Using data on actual years of labor force experience and on occupational and vocational training, Mary Corcoran and George Duncan were able to explain 44 percent of the earnings disparity between men and women, one of the highest proportions of any study.² To the extent that the most ambitious studies using individual characteristics still leave a substantial earnings gap unexplained, there are certainly other factors at work.

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Differences in jobs held

The earnings gap may also arise from the types of jobs men and women hold. A number of studies have supplemented data on individual characteristics with data on occupation, industry, and type of employer (for example, government versus private, or large versus small firm). These studies have been able to explain a substantially larger portion (as much as 88 percent) of the earnings gap than those using only individual characteristics.³

The explanatory power of such models increases with the level of detail used to describe jobs. In other words, studies using only information on broad occupational groups—such as laborers, professionals, and clerical workers—are less successful in exploring the earnings gap than those using more detailed occupational classifications, such as physicians, nurses, bank managers, and tellers. However, there is usually a tradeoff involved in choosing a data source for analytic studies. Data sets on individuals most frequently use only broad occupational classifications. A few studies carried out within individual firms have been able to obtain data on very detailed occupational specifications. Typically, such studies have shown smaller earnings gaps within job categories, suggesting that wage differentials for identical jobs in the same firm are negligible. However, results of these studies pertain only to single-firm settings.

Discrimination in the labor market

Most of the studies of the pay disparity between men and women have been motivated by a desire to quantify the effects of discrimination in the labor market on women's earnings. For example, regression analysis has been used on data sets containing individual earnings records and the variables described above. These studies have asked what women would earn, on average, if they had the same education, training, and other productive characteristics as men.⁴ The earnings gap remaining (that is, the differential that is left "unexplained" by education, experience, and so forth) has often been interpreted as a measure of discrimination.

Using the residual as a measure of discrimination requires that a number of conditions be met. First, the regressions must control for all variables that are relevant. Alternatively, whatever variables are omitted from the equation must be distributed similarly for both men and women. Data sets are limited, however, and variables are never measured with ab-

solute precision. Thus, an unknown fraction of the residual really amounts to the effects of omitted productive characteristics and of errors of measurement.

When occupational controls are added to the analysis, another problem arises. It is well known that occupational earnings carry with them differentials that may be attributable to skill requirements, difficulty of entry into the occupation, and working conditions associated with a job (factors such as riskiness, dirtiness, unpleasantness, and so forth). Thus, occupational variables can, in part, be interpreted as controlling for some of these other factors that influence earnings but that usually cannot be controlled directly in the analysis.

However, the introduction of occupational controls simply changes the question from one of earnings differences between men and women to the puzzle of differences in occupational employment patterns by sex. That is, if women's earnings are lower than men's because they are employed in lower paying jobs, occupational controls in themselves explain nothing. The question then becomes: Why are women in lower paying jobs? Labor market discrimination—that is, unequal access to high-paying occupations—may be only one answer. The question goes beyond earnings differentials and also requires study of pre-labor market forces that can affect young men and women. For example, parents or schools may encourage young women to pursue educational programs different from those that young men pursue. Thus, differences in skill acquisition or social conditioning may partly explain differences in the occupational distribution of men and women.

To sum up, analysis of individual earnings data carries with it one set of problems. Not enough is known about the determinants of individual earnings to be confident that all the labor market variables in which men and women may differ have been isolated. It is probably true that the inability to include all variables increases the estimated gap, leaving it larger than the true earnings gap, other things equal. Looking at earnings by sex within narrowly defined occupations also has its limitations. Unequal pay for identical work is only part of the explanation for the pay disparity; the reasons why occupational employment patterns of men and women differ require independent explanation.

BLS data on differentials

The BLS publishes two types of data sets useful for examining male-female earnings differentials: one that provides substantial detail about individuals (the Current Population Survey), and another that provides substantial detail about jobs—occupational wage surveys. In the two articles that follow, Earl Mellor emphasizes individual characteristics using the Current Population Survey, while Mark Sieling focuses on differences in the jobs men and women hold using occupational wage data—in this case, the Survey of Professional, Administrative, Technical, and Clerical Pay.

The Current Population Survey (CPS) is a national sample of the U.S. population. Data are collected from respondents who provide detailed information about members of their

households, including sex, age, and education, as well as some general information about occupations and earnings. Mellor uses the weekly earnings (only recently available on a quarterly basis) of full-time wage and salary workers at the macro, or aggregate, level to demonstrate that, on average, women earn approximately 65 percent as much as men. He employs standardization techniques to examine characteristics of workers (age, years of schooling, major occupation, major industry, and hours worked) one at a time, and estimates what women's earnings would have been if their characteristics were distributed the same as men's. In his analysis, occupation (at the two-digit Census Occupational Classification level) explains more of the gap (5 percentage points) than any other characteristic. His findings are consistent with earlier work by other analysts.⁵

Two important limitations of Mellor's study are the use of CPS macrodata (or aggregate information) rather than microdata (or information from individual records), and the technique of standardization, which allows him to control for only one characteristic at a time. The CPS data also impose limitations on the type of study that can be conducted. For example, the database includes only total years of education, not information on the type of education, which is important for studying occupational choice. (Years of education is not necessarily a good proxy for the amount and applicability of job-specific skills learned in school.) Perhaps more importantly, the CPS does not provide information on the work history of respondents, which is crucial in controlling for the labor force interruptions that characterize many women's labor force experiences. On the positive side, however, the study emphasizes the importance of the types of jobs men and women hold in analyzing the earnings differential.

Sieling uses a less comprehensive data set than the CPS to explore the pay gap. The BLS Survey of Professional, Administrative, Technical, and Clerical Pay covers only white-collar occupations in medium and large firms. The data are collected from the establishment, not from the employees. This data set, although quite specific, allows Sieling to look at very narrowly defined skill levels within occupations.

He finds that the average pay of men in narrowly defined white-collar occupational skill levels generally exceeds earnings of their female counterparts, but the differences (0-16 percentage points) are much smaller than those found in studies using data on less detailed occupations and skill levels. If one considers only data from within the same establishment, women's earnings are even closer to men's, although some sizable differences are found. However, the data are limited to white-collar occupations in medium and large establishments, and the findings may not be broadly applicable to other occupations.

THESE ARTICLES ILLUSTRATE two approaches to the analysis of earnings differentials. It is readily apparent that more research is necessary to separate the effects of differences in men's and women's human capital and of the distribution of the sexes across occupations in the measurement of the earnings gap. □

FOOTNOTES

¹For a summary of these studies, see Donald J. Treiman and Heidi I. Hartmann, eds., *Women, Work and Wages: Equal Pay For Jobs of Equal Value* (Washington, National Academy Press, 1981).

²Mary Corcoran and George J. Duncan, "Work History, Labor Force Attachment, and Earnings Differences Between the Races and Sexes," *Journal of Human Resources*, Winter 1979, pp. 3-20.

³Treiman and Hartmann, *Women, Work and Wages*.

⁴For a description of this method of estimating the earnings gap, controlling for both productive characteristics and occupational distributions by sex, see Ronald Oaxaca, "Male-Female Wage Differentials in Urban Labor Markets," *International Economic Review*, October 1973, pp. 693-709.

⁵See Treiman and Hartmann, *Women, Work and Wages*.

Investigating the differences in weekly earnings of women and men

Studies report wide variances in the value of factors explaining the female-male earnings gap; standardization of BLS weekly earnings data shows that some of the gap is explained by age, education, occupation, and hours worked

EARL F. MELLOR

Studies seeking to identify and rank the most important reasons for the earnings disparity between men and women have proliferated in recent years. Although the many compendiums of such studies frequently emphasize different viewpoints—of business, government, or academia—they have one aspect in common: each reports an astonishingly wide variance in the explanatory power of the factors used in the studies. For example, in a summary of 16 studies published by various analysts between 1964 and 1979, Cynthia Lloyd and Beth Niemi show that the variables in these studies explained from little or none of the sex-earnings gap to as much as 71 percent.¹ Such large differences arise mostly from the variables selected for analysis, the measure of earnings used (for example, hourly, annual), and the source of the data. In general, models employing only a small number of variables—for example, age, race, and educational attainment—explain far less of the earnings gap than those with many more variables, including occupational detail, hours worked, and several work experience items.

This article looks at sex-earnings differences using a relatively newer data series published by the Bureau of Labor Statistics. The information comes from the Current Popu-

lation Survey, conducted by the Bureau of the Census for the Bureau of Labor Statistics. The monthly survey includes data on how much full-time wage and salary workers usually earn per week, by race, age, education, occupation, hours worked, and several other characteristics. (See box.) Most of the analysis is based on a statistical technique called standardization. This technique permits us to examine each characteristic at the macroeconomic level, and then to estimate what the earnings of women would be if, for each characteristic, the distribution of women had been the same as that for men, and all other characteristics remained unchanged.

In the most aggregate terms, median usual weekly earnings of full-time workers were \$309 in 1982. (See table 1.) With a median of \$241, women earned 65 percent as much as men (\$371). The following discussion illustrates how part of this 35-percent gap is explained through standardizations by age, education, occupation, industry, and hours of work. Also, discussed briefly is the possible effect of labor force interruptions on male-female earnings differences.

Age, education account for small amount

The age-earnings profile for women peaks at younger ages than for men. Median usual weekly earnings of women peak at \$261 in the 25-to-34 age group; peak earnings of men are attained in the 35-to-44 category at a figure \$67 higher

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than the median for men 25 to 34. (See table 1.)

Among teenagers, the female-to-male earnings ratio for full-time workers was 87.6 percent—slightly higher than that for 20- to 24-year-olds, and considerably higher than that for other age groups. However, a large number of young workers have earnings at or near the prevailing minimum wage (\$3.35 per hour in 1982, or \$134 for a 40-hour work-week). About one-third of the male teenagers and nearly half of the female teenagers earned under \$150 a week in 1982. The sex-earnings ratio for workers 25 to 34 was 72 percent and was even lower for the groups comprising 35- to 64-year-old workers.

The age distribution of women who work full time is slightly different from that of men. The women tend to be a bit younger; nearly 20 percent were under 25, compared to 16 percent for men in 1982. However, age apparently does little to explain earnings differences between the sexes. The following shows the actual age distribution of women in 1982, their distribution if they had the same age profile as men, and median weekly earnings in both cases:

	<i>Actual</i>	<i>Redistri- buted</i>
Age 16 and over:		
Total, (thousands)	28,267	28,267
Percent	100.0	100.0
16 to 19	3.4	3.1
20 to 24	16.1	13.2
25 to 54	68.6	71.0
25 to 34	31.5	31.6
35 to 44	21.2	22.5
45 to 54	16.0	16.9
55 and over	11.9	12.7
Median earnings	\$241	\$243

If women who work full time had an age distribution identical to that of men, and all other characteristics had remained the same, the estimated median earnings (assuming the weekly earnings distribution for each age group did not change) would have been only \$2 higher in 1982, and the sex-earnings ratio would have edged upward by 0.5 percentage point, from 65.0 to 65.5 percent.

Differences in years of school completed also account for only a small amount of the earnings gap. If the distribution of years of school completed by employed women 25 and over had been the same as that for men, median earnings of women would have moved up by only \$2 and the sex-earnings ratio also would have been raised by only 0.5 percentage point. (Age 25 and over is used in looking at educational attainment because a large number of the population 16 to 24 are still in school.)

Occupations play a larger role

More of the earnings gap can be explained by the variations in the employment of women and men among occupations. Information by occupation is published from the CPS at three levels of detail. The least detailed in 1982 was the major group, or "one-digit" level, with 11 categories.²

Note on weekly earnings data

The Bureau of Labor Statistics has been collecting quarterly and annual average data on the usual weekly earnings of individuals and families by various demographic characteristics since the first quarter of 1979. These data have certain distinct advantages over other sources of earnings information. They are timely, in that quarterly reports with summary measures are issued about 1 month following the close of each quarter. The series can be tabulated by the exact number of hours reported as usually worked; hence, there is no need to make assumptions in order to estimate hours worked as is the case with the various sources on annual earnings. Of greater significance is the large sample that can be accumulated over the course of a year. Even though the question on weekly earnings is asked of only one-quarter of the monthly Current Population Survey (CPS) sample of some 60,000 households each month, over the course of a year there are about 180,000 unduplicated records of the earnings for full-time workers. Such a data base permits detailed annual average tabulations, including, for example, the earnings of workers by sex for hundreds of occupations. For additional details on the CPS and the merits and limitations of the data on weekly earnings, see Earl F. Mellor, *Technical Description of the Quarterly Data on Weekly Earnings from the Current Population Survey*, Bulletin 2113 (Bureau of Labor Statistics, 1982).

The next level of detail ("two-digit") had 40 occupational groups relevant to wage and salary workers. For example, professional and technical workers were divided into six groups and craftworkers into eight. The "three-digit" level of detail had 422 occupational titles applicable to wage and salary workers. However, many of these titles had too few sample observations to permit the estimation of reliable earnings medians, especially separately for men and women.

Among the 11 major occupational groups, there are large and longstanding differences between the sexes. Women remain underrepresented in some major groups and overrepresented in others.³ For example, in 1982, women accounted for about 6 percent of all craftworkers and 78 percent of all clerical workers. However, an analysis of earnings on the basis of only the major occupational groups does little to explain the female-male earnings gap. If women were distributed among the 11 major groups the same as men (with earnings in each group unchanged), their median earnings would have risen by \$6 to \$247. The earnings ratio in 1982 thus would have been 66.6 percent, closing the female-male gap by very little (1.6 percentage points).

Because there are both high- and low-paying jobs within major groups, it is important to know what jobs within each group are held by women. For example, among wage and salary workers, women actually are more likely than men to work in the professional and technical group (20 versus 17 percent) but are less likely to hold the higher paying jobs

within this group. On one hand, they account for only 5 percent of the engineers, 23 percent of the lawyers, and 22 percent of the physicians employed as wage and salary workers.⁴ (See table 2.) On the other hand, women make up very large shares of the lower paying professional and technical jobs—94 percent of the registered nurses, 70 percent of the health technologists and technicians, 67 percent of teachers below the college level, and 65 percent of the social and recreation workers.

Another example is salesworkers, a middle-paying category in which women are somewhat underrepresented. About half the women in sales were sales clerks in retail trade, one of the lowest paying sales occupations. Only about one-sixth of the men in sales worked in this category—more of them were sales representatives in wholesale trade. Large numbers of men were also employed as sales representatives in manufacturing; salesworkers, other than sales clerks, in retail trade;⁵ and as stock and bond sales agents—all relatively high-paying sales jobs.

As noted, the adjustment of the employment distribution of women to that of men yielded only a small (1.6 percentage point) increase in the sex-earnings ratio when major groups were used. However, the ratio moved up 5.1 percentage points to 70.1 percent when the redistribution method was applied to 40 two-digit occupations. In dollar terms, median earnings of women rose \$19 to \$260. The ratios would undoubtedly rise even higher if the very detailed three-digit occupations were redistributed. However, serious data constraints would complicate such an analysis, as there are many jobs on the list for which no, or very few, women (and, in some cases, men) were found in the CPS sample. Where the exercise can be applied on a more limited scale—for example, to the 13 categories of salesworkers—a marked narrowing is apparent. Overall, women in sales jobs earned only 55 percent as much as men in 1982; but, if women were distributed among the sales jobs in the same way as men, the ratio would jump 11 points to 66 percent.

Even at the finest level of detail for which the CPS data are available, women earn less than men in almost all occupations for which comparisons can be made. For most jobs, full-time usual weekly earnings of women were 60 to 80 percent as much as those of men. For some (for example, nurses, secondary school teachers, cashiers, postal clerks), the ratio was 85 percent or more.

It is important to note that the three-digit level of detail for occupations cannot take into consideration the wide range of full-time jobs which is found in each category. For example, under physicians, there are 85 specialties⁶ (for example, interns and neurological surgeons) for which data are not collected and would not be statistically reliable if they were. For each three-digit occupation, there are numerous specialties with differences in skill levels, market demand for the jobs, and other variables not available from the CPS, but which affect the earnings of each. Obviously, earnings differences between men and women reflect these

Table 1. Median usual weekly earnings of full-time wage and salary workers, by selected characteristics, 1982 annual averages

Characteristic	Median weekly earnings			
	Total	Men	Women	Female-to-male ratio
Race and Hispanic origin				
16 years and over	\$309	\$371	\$241	65.0
White	317	382	244	63.9
Black	247	281	223	79.4
Hispanic	242	272	207	76.1
Age				
16 to 24 years	214	231	194	84.0
16 to 19	167	177	155	87.6
20 to 24	226	246	205	83.3
25 to 34	319	364	261	71.7
35 to 44	359	431	260	60.3
45 to 54	350	428	254	59.3
55 to 64	336	409	246	60.1
65 and over	257	299	210	70.2
Years of school completed				
25 years and over	335	403	257	63.8
Less than 4 years of high school	248	298	189	63.4
Elementary, 8 years or less	230	262	176	67.2
1 to 3 years of high school	268	327	197	60.2
4 years or more of high school	354	424	273	64.4
4 years of high school	308	381	238	62.5
1 to 3 years of college	356	422	279	66.1
4 years or more of college	444	525	351	66.9
5 years or more of college	420	503	326	64.8
Hours usually worked				
35 to 39 hours	230	305	213	69.8
40 hours or more	318	374	247	66.0
40 hours	300	355	241	67.9
41 hours or more	400	429	311	72.5
60 hours or more	411	435	304	69.9

variables to some degree.⁷

Skill level. Some insight into sex-earnings differences by the skill level of a set of selected, narrowly defined occupations is provided in the National Survey of Professional, Administrative, Technical, and Clerical Pay (PATC) conducted by the Bureau of Labor Statistics. An accompanying article reports that earnings of women in the March 1981 PATC survey ranged from 74 to 101 percent of those of men, and, in all but two occupations, the ratio was under 90 percent. But, when the skill level (based on an examination of job duties and responsibilities) is taken into consideration, women earned at least 90 percent as much as men in almost every job and experience category.⁸ The PATC data do not indicate the number of years workers remain at a given skill level, that is, how long it takes to be promoted to positions with greater duties and responsibilities.

Distribution of earnings. The distributions from which the medians are calculated in the CPS cover a wide range of usual weekly earnings among workers in job groups for which there were a reasonably large number of sample observations. Regardless of the median value, there often were some workers earning under \$200 or even under \$100, and others earning hundreds of dollars above the median. For example, lawyers employed full time as wage and salary workers had median weekly earnings of \$626, but nearly 10 percent reported earnings below \$300, and roughly twice that percentage had earnings of \$900 or more. Among retail

Table 2. Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

[Numbers in thousands]

Occupation	Total		Men		Women	
	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹
Total ²	70,546	\$309	42,279	\$371	28,267	\$241
Professional, technical, and kindred workers	12,983	410	7,379	484	5,604	342
Accountants	968	404	585	468	383	325
Architects	58	460	53	504	5	—
Computer specialists	699	492	499	529	199	401
Computer programmers	386	444	263	478	123	382
Computer systems analysts	246	539	181	568	65	428
Computer specialists, n.e.c.	66	611	55	636	11	—
Engineers	1,471	586	1,391	592	80	479
Aeronautical and astronautical engineers	73	628	71	632	2	—
Chemical engineers	64	629	58	641	6	—
Civil engineers	187	558	184	561	3	—
Electrical and electronic engineers	382	599	366	607	16	—
Industrial engineers	237	550	208	566	29	—
Mechanical engineers	239	584	231	588	9	—
Engineers, n.e.c.	220	592	207	596	12	—
Foresters and conservationists	57	382	53	398	5	—
Lawyers and judges	306	633	238	660	68	502
Lawyers	284	626	218	653	66	492
Librarians, archivists, and curators	159	349	35	—	124	340
Librarians	149	346	29	—	119	338
Life and physical scientists	279	519	225	553	54	378
Biological scientists	54	399	31	—	23	—
Chemists	122	520	98	546	23	—
Operations and systems research analysts	232	508	159	547	73	417
Personnel and labor relations workers	390	430	196	530	194	354
Physicians, dentists, and related practitioners	358	507	279	530	80	421
Pharmacists	113	501	85	517	28	—
Physicians, medical and osteopathic	217	526	169	564	47	—
Nurses, dietitians, and therapists	1,215	357	123	358	1,092	357
Dietitians	55	295	6	—	49	—
Registered nurses	952	365	56	363	897	366
Therapists	207	333	62	348	145	328
Health technologists and technicians	499	316	153	365	346	298
Clinical laboratory, technologists and technicians	211	326	53	369	158	317
Radiologic technologists and technicians	82	325	29	—	53	299
Health technologists and technicians, n.e.c.	163	293	66	362	97	257
Religious workers	281	299	251	305	31	—
Clergy	243	302	232	304	11	—
Social scientists	253	518	165	580	88	420
Economists	161	581	117	638	44	—
Psychologists	71	420	34	—	38	—
Social and recreation workers	414	311	146	359	268	291
Social workers	329	328	113	382	216	307
Recreation workers	85	234	33	—	52	203
Teachers, college and university	423	499	312	528	110	415
Teachers, except college and university	2,621	360	861	413	1,760	338
Adult education teachers	56	432	38	—	18	—
Elementary school teachers	1,261	349	236	411	1,025	339
Prekindergarten and kindergarten teachers	156	284	3	—	153	283
Secondary school teachers	1,092	384	560	411	532	357
Teachers, except college and university, n.e.c.	56	314	25	—	31	—
Engineering and science technicians	1,022	379	843	394	178	307
Chemical technicians	92	384	69	400	23	—
Drafters	278	365	232	379	46	—
Electrical and electronic engineering technicians	292	400	256	411	36	—
Surveyors	58	336	58	336	0	—
Engineering and science technicians, n.e.c.	242	380	184	404	58	308
Technicians, except health, engineering, and science	171	411	132	465	40	—
Airplane pilots	56	588	54	600	2	—
Radio operators	56	296	28	—	28	—
Vocational and educational counselors	142	402	72	459	69	348
Writers, artists, and entertainers	766	391	477	444	289	314
Designers	170	461	127	526	44	—
Editors and reporters	157	383	83	451	74	325
Painters and sculptors	89	344	49	—	40	—
Public relations specialists and publicity writers	112	411	60	550	52	341
Writers, artists, and entertainers, n.e.c.	72	391	42	—	30	—
Research workers, not specified	149	486	100	562	49	—
Managers and administrators, except farm	7,908	430	5,595	507	2,313	309
Bank officers and financial managers	710	471	445	574	264	336
Buyers, wholesale and retail trade	153	334	84	412	69	271
Credit and collection managers	63	382	32	—	31	—

See footnotes at end of table.

Table 2. Continued—Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

[Numbers in thousands]

Occupation	Total		Men		Women	
	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹
Health administrators	205	\$461	104	\$587	101	\$394
Inspectors, except construction and public administration	107	420	94	429	13	—
Managers and superintendents, building	113	285	54	353	59	253
Office managers, n.e.c.	444	337	124	512	320	312
Officials and administrators, public administration, n.e.c.	407	463	296	501	110	392
Officials of lodges, societies, and unions	108	479	79	525	29	—
Purchasing agents and buyers, n.e.c.	254	421	166	494	88	319
Restaurant, cafeteria, and bar managers	424	274	237	309	187	233
Sales managers and department heads, retail trade	321	302	193	386	128	227
Sales managers, except retail trade	342	566	302	585	40	—
School administrators, college	119	505	78	547	41	—
School administrators, elementary and secondary	269	517	181	566	87	338
Managers and administrators, n.e.c.	3,699	463	2,979	518	720	312
Salesworkers	3,643	317	2,416	383	1,227	212
Advertising agents and salesworkers	103	344	52	449	51	286
Insurance agents, brokers, and underwriters	444	357	297	419	147	284
Real estate agents and brokers	202	339	91	435	111	292
Stock and bond sales agents	150	549	116	642	34	—
Sales representatives, manufacturing industries	338	462	278	512	59	315
Sales representatives, wholesale trade	795	409	691	426	104	308
Sales clerks, retail trade	1,020	188	420	239	600	167
Salesworkers, except clerks, retail trade	376	298	333	310	43	—
Salesworkers, services and construction	181	346	122	408	59	252
Clerical and kindred workers	13,845	248	2,997	347	10,848	236
Bank tellers	453	199	32	—	422	198
Billing clerks	128	235	16	—	111	233
Bookkeepers	1,321	244	116	330	1,205	240
Cashiers	720	176	112	196	608	172
Clerical supervisors, n.e.c.	262	345	76	474	185	313
Collectors, billing and account	71	260	26	—	46	—
Counter clerks, except food	243	225	62	277	182	213
Dispatchers and starters, vehicle	97	335	67	370	31	—
Estimators and investigators, n.e.c.	505	337	206	426	298	289
Expeditors and production controllers	254	342	146	398	108	294
File clerks	180	220	23	—	158	217
Insurance adjusters, examiners, and investigators	185	300	79	383	106	257
Library attendants and assistants	56	240	7	—	50	236
Mail carriers, post office	239	420	209	423	30	—
Mailhandlers, except post office	146	229	80	250	66	209
Messengers and office helpers	71	204	58	212	14	—
Office machine operators	988	259	257	343	731	242
Computer and peripheral equipment operators	530	285	201	354	329	253
Keypunch operators	332	240	19	—	312	237
Office machine operators, n.e.c.	54	261	19	—	35	—
Payroll and timekeeping clerks	203	275	39	—	164	257
Postal clerks	248	420	175	427	73	403
Receptionists	442	207	9	—	433	206
Secretaries	3,086	243	22	—	3,064	243
Secretaries, legal	151	285	1	—	150	285
Secretaries, medical	65	247	0	—	65	247
Secretaries, n.e.c.	2,870	241	22	—	2,849	241
Shipping and receiving clerks	464	258	358	274	106	221
Statistical clerks	323	271	67	341	255	256
Stock clerks and storekeepers	439	287	282	322	157	241
Teachers aides, except school monitors	145	164	9	—	136	162
Telephone operators	237	269	16	—	221	267
Ticket, station, and express agents	133	434	72	465	62	387
Typists	691	227	22	—	670	227
Miscellaneous clerical workers	927	247	173	322	754	239
Not specified clerical workers	340	245	68	297	272	236
Craft and kindred workers	10,068	375	9,417	384	651	247
Bakers	97	236	62	271	35	—
Brickmasons and stonemasons	87	392	86	395	1	—
Bulldozer operators	79	317	78	319	1	—
Cabinetmakers	52	302	48	—	3	—
Carpenters	672	341	664	341	9	—
Compositors and typesetters	146	278	92	334	54	224
Crane, derrick, and hoist operators	111	420	110	421	1	—
Decorators and window dressers	69	221	27	—	42	—
Electricians	538	432	528	434	10	—
Electric power line and cable installers and repairers	112	441	110	441	1	—
Excavating, grading, and road machine operators, except bulldozer	257	351	253	351	4	—

See footnotes at end of table.

Table 2. Continued—Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

[Numbers in thousands]

Occupation	Total		Men		Women	
	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹
Blue-collar worker supervisors, n.e.c.	1,640	\$422	1,448	\$438	192	\$263
Inspectors, n.e.c.	133	408	117	414	16	—
Job and die setters, metal	70	358	68	364	2	—
Machinists	466	371	451	375	16	—
Mechanics and repairers	2,801	345	2,740	346	61	318
Airconditioning, heating, and refrigeration	173	360	173	360	1	—
Aircraft	123	431	117	435	7	—
Automobile body repairers	135	305	133	305	2	—
Automobile mechanics	778	307	772	308	7	—
Data processing machine repairers	75	429	70	433	6	—
Farm implement	50	269	50	269	0	—
Heavy equipment mechanics, including diesel	901	366	889	367	12	—
Household appliance accessory installers and mechanics	118	340	114	340	4	—
Office machine	75	373	70	379	5	—
Radio and television	71	338	65	346	6	—
Miscellaneous mechanics and repairers	215	361	208	362	7	—
Millwrights	91	458	90	460	1	—
Painters, construction and maintenance	250	294	240	298	11	—
Plumbers and pipe fitters	385	422	381	421	3	—
Printing press operators	171	345	148	362	23	—
Roofers and slaters	67	306	66	308	1	—
Sheetmetal workers and tinsmiths	141	401	136	405	5	—
Stationary engineers	182	393	179	391	3	—
Structural metal workers	73	497	72	498	0	—
Telephone installers and repairers	307	449	272	451	35	—
Telephone line installers and repairers	101	396	94	398	6	—
Tool and die makers	150	437	148	439	2	—
Operatives, except transport	8,291	252	4,998	311	3,294	198
Assemblers	1,016	246	460	319	556	220
Checkers, examiners, and inspectors, manufacturing	699	284	326	360	372	235
Clothing ironers and pressers	87	169	22	—	65	156
Cutting operatives, n.e.c.	188	232	128	249	60	186
Drywall installers and lathers	55	355	55	356	0	—
Filers, polishers, sanders, and buffers	109	234	78	256	32	—
Garage workers and gas station attendants	190	184	179	186	11	—
Laundry and dry cleaning operatives, n.e.c.	119	178	35	—	84	167
Meat cutters and butchers, except manufacturing	153	341	147	342	6	—
Meat cutters and butchers, manufacturing	81	279	54	329	27	—
Mine operatives, n.e.c.	212	432	210	432	2	—
Mixing operatives	75	289	71	289	4	—
Packers and wrappers, except meat and produce	508	218	212	246	296	204
Painters, manufactured articles	117	258	98	279	19	—
Photographic process workers	69	245	33	—	36	—
Precision machine operatives	258	330	227	345	31	—
Grinding machine operatives	92	317	83	326	8	—
Lathe and milling machine operatives	80	362	74	371	6	—
Punch and stamping press operatives	86	282	50	317	35	—
Sawyers	100	228	87	230	13	—
Sewers and stitchers	634	166	32	—	602	165
Shoemaking machine operatives	61	176	16	—	45	—
Furnace tenders and stokers, except metal	67	369	66	372	2	—
Textile operatives	251	213	93	232	158	198
Spinners, twisters, and winders	90	220	28	—	62	217
Textile operatives, n.e.c.	107	204	49	—	59	176
Welders and flame cutters	561	345	531	351	31	—
Machine operatives, miscellaneous specified	1,098	288	809	322	289	213
Machine operatives, not specified	284	252	191	280	92	214
Miscellaneous operatives	549	248	374	287	175	193
Not specified operatives	151	300	97	348	54	250
Transport equipment operatives	2,638	323	2,506	328	133	237
Bus drivers	168	332	123	370	46	—
Delivery and route workers	438	307	411	316	27	—
Forklift and tow motor operators	312	301	284	307	28	—
Taxicab drivers and chauffeurs	90	240	85	244	6	—
Truck drivers	1,519	330	1,495	331	24	—
Laborers, except farm	3,092	243	2,757	248	335	205
Construction laborers, except carpenters' helpers	611	254	595	253	17	—
Freight and material handlers	594	270	533	274	61	244
Garbage collectors	61	233	60	232	1	—
Gardeners and groundskeepers, except farm	372	209	356	210	16	—
Stock handlers	495	222	357	237	138	191
Vehicle washers and equipment cleaners	127	205	108	203	19	—
Warehouse laborers, n.e.c.	253	275	235	282	18	—

See footnotes at end of table.

Table 2. Continued—Weekly earnings of wage and salary workers who usually work full time in occupations employing 50,000 or more, by sex, 1982 averages

[Numbers in thousands]

Occupation	Total		Men		Women	
	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹	Employed	Weekly earnings ¹
Miscellaneous laborers	164	\$284	145	\$296	19	—
Not specified laborers	227	241	207	244	20	—
Service workers, except private household	7,011	207	3,518	246	3,493	\$180
Cleaning service workers	1,624	211	1,104	231	520	175
Lodging quarters cleaners	105	142	6	—	100	140
Building interior cleaners, n.e.c.	515	192	234	217	281	177
Janitors and sextons	1,003	229	864	234	140	195
Food service workers	1,960	168	796	192	1,164	155
Bartenders	175	196	87	224	88	177
Waiter assistants	72	140	62	140	10	—
Cooks	724	180	386	205	338	156
Dishwashers	105	140	81	141	24	—
Food counter and fountain workers	98	145	25	—	73	143
Waiters	531	158	83	229	448	149
Food service workers, n.e.c.	256	169	71	182	185	164
Health service workers	1,410	200	163	222	1,248	198
Dental assistants	95	202	2	—	93	201
Health aides, except nursing	218	219	30	—	189	216
Nursing aides, orderlies, and attendants	826	182	118	211	708	179
Practical nurses	268	255	12	—	255	253
Personal service workers	662	202	211	251	451	188
Attendants, recreation and amusement	88	197	55	222	33	—
Child care workers	92	148	10	—	82	141
Hairdressers and cosmetologists	184	199	24	—	160	194
Housekeepers	132	221	48	—	84	193
Protective service workers	1,355	331	1,245	338	110	254
Firefighters	218	393	216	393	2	—
Guards	561	241	494	240	66	241
Police and detectives	487	405	455	409	32	—
Sheriffs and bailiffs	75	321	68	336	7	—
Private household workers	301	111	10	—	291	111
Child care workers	125	82	1	—	124	83
Housekeepers	60	128	2	—	58	127
Cleaners and servants	111	127	6	—	105	128
Farm workers	765	190	686	192	79	174
Farm laborers, wage workers	696	184	623	185	74	170

¹Excludes earnings from self employment.

²Includes data for occupations not shown.

NOTE: n.e.c. = not elsewhere classified. Dashes indicate earnings not shown where base is less than 50,000.

sales clerks, with a median of \$188, a small proportion (about 1 percent) reported earnings of \$900 or more, but a much larger proportion (81 percent) had earnings under \$300 and some (29 percent) were under \$150.

As shown in table 3, 1 of 3 full-time wage and salary female workers earned under \$200 a week, compared to 1 of 8 men. For most of the major occupational groups, women were 2 to 5 times as likely as men to earn under \$200. Only for the three lowest paying groups was the ratio at or below 2. At the upper end of the earnings distribution, men were at least twice as likely as women to earn \$500 or more for each of the major groups.

The data thus show that differences by sex are greater at the extremes of the earnings scale than a comparison of medians alone suggests. These large differences persist even among the detailed occupations. In each of the 10 lowest paying and the 10 highest paying occupations in which 50,000 or more of each sex were employed, women were far more likely than men to earn under \$200 and far less

likely than men to earn \$500 or more. However, among the lowest paying occupations, the proportion of women to that of men earning under \$200 generally was lower than was the case among the higher paying occupations. This may reflect, as with teenagers, some effect of the minimum wage on large differences at the low end of the earnings spectrum.

Another way to look at earnings differences is to find the top decile of women's earnings and ascertain how much a woman must earn to be among the highest 10 percent of women in an occupation, and then estimate the proportion of men who are earning at least that level. For most major occupational groups, about 40 percent of the men earn at least as much as the highest 10 percent of women workers. (See table 4.)

Unfortunately, this type of analysis cannot be extended to the 10 lowest and highest paying of each of the detailed occupations because of the relatively few sample observations in the vicinity of the top decile boundary. (Observations tend to be clustered near average earnings values.)

However, an examination of the seven three-digit occupations in table 4 in which at least 250,000 workers of each sex were employed in 1982 produced results similar to those for the major groups.

Job and occupational tenure

Questions on both job and occupational tenure were asked in a special CPS supplement conducted in January 1983. Job

tenure differs from occupational tenure in that it refers to the time spent with the current employer, while the latter refers to the number of years in the same occupation without regard to the number of employers. Job tenure results showed that men had been with their current employer an average of 5.1 years, compared to 3.3 years for women. Men in each 10-year age group 35 years and over also had more seniority with their employer than did women. Up to about the mid-30's, job tenure does not differ significantly by sex.⁹

In a study of the effect of occupational tenure on the male-female earnings gap, Nancy Rytina found that the combination of potential work experience (age minus years of schooling minus 6), tenure in the same three-digit occupation, marital status, part- versus full-time employment, residence, and major occupation and industry group accounted for 25 percent of the wage difference between the sexes.¹⁰ However, occupational tenure alone accounted for 4 percent of the gap.

The CPS contains no information about the work history of an individual which may encompass several jobs of different but closely related titles and several employers. Clearly, differences in skills and other aspects of career development accumulated over the worklife may have more impact on current earnings than the length of time spent working in the current occupational field or for the current employer.

Several studies of work history have analyzed other measures of education, training, work history, and labor force attachment—most of which are not available from the CPS—to explain wage differences by race and sex. For example, in an analysis of work history and other data, Mary Corcoran and Greg Duncan explained 44 percent of the hourly wage gap between white men and women. Tenure with the current employer prior to the present position, combined with the number of years of training completed in the present position, explained 23 percent of the gap. Although post-training job tenure in the present position contributed to higher wages, it did not explain any of the wage gap between the sexes. An additional 8 percent of the gap was associated with the number of years of worklife that were at full-time jobs.¹¹

Industry

Data from a BLS survey of business establishments illustrate the extent to which employed women are concentrated in lower paying industries and underrepresented in the higher paying ones.¹² In a ranking of 52 industries (from the July 1982 establishment survey), the apparel and other textile industries ranked first in female employment (82 percent) but ranked 50th in average hourly earnings. Conversely, the bituminous coal and lignite mining industry ranked 52nd in percentage of women employees (5 percent) but first in average hourly earnings.

Current Population Survey data amplify the above findings, showing that women are less likely than men to be employed in mining, durable goods manufacturing, trans-

Table 3. Median usual weekly earnings of women and men, and percent earning under \$200 and \$500 or more in major occupations and in selected low- and high-paying occupations, full-time workers, 1982 annual averages

Occupation	Median usual weekly earnings	Percent under \$200		Percent \$500 or more	
		Men	Women	Men	Women
Major occupation groups					
Total	\$309	12.7	32.7	26.7	6.0
Professional and technical workers	410	3.4	8.8	47.8	15.6
Managers and administrators, except farm	430	3.2	16.2	51.3	14.9
Salesworkers	317	11.8	45.8	32.6	7.5
Clerical workers	248	13.0	30.3	16.5	2.4
Craft and kindred workers	375	7.0	28.4	23.9	7.7
Operatives, except transport	252	16.7	50.7	10.1	1.0
Transport equipment operatives	323	14.4	35.3	16.6	6.8
Nonfarm laborers	243	32.3	47.5	5.9	1.5
Private household workers	111	(1)	90.7	(1)	0.3
Other service workers	207	31.9	61.7	7.8	0.8
Farm workers	190	53.8	62.0	1.6	—
Lowest paying occupations²					
Waiters	158	36.1	77.5	6.0	—
Food service workers, n.e.c.	169	60.6	75.1	2.8	0.5
Cashiers	176	52.7	66.3	5.4	0.2
Cooks, except private household	180	47.4	76.3	0.3	2.8
Nursing aides, orderlies, and attendants	182	43.2	65.1	2.5	0.1
Farm laborers	184	57.8	63.5	1.0	—
Sales clerks, retail trade	188	34.5	71.0	8.8	1.2
Building interior cleaners, n.e.c.	192	41.0	66.2	3.8	—
Bartenders	196	37.9	65.9	4.6	—
Personal service workers	202	33.2	56.1	7.6	3.1
Highest paying occupations²					
Lawyers	626	2.3	3.0	74.8	48.5
Engineers	586	0.4	1.3	71.3	45.0
Computer systems analysts	539	—	4.6	66.9	35.4
Life and physical scientists	519	4.0	11.1	59.1	31.5
Social scientists	518	1.8	2.3	61.8	35.2
School administrators, elementary and secondary	517	0.6	20.7	65.2	28.7
Operations and systems researchers and analysts	508	1.3	2.7	61.6	28.8
Physicians, dentists, and related practitioners	507	1.8	7.5	55.2	37.5
Teachers, college and university	499	2.6	6.4	56.1	32.7
Bank officers and financial managers	471	0.7	7.6	63.6	18.2

¹Percent not shown where the base is under 50,000 workers.

²Occupations in which at least 50,000 of each sex are employed.

NOTE: Dashes indicate zero or rounds to zero.

portation and public utilities, and the Federal Government—groups in which women's earnings are relatively high. A redistribution of female employment to that of male employment among an all-inclusive list of 15 private industry groups and the three levels of government would raise the 1982 sex-earnings ratio 1.0 percentage point, or \$4. However, if the standardization exercise is done on a more detailed list of 46 industry groups in the private sector and 14 groups among government, the median usual weekly earnings of women would rise by \$11, narrowing the sex-earnings ratio by 2.9 percentage points.

Hours worked

To facilitate comparisons among groups, analysis in this article is restricted to full-time workers—those who usually work 35 hours or more per week. Even so, full-time earnings vary widely, depending on whether the worker is at the low or high end of the hours range. For example, full-time workers putting in fewer than 40 hours had median earnings of \$230 per week in 1982. For those working 40 hours, the median was \$300, while those usually working 41 hours or more averaged \$400 a week. The fact that men work more hours explains some of the differential in weekly earnings. Among full-time workers, 24 percent of the men, compared to 10 percent of the women, usually worked more than 40 hours per week in 1982. Thus, men could be expected to earn more per week even if both sexes earned the same hourly rate. If the distribution of hours worked by women were the same as that of men, with women's earnings in each category of hours worked unchanged, median usual weekly earnings of women in 1982 would have been \$253, or 68.2 percent of those of men, instead of \$241 or 65 percent. In other words, the \$12 increase would represent 9.2 percent of the earnings gap between the sexes, or 3.2 percentage points.

Because some people may associate working more than 40 hours a week with the receipt of overtime pay, men may be expected to earn more per week than women as a result of such premium pay. However, the data indicate that premium pay for overtime work may not be a contributing factor to the \$12 disparity attributed to differences in hours usually worked. In fact, the opposite may be the case.

May 1978 is the latest date for which CPS data on both weekly earnings and the receipt of premium pay for working more than 40 hours are available. Among workers who put in 41 hours or more during the survey reference week, more than two-thirds of those who *usually* worked 41 hours or more did not receive a premium rate for their long workweeks.¹³ Among those usually working 35 to 40 hours, only about one-third did not receive premium pay. For both groups, those who did receive premium pay usually earned less per week than those not paid a higher overtime rate. This was true for both men and women.

An explanation for this apparent paradox is that higher paying jobs often are salaried, demand more weekly hours,

and are not covered by either collective bargaining agreements or the overtime provisions of the Fair Labor Standards Act. The data show that among those working 41 hours or more during the reference week who *usually* worked 41 or more hours, professional-technical workers and managers-administrators accounted for 14 percent of the population receiving premium pay, but 55 percent of the population not paid higher rates.

The numbers suggest that the effect on women's earnings as a result of their working fewer hours than men is brought about more because women are less likely to hold higher paying jobs which demand long workweeks than the fact that they are less likely to work overtime and receive premium pay. In support of this explanation is the fact that, for workers putting in 41 hours or more a week in May 1978, women were somewhat more likely than men (45 versus 42 percent) to receive premium pay.

Labor force interruptions

The role labor force interruptions play in sex-earnings differences has been analyzed using data which are not available in the CPS. In 1974, Jacob Mincer and Solomon Polachek used data from the 1967 National Longitudinal Survey of Work Experience to suggest that because of depreciation and a shorter overall payoff period, workers who expect to interrupt their careers will have lower investments

Table 4. Top decile earnings of men and women, and percent of men earning as much as the highest paid decile of women for major occupational groups and for selected occupations, full-time workers, 1982 annual averages

Occupation	Lower boundary of top decile		Percent of men earning at least as much as women's top decile
	Men	Women	
Major occupation groups			
Total	\$688	\$437	37
Professional and technical workers	848	561	37
Managers and administrators, except farm	¹ 900 +	568	40
Salesworkers	790	440	40
Clerical workers	571	386	42
Craft and kindred workers	616	470	29
Operatives, except transport equipment	502	338	43
Transport equipment operatives	569	445	24
Nonfarm laborers	448	355	25
Private household workers	(²)	197	(²)
Other service workers	469	295	38
Farm workers	315	285	14
Selected occupations³			
Accountants	776	532	39
Secondary school teachers	637	567	18
Sales clerks, retail trade	482	290	37
Assemblers	477	362	40
Cooks, except private household	358	243	34
Checkers, examiners, and inspectors	540	380	45
Bank officers and financial managers	¹ 900 +	597	46

¹Earnings of \$900 or more. Decile boundaries are estimated using linear interpolation of \$50- and \$100-wide intervals. Since the \$900+ interval is open-ended, the boundary cannot be estimated.

²Decile boundary and percent not estimated where base is under 50,000.

³Occupations in which at least 250,000 of each sex are employed.

in human capital than those who expect no interruptions.¹⁴ In 1981, Polachek showed that if the cost of withdrawing from the labor force varied among occupations and lifetime labor force participation differs among individuals, an individual will choose occupations which result in the smallest atrophy penalty (depreciation and forgone appreciation) in his or her lifetime.¹⁵

Using data from the Panel Study of Income Dynamics, Mary Corcoran, Greg Duncan, and Michael Ponza found that even though women earned relatively lower wages when they returned to work than they had prior to dropping out of the labor force, they experienced a subsequent rapid wage growth (a rebound) such that the net long-term loss from dropping out is small.¹⁶ In addition, they found that depreciation does not differ significantly between "male" and "female" jobs, confirming research by Paula England, who, using data from the National Longitudinal Survey, found that neither the depreciation rate nor returns to work experience were correlated with the percent female in the current occupation.¹⁷ They also showed that there is enough mobility between "men's" and "women's" jobs to suggest that "the use of current occupation as a proxy for occupational history is inappropriate and may provide misleading information about whether job choice is conditioned by expectations about future work or whether experience garnered in 'female' jobs results in lower wage growth and less depreciation than experience garnered in 'male' jobs."

A recap and related issues

Theories such as human capital theory, dual labor markets, and comparable worth all encompass factors that have a bearing on earnings differences between men and women. As discussed, studies focusing on these theories show a great diversity of views and reveal an exceedingly wide variance in the explanatory power of their investigations.¹⁸ Using data from a relatively new BLS earnings series published quarterly, I examined separately certain aspects of employment, and estimated how much the sex-earnings ratio would change if women were distributed in employment more like men. The following summarizes my findings:

	<i>Female-male ratio, median weekly earnings, 1982</i>	<i>Percentage- point change</i>
Actual	65.0	—
Redistributed by:		
Age	65.5	0.5
Years of school (age 25 and over)	64.3	0.5
Occupation	70.1	5.1
Industry	67.9	2.9
Hours worked	68.2	3.2

Although differences in age, years of school completed, industry, occupation, and hours worked each account for a relatively small part of the earnings gap between women and men, it would be inappropriate to accumulate these

Table 5. Median usual weekly earnings of men and women, full-time wage and salary workers, May 1967-78, and quarterly and annual averages, 1979-83

Date	Median weekly earnings			
	Total	Men	Women	Female-to-male ratio
May: ¹				
1967	\$109	\$125	\$ 78	62.4
1969	121	142	86	60.6
1970	130	151	94	62.3
1971	138	162	100	61.7
1972	144	168	106	63.1
1973	159	188	116	61.7
1974	169	204	124	60.8
1975	185	221	137	62.0
1976	196	233	145	62.2
1977	211	252	156	61.9
1978	226	271	166	61.3
1979:				
I	238	290	182	62.8
II	242	295	183	62.0
III	243	298	187	62.8
IV	252	309	192	62.1
Annual average	244	298	186	62.4
1980:				
I	260	315	200	63.5
II	261	317	200	63.1
III	266	321	205	63.9
IV	277	334	211	63.2
Annual average	266	322	204	63.4
1981:				
I	283	342	220	64.3
II	284	343	221	64.4
III	287	345	224	64.9
IV	300	360	232	64.4
Annual average	289	347	224	64.6
1982:				
I	304	363	238	65.6
II	308	370	240	64.9
III	307	371	240	64.7
IV	316	379	248	65.4
Annual average	309	371	241	65.0
1983:				
I	319	385	252	65.5
II	320	383	253	66.1
III	320	388	251	64.7
IV	327	393	260	66.2
Annual average	322	387	254	65.6

¹Data for 1967-78 are not strictly comparable to those for later years.

NOTE: Data are not seasonally adjusted. Earnings data were not collected in 1968.

reductions. They may explain more or less than their sum depending on their interaction. Clearly, there is an overlapping of the individual parts. For example, a redistribution of women among occupations to close the 5.1-percentage-point gap due to occupational differences may also reduce some of the differences in both industry and hours worked as well as any from job or occupational tenure. Although statistical techniques have been applied to various human capital variables (education, on-the-job training, and so forth) using individual CPS records, they cannot establish precisely to what extent the differences in occupations are based on human capital factors alone, as opposed to differences caused by individual selections between higher and lower paying jobs—voluntarily or otherwise—and differences resulting from discrimination in hiring, advancement, and pay scales on the part of employers. The CPS contains no questions on the last factors. Moreover, many components of human capital are not available from either the CPS or other sample

survey data; indeed, some may be virtually impossible to measure.

If an occupation pays little simply because women constitute a large share of the total employed, one may expect the earnings of men employed in these occupations to be lower than those in which men predominate. A simple regression equation shows a weak inverse, but not statistically significant, relationship. The share of women in an occupation was associated with only 1.4 percent of the variance in men's earnings.¹⁹ Thus, this regression alone cannot suggest that employers pay less for certain jobs simply because women predominate in them.

A regression of women's median earnings on the percent employed in a specific occupation (done on 112 occupational titles with 50,000 women or more) does show a significant inverse relationship. The slope of the estimated regression line indicates that for each increase of 10 percent in the proportion of women in the occupation, median usual weekly earnings in 1982 would fall by \$13. The equation accounted for about 19 percent of the variance in women's earnings among these occupations.²⁰ The relationship shows a correlation with, but not a cause for, women earning less than men.

Recent trends

The overall median weekly earnings ratio of women to men employed full time did not change much between 1973 and 1978, fluctuating mostly between 61 and 62 percent. (See table 5.) Among specific age groups, changes were mixed. The ratio of the medians rose for teenagers and for workers 25 to 34 years and fell for those 45 to 54 and 55 to 64. Apparent changes for the remaining groups were not statistically significant.

The overall ratio of female-to-male earnings did change significantly between 1979 and 1982. For workers 25 and over, the sex-earnings ratio rose from 61 to 64 percent, and it rose even after race and years of school completed were taken into consideration. Among whites age 25 and over, women gained relative to men for the educational groups with less than 4 years of college. Although the earnings of women with 4 years or more of college did not advance relative to men, they continued to have a higher sex-earnings ratio (67 percent) than those completing fewer years of school. Among blacks 25 and over, there were apparent gains in the earnings ratio for all educational groups between 1979 and 1982. However, because of their smaller sample size, only gains for those completing 4 years of high school or less are statistically significant.²¹

One possible explanation of the recent rise in the female-to-male earnings ratio could be that there has been a changed mix of occupations. That is, proportionately more women than men may have moved into higher paying jobs. The data, however, do not confirm this. If both women and men age 16 and over in 1982 were distributed among either the major or the two-digit occupational groups as their counterparts were in 1979, with earnings distributions within each occupational group the same as they were in 1982, the ratio of female-to-male earnings would have been 64.9 percent—not significantly different from the actual ratio.

Another factor which could affect the earnings ratio is change in the economic situation, particularly if the unemployment rate and hours worked by men are more sensitive to overall fluctuations than those of women. In such a case, the sex-earnings ratio would have risen as a result of recent recessions if more men than women lost higher paying jobs or had their hours reduced. □

FOOTNOTES

¹Cynthia B. Lloyd and Beth T. Niemi, *The Economics of Sex Differentials* (New York, Columbia University Press, 1979). The table beginning on page 232 summarizes the results of these studies, most of which use multiple regression analysis.

²There were actually 12 such categories in the classification system used for the 1972–82 period, but there are so few farmers and farm managers employed as wage and salary workers that they are combined with the farm laborers and supervisors category.

³See Janet L. Norwood, *The Female-Male Earnings Gap: A Review of Employment and Earnings Issues*, Report 673 (Bureau of Labor Statistics, 1982), pp. 2 and 8; and Carol Boyd Leon, "Occupation winners and losers: who they were during 1972–80," *Monthly Labor Review*, June 1982, pp. 18–28.

⁴Because these proportions exclude the self-employed and unpaid family workers, they differ from those published in the Bureau of Labor Statistics' monthly publication, *Employment and Earnings*, which generally have as a universe all employed persons.

⁵Salesworkers in retail trade, excluding clerks, include such job categories as automobile salesworkers, estimators, comparison and investigative shoppers, and various sales consultants. See U.S. Bureau of the

Census, *1970 Census of Population, Classified Index of Industries and Occupations* (Washington, U.S. Government Printing Office, 1971).

⁶See *Classified Index*, pp. 0–7 and 0–8 for a list of these specialties.

⁷See Michael Finn, "The Earnings Gap: Discrimination or Economic Choices," a paper presented to the Conference on Comparable Worth, sponsored by The Eagle Forum Education and Legal Defense Fund, held in Washington, D.C., October 1983.

⁸The job titles covered are accountant, auditor, attorney, chemist, director of personnel, job analyst, buyer, engineering technician, drafter, computer operator, photographer, accounting clerk, messenger, and purchasing assistant.

⁹U.S. Department of Labor, *USDL News*, 84–86, Mar. 1, 1984.

¹⁰Nancy F. Rytina, "Tenure as a factor in the male-female earnings gap," *Monthly Labor Review*, April 1982, pp. 32–34.

¹¹Mary Corcoran and Greg J. Duncan, "Work History, Labor Force Attachment, and Earnings Differences Between the Races and Sexes," *Journal of Human Resources*, Winter 1979, pp. 3–20.

¹²*The Female-Male Earnings Gap*, pp. 2 and 7.

¹³U.S. Department of Labor, Bureau of Labor Statistics, unpublished

data from the May 1978 Current Population Survey.

¹⁴Jacob Mincer and Solomon Polachek, "Family Investments in Human Capital: Earnings of Women," *Journal of Political Economy*, March/April 1974, pp. S76-S108.

¹⁵Solomon Polachek, "Occupational Self-Selection: A Human Capital Approach to Sex Differences in Occupational Structure," *The Review of Economics and Statistics*, February 1981, pp. 60-69.

¹⁶Mary Corcoran, Greg J. Duncan, and Michael Ponza, "Work Experience, Job Segregation, and Wages," a paper prepared in 1982 for the National Academy of Science Conference on Job Segregation by Sex. Much of the discussion in this section is drawn from this paper.

¹⁷Paula England, "The Failure of Human Capital Theory to Explain Occupational Sex Segregation," *Journal of Human Resources*, Summer 1982, pp. 358-70.

¹⁸For an example of two compendiums espousing different viewpoints on comparable worth, see Donald J. Treiman and Heidi I. Hartman, eds., *Women, Work, and Wages: Equal Pay for Jobs of Equal Value* (Washington, National Academy Press, 1981); and E. Robert Livernash, ed., *Comparable Worth: Issues and Alternatives* (Washington, The Equal Employment Advisory Council, 1980).

¹⁹The regression equation for the earnings of men is:

$$E_m = \$398.3 - 0.57 P_i \\ (30.02) \quad (-1.55)$$

where E_m is the usual weekly earning of men, and P_i is the percent of workers in each occupation who are women (numbers in parentheses are T -statistics.) The slope term is not significant at the 0.1 level, and the R -square is only 0.014.

²⁰The regression equation for the earnings of women is:

$$E_f = \$333.9 - 1.28 P_i \\ (21.04) \quad (-5.11)$$

where E_f is the usual weekly earnings of women, and P_i is the percent of workers in each occupation who are women. The slope term is significant at better than the 0.1 level, and the R -square is 0.192. The universe of occupations is those in which 50,000 women or more were employed, either at the three-digit level of detail or the first lower level of detail having 50,000 or more female employees.

²¹See Earl F. Mellor, *Technical Description of The Quarterly Data on Weekly Earnings from the Current Population Survey*, Bulletin 2113 (Bureau of Labor Statistics, 1982), for information pertaining to the merits and limitations of the earnings data from the CPS.

A contemporary social problem

The logic of paying housewives for keeping the work force in good condition is not likely to appeal to either employers or to husbands. And certainly there are many hurdles to overcome. But, who knows, by the 21st century employers may be contributing to a fund to pay for the services supplied to their workers by wives in the home as routinely as they contribute to social security funds, or unemployment accounts. It may be simply a matter of getting used to the idea. Such a system would require conceptualizing housewives as part of the labor force and counting their contribution to the gross national product. It would constitute a major shrinkage of the segment of social life for which the societal model was relevant. With what "unanticipated consequences," we cannot yet say. But if such a system were inaugurated, it would entitle employers to impose standards of performance, the implementation of which would no doubt be rejected by most housewives.

—JESSIE BERNARD

"Between Two Worlds: The Housewife,"
in PHYLLIS L. STEWART and MURIAL G. CANTOR, eds.,
Varieties of Work
(Beverly Hills, Calif.,
Sage Publications, Inc., 1982), p. 89.

Staffing patterns prominent in female-male earnings gap

Earnings differences are relatively small between women and men in narrowly-defined jobs; however, relatively fewer women fill the higher levels of these jobs

MARK S. SIELING

In congressional testimony, Commissioner of Labor Statistics Janet L. Norwood summed up findings on pay differences between women and men by saying: "Women in general earn less than men today and much of the difference is because the jobs that women hold are generally paid at lower rates than the jobs held by men."¹ One need only look at the office setting to understand the strength of this statement: women hold nearly 8 of 10 traditionally lower paid clerical jobs, but fewer than 3 of 10 of the higher paying managerial and administrative positions. Such staffing patterns bring to mind the barriers to women's entry and promotion in higher paying occupations, and the pay differences between the traditionally female-dominated and male-dominated jobs. This article discusses another aspect of gender pay differences: How are women and men paid in jobs they hold in common—to what extent does equal pay prevail for equal work?

Data from the Bureau of Labor Statistics 1981 national survey of professional, administrative, technical, and clerical pay (PATC survey), which covers white-collar employees in medium and large establishments, show that:

- Average pay of men in narrowly defined white-collar occupational skill levels generally exceeded earnings of their female counterparts, but the difference was smaller than other broader-based measurements indicate.

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- Women's earnings were closer to men's when viewed within individual establishments.
- Sizable female-male pay differentials existed within some establishments, but they were not consistently in men's favor.

These findings corroborate other research emphasizing the effect of occupational staffing patterns on female-male

Table 1. Salary levels of women as a percent of the salaries of men, and women's share of total employment in selected occupations, 1981

Occupation	Female-male pay ratio ¹	Female share of total employment
Professional:		
Accountant	83	23
Auditor	86	22
Attorney	78	15
Chemist	75	14
Administrative:		
Director of personnel	87	13
Job analyst	79	62
Buyer	80	20
Technical:		
Engineering technician	85	8
Drafter	82	13
Computer operator	92	34
Photographer	80	7
Clerical:		
Accounting clerk	82	92
Messenger	101	46
Purchasing assistant	74	85

¹Includes data only for workers identified by sex.

Table 2. Female-male pay and employment ratios, 1981

Occupational work level	Average monthly salary ¹	Female-male pay relationship ²	Female share of total employment
Professional:			
Accountant I	\$1,377	99	46
Accountant II	1,679	98	34
Accountant III	1,962	96	19
Accountant IV	2,402	95	11
Accountant V	2,928	90	5
Auditor I	1,364	98	36
Auditor II	1,651	97	27
Auditor III	2,033	92	21
Auditor IV	2,456	90	8
Attorney I	1,873	103	28
Attorney II	2,338	99	24
Attorney III	3,031	95	13
Attorney IV	3,738	94	9
Chemist I	1,508	96	38
Chemist II	1,757	94	29
Chemist III	2,120	93	15
Chemist IV	2,567	92	10
Administrative:			
Buyer I	1,350	96	52
Buyer II	1,689	95	23
Buyer III	2,100	92	9
Director of personnel I	2,321	101	21
Director of personnel II	2,933	94	10
Director of personnel III	3,574	90	7
Job analyst I	1,412	87	75
Job analyst II	1,525	92	85
Job analyst III	1,900	90	66
Job analyst IV	2,393	94	29
Technical:			
Engineering technician I	1,137	97	24
Engineering technician II	1,307	98	17
Engineering technician III	1,527	97	9
Drafter I	923	103	34
Drafter II	1,075	101	26
Drafter III	1,301	96	18
Drafter IV	1,611	94	8
Computer operator I	906	99	37
Computer operator II	1,049	102	49
Computer operator III	1,220	97	35
Computer operator IV	1,475	97	24
Computer operator V	1,733	92	17
Photographer II	1,425	96	6
Photographer III	1,704	106	5
Clerical:			
Accounting clerk I	798	94	95
Accounting clerk II	953	89	94
Accounting clerk III	1,121	89	91
Accounting clerk IV	1,407	84	82
Purchasing assistant I	1,002	93	95
Purchasing assistant II	1,278	87	84
Messenger	783	101	46

¹Includes data for workers not identified by sex.

²Includes data only for workers identified by sex.

pay differentials; that is, for the jobs and types of establishments studied, overall disparities in earnings between women and men appear to be more the result of differences in occupational employment and in advancements within individual occupations than of pay differences within narrowly defined job categories. Moreover, these staffing patterns have changed dramatically over the last decade.

Chart 1 traces the employment of women during the 1970's

in four relatively high-paying professional occupations covered by the PATC survey. Given the influence of seniority on progression within occupations, growth in women's employment in the experienced work levels has not been as noticeable as at the entry level. For example, in 1981, 46 percent of entry-level accountants were women, up from 14 percent in 1970; at the experienced level (III), the corresponding figures were 19 percent in 1981 and 4 percent in 1970. (Note, however, that the rate of increase in women's employment was, in fact, greater at the experienced level.)

Growth in the employment of women in the professions reflects the increased number of women who have college or advanced degrees and have combined work with family responsibilities. In 1970-71, about 110,000 more bachelor's degrees were conferred on men than on women; in 1980-81, this gap narrowed to about 4,600.² Married women ages 25 to 34 triggered much of the increased labor force participation of women. Moreover, 70 percent of married women with college degrees were either employed or looking for work in 1981; 10 years earlier, the ratio was 50 percent.³

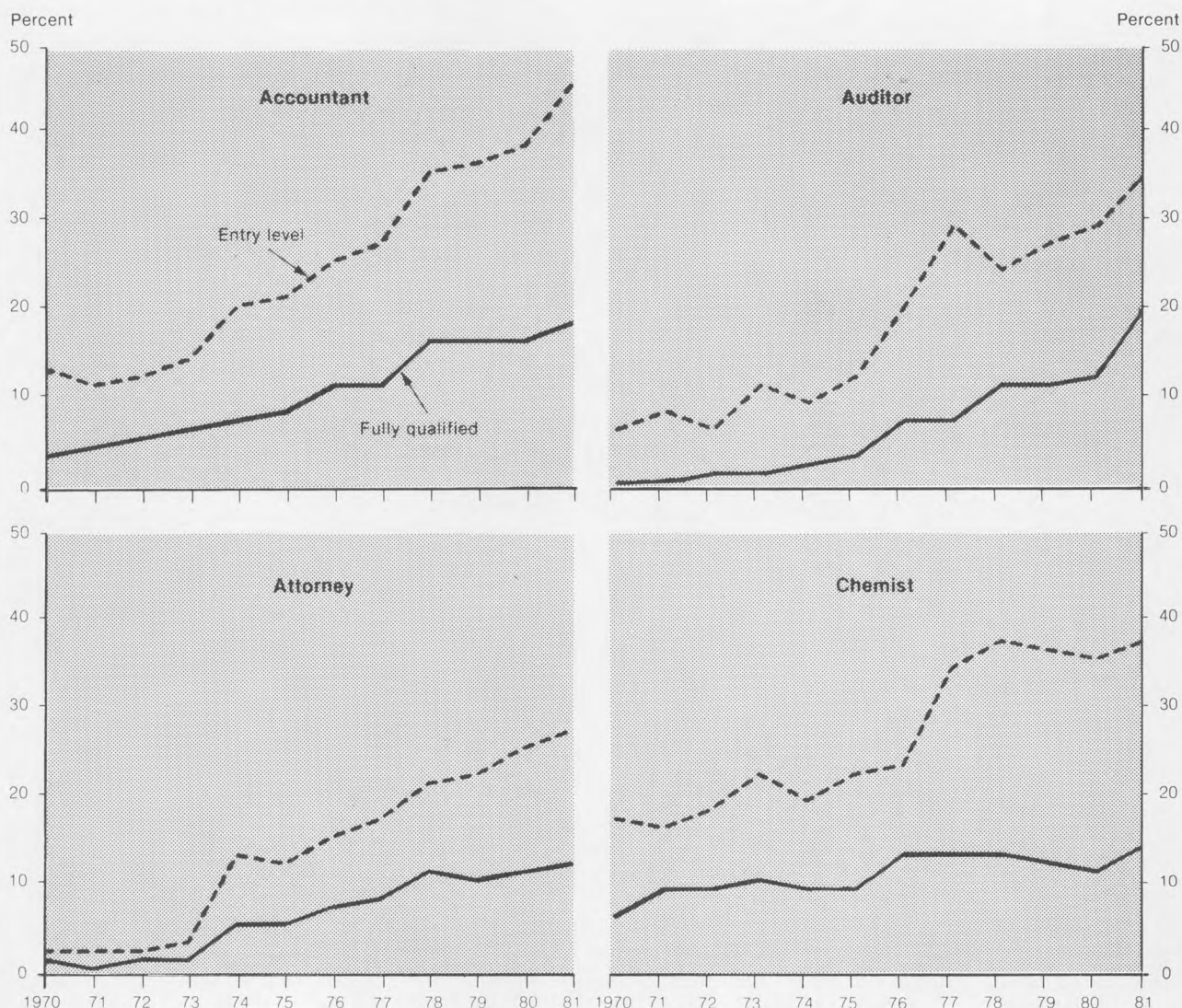
The PATC survey

Findings from the PATC survey, despite certain limitations noted below, provide an opportunity to analyze female-male occupational earnings differences. They provide the kind of detail that separates entry-level, experienced, and senior-level positions within an occupation to control for differences in skill levels, duties, responsibilities, and other job-related factors which help identify "equal work."⁴ Also, the survey obtains data from a sample of establishments, thereby permitting analysis of occupational pay relationships both within individual establishments and among establishments. Because the survey was not designed to compare earnings of women and men, it does not collect information on the reasons for female-male pay differences.

The PATC survey was primarily designed to permit comparisons of occupational pay rates in the private sector with those of the Federal Government.⁵ BLS conducts the survey, but the occupations and coverage specifications, such as establishment size and the private sector industries to be included, are determined by the President's Pay Agent—a tripartite entity consisting of the Secretary of Labor and the Directors of the Office of Management and Budget and the Office of Personnel Management.

The March 1981 PATC survey covered 96 work levels in 23 occupations.⁶ The industrial coverage and minimum size establishment were as follows: manufacturing, 100 or 250 employees; transportation, communications, electric, gas, and sanitary services, 100 or 250 employees; mining and construction, 250 employees; wholesale trade, 100 employees; retail trade, 250 employees; finance, insurance, and real estate, 100 employees; and selected services, 50 or 100 employees.

Chart 1. Women's share of entry level and fully qualified level of employment in selected professional occupations, 1970-81



NOTE: Entry level (I) employees are recent college graduates; fully qualified (level III) employees are experienced nonsupervisory staff.

The relatively small group of occupations surveyed, therefore, are not representative of all occupations, and the medium to large size establishments sampled do not statistically represent those employing under 100 workers or those in industries not covered, such as health and educational services. Information on occupational earnings of women and men working in establishments smaller than those covered by the PATC survey is included in BLS area wage surveys and industry wage surveys.⁷

Each occupational work level represents the type of duties and responsibilities in private industry that are comparable with those of Federal white-collar employees performing

the same level of work. The information on occupational pay relationships between women and men, however, is limited by two factors: many of the jobs surveyed are overwhelmingly populated by either women or men and collection of earnings data by sex is becoming increasingly difficult as such identification of individual workers is often absent from payroll records. Because of these factors, this analysis of female-male earnings differences was restricted to PATC work levels (1) having data identifiable by sex for at least 80 percent of the workers;⁸ (2) having each sex account for at least 5 percent of the workers; and (3) having a minimum of 50 establishments provide pay data for both men and

women when pay comparisons were made within establishments.

The analysis followed a sequential approach that provided some indication of the relative importance of staffing patterns and pay factors in explaining the overall pay differences between women and men.⁹ Average earnings of women and men were compared in a given occupation (for example, accountant); within a narrowly defined skill level of an occupation (for example, entry-level accountant); and within establishments, again using narrowly defined skill levels of an occupation.

Earnings differences

Table 1 presents findings on female-male earnings differences for 14 of the 23 PATC survey occupations. In only one occupation, messenger, did women average more than men. The lowest pay ratios were for purchasing assistants and chemists—where women averaged 74 and 75 percent of their male counterparts' pay. For other occupations, female-male pay relationships ranged from 78 to 92 percent. The data show no correlation between women's share of total employment and female-male pay ratios within occupations. For example, messenger, the occupation with the highest sex earnings ratio, and purchasing assistant, the occupation with the lowest, both ranked among the four highest occupations with respect to female employment.¹⁰

When comparisons are limited to work levels within occupations, relative earnings of women move closer to those of men: 43 of 48 female-male pay ratios reach 90 percent or more. (See table 2.) Thus, the greater earnings disparity shown in table 1 largely reflects an uneven distribution of men and women among the work levels of the occupation—that is, different staffing patterns. For example, a higher percentage of women than men are classified below the experienced level (III) of the four professional occupations surveyed. The following tabulation shows the percent of women and men in both entry and developmental level occupations in 1981:

	Women	Men
Accountants	59	28
Attorneys	60	30
Auditors	60	40
Chemists	47	16

Table 2 also shows the share of female employment in each work level. Consistently, the share for women was smallest at the highest levels of the occupation and, except for two occupations, was largest at the lowest levels. Salaries, of course, increased progressively from bottom to top.

The data in tables 1 and 2, however, are influenced by the distribution of women and men among establishments with differing pay scales. Table 3 eliminates these disparities by focusing on wage relationships within individual establishments with both women and men in the same occupa-

tional work level.¹¹ It displays the range of female-male pay ratios developed for such establishments, the frequency with which these ratios are at or near 100, and the tendency—particularly in professional and administrative jobs—for the percentage of establishments with low pay ratios to increase at the higher levels of an occupation. For example, among entry-level accountants (I), women averaged less than 85 percent of men's pay in 2 percent of the 260 establishments employing both women and men in the job. At the senior accountant level (V), 13 percent of 75 establishments had female-male pay ratios under 85. At the upper extreme, 7 percent of the establishments reported entry-level female accountants averaging at least 110 percent of their male counterparts; at the senior accountant level, 4 percent of the establishments had ratios of 110 or higher.

Table 3. Average salary relationship of women and men employed in the same job and establishment, selected occupational work levels, 1981

Occupational work level	Number of establishments	Percent of establishments with average female-male pay ratio of—						
		Under 85	85 to 89	90 to 94	95 to 99	100 to 104	105 to 109	110 and over
Professional:								
Accountant I	260	2	5	16	30	29	11	7
Accountant II	338	5	8	17	27	26	12	6
Accountant III	417	10	12	19	25	16	11	6
Accountant IV	220	11	11	24	25	16	7	6
Accountant V	75	13	21	25	23	9	4	4
Auditor I	58	—	3	10	34	29	12	10
Auditor II	91	3	10	19	29	19	12	9
Auditor III	104	10	14	13	35	13	10	5
Attorney II	67	9	4	25	18	22	12	9
Attorney III	68	9	12	24	22	22	7	4
Chemist I	51	—	10	27	27	22	8	6
Chemist II	92	5	4	22	29	26	9	4
Chemist III	93	6	11	19	33	17	6	6
Chemist IV	71	8	18	20	28	20	3	3
Administrative:								
Buyer I	104	8	14	13	20	27	8	11
Buyer II	264	10	12	22	26	17	6	7
Buyer III	183	14	17	29	19	14	3	4
Technical:								
Engineering technician I	71	4	4	8	30	25	17	11
Engineering technician II	139	3	7	11	32	31	10	6
Engineering technician III	143	5	8	12	38	27	8	3
Drafter II	178	3	3	15	28	33	10	8
Drafter III	233	4	6	16	33	24	11	6
Drafter IV	192	3	8	15	28	35	8	4
Computer operator I	93	1	1	18	22	35	11	12
Computer operator II	178	1	5	12	24	31	11	16
Computer operator III	403	4	6	13	28	29	10	10
Computer operator IV	243	5	8	17	29	25	9	6
Clerical:								
Accounting clerk I	95	5	6	11	18	22	23	15
Accounting clerk II	322	5	3	10	29	25	15	14
Accounting clerk III	319	5	5	14	23	29	12	11
Accounting clerk IV	212	4	7	13	26	30	13	7
Messenger	204	3	6	12	25	30	9	13

NOTE: This table is limited to establishments employing both women and men in the same occupational work level. For each establishment and work level studied, mean salaries were computed separately for women and for men. The mean for women was then expressed as a percent of the corresponding mean for men. Because of rounding, sums of individual items may not equal 100.

An earlier BLS study, based on area wage survey results, also found considerable diversity among establishments with respect to female-male pay differences, but the extent of these differences varied by industry division and geographic region.¹² (The PATC survey sample is not designed to permit analysis of industrial and regional differences.)

Range-of-rate pay systems partly explain why women and men may have different earnings, even when they work in the same establishment and in the same narrowly defined jobs. Such pay systems typically establish minimum and maximum pay rates for a company job and provide for periodic wage increases within this range based on an employee's length of service or job performance, or both.¹³ Employees in entry and developmental levels of professional jobs normally advance to higher work levels before pro-

gressing very far into their rate ranges. This pattern changes abruptly at the experienced levels, as opportunities for promotion diminish. Those who are not promoted progress through the rate range of their current job level, increasing the variation of earnings among incumbents.¹⁴ Because women tend to have less seniority than men in experienced work levels, they also tend to have lower pay levels when pay is related to years of service. Tables 2 and 3 illustrate this point by generally showing smaller female-male pay differences in lower work levels where seniority distinctions between men and women are less significant. More detailed consideration of this point is not possible here because the PATC survey does not collect information on workers' seniority.¹⁵ Other explanations for female-male pay differences also are beyond the scope of this analysis. □

—FOOTNOTES—

¹Statement before the Committee on Post Office and Civil Service, Subcommittee on Human Resources, Civil Service, and Compensation and Employee Benefits, U.S. House of Representatives, Sept. 16, 1982. Subsequently, this formed the basis for *The Female-Male Earnings Gap: A Review of Employment and Earnings Issues*, Report 673 (Bureau of Labor Statistics, 1982).

²See *Digest of Education Statistics* (Washington, National Center for Education Statistics, 1983).

³See *Educational Attainment of Workers, March 1981*, Bulletin 2159 (Bureau of Labor Statistics, 1983).

⁴See *National Survey of Professional, Administrative, Technical, and Clerical Pay, March 1981*, Bulletin 2808 (Bureau of Labor Statistics, 1981), pp. 36–71, for descriptions of occupations surveyed. Several of the occupations in the PATC survey have exclusions that help narrow their definitions. For example, the accountant definition does not cover workers whose principal or sole duties are designing or improving accounting systems or other nonoperating staff work, such as budget or financial analysis. In addition, workers without college degrees are almost always excluded from the professional jobs studied.

⁵U.S.C.5301 (a) (3). The role of the PATC survey in the pay-setting process is described in George L. Stelluto, "Federal pay comparability: facts to temper the debate," *Monthly Labor Review*, June 1979, pp. 18–28.

⁶PATC work levels are identified by Roman numerals, the higher the numeral the greater the duties and responsibilities. The number of work levels varies by occupation, ranging from 1 for messenger to 8 for chemist and engineer. For professional occupations, the first two levels are entry and developmental positions; the next two are for experienced workers; and higher levels generally are for supervisory or managerial positions.

⁷For a list of these surveys, see *Directory of Occupational Wage Surveys, 1974–79*, Report 609 (Bureau of Labor Statistics, 1980). Area wage survey findings are analyzed in John E. Buckley, "Pay differences between men and women in the same jobs," *Monthly Labor Review*, November 1971, pp. 36–39. Occupational earnings data by sex are also available from the household-based Current Population Survey, although without the detailed job definitions used in establishment-based occupational wage surveys. For an analysis of CPS data, see Nancy Rytina, "Earnings of men and women: a look at specific occupations," *Monthly Labor Review*, April 1982, pp. 25–31.

⁸The 1981 PATC survey reports salary data for nearly 1.8 million employees, about nine-tenths of whom were identified by sex. Those identified by sex were divided about evenly between men and women.

⁹Many studies employ multiple regression techniques in efforts to account for earnings differences between men and women. These analyses, often based on data collected in the Current Population Survey, use as explanatory variables such personal characteristics of workers as job tenure and educational attainment. A broadly defined occupational variable, along with such worker characteristics, is at times included in a wage regression. Nevertheless, except as modified by merit or length-of-service adjustments under rate-range systems, pay rates typically are set for individual jobs, rather than for the workers filling them. Worker characteristic variables thus may function in regression models both as proxies for occupation and as measures of productivity or skill differences among incumbents within a job. For a review of this research, see *Women, Work, and Wages: Equal Pay for Jobs of Equal Value* (Washington, National Academy of Sciences, 1981). See also Wesley Mellow, "Employer Size, Unionism, and Wages," in supplement to Vol. VI of *Research in Labor Economics* (Greenwich, Conn.: JAI Press, 1983).

¹⁰For the 14 occupations, the coefficient of correlation between female-male pay relatives and female share of total employment was only -0.07 , which clearly is not statistically significant.

¹¹As in other BLS wage surveys, the PATC job descriptions are usually more generalized than those of individual establishments.

¹²See Buckley, "Pay differences."

¹³In the 1968–70 period—the latest time for which data are available—approximately two-thirds of the office workers in metropolitan areas were paid under range-of-rate plans. See John Howell Cox, "Time and incentive pay practices in urban areas," *Monthly Labor Review*, December 1971, p. 54.

¹⁴In some instances, a PATC survey occupational work level includes more than one company job title, for example, technicians and supervisors in an establishment that meet the survey job description for accountant IV. If rate ranges differ for company jobs matched to the same PATC work level, this adds to the potential for earnings variation.

¹⁵For a general discussion of seniority differences between men and women, see *Job Tenure and Occupational Change, 1981*, Bulletin 2162 (Bureau of Labor Statistics, 1983).

Conference Papers



The following excerpts are adapted from papers presented at the Thirty-Sixth Annual Meeting of the Industrial Relations Research Association, December 1983, in San Francisco.

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

Industrial relations research: its postwar contributions

CLARK KERR

This first contribution of an applied and specialized field of study, such as industrial relations, is to provide a running description of and commentary upon current developments. This is the role of the analytical historian of contemporary events or, more modestly, of the high-level journalist describing and explaining what is happening more or less as it happens. This is a very important role. It keeps other scholars informed of developments for the sake of their teaching and research. It contributes facts and understanding to practitioners and to policymakers in the field. It adds to the quality of public perceptions of developments both directly and indirectly. It provides historians of the future with a rich store of information and analyses. Industrial relations research in the United States has played this role since World War II most effectively. A large volume of articles and books has examined all aspects of the field quite adequately and generally quite impartially. There is no need for any interested person to be ignorant of any important, and even many unimportant, developments. An impressive layer of records has been compiled for current and future use.

Yet some criticisms may be advanced. Reflecting back

Clark Kerr, former president of the University of California, is a professor at the Institute of Industrial Relations, Berkeley. The title of his full IRRA paper is "A Perspective on Industrial Relations Research—Thirty-Six Years Later."

on the literature as published and reviewed in the leading journals and at the annual meetings of the Industrial Relations Research Association, one cannot miss seeing the rise and fall of interest in certain subjects—in the operation of unions at one time, in manpower planning at another time, in discrimination in the labor market at still another time, and so forth. These waves of interests are both understandable and regrettable. They reflect the current issues before society, but they deny constant attention to some long-term developments. Attention has focused now here, now there; and when picked up again in an old area by a new generation of scholars they seem often to make no connection with what was seen and thought the last time around. Related to this faddish nature of attention is the observation that so many subjects are treated in so many articles (particularly by econometricians) with little historical depth or little horizontal comparison to other similar contemporary developments—little self-contained compartments unrelated to time or to place; little dots of data analysis not located vertically or horizontally on the great map of social experience. May I also suggest, looking at this body of literature over many years as an observer and occasional participant, that much of it, and perhaps even more of it than in earlier times, seems to be written to prove a point of view, mostly either neoclassical or Marxist, or to demonstrate mastery of a technique, like econometrics, than to give fresh and fully rounded illumination to the subject matter.

Policy formation

A second contribution is to be useful in policy formation. Industrial relations research and commentary has had one, but only one, spectacular success. This was the contribution of the Wisconsin School to two related but separable developments. One was to the introduction of the welfare state to the United States. Members of the Wisconsin School contributed many of the ideas, in their American formulation, and many of the persons who actually implemented these ideas. The other was to the official acceptance and even encouragement of the trade union movement in the United States. This may yet prove to be even more important than the former. For it may turn out to be the first step toward a new form of capitalism and even of political governance in the United States by establishing part of the

framework for the tripartite corporation state, as has developed, for example, in Austria, Sweden, and Germany; although this evolution now seems to have been set back temporarily at least. These two contributions together constitute certainly one of and perhaps even the greatest of all contributions of American social scientists to national policy.

Industrial relations research, however, made no major contribution to the other great revolution of recent times in American economic behavior—the Keynesian revolution, except for John T. Dunlop's important but relatively minor correction of Keynes. It might have done so, but it largely has not. One of the failures of the macroeconomy theory of the Keynesians has been that it has not been grounded in adequate microeconomy theory, including the behavior of labor markets. For Keynes, inflation would only commence as bottlenecks began to appear as full employment was approached. He did not contemplate the possibility of stagflation, and it had, of course, not yet evidenced itself when he wrote *The General Theory*. His followers, however, facing the fact of stagflation, have not had an adequate microeconomy theory to explain it or to suggest solutions, although this is beginning to change.

In the interim, industrial relations research, very broadly interpreted, has made contributions to some less significant new policies. It has helped to elucidate the contribution of education to skill and of skill to productivity and thus encouraged the heavy investment in education, particularly in the 1960's. It has helped to indicate the degree of discrimination by race and by sex in labor markets and thus encouraged policies of affirmative action. It has helped to search out and to extend good practices in improving the quality of working life. It has sought out and encouraged better management practices toward workers, as, for example, it did early on in the "human relations in industry" and in the theory "y" versus theory "x" analyses of management approaches. These are not inconsiderable contributions.

The big policy issue is now stagflation, the equivalent of the Great Depression of the 1930's as a challenge waiting a solution. Here the study of industrial relations can make a very great contribution both in understanding this phenomenon and in solving the policy puzzle of how full employment and stable prices can coexist. The Phillips curve once looked like both an adequate explanation and an acceptable cure by showing the tradeoff between inflation and unemployment, but the tradeoff now both explains less and cures less but at more cost. Industrial relations research can contribute part of the explanation as it discovers and explains the realities of labor markets, particularly of internal labor markets, and of wage-setting policies by firms, unions and governments; and possibly part of the cure as it studies the intricacies of incomes policies and their attendant social conditions and arrangements, and as it studies the means for increasing labor productivity. In these ways less inflation

and more employment can possibly be made more compatible. Here we are, however, dealing at the microeconomy level and no big solution, as with Keynes at the macroeconomy level, is possible.

The relationship to theory

The third potential contribution of an applied and specialized field is to theory. Such a field can (1) test the explanatory power of an existing theory against actual practice, can (2) contribute better assumptions to modify an old theory or create a new theory, and can (3) bring to light new problems to be explained. It can also (4) extend an old theory into explanations of further corners of practice. Industrial relations research has only been clearly successful in the last of these contributions as the neoclassical labor economists have applied their system of analysis, particularly to a deeper understanding of the supply of labor. Industrial relations research has long sought to alert theorists to the inherent nature and the changing natures of labor markets, but few of the theorists have really listened—John R. Hicks and Arthur Okun are prominent among those who have. Now stagflation is forcing them to listen as mass unemployment made them listen to new explanations during the Great Depression.

I SHOULD LIKE TO DRAW a few lessons from this short review:

- Theorists like to hear what they want to hear.
- Only *in extremis* will they listen to what they do not want to hear and particularly from scholars in applied fields.
- Interdisciplinary barriers are easier to raise than to lower. Only in biology are the old vertical barriers being torn down among fields, but only as new barriers are being built horizontally by levels of complexity of organisms. It is easier to prove once more or to extend into new areas of exploration an old theory, whether neoclassical or Marxist, than to create a new theory or even new explanations below the level of a general theory.
- Curiosity about historical antecedents before the current event and about comparative experiences beyond the immediate event under study does not seem to flourish in the current ambience of scholarship. Both Karl Marx and Joseph Schumpeter are at least temporarily out of style, as are Adam Smith and Alfred Marshall—all of them were concerned with philosophical issues, with historical changes, with the political and sociological conditions surrounding economic life.
- Policy advice can only be effective when policies are about to be made anyway because of the force of circumstances. Policy advice is of no value outside this context no matter how intrinsically good the advice may be.

- The “pure” knowledge of the mathematical economist and what might be called the “bounded” knowledge of the econometrician (bounded by a limitation to only such evidence as is quantifiable) are both more in demand and easier to supply than the “realistic” knowledge of the person who contacts reality at first hand in all its complexities, such as the researcher in industrial relations.

These half-dozen lessons were not so clear 36 years ago to those of us who started the Industrial Relations Research Association. In retrospect, I think I am glad they were not, but I am not sure—we might have been too discouraged by contemplating them; however, we might have been much more sophisticated in our efforts. In any event, always in the midst of less than perfect knowledge, each new generation of industrial relations scholars must answer for itself what problems are most worth solving, what methods are most likely to be most effective, and what efforts are most worth making. □

Young discouraged workers: racial differences explored

DONALD R. WILLIAMS

The “discouraged worker” effect, defined to be the observed decline in labor force participation rates associated with increases in unemployment rates, is frequently an important topic for discussion in both academic and political circles. One reason for concern is that the effect seems to differ across demographic groups. The labor force participation of women and teenagers, for instance, is often found to be more responsive to changes in employment opportunities than is the participation of white prime-aged males.¹ This can lead to differentials in the accumulation of human capital through on-the-job training, and the understatement of “unemployment” during periods of loose labor markets.

A recent study has shown that, among the male teenage group, significant differences also exist by race. The participation rate declines with rising unemployment for both whites and blacks, but the magnitude of the response differs by a factor of up to 5 to 1, with black youth exhibiting the “stronger” response.² To expand on these findings, a time-series analysis of Current Population Survey gross change data for the 1972–82 period was conducted.³ The objectives of the analysis were to estimate the degree to which the rates of flow by individuals among labor force states respond to changes in employment opportunities, and to identify which of these flows contribute most to the racial difference in the discouraged worker response.

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The gross flow approach

By definition, an individual can occupy one of three states at any time: employment (E), unemployment (U), or non-participation in the labor force (N). Over time, he or she makes transitions between those states and contributes to flows into and out of the labor force that determine the levels of and changes in labor force participation rates. The probability of making such a transition in a specified time interval is simply the number of people who make the transition, divided by the total number of people in the original state. Letting λ_{ij} be the probability of making a transition from state i to state j , we can express the six possible transition probabilities as λ_{EU} , λ_{EN} , λ_{UE} , λ_{UN} , λ_{NE} , and λ_{NU} .

The importance of these flow probabilities or “transition rates” lies in the fact that they determine the numbers of people in each of the states E , U , and N at a point in time and, hence, the labor force participation rate. That relationship can be expressed fairly simply.⁴ As a result, changes in participation rates across demographic groups can be linked to changes or differences in transition probabilities. In general, the labor force participation rate for a demographic group will vary directly with λ_{NE} , λ_{NU} , and λ_{UE} , and inversely with λ_{EN} , λ_{UN} , and λ_{EU} .

Determinants of transition rates

Each of the transition probabilities is determined by factors falling into two broad categories: those that affect the levels and frequencies of wage offers made by firms, and those that affect the “value” for workers of nonmarket activity (leisure). The demand for a firm’s product and the (perceived) productivity of a worker are examples of the former. Unemployment insurance, schooling, and marital or parental status are examples of the latter. Some factors fall into both categories.⁵

Expectations about the effects of these factors on transition rates are not always clear, but under standard assumptions one may postulate three hypotheses:⁶

- (1) Those factors that decrease the levels of wage offers by firms should increase the probability of making the U -to- N transition because the returns to job search have declined. Likewise, because employed workers will be less likely to quit work to search for another job and unemployed workers will be less likely to accept a job, the E -to- N , E -to- U , and U -to- E rates should decline. Individuals not in the labor force will also see lower returns, so that N -to- U and N -to- E transition rates should also be lower.
- (2) Those factors that decrease the probability or frequency of wage offers are hypothesized to have a two-fold effect. First, given a level of job search intensity, expected returns to search are lower. That, however, could increase the returns to greater intensity of search.

Assuming that the first effect dominates, we should predict the same effects on transition rates as in hypothesis (1): higher λ_{UN} and lower λ_{EU} , λ_{UE} , λ_{NU} , and λ_{NE} .

- (3) Factors that increase the value of nonmarket activity should decrease the rate of flow out of nonparticipation and increase the rates of flow into it. Factors that at the same time lower the costs of job search (or subsidize search) will have an ambiguous effect with regard to the N -to- U and U -to- N transitions, but can be expected to decrease the U -to- E transition rate.

The level of aggregate demand can affect the various transition rates through each of the channels above. First, a decline in aggregate demand can depress the levels of wage offers made by firms, leading to the effects described in hypothesis (1) above. In the extreme, however, wage offers fall to zero through firing or layoff, in which case not all of the predictions in hypothesis (1) will hold. In particular, an increase in firings or layoffs should boost the E -to- N and E -to- U transition rates. Second, a decline in aggregate demand should also reduce the probability or frequency of given wage offers, and thus have the effects described in hypothesis (2). Third, a decline in demand can bring about the unemployment of a spouse or parent, which can lead to decreases in the value of a worker's nonmarket activity and corresponding increases in transitions from N to U and E . The effects of changes in aggregate demand therefore depend on the relative magnitudes of the responses described above. In addition to developments in aggregate demand, the effects of four other variables are also estimated for analysis. The variables are: the minimum wage, the level of female labor force activity, the level of Aid to Families with Dependent Children (AFDC) payments, and the existence of the Youth Employment and Demonstrations Projects Act.

The minimum wage variable can be used to test two of the above hypotheses. To the extent that the minimum acts as a proxy for wages offered by firms to teenagers, a rising minimum can be thought of as rising wages, inducing participation. On the other hand, to the extent that it lowers demand for teenage labor, it diminishes the probability of a teenager receiving a job offer, which can reduce flows into the participation states and increase flows out of them.

The female labor force activity variable is included to account for this latter effect. If teenagers and women are close substitutes in production then, given a level of aggregate labor demand, the increased labor force participation of women should decrease the probability of job offers to youth, and the predictions in hypothesis (2) above should result.⁷ However, the increased labor supply of women can also have the effects described in hypothesis (3), to the extent that the working women are also teenagers' mothers.

The AFDC variable is included to account for its effects on the value of nonmarket time. The direct effect of AFDC

payments is to increase household income or wealth. Any nonmarket income is seen to increase the value of one's nonmarket activities, and so should decrease flows into and increase flows out of labor force participation. Because AFDC can be seen as reducing or subsidizing the costs of job search, it could lower the U -to- E transition rate.⁸

The Youth Employment and Demonstrations Project Act of 1977 served to create more than 200,000 jobs for inner city youth, and so should have boosted the frequency of job offers, particularly for black youth. The overall effect of the program should, therefore, be to increase flows into the labor force after implementation in September 1977, and decrease flows out of it.

Empirical analysis

The effects of the variables above on transition rates were estimated from the following equation:⁹

$$\begin{aligned} \log(\lambda_{ij})_t = & \beta_0 + \beta_1 \log(\text{RELMIN})_t \\ & + \beta_2 (\text{WOMEN})_t + \beta_3 \log(\text{AFDC})_t \\ (1) \quad & + \beta_4 (\text{YEDPA})_t + \beta_5 \log(\text{UPRIME})_t \\ & + \beta_6 (\text{TIME})_t + \Gamma (\text{month dummies}) \\ & + u_t \end{aligned}$$

where RELMIN is defined to be the basic Federal minimum wage, relative to the nominal average hourly wage for production and nonsupervisory workers; WOMEN is the female percentage of the total labor force; AFDC is the nominal average monthly AFDC payment, relative to nominal average hourly wages; and YEDPA is the Youth Employment and Demonstrations Projects variable, taking the value 0 for months before September 1977, and 1 thereafter.¹⁰

The proxy variable for the level of aggregate demand is the prime-age male unemployment rate, UPRIME . The dependent variable, $(\lambda_{ij})_t$, is defined as the number of people who moved from state i to state j in month t , divided by the number of people in state i in month $t - 1$.

Results of the regression, presented in tabular form in the full paper, were derived from two specifications of equation (1). The first, a regression of $\log(\lambda_{ij})_t$ on UPRIME and TIME alone showed that decreases in the level of aggregate demand (increases in UPRIME) are associated with decreases in flows into employment, increases in flows from employment to unemployment, and decreases in flows from employment to nonparticipation. This latter effect may be indicative of the propensity for quits to decline as demand falls. The propensity for the N -to- U transition rate to increase as aggregate demand falls may indicate a strong "added worker" effect among male teens. The most perplexing result of this analysis was the tendency, as UPRIME rises, for the U -to- N transition rate to decline for white males. This is interesting because the U -to- N transition is the one most commonly associated with notions of "discouragement." In a 1980 study, Ralph Smith and Jean Vanski found a similar result using a different measure of demand, clearly

suggesting that standard behavioral notions of discouragement may be inappropriate.¹¹

Racial differences existed for many of the effects, in addition to the *U-to-N* difference. The decline in the transition rate from nonparticipation to employment seemed much larger for blacks. And though teens of both races become more likely to make the out-of-the-labor-force to unemployment transition, the response was much less (and statistically insignificant) for blacks.

Estimates using the full specification of equation (1) indicate that these results are confirmed after taking account of the effects on transition rates of the other variables. A major difference is that the sign of the coefficient on *UPRIME* in the *U-to-N* regression changes from positive to negative, with blacks and whites exhibiting the same type of response, although the magnitude of the response is much larger for whites.

Of particular interest is the effect of the influx of women on the male teens' transition rates. An increase in the labor market activity of women is associated with a decrease in flows into employment and an increase in the flow from unemployment to out-of-the-labor-force, particularly for black youth. To the extent that the increased participation of women has been primarily among whites, these results suggest a significant degree of substitution of white women for black teens over the sample period. They could also suggest a significant degree of racial preference on the part of employers. Note that we must be careful when interpreting the results from the full specification of the equation, because *WOMEN*, *AFDC*, and *RELMIN* all probably have some cyclic components. One might wrongly attribute to those variables some of the effects that should instead be attributed to *UPRIME*.

Differences in participation responses

Each of the racial differences in the impacts of changes in *UPRIME* contributes to racial differences in the discouraged worker effect. As *UPRIME* increases, λ_{NE} decreases more for blacks than for whites, λ_{NU} increases more for whites than for blacks, and λ_{UN} decreases more for whites than for blacks. Each of these effects depressed the labor force participation rate more for blacks than for whites. The relative importance of the effects can be ascertained by estimating the change in the 1972–81 average participation rate for each race in response to a 1-percent change in a period-average transition rate. Results of this analysis show, for example, that a 1-percent increase in the *E-to-N* transition rate causes a .2907-percent decrease in the participation rate for blacks and a .2695-percent decrease in the participation rate for whites. Overall, the estimates indicate that given changes in transition rates have greater effects on participation rates for blacks than for whites, for all types of transitions. This is especially true for the *EU*, *UE*, *UN*, and *NU* transitions.

The analysis also suggests that the most important sources of the racial differences in the participation rate response to

a change in *UPRIME* are in the *U-to-N* and *N-to-E* transitions. A 1-percent increase in *UPRIME* lowers the labor force participation rate for blacks by .02 percent through the *U-to-N* transition rate and by .09 percent through the *N-to-E* rate. For whites, a 1-percent increase in *UPRIME* leads to an increase in the participation rate of .002 percent through the *U-to-N* rate, and decreases it by only .05 percent through *N-to-E*.

IN SUM, the differential discouraged worker effect exhibited by black and white male teenagers seems to be the result of racial differences in the magnitudes of the responses to changes in aggregate demand of the nonparticipation-to-employment, unemployment-to-nonparticipation, and nonparticipation-to-unemployment transition rates. The reasons for these differential responses remain unclear; yet, identification of those reasons could answer many important policy questions: Are the differences behavioral? As unemployment rates rise, does the *N-to-E* transition rate decline more for blacks than for whites because whites and blacks place different values on nonmarket time? Or, does the frequency of wage offers decline faster for blacks than for white due, say, to racial discrimination? These and other questions beg further research on this important labor force phenomenon. □

FOOTNOTES

¹ For evidence of these effects by sex and age, see Alfred Tella, "The Relation of Labor Force to Employment," *Industrial and Labor Relations Review*, April 1964, pp. 454–69; Alfred Tella, "Labor Force Sensitivity to Employment by Age and Sex," *Industrial Relations*, February 1965, pp. 69–83; Thomas Dernberg and Kenneth Strand, "Hidden Unemployment 1953–1962: A Quantitative Analysis by Age and Sex," *American Economic Review*, March 1966, pp. 71–95; Jacob Mincer, "Labor Force Participation and Unemployment: A Review of Recent Evidence," in Robert A. Gordon and Margaret S. Gordon, eds., *Prosperity and Unemployment* (New York, Wiley Press, 1966); William G. Bowen and T. Aldrich Finegan, "Labor Force Participation and Unemployment," in Arthur M. Ross, ed., *Employment Policy and the Labor Market* (Berkeley, University of California Press, 1965); William G. Bowen and T. Aldrich Finegan, *The Economics of Labor Force Participation* (Princeton, N.J., Princeton University Press, 1969); and George L. Perry, "Potential Output and Productivity," *Brookings Papers on Economic Activity*, Vol. 1, 1977, pp. 11–47.

² In "Racial Differences in Male Teenage Labor Force Participation," Ph.D. diss. (in progress), Donald R. Williams finds that a 1-percent increase in their own age/race-specific unemployment rates caused .11- and .02-percent declines in the labor force participation rates for black and white teens, respectively, over the 1972–82 period. A 1-percent increase in the prime-age male unemployment rate (the variable used in this analysis) is associated with participation rate declines of .11 percent for blacks and .08 percent for whites. During the last recession, when the prime-aged male rate went from 5.0 percent in May of 1981 to 7.9 percent in June of 1982 (a 58-percent increase), the black teenage participation rate declined from 43.8 to 36.5 percent, a drop of 16.6 percent, or more than 75,000 workers.

³ Data are from unpublished "gross change" tabulations from the Current Population Survey for the January 1972–December 1981 period (Bureau of Labor Statistics). For a description of gross change data, see U.S. Department of Labor, Bureau of Labor Statistics, *Gross Flow Data from the Current Population Survey* (Washington, 1982). Also presented there are descriptions of the biases inherent in the data. The data used in this

paper are the raw data and so are subject to those biases, although the biases should not affect the interpretation of our results.

⁴See Stephen Marston, "Employment Instability and High Unemployment Rates," *Brookings Papers on Economic Activity*, Vol. 1, 1976, pp. 169–203; and Williams, "Racial Differences," for discussions of the exact relationships between labor force participation rates and transition rates.

⁵For example, a decline in aggregate demand may decrease the levels of pay being offered to workers or increase probabilities of layoff, and at the same time decrease the value of a worker's home time due to the unemployment of a spouse. See Shelly J. Lundberg, "Unemployment and Household Labor Supply," Ph.D. diss., Northwestern University, 1981.

⁶I discuss these relationships in general in chapter 4 of Williams, "Racial Differences."

⁷For evidence regarding the elasticity of substitution of women for teenagers, see James H. Grant and Daniel S. Hamermesh, "Labor Market Competition Among Youth, White Women, and Others," *Review of Economics and Statistics*, August 1981, pp. 354–60.

⁸Michael Wachter and Choongsoo Kim argue that as minimum wage programs expand, often other government programs (such as AFDC) are expanded. These programs can have effects which offset those of the minimum wage. See "Time Series Changes in Youth Joblessness," in Richard B. Freeman and David Wise, eds., *The Youth Labor Market Problem* (Chicago, University of Chicago Press, 1982). Charles Betsey and Bruce Danson present results indicating that the biases which result from estimating minimum wage effects without controlling for changes in these other programs can be substantial. See "Federal Minimum Wage Laws and the Employment of Minority Youth," *American Economic Review*, May 1981, pp. 379–84. Therefore, another reason that we want to include AFDC payments is to better estimate the effects of the minimum wage.

⁹Empirical analyses similar to the one conducted here have been done for all race/sex groups, but only through 1976. See Stephen Marston, "Employment Instability"; Ronald G. Ehrenberg, "The Demographic Structure of Unemployment Rates and Labor Market Transition Probabilities," mimeo (Ithaca, N.Y., Cornell University, July 1979); and Ralph E. Smith and Jean E. Vanski, "The Volatility of the Teenage Labor Market: Labor Force Entry, Exit, and Unemployment Flows," in *Youth Unemployment: Its Measurement and Meaning* (Washington, U.S. Department of Labor, 1980).

¹⁰The jobs were created in the summer of 1977, so this variable does not really measure the "direct" impact of YEDPA on labor market transitions. Instead, it simply divides the sample into "pre-" and "post-YEDPA" periods.

¹¹See Smith and Vanski, "The Volatility of the Teenage Labor Market."

Job cuts are only one means firms use to counter imports

ANN C. ORR AND JAMES A. ORR

The Trade Adjustment Assistance program, established in 1962 and greatly expanded in 1974, was designed to reduce the cost of adjustment to workers displaced due to import competition and to make adjustment more palatable through the provision of employment services and income maintenance during their period of unemployment.¹ Alternatively, tariffs, quotas, and other explicit forms of protection have as their objective the protection of employment in an in-

dustry and thus the prevention of adjustment costs, causing trade policy to be described as a "protect vs. adjust" option for the economy.

Overlooked is the role of intra-industry adjustments in the form of factor mobility and declines in earnings of workers remaining employed in the industry. Reductions in wages and compensation can, under certain conditions, substitute for reductions in employment as a means of reducing labor costs. Wage reductions are, of course, not options for all firms. To the extent that the workers' training and experience determine productivity, a wage decline not linked to a decline in productivity will simply cause the workers to move to another firm or industry. Should labor productivity increase, however, as a result of, for example, greater capital investment or more efficient utilization, room exists for varying wage rates to reduce labor costs.

We used several criteria to identify a sample of industries that have experienced relatively strong import competition. Generally, an industry was considered import-sensitive for purposes of this analysis if the import-penetration rate was high and rising over the past decade, or employment in the industry is highly protected by the existing tariff structure. Secular increases in import penetration rates suggest that imports are likely to be permanent features of a market, rather than the result of short-term movements in exchange rates or general demand conditions. Tariff-sensitive employment indicates the combination of a high tariff rate, high import elasticity of demand, and labor-intensive production technologies. Based on the import penetration study of Gregory K. Schoepfle² and the estimates of employment opportunity declines resulting from the Tokyo Round tariff reductions in Thomas Bayard and James Orr,³ we selected 25 3-digit SIC manufacturing industries as import-sensitive over the period 1960–1980.⁴ The industries generally met both criteria. Employment in these industries exceeded 6 million workers, or 30 percent of all manufacturing employment.

An industry was considered to have experienced a decline in employment if there was a reduction of 10 percent or more in the average annual number of workers employed from the industry's pre-1978 peak employment level to 1978. (See table 1.)

An industry was considered to have experienced a wage adjustment if there was a decline of 5 percent or more in its *relative* wage, that is, the wage of the industry expressed as a percentage of the average manufacturing wage. This form of the industry's wage was used to control for both the effects of inflation and manufacturing sector-wide effects on wages.

Regional employment redistribution was measured over the 1972–80 period. It was considered to have occurred if there was both a decline of at least 5,000 workers in an industry in at least two States and a corresponding increase in employment in at least two States of the same amount. The magnitude of the change in the total employment in the

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Table 1. Adjustment characteristics of 25 import-sensitive industries

[Employment in thousands]

SIC code	Industry	Peak year	Relative wages in—		Peak year	Level of employment in—		Significant regional distribution
			Peak year	1978		Peak year	1978	
	Manufacturing	—	—	—	1979	21,000	20,476	Yes
221	Broadwoven fabric mills, cotton	1969	0.73	0.72	1960	245	150	No
222	Broadwoven fabric mills, manmade fiber and silk	1969	0.75	0.73	1978	125	125	No
223	Broadwoven fabric mills, wool	1966	0.76	0.71	1960	57	23	No
224	Narrow fabric mills	1960	0.73	0.64	1969	32	26	No
225	Knitting mills	1970	0.71	0.64	1973	267	240	Yes
226	Dyeing and finishing textiles	1967	0.79	0.74	1973	95	78	No
227	Floor covering mills	1970	0.76	0.71	1973	66	62	Yes
228	Yarn and thread mills	1969	0.68	0.65	1973	159	139	No
23	Apparel	1968	0.73	0.63	1973	1,438	1,333	Yes
224	Wooden containers	1975	0.69	0.66	1973	47	43	Yes
302	Rubber and plastics footwear	1972	0.73	0.61	1973	30	23	Yes
314	Nonrubber footwear	1968	0.72	0.60	1960	245	160	No
326	Pottery and related products	1963	0.93	0.84	1973	48	46	No
331	Blast furnaces and basic steel products	1982	1.57	1.52	1965	660	570	No
354	Metalworking machinery	1970	1.22	1.13	1980	370	350	No
355	Special industry machinery	1972	1.06	1.04	1980	210	200	No
363	Household appliances	1961	1.08	0.93	1973	198	184	Yes
364	Electric lighting and wiring equipment	1965	0.93	0.88	1979	225	220	Yes
365	Radio and TV sets	1960	0.91	0.86	1966	165	120	No
366	Communication equipment	1982	1.13	1.09	1982	560	490	No
367	Electric components and accessories	1961	0.86	0.79	1982	550	450	Yes
371	Motor vehicles and equipment	1977	1.38	1.37	1978	1,000	1,000	No
387	Watches, clocks and parts	1960	0.87	0.70	1969	35	30	No
391	Jewelry	1970	0.92	0.77	1978	65	65	Yes
394	Toys and sporting goods	1970	0.77	0.70	1974	135	122	Yes

industry was not used in constructing the regional adjustment measure.

Relative wage declines most common

Despite the prevalent notion that employment declines are the predominant means of adjustment in import-sensitive industries, only three of the 12 industries which experienced employment declines used employment decline as the *sole* means of adjustment. A majority (16) of industries used at least two adjustment measures. Relative wage declines were the most common form of adjustment, occurring in 15 industries. Regional redistribution of employment occurred in 10 industries and was accompanied in almost every case by relative wage decline. This complementarity between the regional redistribution of employment and declines in relative wages appears in all types of industries and suggests a much broader impact of imports on domestic employment than that suggested by observing only aggregate industry employment levels.

The textile industries provide evidence on the variations in the process of adjustment within broad categories of industries. The broadwoven fabric mills, cotton, and yarn and thread mills industries experienced only employment declines. No adjustments occurred in either relative wages or in the regional distribution of employment. Several char-

acteristics of these industries, however, limited the adjustment options which firms in the industries could pursue. By 1970, employment in these industries was already concentrated in the South, and wage rates averaged only 70 percent of manufacturing wages. By contrast, the knitting mills and floor covering mills industries, although relatively small, experienced both declines in relative wages and a regional redistribution of employment from States in the Northeast to the South. Furthermore, since 1965 both industries have experienced increases in productivity at least as large as that in the manufacturing sector. In the case of floor covering mills, labor productivity growth was much larger.

Employment losses in the apparel industry, the largest industry and least geographically concentrated in the sample, were not large in the aggregate. There was, however, a decline in relative wages beginning in 1968 and a significant redistribution of employment away from the Northeast States toward States in the South and West, particularly California, where employment increased by more than 25,000 between 1972 and 1978. Again, labor productivity growth in the industry kept pace with that of the manufacturing sector throughout the period.

The footwear industries both experienced declines in employment as well as in relative wages. Rubber footwear also experienced a regional redistribution of its employment while

nonrubber footwear, although concentrated in the Northeast, did not. Employment declines in the latter also preceded declines in relative wages, an exception to the pattern observed in many industries.

As a group, manufacturers of household appliances, electric lighting equipment, radio and television sets, communication equipment, and electronic components tended to adjust in a similar pattern. Actual employment declines occurred only in the radio and TV industry, which also experienced a sustained decline in its relative wage beginning in 1960. The remaining industries experienced no employment decline but did, with the exception of communication equipment, experience declines in relative wages beginning in the early to mid-1960's and a regional redistribution of employment. By the end of the 1970's, relative wages in all five of these industries had recovered and were, in fact, increasing. California and Massachusetts had the strongest gains in employment in these industries, while Ohio, Illinois, Pennsylvania, and New Jersey had major employment losses.

Restructuring indicated

The pattern of adjustment in this group of industries suggests that a successful restructuring occurred. By the end of the 1970's, relative wages in all five of these industries had recovered and were, in fact, increasing above the previous peak level. Labor productivity growth in this group of industries, with the exception of electric lighting equipment, far exceeded that of the manufacturing sector as a whole in the 1970's. Particularly strong growth in labor productivity was observed in two of these industries (radio-TV sets and electronic components) in which such growth began in the mid-1960's. Despite this strong growth, these industries experienced declining relative wages throughout the 1960's and until the late 1970's, which suggests that their adjustment was based largely on labor cost reductions.

The automobile and steel industries, two of the largest in the sample, were anomalies in their patterns of adjustment. The former did not adjust in any of the three dimensions over the period studied. Labor productivity growth kept pace with that of the manufacturing sector, while relative wages increased. The steel industry was the only industry in the sample which experienced a decline in employment, a *decline* in labor productivity, and an increase in relative wages. □

FOOTNOTES

¹Walter Corson, Walter Nicholson, David Richardson, and Andrea Vayda. *Survey of Trade Adjustment Assistance Recipients* (Princeton, N.J.: Mathematical Research Institute Inc., 1979).

²Gregory K. Schoepfle, "Imports and domestic employment: identifying affected industries," *Monthly Labor Review*, August 1982, pp. 13-26.

³Thomas Bayard and James Orr. *Trade and Employment Effects of Tariff Reductions Agreed to in the Tokyo Round of the Multilateral Trade Negotiations* (Washington, U.S. Department of Labor, Bureau of International Affairs, April 1980).

⁴The list contains many of the industries generally considered to be trade-sensitive. The 3-digit sic industry was selected because of the desire to disaggregate the industry as much as possible while still having adequate time series data on employment, wages, and the regional distribution of employment. Gregory Schoepfle, and Thomas Bayard and James Orr both worked at the 4-digit input-output level of analysis. If one of their industries satisfied our criteria, we included the associated 3-digit sic industry in our sample.

Plant closures: efforts to cushion the blow

BENNETT HARRISON

In sharp contrast to the European situation, only about one in five workers in the United States is covered by collective bargaining agreements. Moreover, of those workers who do belong to unions, only a small proportion have contracts containing language providing more than token advance notification of shutdowns. Of all collective bargaining agreements in force in 1980 and covering more than 1,000 employees, only 15 percent contained language requiring either advance notice of a closure or relocation, or explicitly authorized union participation in the procedure. Of the contracts containing such language, 3 of 4 were in manufacturing, so service sector workers (the fastest growing segment of the economy) were especially poorly protected. And of those agreements reporting (to the Bureau of Labor Statistics) on length of the prenotification period, more than half provided less than 3 months' notice, while only 14 percent called for prenotification of 6 months or more.¹ Advocates of national legislation requiring firms to give workers advance notification of closure regularly point to these data as evidence that "voluntary" (including collectively bargained) arrangements have been insufficient in their coverage to adequately provide the protection they feel is needed.

That vulnerability has been enhanced by a U.S. Supreme Court decision in June 1981, in *First National Maintenance Corp. v. NLRB*. The Court ruled 7 to 2 that a company may close a plant without bargaining with its union, provided that the shutdown is "partial" (one of several plants or units in a multiunit company, but not the entire firm) and "purely for economic reasons" (as opposed to, for example, an antiunion animus). In their decision, the justices overturned a number of lower court (and previous Supreme Court) rulings that unions *always* had a right to be informed in advance, if only so they might (said the lower courts) choose to negotiate a new contract that could conceivably *change* the "economic reasons" for the closure.²

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Voluntary plant closure practices

In recent years, the managements of some companies have met with the "workers' representatives" to discuss outplacement or retraining and to plan for the redeployment of the displaced employees (although almost never to reconsider the decision to close), have negotiated such benefits for the displaced workers as severance pay, continuation of health benefits, and transfer rights to jobs elsewhere in the parent company's organization. A small body of best-practice case material is gradually emerging on the ideas and experiences of these managers and their consultants at such companies as Ford, the Brown and Williamson Tobacco Co., Goodyear Tire and Rubber, and other firms.³ Moreover, it is widely believed among human resource professionals that wherever union- or government-initiated programs to plan for the rapid redeployment of workers who have been displaced by a closure have been successful (the leading examples over the last 2 years being the programs of the Illinois AFL-CIO and the State of California's Economic Adjustment Team), that outcome is due primarily to the active involvement and support of the private firms undergoing shutdown.

Nevertheless, many American labor, government, and community activists ask why this country's work force should have to depend upon voluntary "statesmanlike" behavior by managers. If *some* firms can undertake to give advance notice, and to join with workers and government to plan redeployment of displaced labor, then (it is said) that just proves that *all* firms can do it—and therefore should be *required* to do it. This seems to have been precisely the argument that most effectively swayed the provincial and national governments of Canada, most of which now have mandatory advance notice laws on their statute books.⁴

Advocates of plant closing legislation in the United States are as concerned with normalizing and standardizing the practice of shutdown as they are with achieving a greater measure of social justice. And especially in American political practice, "normalizing" and "standardizing" means *legislating*.

State and local legislation

By late 1983, plant closing legislation had been passed or was being considered in 17 States and 2 cities. Maine has had a modest law on its books since 1971. In 1983, the Wisconsin legislature repealed its 1975 law and substituted another which will go into effect in 1984, replacing provisions for mandatory notification with voluntary guidelines combined with incentives in the form of "positive adjustment" assistance. Also in 1983, Connecticut passed a law requiring a modest continuation of the health benefits of certain eligible workers displaced by plant closures. Philadelphia passed a law in 1982 mandating a 60-day prenotification period; a recent evaluation of its immediate after-effects notes that a number of large service firms (in petro-

leum distribution, communications, and insurance) have moved into the city since the passage of the law.⁵ In July 1983, the city council of Pittsburgh passed a 3- to 9-month advance notice bill over the veto of the mayor, only to have it disallowed in August by two local judges. The city council is now appealing. Fourteen other States and Connecticut are currently debating advance notification and positive adjustment legislation, including California, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, Pennsylvania, and Rhode Island.

Over the decade, since plant closing legislation became a subject of political discourse in this country, several central issues have emerged. Around some of these, positions have long since hardened, and little compromise seems likely in the foreseeable future between advocates and opponents. Other issues seem much more open.

Prenotification. Although the principle of mandatory advance notice is currently in retreat in some places (for example, the new Wisconsin statute), it remains the essential core of the plant closing demand. Indeed, the North American business community itself seems rather divided on both the feasibility and the desirability of prenotification of company decisions to shut down, relocate, or permanently lay off significant numbers of workers. Thus, for example, representatives of Levi Strauss & Co., which closed eight plants during 1982–83, testified at congressional hearings that they endorsed a national plant closing bill, if only to head off the "chaos" which would result with the passage of separate State laws (Levi Strauss operates in 19 States).⁶ Earlier, in May 1980, a survey of executives in 105 Fortune 500 companies elicited the rather remarkable finding that 3 of 5 executives thought a prenotification period of at least 3 months was quite feasible, while "over a third of the respondents considered 6 months to a year to be the ideal period."⁷

One of the more common fears of the negative consequences of prenotification requirements is the concern that, once they are given their notice, workers will slow down on the job, commit sabotage, or simply leave to take new employment elsewhere. One way or another, it is feared, advance notice will wreak havoc with plant productivity. Because there are already prenotification laws on its statute books, Canada is a useful place to look for evidence on this question. And while much more research is needed, preliminary inquiries indicate that executives of individual private corporations and officials of the Canadian Manufacturing Association have, from personal experience, found such fears to be unjustified.⁸

Consultation comparisons. In Europe, consultations between managers and works councils—certainly over the outplacement of employees, and sometimes over the decision to close itself—form an important part of the plant

closing dispute resolution process. This is, of course, grounded in the real political power of the labor movement in those countries. (Although joint labor-management committees of various kinds are an object of experimentation in a number of places, American practice clearly eschews European-style consultations. In this country, "rights" tend to get spelled out in detail, and almost every disagreement ends up in court. And those rights almost entirely concern the arrangements for separation. Keeping the plant open, especially under alternative forms of ownership, is simply not a central subject of discussion in the typical American (or, for that matter, Canadian) closure.

Severance. In private discussions, employers often indicate that they can "live with" prenotification, but that mandatory severance pay is simply unacceptable, threatening, as it might, to eliminate the cost advantages of relocating the operations. From the point of view of local labor and community leaders, mandatory severance also has its contradictory aspects. The oldest and the youngest workers in the plant tend to show the greatest interest in "taking the money and running"—the former because they have little chance of finding other employment, and the latter because they have the *best* chances. It seems typically to be the middle-aged workers who most resent the shutdown, who are the most likely to organize resistance, and who are at the same time most prepared to make wage or benefit concessions in order to keep the plant open (or to facilitate a worker buyout). The problem is inherent in the contradiction between the indivisible nature of the plant closing decision ("open" or "close"), with its collective implications ("everyone stays" or "everyone goes"), and the individual consumerist nature of the severance remedy.

Health benefits. In a society with neither universal national health insurance for people of working age nor easily-available, inexpensive, and reliable private individual health insurance, it should be no surprise that American workers are increasingly concerned with protecting their claims on their group health insurance policies made available through their present employers. This seems to be an issue which crosses all the usual age, race, and gender boundaries. □

—FOOTNOTES—

¹Major Collective Bargaining Agreements: Plant Movement, Interplant Transfer, and Relocation Allowances, Bulletin 1425-20 (Bureau of Labor Statistics, 1981), pp. 8-10.

²Joseph Cipparone, "Advance Notice of Plant Closings: Toward National Legislation," *University of Michigan Journal of Law Reform*, Winter 1981; and John D. Feerick, "Plant Closures and Duty to Bargain," *New York: Law Review*, March 1981.

³Robert B. McKersie and William McKersie, *Plant Closings: What Can be Learned From Best Practice* (Washington, U.S. Department of Labor, Labor Management Services Administration, 1982).

Brown and Williamson Tobacco Co. in many ways represents the state of the art. In one series of closures in Louisville, Ky. in 1980, involving a consolidation of operations at the firm's Macon, Ga. site, Brown and Williamson provided its workers and their unions with advance notification,

severance pay, 6-month continuation of life and medical insurance, transfer rights to the Macon plant for 325 of the 3,000 Louisville workers, moving expense assistance for this group, and counseling, job placement assistance, and company-financed retraining for the rest. The company even prevailed on the Governor of Kentucky to obtain a waiver of State law that would have prevented those laid off from drawing both severance pay and unemployment insurance simultaneously. (See Barry Bluestone and Bennett Harrison, *The Deindustrialization of America*, New York, Basic Books, 1982). Of course, this was all done to effect an orderly, trouble-free consolidation. And it is true that continuation of the production activities in Louisville (let alone adaptive reuse of the plant) was never open to discussion. The relationship between the parties was undoubtedly more paternalistic than collaborative. Notwithstanding all of this, such an orderly transition—triggered by advance notification of the impending closure—seems to me to be precisely what many planners in Europe would like their own legislation to achieve.

⁴For the purposes of this paper, I have been able to conduct only a cursory examination of Canadian plant closing laws and practices. Six of the ten provinces—Ontario, Quebec, New Brunswick, Nova Scotia, Newfoundland, and Manitoba—do have mandatory advance notification laws (although there are also long lists of authorized exceptions where notice is not required, such as—in the Nova Scotia statute—when closure is due to "circumstances beyond the control of the employer"). There is also a national law, covering about 400,000 employees in certain specific sectors including transport, banking, Federal Crown Corporations, and so forth. Prenotification under federal law varies from 8 to 16 weeks. See footnote 7, pp. 133-34).

At both federal and provincial levels, modest sanctions are usually prescribed for noncompliance, typically involving entitling workers to sue for the backpay that would have been earned had the plant stayed open for the duration of the requisite notification period (the toughest sanctions, at least on paper, are in Newfoundland, where failure to give notice means that the employer may not close the plant.) The notice period varies from one province to another and according to the number of employees in the plant at the time of the announcement. Thus, for example, in Ontario and Newfoundland the managers of a plant with 50 to 199 employees must give 8 weeks' notice; 200 to 499 employees require 12 weeks; and work forces in excess of 500 must be given 16 weeks' prenotification. Most provincial laws, as well as the national regulation require that, when viable firms close a particular plant, severance pay must be provided to all employees (whether or not they are covered by any collective bargaining agreement) according to the general formula of 1 week's severance pay for each year of service up to some maximum (usually 26 weeks). While there are a variety of labor-management and tripartite "positive adjustment" programs subsidized by the government, there does not seem to be anything resembling the right of "consultation" as practiced intranationally in Europe and sought internationally through the Vredeling Directive.

⁵James A. Craft, "Plant Closing Legislation," Working Paper No. 550 (Graduate School of Management, University of Pittsburgh, 1983).

⁶*Daily Labor Report*, July 12, 1983, pp. A-4, A-5.

⁷Morris L. Sweet, *Industrial Location Policy for Economic Revitalization: National and International Perspectives* (New York, Praeger Publishers, 1981), p. 148.

⁸Based on Conference Board of Canada (1983), and on interviews with Canadian business officials conducted by the staff of the Massachusetts Commission on the Future of Mature Industries.

Does it pay to organize? estimating the cost to unions

PAULA B. VOOS

In recent years, the total membership of U.S. labor organizations has been shrinking. Between 1978 and 1980, there was a drop in worldwide membership of about 355,000 members to approximately 23,883,000. During this same

period, U.S. membership fell by 391,000 members to 22,366,000.¹ These recent developments occurred in a long-run context of absolute union growth, but a decreasing percent organized, especially in the private sector. This study explores several issues in union growth and examines new data on the size of organizing programs.

First, was a decrease in the union commitment to growth partially responsible for the secular decline in the percent of workers organized in the private sector, as some researchers have contended?² Second, did a larger expenditure on organizing enable a union to win bargaining rights for more employees in National Labor Relations Board representation elections, and if so, what was the cost to the union of each new member? Third, how did that estimated marginal cost compare to the marginal benefit existing union members receive from organizing; that is, is organizing justifiable in strictly economic terms or is social idealism a necessary rationale for these programs? And, finally, how much additional money would U.S. labor organizations need to spend annually to arrest the long-run decline in the percent organized?

To answer these questions, estimates of nonlocal organizing program expenditures were made from the financial statements of the following 27 unions: Auto Workers (UAW), Brewery Workers, Carpenters, Chemical Workers, Clothing Workers, Communications Workers, Electrical Workers (IBEW), Furniture Workers, Glass and Ceramic Workers, Ladies' Garment Workers, Longshoremen and Warehousemen, Machinists, Maintenance of Way Employees, Marine and Shipbuilding Workers, Meat Cutters, Newspaper Guild, Office and Professional Employees, Packinghouse Workers (UPWA), Painters, Railway and Airline Clerks, Rubber Workers, Service Employees, Steelworkers, Teamsters, Textile Workers (TWUA), Upholsterers, and Woodworkers. The trend in inflation-adjusted organizing expenditures was inferred from a subsample of 20 unions which grew at the same rate as all U.S. unions for the period 1953-74. A second subsample of 25 unions which utilized NLRB representation procedures was used to generate marginal cost estimates between 1964 and 1977.

Organizing expenditures increased in real terms between 1953 and 1974, using either the Consumer Price Index or the gross national product (GNP) deflator to define constant dollars. Nonlocal organizing expenditures for the subsample of 20 unions rose from \$24.4 million to \$43.6 million (1967 CPI dollars) between 1953 and 1974, an annual real growth

rate of 2.8 percent. Insofar as the union commitment to growth can be defined as the aggregate amount of real resources allocated to organizing, it is obvious that a decrease in commitment was not responsible for the decline in the percent organized over this period.

Unions which mounted larger organizing programs between 1964 and 1977 won bargaining rights for more workers in NLRB representation elections, controlling for the number of potential members, the characteristics of the contested unit, and macroeconomic factors. The regressions establishing this relationship were used to estimate the cost of recruiting an additional union member. Estimates were adjusted to reflect the facts that unions do not manage to negotiate collective bargaining agreements in a significant minority of units won in NLRB elections, and that a minority of employees covered by collective bargaining agreements do not become union members. With these adjustments, the marginal cost of each additional union member ranged from \$580 to \$1,568 (1980 dollars). The lower figure was derived from a "fixed effects" model controlling for many measured aspects of the union's environment and for unmeasured characteristics of each union; the higher figure was derived from models which controlled for neither.

Previous econometric estimates of the extent to which wages increase when a greater percent of an industry is organized were utilized to derive estimates of the marginal benefit going to existing union members from organizing an additional person.³ In 19 of 20 major manufacturing industries, the discounted present value of this benefit exceeds the highest estimate of the marginal cost of organizing.

Thus, while organizing programs are effective in the unionization of additional persons, the cost is substantial. However, the cost of not organizing in terms of the benefits forgone by existing union members is even higher. Between 1953 and 1978, the proportion of workers who were members of labor organizations declined by about 0.3 percentage points per year. Had unions moved to arrest the decline in 1978 by expanding organizing programs, the cost would have ranged from \$163 million to \$442 million (1980 dollars). □

—FOOTNOTES—

¹ See *Directory of U.S. Labor Organizations, 1982-83 Edition* (Washington, The Bureau of National Affairs, Inc., 1982).

² Richard N. Block, "Union Organizing and the Allocation of Union Resources," *Industrial and Labor Relations Review*, October 1980, pp. 101-13; and Richard A. Lester, *As Unions Mature: An Analysis of the Evolution of American Unionism* (Princeton, N.J., Princeton University Press, 1958).

³ Richard B. Freeman and James L. Medoff, "The Impact of the Percent Organized on Union and Nonunion Wages," *The Review of Economics and Statistics*, November 1981, pp. 561-72.

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Comparing rates and proportions: they can be misleading

DAVE M. O'NEILL

We are all familiar with proportions that measure very important socioeconomic magnitudes. Unemployment rates, poverty rates, and mortality rates are three of the most widely used. The unemployment rate is an indicator of a group's difficulties in finding a job; the poverty rate is one measure of the adequacy of a group's income; and the mortality rate is an indicator of a group's ability to deal with disease and other life-threatening hazards.

To compare groups on these magnitudes, the ratio of their rates is almost always used. Thus, the ratio of the unemployment rate of blacks to that of whites is watched to detect changes in their relative difficulty in finding a job. Similarly, changes in the ratios of poverty rates and mortality rates are used to measure relative changes in the economic and health status of groups. However, these ratios can lead to wrong conclusions about changes in the relative status of groups. (See a discussion of the "incremental ratio" in Curtis Gilroy's "Black and white unemployment: the dynamics of the differential," *Monthly Labor Review*, February 1974.)

The correct approach is to observe the ratio of the complements of each of the well-known rates as well. That is, the ratios of employment rates, of "nonpoverty" rates, and of survivor rates should also be used. Changes in these ratios will sometimes indicate the same change in the relative position of the groups as the ratios of the well-known rates. However, they will often move in the opposite direction.

Proportions and rates as means

The three well-known rates are used so often that it is easy to forget that a rate or proportion is a special kind of mean. It is a measure of the level (and dispersion) of a certain kind of frequency distribution—one in which each individual either has one value of the characteristic or another. Each value is usually nonnumeric (for example, unemployed, employed; dies, lives; poor, not poor). The relative

frequency in one of the categories (p) of the characteristic is used to summarize the distribution. No information is added by $(1-p)$ if the group's (p) is only being compared with itself at different places or times. In these situations, if (p) goes up, $(1-p)$ must go down.

However, when the *ratio* of the (p)s of two groups is being compared over time, the information provided by changes in the ratio of the $(1-p)$ s can be different from that shown by the ratio of the (p)s. The only reliable approach is to examine the behavior of both of these ratios.

Changes in the two ratios of rates may indicate the same change in relative status between the two groups. However, it is also possible for the two ratios to indicate opposite changes in relative status. Thus, during almost every recession since World War II, the ratio of black to white unemployment rates fell, and the ratio of black to white employment rates also fell. This happens because blacks start out with a significantly higher level for their unemployment rate and a lower level for their employment rate than do whites. Therefore, somewhat higher percentage-point increases in unemployment for blacks (which tend to happen during recessions) represent a smaller percentage increase for the black unemployment rate but, simultaneously, a greater percentage decrease in their employment rate.

Which way does relative status move in this situation? Do blacks become relatively worse off or better off in recessions? A precise answer would require assigning values (dollars, utility) to the employment and unemployment categories. Then, the unemployment and employment rates could be combined using the values as weights to derive employment status indices for each group. The behavior of the ratio of these indices would give the correct change in the relative status of the two groups.

In the absence of these indices, what can be concluded when the two ratios of rates show opposite changes? A conservative approach is to say that the direction of change in relative status cannot be determined. In effect, there may have been a change in relative status, but it is too small to detect with available data.

Cases in point

Some important trends in relative status by sex and race have probably been misunderstood because only the ratios

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of the (p)s were used to compare the groups. Two such examples which we will examine are infant mortality by race and poverty by sex.

Table 1 shows data on infant death rates (p), and infant survival rates (1 - p) by race during 1940-82. If one compares the last two table columns, it becomes clear that the ratio of the death rates and the ratio of the survival rates give opposite answers to the question—what happened to the relative chances of black infants surviving versus white infants? The ratio of death rates (black to white) shows the situation worsening for blacks, while the ratio of survival rates shows their relative situation improving. Because blacks started from a higher death rate level, a significantly larger absolute decline in their mortality rate amounted to a smaller relative decline than whites experienced. And because their survival rate started from a lower level than whites, it must have increased by a greater percentage. As noted, without data to combine (p) and (1 - p) for each group, we can only conclude that there was no significant change in relative status.

Table 2 shows data on poverty rates and nonpoverty rates for families, by the sex of the family head, 1959-82. As with infant death rates, use of the ratio of the poverty rates (p) instead of the nonpoverty rates (1 - p) gives opposite

Table 2. Poverty and "nonpoverty" rates of family heads by type of family, selected years, 1959-82

Year	Female head, no husband present		Heads of all other families		Ratio of female head to other heads	
	Poverty rate	Non-poverty rate	Poverty rate	Non-poverty rate	Poverty rate	Non-poverty rate
1959	42.6	57.4	15.8	84.2	2.69	.68
1960	42.4	57.6	15.4	84.6	2.75	.68
1965	38.4	61.6	11.1	88.9	3.45	.69
1970	32.5	67.5	7.2	92.8	4.51	.73
1975	32.5	67.5	6.2	93.8	5.24	.72
1979	30.4	69.6	5.5	94.5	5.53	.73
1980	32.7	67.3	6.3	93.7	5.19	.72
1981	34.6	65.4	7.0	93.0	4.94	.70
1982	36.3	63.7	7.9	92.1	4.60	.69

SOURCE: *Consumer Income, Current Population Reports, Series P-60, No. 68* (Bureau of the Census, 1969); *Consumer Income, Current Population Reports, Series P-60, No. 95* (Bureau of the Census, 1974); and *Consumer Income, Current Population Reports, Series P-60, No. 140* (Bureau of the Census, 1983).

Table 1. Infant mortality and survival rates by race, selected years, 1940-82

Year	Mortality rates ¹		Survival rates ²		Ratio of blacks to whites	
	Black	White	Black	White	Mortality rates	Survival rates
1940	72.9	43.2	927.1	956.8	1.69	.969
1950	43.9	26.8	956.1	973.2	1.64	.982
1960	44.3	22.9	955.7	977.1	1.93	.978
1965	41.7	21.5	958.3	978.5	1.94	.979
1970	32.6	17.8	967.4	982.2	1.83	.985
1975	26.2	14.2	973.8	985.8	1.84	.988
1980	21.0	11.1	979.0	988.9	1.89	.990
1981	20.0	10.5	980.0	989.5	1.90	.990
1982	19.3	9.9	980.7	990.1	1.95	.991

¹Deaths per 1,000 live births.

²One thousand live births minus the mortality rate.

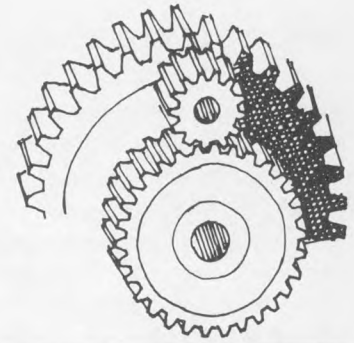
SOURCE: Data for 1940-81: *Vital Statistics of the U.S.* (U.S. National Center for Health Statistics, 1982); data for 1982: *The Widening Gap, The Incidence and Distribution of Infant Mortality and Low Birth Weight in the U.S., 1978-1982* (Washington, Food Research and Action Center, Jan. 5, 1984).

answers. According to the ratio of poverty rates, families maintained by women lost ground steadily relative to families maintained by men during the period. But the trend in the ratio of nonpoverty rates, at least until the beginning of the sharp recession after 1979, leads to the opposite conclusion. Most discussion of poverty policy has focused on the ratio of the poverty rates. However, as we have said, a proper assessment requires that the trend in both (p) and (1 - p) be examined. And this leads to the conclusion that between 1959 and 1979 the poverty status families maintained by women did not decline relative to those maintained by men.

Poverty rates by sex, infant death rates by race, and unemployment by race are only three of a large class of situations. Many educational attainment comparisons use measures such as "the proportion with a certain level of attainment or more," which raise the same issues when used to compare the relative progress of groups. The health area abounds with further examples.

IN SUMMARY, one should always keep in mind that a proportion or rate is a mean of a special kind of frequency distribution, and one must take special care to use the ratios of both the (p)s and (1 - p)s for comparing groups. □

Productivity Reports



Measuring productivity in State and local government

DONALD M. FISK

State and local governments, which employ about 13 million persons, are the largest single group of establishments for which productivity indexes are not routinely calculated. The Joint Economic Committee of the Congress, the National Academy of Sciences, the General Accounting Office, and others have suggested additional research into the possibility of measuring State and local government productivity, and in response the Bureau of Labor Statistics has conducted an initial examination into the feasibility of calculating selected productivity indexes. The results suggest that, while conceptual and data problems are difficult to resolve, it is feasible to calculate productivity indexes for many State and local government services.

The BLS study reviewed research, literature, and surveys, interviewed State and local officials, examined national data which would be useful in calculating productivity indexes, summarized the results of the investigation, and outlined a strategy for further work in the area. The study focused on ways that national labor productivity trends might be calculated on a routine basis, much as they are calculated for private-sector industry trends. The conclusions should also be useful for governments interested in calculating their own productivity.

Defining and measuring outputs

A number of researchers have discussed the confusion surrounding the basic concepts and procedures used to measure government productivity. The major problem is in the definition and measurement of outputs, which alternatively focus on operational activities, organization or direct outputs, or program consequences. Each of these three general types of measures is important. However, the most common, at least nationally, is the second type, the direct output or technical efficiency measure. It is this type of measure which is most often computed for the private sector and the

one with which this study was primarily concerned.

Selection of the proper measure of output requires a service-by-service and product-by-product approach. When a government provides a single service, as in the case of some of the special districts—solid waste disposal and drinking water are examples—the output can be simply a count of the units of service. However, most governments produce heterogeneous services, and it is often difficult to even identify the basic services. Furthermore, most services are composed of a number of different subservices or products which also are difficult to identify. In addition, each service may involve quality and other changes.

Data to calculate aggregate national, State, and local government output indexes are generally lacking. The Federal Government collects some data, particularly in those areas where it has shared responsibilities, such as unemployment insurance and drinking water. Some data are collected by national associations and public interest groups. But, more often than not, national statistics are simply unavailable on State and local government output. In many cases, individual governments do not collect such statistics.

Labor most useful measure of input

The most frequently used measure of input is labor. Constituting more than half of all State and local government operating expenditures, labor is important for public policy considerations, is easy to calculate compared with other factors of production, and is the most accessible of State and local government factor inputs.

The preferred labor measure is labor hours. However, no national statistics are available for labor hours of State and local governments; few governments even collect such data. A measure often used as a proxy for the number of hours is the number of full-time-equivalent employees, and many State, county, and municipal governments maintain such statistics. Most governments also have statistics on the number of employees, a measure widely used in the private sector.

However, none of the sources of national statistics is entirely satisfactory for computing individual service indexes. The primary data sources are not divided sufficiently to compute labor indexes for individual government services; others do not collect full-time-equivalent employee statistics, and some contain major errors. Construction of

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valid labor indexes, either aggregate or individual, requires detailed comparison and adjustment of data.

Seven State and local services were selected for detailed examination from the dozens provided by government. The more important government services, such as education, police, and firefighting, are not included because of conceptual or data problems.

For three services—electric power, State alcoholic beverage stores, and unemployment insurance—illustrative indexes were calculated. For two services—sanitation and drinking water—productivity was not calculated because national data are lacking. For the remaining two services—transit and the Employment Service—productivity indexes were not calculated because of unresolved conceptual and data issues; additional research is being conducted in these two areas.

These seven services illustrate the problems and opportunities that occur in computing State and local government productivity indexes. The problems are substantial and include both conceptual and data issues. However, the difficulties may not be any worse for calculating State and local government productivity than for calculating service industry productivity in the private sector.

Both sectors produce many of the same services. There are literally dozens of such services, ranging from electric power to alcoholic beverage sales, from hospitals to employment counseling. Not every government service has its

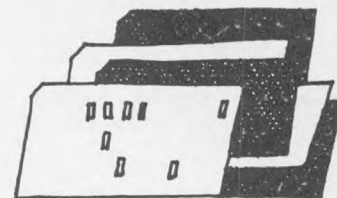
private sector counterpart, but most do.

Most of the past discussion on calculating government productivity has been entangled in questions of effectiveness, consequences, outcome, and impact. Productivity analysis in these areas has become entrapped in externalities. As long as the discussion is restricted to direct outputs, the solutions are at least as tractable as in the private sector.

This is not to say that productivity can be computed for every State and local government service. Thorny problems exist in calculating State and local government productivity, just as in the private sector. However, it should be possible to compute labor productivity for many State, county, and municipal services.

Development of these indexes must proceed service by service. After the development of individual service indexes, it should be possible to construct aggregate indexes for functional or service groupings, such as the social insurance programs, utilities, and transportation. By using the building block approach, individual indexes and groups of indexes might be combined into appropriate functions such as public works and public safety. Eventually, it may be possible to develop a national productivity index for State and local government, but this is probably many years away.

A comprehensive report, *Measuring Productivity in State and Local Government*, BLS Bulletin 2166, January 1984, is available from the Superintendent of Documents, Washington, 20402 for \$3.75. □



A statistical portrait of hired farmworkers

LESLIE A. WHITENER

Farm labor data from the decennial censuses have been used in research on occupational trends, labor force stratification, occupational segregation and inequality, and labor market structure.¹ However, certain limitations should be considered when using these data. Census occupational codes are determined from the primary work activity of the respondent in the week prior to completing the census questionnaire, generally the last week of March. Because of the seasonal nature of agriculture, many farmworkers are excluded from the farm labor categories listed in the decennial census if they were not working on farms in March. These exclusions suggest a significant undercounting in the number of farmworkers and indicate some caution in the use of census farm labor data.

Census data are useful for comparing occupational groups because data on a large number of occupations are collected simultaneously. However, problems arise when these data are used to describe work activities which are characterized by seasonality and a high degree of labor turnover. As noted, agricultural work is particularly susceptible to this problem.

According to the U.S. Department of Agriculture's Hired Farm Working Force Survey, only about one-third of the hired farmworkers who worked sometime during 1981 were employed during March. Instead, they were more likely to have worked during the months of June, July, and August. This suggests the census may be missing as many as two-thirds of the Nation's hired farmworkers.

This study uses data from the 1981 Hired Farm Working Force Survey to evaluate the usefulness of census data for farm labor research. The analysis focuses on two groups of workers: (1) those who did hired farmwork during March and most closely represent the hired farmworker population as measured by the census and (2) those who were employed at other times of the year and were therefore excluded from the census farm labor categories.² This report examines

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the composition of each group of workers and investigates differences in socioeconomic characteristics between the two groups.

Concepts and measurement

The biennial Hired Farm Working Force Survey is conducted for the Economic Research Service of the U.S. Department of Agriculture by the Bureau of the Census as a supplementary part of the December Current Population Survey.³ Data from this survey indicate that there were 2.5 million persons 14 years of age and over who did farmwork for cash wages or salary at some time during 1981, even if only for 1 day. For purposes of comparability with decennial census data, however, population coverage was changed to include only those workers 16 years of age and over. Approximately 282,000 persons 14 to 15 years old (11 percent of the total) were excluded from the analysis.

Although data from the Hired Farm Working Force Survey are collected biennially and were not available for the 1980 census year, the 1979 and 1981 survey data show that the basic employment and demographic characteristics did not change significantly, suggesting that information for 1981 closely approximates 1980 data.

Hired farmwork, as defined in this survey, includes work done on the farm for cash wages or salary in connection with the production, harvesting, and delivery of agricultural commodities, as well as farm management if done for cash wages. Exchange work, work done by unpaid family members, customwork, nonfarmwork done on a farm, or work done exclusively for "pay in kind" are not included. Exhibit 1 lists the agricultural-related occupations reported in the 1980 census. The data from the Hired Farm Working Force Survey most closely approximate the hired segment of those census categories of managers, supervisors, farmworkers, and nursery workers shown in exhibit 1.

The 1980 census shows there were 792,000 wage and salary workers in the five agricultural occupations listed in exhibit 1. In comparison, the Hired Farm Working Force Survey of 1981 reports there were about 818,000 persons who did hired farmwork in March. These two numbers were not significantly different. This suggests that Hired Farm Working Force Survey data on workers in March approximate the hired farmworker population measured by the

Exhibit 1. Farming, forestry, and fishing occupations reported in the 1980 decennial census

Census code	Occupation
Farm operators and managers	
473	Farmers, except horticultural
474	Horticultural specialty farmers
475 ¹	Managers, farms, except horticultural
476 ¹	Managers, horticultural specialty farms
Other agricultural and related occupations	
Farm occupations, except managerial	
477 ¹	Supervisors, farmworkers
479 ¹	Farmworkers
483	Marine life cultivation workers
484 ¹	Nursery workers
Related agricultural occupations	
485	Supervisors, related agricultural occupations
486	Groundskeepers and gardeners, except farm
487	Animal caretakers, except farm
488	Graders and sorters, agricultural products
489	Inspectors, agricultural products
Forestry and logging occupations	
494	Supervisors, forestry and logging workers
495	Forestry workers, except logging
496	Timber cutting and logging occupations
Fishers, hunters, and trappers	
497	Captains and other officers, fishing vessels
498	Fishers
499	Hunters and trappers

¹Indicates categories which most closely match the definition of hired farmworker used in this article. Unpaid family workers are not included in these categories. Some graders and sorters (488) would be included if this kind of work was done on the farm.

SOURCE: Census of Population and Housing, 1980: Public-use microdata samples technical documentation (U.S. Bureau of the Census, February 1983).

census, and are useful for examining the strengths and weaknesses of farm labor data from the decennial census.

Farmworkers employed in March

What are the characteristics of hired farmworkers who work in March? Who are those workers not included in the census because they work in other months? How do these two groups of workers differ in terms of demographic and economic characteristics?

Agricultural dependence. In general, hired farmworkers employed in March appear to be strongly attached to farmwork as an occupation. About 75 percent of these workers performed farmwork in at least 9 other months during the year and more than one-half did farmwork in all 12 months of 1981. In general, these workers did more than just a few days of work each month. Only 5 percent were casual workers with less than 25 days of farmwork during the year and 22 percent were seasonal workers with 25 to 149 days. The remaining three-fourths were regular or year-round workers who performed 150 days or more of farmwork in 1981 (table 1). On balance, these workers averaged 218 days of farmwork during the year.

More than 70 percent of the workers who responded to a survey question concerning their principal activity during the year cited hired farmwork as their major job, while the remainder indicated they were engaged primarily in other farmwork, nonfarmwork, were unemployed, attending school,

keeping house, or were otherwise not in the labor force most of the year.

In 1981, farmworkers employed on farms in March received mean earnings of \$6,979 from all sources of earnings with over \$6,000 from farmwork alone (table 2). Nine of 10 workers received at least half of their total earnings from farmwork. Most of these workers had no other job. Only one-fourth did any nonfarm work during the year, and they worked an average of 101 days at their nonfarm jobs. The largest proportions were nonfarm laborers or craft workers.

Demographic composition. Workers were generally 20 to 45, with an average age of 34 (table 3). They were likely to be household heads and were probably largely responsible for their families' support. The majority were male (89 percent) and married (58 percent), and had an average family size of four. Only 1 of 4 lived on farms.

Economic and educational status. In general, hired farmworkers are one of the more economically and educationally disadvantaged groups. They have few labor market skills, little education, and limited opportunity for employment in higher skilled, better paying jobs.⁴ The data on workers employed in March support these conclusions. In 1981, workers received about \$7,000 from all sources (mostly from farmwork) compared with over \$13,000 received by all U.S. nonagricultural private sector production workers.⁵

Table 1. Employment characteristics of farmworkers in March and other months, 1981

Worker characteristic	Total workers	Workers employed in March	Workers employed in other months
Number of workers	2,210,000	818,000	1,392,000
	Percent		
Proportion of earnings from farmwork	100	100	100
0-24 percent	22	6	132
25-49	8	5	19
50-99	12	13	12
100	58	76	147
Duration of farmwork:			
Fewer than 25 days	37	5	155
25-149	34	22	141
150-249	12	26	14
250 and over	17	47	10
Principal employment status during year:			
In labor force:			
Hired farmwork	32	71	19
Other farmwork ²	4	4	4
Nonfarmwork	19	9	125
Unemployed	4	2	15
Not in labor force:			
Keeping house	9	3	112
Attending school	26	9	137
Other	6	2	18

¹Differences between March and other workers are significant at the 95-percent confidence level.

²Includes operating a farm or unpaid family labor.

SOURCE: Hired Farm Working Force Survey of 1981 (U.S. Department of Agriculture, Economic Research Service).

Table 2. Average days worked and earnings received by farmworkers in March and other months, 1981

Worker characteristic	Total workers	Workers employed in March	Workers employed in other months
Number of workers	2,210,000	818,000	1,392,000
Average dollars			
Total earnings	4,756	6,979	23,449
Farm earnings	2,925	6,080	21,071
Nonfarm earnings ¹	4,308	3,697	24,473
Average days			
Days of farmwork	105	218	239
Days of nonfarm work ¹	130	101	2138

¹Based on 939,000 persons (199,000 in March; 740,000 in other months) who did both farm and nonfarm work.

²Differences between March and other workers are significant at the 95-percent confidence level.

SOURCE: Hired Farm Working Force Survey of 1981 (U.S. Department of Agriculture, Economic Research Service).

However, earnings data should not be used alone to define the economic well-being of farmworkers. Family income and family size must also be considered. A modified version of the 1981 official Federal poverty criteria⁶ showed that about 31 percent of farmworkers employed in March were in low-income families. Among minority workers, low income was even more widespread. Hispanic and black and other workers made up about 17 percent each of all hired farmworkers employed in March.⁷ Yet, over 40 percent of both the Hispanic and black and other groups were in low-income families, compared with only 25 percent of the white workers.

Homeownership is also an indicator of economic status. Less than one-half of the workers employed in March 1981 owned or were buying their own home or lived with a family that did. The remainder were renting or living in a domicile that did not require cash rent.

The low economic status of those farmworkers who were employed in March compared to other U.S. workers is probably a result of a strong dependence on relatively low agricultural earnings, and limited skills and opportunities for higher paying nonfarm jobs. Low levels of education may contribute to these workers' dependence on low-wage jobs. In 1981, farmworkers 25 years of age and over had completed a median of 10.3 years of school, but there were differences by race or ethnic group. Hispanic workers had a median of 5.9 years of schooling; blacks and others had completed a median of 8.2 years; and whites had a median educational level of 12.2 years.

Farmworkers employed in other months

Agricultural dependence. Unlike the workers who did farmwork in March, farmworkers employed in other months tended to be seasonal workers with a relatively weak attachment to hired farmwork. More than half were casual workers doing less than 25 days of farmwork; 41 percent

were seasonal workers doing 25 to 149 days. On average, these workers completed 39 days of farmwork in 1981.

More than half of these workers were not in the labor force most of the year and the majority of these were students. Twenty-five percent cited nonfarm work as their major activity and relied on farmwork for supplemental earnings. Less than 10 percent cited hired farmwork as their major activity during the year.

Workers employed in the other months were dependent on agriculture for their earnings. About 60 percent received at least half or more of their total earnings from farmwork. Generally, this was because a large proportion of these workers were out of the labor force most of the year and had no other source of earnings.

Demographic composition. In contrast to workers employed in March, those performing farmwork in the other months were younger and tended to be single and not the household head. A large proportion were students and homemakers and they were likely to be white, female, and living in nonfarm places. The majority (61 percent) owned their own home or lived with a family that did.

Table 3. Demographic characteristics of farmworkers in March and other months, 1981

Worker characteristic	Total workers	Workers employed in March	Workers employed in other months
Number of workers	2,210,000	818,000	1,392,000
Percent			
Total	100	100	100
Age:			
16-19	28	12	138
20-24	20	21	20
25-34	23	27	220
35-44	11	17	17
45-54	8	12	16
55 and over	10	11	9
Race or ethnic group:			
White	72	66	176
Hispanic	14	17	11
Black and other	14	17	13
Sex:			
Male	78	89	171
Female	22	11	129
Household status:			
Head	48	65	137
Spouse	9	5	112
Other	43	30	151
Residence:			
Farm	17	24	113
Nonfarm	83	76	187
Homeownership:			
Own or buying home	56	46	161
Renting	29	27	30
Other	15	27	19

¹Differences between workers employed in March and those employed in other months are significant at the 95-percent confidence level.

²Differences between workers employed in March and those employed in other months are significant at the 90-percent confidence level.

SOURCE: Hired Farm Working Force Survey of 1981 (U.S. Department of Agriculture, Economic Research Service).

Economic and educational status. Workers employed in the other months generally did farmwork on a casual or seasonal basis. They worked fewer days at farmwork than those working in March and received lower farm earnings. In 1981, their farm earnings averaged \$1,071 compared to \$6,080 for those employed in March. Their earnings from nonfarm work were higher than those working in March, but their overall earnings were lower. They were probably not largely responsible for their own or their families' support. Their average family income was \$16,259, slightly above that of those who did farmwork in March (\$14,329). However, both groups were considerably below the U.S. average for all families (\$25,838).⁸ Based on family size and income data, almost a third of the workers who were employed at other times of the year were living in low-income families. This proportion was similar to those who worked in March.

Workers in other months who were 25 years of age and over had completed more years of schooling (median of 11.8 years) than those who worked in March (median of 10.3 years). However, both groups had less education than the total population 25 years and older (median of 12.5 years).⁹

Summary and implications

The decennial census information has some clear advantages over other sources of farm labor data. The census is the only complete enumeration of the national labor force, including categories for farm labor. It offers geographic detail not available in other data sources and provides a variety of information for all States, counties, and other areas within States, and various categorizations of place of residence. Census farm labor data also offer the advantage of historical comparability, at least at the broadest classification level, and efforts are being made to describe and improve the comparability at more detailed occupational levels.¹⁰ Finally, census counts are invaluable for examining characteristics of different occupational categories. However, there are serious limitations which must be considered in using census farm labor information.

Census occupational data are generally used under the assumption that workers are employed in the same occupation on a year-round basis. This implies that the basic characteristics of workers in an occupational group would be similar regardless of the month of data collection. However, these assumptions cannot be extended to all hired farmworkers. Data on those working in March generally describe those farmworkers who are committed to and economically dependent on hired farmwork for most of the year. Yet, almost one-third of these workers cited nonfarmwork or not in the labor force as their primary activity during the year. These workers would not identify farmwork as an occupation. Although almost 9 percent of those who worked in the other months cited hired farmwork as their major activity, census counts do not include them in the farm labor

categories. Thus, census data, which focus on those workers who are attached to a particular work activity on a year-round basis, do not perfectly measure farmworkers from this perspective.

Also, census tallies are often used to describe an occupational category in terms of the total labor force involved in that particular activity. Census data are useful for identifying the numbers and characteristics of physicians or economists, for example, because in all probability, the data vary little from month to month. However, because of the seasonality in agriculture and the high turnover of farmworkers, census data collected in March could exclude as many as two-thirds of all hired farmworkers. Also, the socioeconomic characteristics of workers employed in March differ considerably from those of workers employed in other months. Thus, census data are not useful for examining farm laborers from a total labor force perspective.

The Hired Farm Working Force data for March workers, used as a proxy for census data, characterize hired farmworkers as a group of workers who are economically dependent on agriculture. The majority are white, male, and the household heads. They are most likely to live in nonfarm areas and generally do not own their own homes. These workers often have low levels of education and they are highly dependent on their farmwork in terms of days worked and earnings received. Most have no other source of earnings.

However, if workers employed in March are combined with those working in the other months, these generalities would change, and in some cases, patterns would be reversed. With the combination of the two groups, the average worker becomes younger and more educated. He or she is less likely to be white and less likely to be a household head. The employment and economic variables are affected even more. Workers employed in March report higher farm earnings than those working in the other months. When the two groups are combined, overall averages for farm earnings, as well as for total earnings and days of farmwork, decrease to reflect the influx of the more seasonal workers. Thus, an employment concept based on census data obtained in March and a labor force supply concept which includes all persons doing hired farmwork during the year provide two significantly different descriptions of U.S. farmworkers.

These findings suggest that research using census farm labor data would have different study results if the data were modified to include all workers. For example, in an earlier article, Dixie Sommers used 1970 census data to rank occupations, including farm laborer, by median earnings, and to examine the effects of age, education, and full-year employment on earnings of men and women.¹¹ If Sommers had used data for all hired farmworkers in her study of occupational rankings, the median earnings of farmworkers would still be ranked toward the bottom of the occupational list, although there might be slight shifts with other low-paying occupations. However, Sommers also examined the

effects of age, education, and duration of employment on the median earnings of the occupational groups. Had she included all farmworkers in her analysis, the effects of the variables on median earnings could have significantly changed her results because all farmworkers are younger, have more years of education, and spend less time doing farmwork than farmworkers reported by the census.

Research findings on historical occupational trends could also be affected. While the number of hired farmworkers has been relatively stable during the 1970's, this stability has not been evident in all segments of the farmwork force. Between 1970 and 1981, the number of regular and year-round workers who worked 150 days or more showed a significant increase of 47 percent. This trend should be reflected in the analysis of 1970-80 census data. However, the increase was partially offset by declines in the numbers of casual and seasonal workers performing less than 75 days of farmwork. This pattern would not be visible in the census data. Because the characteristics and employment patterns of all segments of the hired farmwork force do not change consistently, historical analysis based on census data may obscure important patterns and trends relating to hired farmworkers.

Thus, farm labor data from the decennial census require careful use and explicit caveats as to which group is being measured and what implications this has for farm labor research. Census data, improperly used, could lead us to believe that farmworkers are a relatively established year-round work force that is strongly attached to agriculture in terms of days worked and earnings received. This is clearly not the case. □

—FOOTNOTES—

¹ See Constance Bogh DiCesare, "Changes in the occupational structure of U.S. jobs," *Monthly Labor Review*, March 1975, pp. 24-34; Curtis L. Gilroy, "Investment in human capital and black-white unemployment," *Monthly Labor Review*, July 1975, pp. 13-21; David L. Rogers and Willis J. Goudy, "Community Structure and Occupational Segregation, 1960 and

1970," *Rural Sociology*, Summer 1981, pp. 263-81; Wendy Wolf and Neil Fligstein, "Sex and Authority in the Workplace: The Causes of Sexual Inequality," *American Sociological Review*, April 1979, pp. 235-52.

² Depending on the time of completion of the census form, an individual could be reporting his or her occupation based on work activity during a week in March or in April. However, because census forms are to be returned by April 1, this study uses March as the month most often reported by respondents. A comparison of data from the Hired Farm Working Force Survey for March and April indicates that the numbers and characteristics of farmworkers in these months did not vary significantly.

³ For additional information on survey design and reliability of estimates, see Susan L. Pollack and William R. Jackson, Jr., *The Hired Farm Working Force of 1981* (U.S. Department of Agriculture, Economic Research Service, 1983); and *The Current Population Survey—Design and Methodology* (U.S. Bureau of the Census, 1978), Paper No. 40.

⁴ See Ray Marshall, *Rural Workers in Rural Labor Markets* (Salt Lake City, Utah, Olympus Publishing, 1974); and Leslie Whitener Smith and Robert Coltrane, *Hired Farmworkers: Background and Trends for the Eighties* (U.S. Department of Agriculture, Economic Research Service, 1981).

⁵ Based on average weekly earnings from *Employment and Earnings*, January 1983 (Bureau of Labor Statistics).

⁶ This low-income measure was based on the following family size and income criteria. Families with annual incomes at or below these thresholds were considered to be economically disadvantaged for purposes of this study.

Family size	Family income
1	\$ 4,999
2	5,999
3	7,499
4	9,999
5-6	11,999
7	14,999

⁷ Race or ethnic data are classified into three mutually exclusive groups based on a self-identification question. The groups are white, Hispanic, and black and other.

⁸ *Money Income of Households, Families and Persons in the United States*, Series P-60, No. 138 (U.S. Bureau of the Census, 1983).

⁹ Unpublished data from the March 1981 Current Population Survey (U.S. Bureau of the Census).

¹⁰ The 1980 census adopted a new occupational classification scheme which greatly affects historical comparability for many occupations. However, efforts are underway to standardize occupational data for previous census years based on 1980 classification codes. See Charles Nam and others, "Historical Comparability of Occupation Statistics: Report of a Project," *Proceedings of the American Statistical Association*, 1982.

¹¹ See "Occupational rankings for men and women by earnings," *Monthly Labor Review*, August 1974, pp. 34-51.



Major Agreements Expiring Next Month

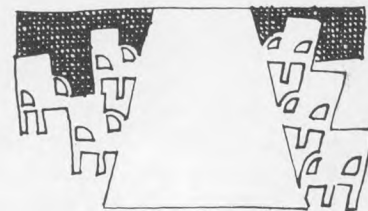
This list of selected collective bargaining agreements expiring in July is based on contracts on file in the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more.

Employer and location	Industry	Labor organization ¹	Number of workers
ACF Industries, Inc., Amcar Division (Interstate)	Transportation equipment	Steelworkers	2,000
Allen-Bradley Co. (Milwaukee, Wis.)	Electrical products	Electrical Workers (Un-Ind.)	2,000
Amalgamated Sugar Co. (Idaho and Oregon)	Food products	Grain Millers	1,100
Associated General Contractors of America, Inc.: Mobile Chapter (Alabama and Florida)	Construction	Building and Construction Trades Council: Teamsters (Ind.)	7,000
Association of Master Painters and Decorators of the City of New York, Inc. (New York)	Construction	Painters	4,500
East Bay Hotel Association, Inc. (California)	Restaurants	Hotel Employees and Restaurant Employees	5,000
Food Employers Council, Inc. and Independent Retail Operators (California)	Retail trade	Food and Commercial Workers	65,000
Food Employers, Inc. (Oregon)	Retail trade	Food and Commercial Workers	4,200
General Telephone Company of Ohio (Ohio)	Communication	Communications Workers	2,650
Great Northern Paper Co. (Millinocket, Me.)	Paper	Paperworkers	1,600
Greater St. Louis Automotive Association and 1 other (Missouri and Illinois)	Retail trade	Machinists	2,000
Hammermill Paper Co. (Kaukauna, Wis.)	Paper	Paperworkers	1,250
International Harvester Co., Solar Turbines, Inc. (California)	Transportation equipment	Machinists	1,400
James River Corp. (Kalamazoo, Mich.)	Paper	Paperworkers	1,100
Joseph E. Seagram and Sons, Inc. and 1 other (Interstate)	Food products	Distillery Workers	1,400
Missouri River Basin agreement (Interstate) ²	Construction	Boilermakers	3,400
Meijer, Inc. (Michigan)	Retail trade	Food and Commercial Workers	9,000
Pacific Maritime Association (Interstate)	Water transportation	Longshoremen and Warehousemen (Ind.)	10,050
Schenley Distillers, Inc. (Interstate)	Food products	Distillery Workers	1,000
Southern Illinois Contractors Association (Illinois)	Construction	Laborers	2,000

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

²Industry area (group of companies signing same contract).

Developments in Industrial Relations



Lynn Williams to head Steelworkers

After a bitter 4-month campaign, Lynn Williams was elected to head the United Steelworkers until March 1, 1986, but there was a possibility that the vote outcome would be challenged by Frank McKee, the other aspirant. Even if the issue is dropped when the official vote count is reported to the union's executive board in June, it is possible that lingering bitterness between the two camps could hinder the union's efforts to reverse the recent substantial decline in membership.

During the campaign to fill the remaining 2 years of the term of Lloyd McBride who died in November 1983, followers of both candidates contended that their man had the qualities and experience required to lead the union out of its difficulties. Williams, the 59-year-old secretary and acting president, pressed his belief that the union must cooperate more closely with the industry in seeking political and legislative solutions to problems such as the increasing incursions of foreign producers. McKee, the 63-year-old treasurer—who will retain that post—contended that his 20 years' experience as a mill hand had given him a better understanding of the problems of steelworkers, and that Williams could not properly represent the interests of domestic steelworkers because he is a Canadian.

Williams received 193,686 votes, of which 51,610 were cast by Canadian members. McKee received 135,823 votes, 3,758 were by Canadian members. McKee charged voting irregularities, contending that ballots were improperly distributed to Canadian members. However, his assertion was rejected by a Campaign Conduct Administrative Committee established under the union's constitution and headed by former Secretary of Labor W. Willard Wirtz. James W. English, the associate counsel of the union and a neutral official in charge of giving advice on election conduct, also found no evidence of misconduct.

Williams joined the union in 1947, held positions in the Canadian Labour Congress and the Steelworkers' Canadian organization, including a stint as a district director, and was elected secretary of the international in 1977, when McBride and McKee also entered office. He was supported by I. W.

Abel, the union's only living ex-president. Williams is the fourth person to head the union, and is the second Canadian heading an AFL-CIO affiliate, joining Kenneth J. Brown of the Graphic Communications International Union.

Airline industry update

Reflecting continuing economic difficulties in the air transportation industry, union and management representatives continue to negotiate contracts reducing labor costs. In return, some settlements provide for adoption of plans giving employees shares of company stock. (See *Monthly Labor Review*, January 1984, pp. 36-37, and February 1984, pp. 64-65, for previous cost-reduction settlements in the air transportation industry.)

Frontier Airlines, which in 1983 suffered its first full-year loss since 1971, negotiated cost-reduction contracts with several unions that established "two-tier" pay systems. The accord with the Air Line Employees Association, covering 2,600 customer service and clerical employees, cut the pay of new hires by 35 percent, compared with an 11-percent cut for those already on the payroll. Other terms for all employees represented by the unions included a reduction in holiday, vacation, and other benefits; adoption of a profit-sharing plan; and adoption of split work schedules under which some employees are on duty for 4 hours, off for 4 hours, and then work another 4 hours. Cockpit crew members, represented by the Air Line Pilots Association, agreed to a 35-percent cut in pay for new hires and 8.1 percent for incumbents, plus elimination of plans to restore a 3.5-percent pay cut in September that had been negotiated in 1983. Terms of a contract for employees represented by the Association of Flight Attendants were not released pending the outcome of a ratification vote, and bargaining was continuing with the Machinists union, which has vowed to resist steep cuts in compensation and adoption of a two-tier pay system.

Trans World Airlines asked the Independent Federation of Flight Attendants for an early start of negotiations on a contract to succeed one scheduled to expire July 31. The company said that it would seek "significant" cuts in compensation and permanent changes in work rules from 4,600 workers. In response, union president Arthur Teolis said, "We will make reasonable concessions provided we get

"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.

certain protections," including job security guarantees and stabilization of work schedules.

At United Airlines, 8,500 members of the Association of Flight Attendants were covered by a 37-month agreement that provided for one pay increase of 6 percent, effective on October 1, 1984. For an attendant with 12 years of service, the increase will raise pay to \$2,072 a month, from \$1,955, for 65 hours of work. During their first 5 years of employment, new employees will be paid about 25 percent less than current pay scales. Beginning with the sixth year of service, however, they will move into the appropriate step of the regular 14-year pay progression schedule for current employees. At the time of the settlement, United also was bargaining with the Machinists union for 14,000 mechanics and with the Air Line Pilots Association for 4,800 cockpit crew members.

Braniff Airways resumed operations on March 1, 22 months after it had filed for protection from creditors under the Federal Bankruptcy Act. The major factors in the rebirth were an infusion of money from the Hyatt Corp., the new principal owner, and new 5-year labor contracts calling for 30- to 40-percent cuts in compensation and some changes in work rules to increase efficiency. The carrier, which was the 8th largest in the Nation, now has 2,250 employees, down from a peak of about 9,000. Virtually all of the current employees were with Braniff at the time of shutdown.

All of the agreements, negotiated at various times in 1983, limit paid vacations to 3 weeks a year and limit the carrier's health insurance contribution to \$100 a month, with employees paying the balance (scheduled to rise to \$132 over the 5-year period). A pension plan has not been established but Braniff said it will continue to provide sick leave and airline travel passes, is planning to establish a profit-sharing plan, and is considering a stock-option plan.

- The 380 pilots, represented by the Air Line Pilots Association, are guaranteed 65 flight hours a month at \$43.01 an hour in the first year, rising, in steps, to \$56.84 in the fifth year.
- The mechanics' agreement, which was subject to a legal dispute regarding its validity, provided for an initial rate of \$9.50 an hour and a final-year rate of \$11, compared with the current industry average of nearly \$17. The 340 mechanics are represented by the Machinists union.
- The 675 clerical, office, fleet, and passenger service employees represented by the Teamsters start at \$7 an hour and rise to \$8.14 over the term. Their contract is the only one that provides for automatic cost-of-living pay adjustments, ranging from 3 to 8 percent a year.
- The 525 employees represented by the Association of Flight Attendants also will be guaranteed 65 hours a month, starting at \$17.70 an hour and rising to \$18.79 in the final year. Before the shutdown, most of the attendants were earning the \$26.30-an-hour top rate payable after 13 years of service.

NLRB says operations transfer not negotiable

Organized labor, which has been adversely affected by several recent National Labor Relations Board decisions, suffered another blow when the Board held that an employer is generally not required to bargain with unions regarding transfer of operations to another location. The ruling involved United Technologies Corp.'s Otis Elevator Corp. subsidiary in Mahwah, N.J., and Auto Workers Local 989. The case arose in 1977 when United Technologies decided to merge its elevator research and development operations in Mahwah with a larger operation in East Hartford, Conn. This resulted in a March 1981 ruling by the Board validating the union's complaint that Otis had engaged in an unfair labor practice by refusing to bargain on the move. But 3 months later, in *First National Maintenance Corp. v. NLRB*, the Supreme Court ruled that an employer could close part of a business for economic reasons without first bargaining with employees over the decision. In reversing its Otis decision to follow the Court's ruling, the Board extended employers' rights by permitting them to make unilateral decisions on such matters as subcontracting work or selling or relocating a plant. In its finding, the Board said employers are not required to bargain on any "decisions which affect the scope, direction or nature of the business." Continuing, the Board said that Otis was not required to bargain on the decision to move because it "clearly turned upon a fundamental change in the nature and direction of the business" that resulted because Otis' technology was dated and its product was not competitive. The Board did hold that bargaining is required on decisions that "turn upon a reduction of labor costs."

United Auto Workers' attorney Stephen Schlossberg said the decision has serious ramifications because it "strikes at the heart of bargaining" and that, given the chance, the union "could have really done something" about the threatened transfer. He was referring to the possibility that the union would have accepted contractual changes that would have improved Otis' competitive position.

The union said it would appeal, because the decision "threatens to unleash a new wave of plant closings, joblessness and community misery as companies are released from any obligations to bargain with their workers before transferring or subcontracting work, or even to supply any information relative to the move."

Management officials applauded the decision because it extends the Supreme Court's decision to relieve employers of the obligation to bargain with unions on business matters that are unrelated to labor costs.

Another case centering on the right of employers to transfer operations occurred earlier in 1984 (see *Monthly Labor Review*, March 1984, p. 57). In this case, which involved the Milwaukee Spring Co., the Board held that the employer's plan to transfer work from a union plant to a non-union plant was based on management's effort to escape

labor costs of the union contract and therefore was a required bargaining issue. However, the Board permitted the company to shift the work because the contract did not contain a work preservation clause and Milwaukee Spring bargained on the move in good faith, even though the negotiations ended in an impasse.

Arbitration not equal to judicial factfinding

The Supreme Court held that a discharged police officer could seek redress in court, even though he had fully utilized the grievance procedure in his union's contract, culminating in an arbitrator's ruling that the discharge was warranted.

The case, *McDonald v. City of West Branch, Mich.*, arose in 1976 when officer McDonald asked a Federal District Court to assess damages against the chief of police and other West Branch officials under Section 1983 of the Civil Rights Acts of 1871, claiming they had discharged him for exercising his First Amendment rights of freedom of speech, freedom of association, and freedom to petition the government for redress of grievances. Specifically, he contended the action had been taken in reprisal for his activities as a steward for his bargaining representative, a local of the United Steelworkers. The city maintained officer McDonald had been discharged for allegedly participating in a sexual assault on a minor.

The District Court judge allowed McDonald to proceed with the action and a jury awarded him an \$8,000 judgment against the police chief. However, on appeal, the Sixth Circuit Court of Appeals overturned the decision, finding that the First Amendment claim was an unwarranted attempt to litigate a matter that had already been decided by the arbitrator.

In its decision, written by Justice Brennan, the Supreme Court recognized that while Title 28 USC 1738 provides that the "judicial proceedings" of any court in the United States must be given full credence by all other courts within the United States, it did not apply to the case at hand because arbitration is not a "judicial proceeding." Continuing, the Court said that arbitration is well suited to resolving contractual disputes, but is not an adequate substitute for a judicial proceeding in protecting the rights that Section 1983 is designed to safeguard. The Court explained that an arbitrator may not have the expertise to resolve complex legal questions that may arise in Section 1983 actions, or the authority to enforce Section 1983; that a union's usual exclusive control over prosecuting grievances may result in an employee's loss of an opportunity to be compensated for any constitutional deprivation because it was not in the union's best interest to press the grievance vigorously; and that arbitration factfinding is not equivalent to judicial factfinding.

The Supreme Court remanded the case to the Circuit Court of Appeals.

'Factory surveys' legal, Supreme Court finds

It is constitutional for Federal agents to conduct "factory surveys" to enforce immigration laws, the Supreme Court has ruled. The case, *Immigration and Naturalization Service [INS] et al. v. Herman Delgado et al.*, arose in 1977 when INS conducted such surveys at three garment plants in California. At two of the plants, the INS acted under authority of search warrants issued in response to INS assertions that numerous illegal aliens were employed in the plants. The survey at the third plant was conducted with the employer's consent. During each survey, which lasted from 1 to 2 hours, some agents were stationed near the exits, while other agents moved systematically through the factory approaching employees and, after identifying themselves, asking from one to three questions relating to their citizenship. If an employee gave a credible reply that he or she was a U.S. citizen or produced immigration papers, the agent moved to another employee. During the survey, employees continued with their work and were free to walk around within the factory. The surveys resulted in the arrests of 164 of the 590 workers.

Four of the employees who were questioned—two American citizens and two legally resident aliens—joined with the Ladies' Garment Workers' Union in a suit to halt such surveys, contending that they violated the illegal search and seizure prohibitions of the Fourth Amendment to the Constitution. The Federal District Court ruled in favor of the INS, but the Ninth Circuit Court of Appeals held that the surveys were an unreasonable seizure of all the employees and that the INS could not question employees without having information that particular employees were illegal aliens.

In the majority opinion, written by Justice Rehnquist, the Supreme Court held that the factory surveys did not result in the seizure of the entire work force and the individual questioning of the employees who initiated the case did not amount to a detention or seizure under the Fourth Amendment. Justice Rehnquist said that a "consensual encounter" between a police officer and a citizen could be transformed into a violation of the Fourth Amendment if, in view of all the circumstances surrounding the incident, a reasonable person would have believed that he was not free to leave. According to the Court, this did not occur during the surveys because employees were free to move about in the normal course of their duties, and the INS agents were stationed at the exits to insure that all employees were questioned, not to prevent them from leaving.

Finally, the Court said that because there was no seizure of the entire work force, the respondents could litigate only what happened to them, which, based on their own description of their encounters with the agents, were "classic consensual encounters," rather than violations of the Fourth Amendment.

In a concurring opinion, Justice Powell said that factory

surveys were reasonable under the Fourth Amendment even if they resulted in seizures of some of the individuals questioned by the agents. He said that the minimal intrusion on personal privacy was justified because it is outweighed by the greater benefit accruing to the public in apprehending illegal aliens.

Justice Brennan, also writing for Justice Marshall, dissented, saying that the majority decision was marked by a "studied air of unreality." Brennan said that the interrogations of individual employees were, in fact, illegal seizures within the meaning of the Fourth Amendment. He wrote, ". . . it is beyond cavil that the manner in which INS agents conducted these surveys demonstrated a 'show of authority' of sufficient size and force to overbear the will of any reasonable person. Faced with such tactics, a reasonable person could not help but feel compelled to stop and provide answers to the INS agents' questions. The Court's efforts to avoid this conclusion are rooted more in fantasy than in the record of this case."

Flight Attendants union chartered by AFL-CIO

The 21,000-member Association of Flight Attendants became the 96th member union of the AFL-CIO when the Federation's Executive Council granted it a charter. Previously, the Flight Attendants were an autonomous affiliate of an AFL-CIO affiliate, the Air Line Pilots. The move for a separate charter was strongly supported by Air Line Pilots President Henry A. Duffy, as well as by AFL-CIO President Lane Kirkland and Vice President Joyce Miller, who is president of the Coalition of Labor Union Women.

The new affiliate is headed by President Linda A. Puchala, Secretary-Treasurer Pamela Casey, and Vice President Susan Bianchi Sand, making it the first AFL-CIO union whose top officers are all women. Puchala said that the Association's new status as an autonomous chartered union will give it recognition as "the national flight attendants union" that will be a major boost to organizing activities. Currently, the union represents cabin crews on 14 airlines.

Truckers' pay increase diverted

About 200,000 Teamsters' members in the trucking industry did not receive a scheduled 35-cent-an-hour automatic annual cost-of-living pay increase as a result of a decision by a committee consisting of officials of the union and employer associations. Instead, the money will be used to maintain the existing level of health and welfare and pension benefits, as permitted in the parties' 1982 settlement. (See *Monthly Labor Review*, April 1982, p. 64.)

A similar diversion occurred with the 33-cent cost-of-living pay increase that had been scheduled for April 1983. Thus, the only wage increase during the 38-month term of the trucking agreement was 47 cents (in April 1982) of a scheduled 72-cent cost-of-living adjustment. That increase

was to have been paid during the preceding contract but was postponed to the first month of the 1982 contract.

Although the current contract was negotiated in advance of the expiration date of the prior contract, there are no indications that the parties will bargain early under an option to reopen the current trucking contract after April 1, 1984, if they "agree that the financial status of the industry has either substantially increased or decreased compared to the date of the ratification of this agreement." Even if the parties did bargain early, getting the contract approved could be a problem for union leaders, in view of the members' rejection of an earlier proposal that was backed by union leaders. That proposal could have led to the recall of some laid-off workers at reduced compensation levels. (See *Monthly Labor Review*, November 1983, p. 73.)

Hawaiian hotel employees get new contract

A 3-year accord between the Council of Hawaii Hotels and the Hotel and Restaurant Employees union provided for pay increases of 4 percent in the first and second years and 5 percent in the third year. The contract covers more than 8,000 employees of 15 hotels. It also provides for a 34-cent-an-hour increase in the employers' financing of health and welfare benefits over the contract term, bringing the total to 98 cents, and a 6-cent increase in their financing of pensions, bringing the total to 38 cents. A management official said that the new financing levels are "set" amounts, which was a major objective of the hotels. Previously, the employers were required to provide whatever financing was necessary to maintain benefit levels, which had resulted in an 80-percent rise in their benefit costs over the last 5 years.

In another change beneficial to management, new employees will be paid 80 percent of scale for the first 60 days of employment. Previously, new employees were paid 10 cents an hour under scale for the first 30 days of employment. Also, employees working "short shifts" will now be paid at straight-time rates plus a 10-percent premium. Previously, the premium for these employees ranged from 10 to 25 percent.

Steelworkers' local adopt jobsharing plan

Members of Steelworkers Local 1211 have adopted a plan under which employed members at Jones & Laughlin Steel Corp.'s Aliquippa, Pa., steel mill will share jobs with other members on layoff from the plant. Under the plan, the 200 jobs in the general labor pool will be shared by the current employees holding the jobs and 225 workers recalled from layoff. Expectations are that each of the 425 employees will work 60 percent of the time and be on layoff 40 percent of the time. While on layoff, they will be eligible for supplemental unemployment benefits.

During the recession which ended late in 1982, a number of firms adopted worksharing to aid employees financially

and to help them retain their skills in anticipation of an economic recovery. The plans were particularly popular in Arizona, California, and Oregon, the only States which (at the beginning of 1983) permitted job-sharers to draw State unemployment benefits for idle periods. Subsequently, such provisions were enacted in Florida, Illinois, and Washington.

Elsewhere in the industry, Armco, Inc., agreed to a trial plan suggested by employees for boosting output of steel slabs at its Middletown, Ohio, mill. Armco had announced that it would be necessary to import the slabs because of an unscheduled shutdown of its largest blast furnace to reline its interior.

The plan calls for employees to make an all-out effort to attain peak output at each step of the steelmaking process. If the target production levels—which have never been met for a sustained period—are not attained, the plan would be terminated and Armco would purchase the slabs overseas. The slabs, which are rolled into sheet metal, are not available from domestic mills because of intense demand for sheet metal, particularly from automobile manufacturers.

Employees at the mill are represented by Armco Employees Independent Federation, Inc.

'Cooperative approach' to lead safety standards

In a departure from the contentious relationship that sometimes occurs when Federal job safety and health standards are developed or applied, the Department of Labor's Occupational Safety and Health Administration, (OSHA), Asarco Inc., and the United Steelworkers union worked out agreements designed to limit worker exposure to lead in three smelters and a refinery. The agreements gives Asarco extra time to comply with the various exposure limits of the lead standard OSHA issued in 1983 in return for adoption of a system of technical controls and workplace practices which will demonstrate that the company is striving to attain the standard. The controls and practices include improving ventilation, enclosing some processes or workspaces, improving the method of cleanup, increasing the frequency of cleanup, providing filtered air for certain rooms and mobile equipment, periodically inspecting worksites, and conducting research to develop or locate more effective controls.

An OSHA official called the cooperative approach "very effective in solving compliance problems in the workplace."

A Steelworkers' official also lauded the settlement, saying that it precludes lengthy delays that sometimes result from employer efforts to win variances from standards.

The agreements are for 2½ to 4½ years. They incorporate some of the control approaches the parties worked out in 1983 to comply with the arsenic standard. OSHA will retain authority to inspect the facilities in response to serious accidents and exposure complaints. Prior to the termination of the agreements, the parties will negotiate renewal agreements incorporating the latest exposure controls.

The smelters are in El Paso, Tex.; East Helena, Mont.; and Glover, Mo. The refinery is in Omaha, Neb.

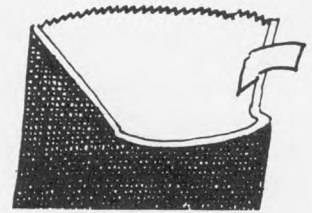
Black public employees win \$15 million award

In a ruling which could result in back pay of more than \$15 million, a U.S. district judge held that the State of Illinois and Cook County had discriminated against black welfare workers by paying them less than white workers performing the same duties. The State, County and Municipal Employees union, which initiated the class action suit in 1973, said the award could affect more than 1,000 current and former employees in the county. In the suit, the union contended that blacks had been generally assigned as case trainees and case aides, while whites were case workers and paid \$150 to \$200 more per month. The discrimination ended in 1975 when the State took over the county welfare department.

About \$4 million of the award is to be paid by the county and the balance by the State. The union calculates that individual payments could be as much as \$40,000.

Hair product company charged with sex bias

A U.S. district judge decided that Johnson Products Co. had discriminated against female sales employees in hiring, pay, and promotions, and fired them if they complained to the Equal Employment Opportunity Commission. The attorney who filed the class action suit said that more than 100 women could collect damages from Johnson Products, which makes hair care products, and is one of the largest black-owned businesses in the country. The attorney also indicated that negotiations were underway with the company on the amount of damages. Johnson Products did not indicate whether it will appeal the finding. □



Book Reviews

Keeping informed

Handbook of Wage and Salary Administration. 2d ed. Edited by Milton L. Rock. New York, McGraw-Hill Book Co., 1983. 800 pp. \$59.95.

The value of a reference work such as the *Handbook of Wage and Salary Administration* can be recognized by comparing pay plans in today's factories and offices with those generally used half a century ago. Wages and salaries of individual workers were usually set on an informal personal basis, and relatively little thought was given to the idea of an equitable overall pay structure. Worker performance greatly influences current-day earnings, but, at least in larger firms, it now commonly does so within a framework emphasizing pay progression within specified rate ranges for formally defined and evaluated jobs.

In addition, employee compensation no longer consists just of pay rates; it typically includes a host of so-called "fringe benefits"—such as paid sick leave, holidays, and vacations; overtime, shift differentials, and other forms of premium pay; and various health, insurance, and retirement benefits. Many of these pay supplements have resulted from actions of employers alone or of unions and management through collective bargaining; others, however, stem from legal enactments, for example, social security, unemployment insurance, and workers' compensation.

Administrators of present-day compensation plans have a complex task. Equitable pay relationships must be maintained among a company's jobs and, at the same time, wage and salary rates must be competitive with those paid by other employers. Furthermore, appropriate incentives must exist to stimulate a high level of worker performance. Also, job hierarchies should provide an opportunity for employee growth and advancement.

To accomplish these goals, compensation specialists must know the techniques for designing, describing, and evaluating jobs; establishing wage and salary structures; planning and budgeting for merit increases; and appraising and rewarding performance of individual employees. Compensation plan administrators must also be familiar with the availability and use of wage, salary, and benefit surveys; the details of individual fringe benefits and the creation of a benefit package; and the various laws affecting employee

compensation, such as the Fair Labor Standards Act, the Social Security Act, the Equal Pay Act of 1963, and the Employee Retirement Income Security Act.

This second edition of the *Handbook of Wage and Salary Administration* is an encyclopedic review of these topics. Its 800 pages contain 66 chapters, ranging from 2 to 24 pages in length. Authors of the individual chapters include corporate compensation specialists, consultants, academic experts, and government officials. Chapter titles range from "Acquiring Competitive Information from Surveys: Abbott-Langer Directory of Pay Survey Reports" to "Evaluating an Executive Compensation Program." Reflecting common practice, separate chapters are devoted to establishing pay structures for hourly, clerical, and exempt and managerial employees. Two chapters deal with an equal employment opportunity issue currently receiving widespread attention—the concept of comparable worth, or equal pay for jobs of equal value.

Nevertheless, the book does not span the full gamut of topics pertaining to employee pay. It is concerned essentially with methods for establishing pay structures within companies and for adjusting wages and salaries of individual employees. General wage increases granted by employers alone or through collective bargaining receive only incidental mention. Within its scope, however, the book is a useful source of pertinent information, presenting concise statements of current approaches to issues in wage and salary administration.

—VICTOR J. SHEIFER
Office of Wages and Industrial Relations
Bureau of Labor Statistics

Book notes

Données Sociales. 5th ed. Paris, France, Institut National de la Statistique et des Etudes Economiques, 1984. 592 pp.; English abstracts, 12 pp. 160 F.; \$19.75.

The English abstract of this new edition of *Données Sociales* [Social Data], published by France's National Institute of Statistics and Economic Studies, notes that the work provides an informative review of statistical data on France

and seeks to serve as a tool for decision-makers, teachers, and research workers. It also provides "a description of French society taken as a whole and seen from the point of view of individuals, and an analysis of the ways in which the state or other institutions intervene to resolve social problems—unemployment, poverty, old age."

The study covers the population and social groups; the labor force; industrial relations; the socialization of resources; urbanization; consumption; health; socialization of the family; services; and new tools for occupational analysis. Each of the chapters is preceded by an introduction which links and summarizes the different articles.

Copies of this publication are available from l'observatoire économique de Paris, Tour gamma A 195, rue de bercey, 75 582 Paris Cedex 12 (France).

Part-Time Employment in America. Edited by Diane Rothberg. McLean, Va., Association of Part-Time Professionals, 1984. 83 pp. \$21.95, paper. Available from APTP, P.O. Box 3419, Alexandria, Va. 22302.

This publication is the outcome of the first national conference on part-time employment. The viewpoints represented by the conference speakers draw from a range of experts and provide an up-to-date look at part-time issues of concern to employers, workers, and public policy officials.

In their remarks, the speakers point out that the growth in part-time positions reflects complex demographic, industrial, and managerial changes, for example, preferences of married women and older workers for reduced work schedules, the movement from a goods-producing to a services-producing economy, and pressures from the marketplace for productivity and cost effectiveness.

White Collar Workers in Transition: The Boom Years, 1940–1970. By Mark McCulloch. Westport, Conn., Greenwood Press, 1983. 193 pp., bibliography. (Contributions in Labor History, 15.) \$29.95.

By the late 1950's, white-collar workers outnumbered production workers for the first time. This rapid growth has caused a good deal of speculation about the changing nature of white-collar work, white-collar workers, and their relationship to other groups in the workplace.

Mark McCulloch describes and analyzes changes in the work process, the composition of the labor force, and the collective awareness of three specific occupations—white-collar banking, public welfare, and electrical manufacturing workers. The period from 1940 to 1970 was one of sharp change in these occupations.

The impact of automation is examined as well as changes in the safety and working conditions of the labor force. Changes in pay and fringe benefits and hours of work are also discussed.

This is a timely and interesting book and is particularly

applicable to courses in labor history, labor relations, economics, and sociology, and should appeal to anyone interested in the changing workplace.

Determinants of Female Reentrant Unemployment. By Ethel B. Jones. Kalamazoo, Mich., The W. E. Upjohn Institute for Employment Research, 1983. 74 pp. \$6.95, paper.

In this study, the author focuses on two questions: To what extent do women undergo a spell of unemployment upon reentry into the labor force? What factors determine whether or not a woman undergoes a spell of unemployment upon reentering the labor force? The empirical data for this study are from two samples of reentrants that were constructed from the National Longitudinal Survey for 1972. The sample of young women included those 20 to 28 years of age and the sample of mature women included persons 35 to 49 years of age.

The author reports that approximately 1 of every 3 women actually undergoes a spell of unemployment upon reentrance. Five of every 10 young women and 4 of every 10 mature women experienced some type of unemployment during 1972. The determinants considered included education, certification in a profession or trade, years of work experience, marital status, a young child or the number of young children at home, migration, the potential market wage, husband's income, race, a self-reported health limitation, the area's unemployment rate, and an indicator of prior intentions to seek work.

Labor Force Statistics, 1970–1981. Paris, Organization for Economic Cooperation and Development, Department of Economics and Statistics, 1983. 477 pp. \$24, OECD Publications and Information Center, Washington 20006.

This 19th edition of the *Labor Force Statistics Yearbook* contains historical time series of the evolution of the population and labor force for the 24 Member countries of the Organization for Economic Cooperation and Development.

The Yearbook is divided into three parts. Part I contains general tables referring to the main aggregates from 1968 to 1981. Graphs covering a 20-year period beginning in 1962 show the evolution of some major labor force components. Part II contains data by country covering 1970–81. Part III contains a time series for participation rates and unemployment rates by age and sex for 14 Member countries covering the period 1970 to 1982.

Facts and Figures on Government Finance. 22d biennial ed. Washington, Tax Foundation, Inc., 1983. 364 pp. \$20, paper.

In this new edition, the Tax Foundation presents a comprehensive statistical portrait of the fiscal operations of Federal, State, and local governments. Key areas of the economy

and government not covered before are documented. Topics covered for the first time include: How governments raise and spend each dollar of public funds; how foreign governments raise their tax revenues compared with the United States; capital outlays of the Federal Government; Federal expenditures in each State by type of spending, total amount spent, and per capita spending; and the Federal tax burden borne by residents of each State by type of tax.

Tax Foundation, Inc., is a nonprofit, nonpartisan research and public education organization founded in 1937 to monitor tax and fiscal activities at all levels of government.

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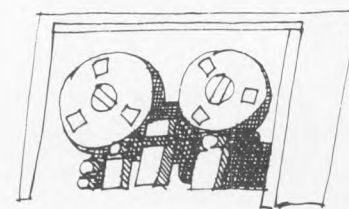
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NOTES ON CURRENT LABOR STATISTICS

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

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

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

Seasonally adjusted labor force data in tables 3-8 were revised in the February 1984 issue of the *Review*, to reflect experience through 1983.

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

Annual revision of the seasonally adjusted payroll data shown in tables 11, 13, and 15 were made in July 1983 using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 29 and 30 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from

quarter to quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average, All Items CPI. Only seasonally adjusted percent changes are available for this series. **Adjustments for price changes.** Some data are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of \$3 and a current price index number of 150, where 1967 = 100, the hourly rate expressed in 1967 dollars is \$2 ($\$3/150 \times 100 = \2). The resulting values are described as "real," "constant," or "1967" dollars.

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

Symbols

- p = preliminary. To improve the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.
- r = revised. Generally, this revision reflects the availability of later data but may also reflect other adjustments.
- n.e.c. = not elsewhere classified.

Schedule of release dates for BLS statistical series

Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	June 1	May	July 6	June	August 3	July	1-11
Producer Price Index	June 15	May	July 13	June	August 10	July	23-27
Consumer Price Index	June 22	May	July 24	June	August 22	July	19-22
Real earnings	June 22	May	July 24	June	August 22	July	12-16
Productivity and costs:							
Nonfinancial corporations					August 27	2nd quarter	29-32
Nonfarm business and manufacturing			July 31	2nd quarter			29-32
Major collective bargaining settlements			July 27	1st half			36-37
Employment Cost Index			July 31	2nd quarter			33-35

EMPLOYMENT DATA FROM THE HOUSEHOLD SURVEY

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 60,000 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

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

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

rate for all civilian workers represents the number unemployed as a percent of the civilian labor force.

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

Notes on the data

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

Data in tables 2-8 are seasonally adjusted, based on the seasonal experience through December 1983.

1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950-83

[Numbers in thousands]

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

EMPLOYMENT, HOURS, AND EARNINGS DATA FROM ESTABLISHMENT SURVEYS

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by 189,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

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

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

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

in manufacturing (the only sector for which overtime data are available) and the effects of changes and seasonal factors in the proportion of workers in high-wage and low-wage industries.

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

The Diffusion Index, introduced in table 17 of the May 1983 issue, represents the percent of 186 nonagricultural industries in which employment was rising over the indicated period. One-half of the industries with unchanged employment are counted as rising. In line with Bureau practice, data for the 3-, 6-, and 9-month spans are seasonally adjusted, while that for the 12-month span is unadjusted. The diffusion index is useful for measuring the dispersion of economic gains or losses and is also an economic indicator.

Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1983 data, published in the July 1983 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 1981; seasonally adjusted data have been revised back to January 1978. Unadjusted data from April 1982 forward, and seasonally adjusted data from January 1979 forward are subject to revision in future benchmarks. Earlier comparable unadjusted and seasonally adjusted data are published in a *Supplement to Employment and Earnings* (unadjusted data from April 1977 through February 1983 and seasonally adjusted data from January 1974 through February 1983) and in *Employment and Earnings, United States, 1909-78*, BLS Bulletin 1312-11 (for prior periods).

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

13. Weekly hours, by industry division and major manufacturing group, seasonally adjusted

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1983										1984			
	1982	1983	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar. ^p	Apr. ^p	
	PRIVATE SECTOR	34.8	35.0	34.9	35.1	35.1	35.0	35.0	35.2	35.3	35.2	35.3	35.5	35.4	35.2	35.6
MANUFACTURING	38.9	40.1	40.1	40.0	40.1	40.2	40.3	40.8	40.6	40.6	40.5	41.0	41.0	40.6	41.2	
Overtime hours	2.3	3.0	2.9	2.7	2.9	3.0	3.1	3.3	3.3	3.4	3.4	3.5	3.6	3.4	3.7	
Durable goods	39.3	40.7	40.5	40.4	40.6	40.8	40.8	41.5	41.2	41.2	41.1	41.8	41.7	41.2	41.9	
Overtime hours	2.2	3.0	2.8	2.6	2.8	3.0	3.1	3.4	3.4	3.5	3.5	3.7	3.7	3.6	3.9	
Lumber and wood products	38.0	40.0	40.0	39.8	40.0	39.9	40.2	40.5	40.3	39.7	39.7	40.8	40.4	39.9	40.5	
Furniture and fixtures	37.2	39.4	39.3	39.2	39.6	39.7	39.7	40.1	39.8	39.7	40.1	40.2	39.7	39.1	40.0	
Stone, clay, and glass products	40.0	41.4	41.0	41.2	41.6	41.7	41.7	42.1	41.7	41.7	41.6	23.3	42.6	41.7	42.5	
Primary metal industries	38.6	40.5	39.9	40.3	40.3	40.8	40.9	41.2	41.7	41.6	41.8	41.9	42.0	41.7	42.0	
Fabricated metal products	39.2	40.6	40.5	40.4	40.5	40.7	40.9	41.6	41.2	41.4	41.4	41.8	41.9	41.1	41.9	
Machinery, except electrical	39.7	40.5	40.2	40.0	40.4	40.7	40.7	41.2	41.3	41.3	41.4	41.8	41.9	41.5	42.4	
Electric and electronic equipment	39.3	40.5	40.4	40.3	40.5	40.8	40.7	41.1	41.1	41.1	40.9	41.4	41.3	40.7	41.3	
Transportation equipment	40.5	42.1	42.3	41.6	41.9	42.0	41.8	43.5	42.5	42.5	41.9	43.4	43.2	42.9	43.6	
Instruments and related products	39.8	40.4	40.5	40.4	40.1	40.7	40.4	41.0	40.7	40.6	40.7	41.4	41.3	41.0	42.0	
Nondurable goods	38.4	39.4	39.5	39.4	39.6	39.5	39.5	39.9	39.7	39.7	39.7	40.0	40.0	39.7	40.2	
Overtime hours	2.5	3.0	3.0	2.9	3.0	3.0	3.1	3.1	3.1	3.1	3.2	3.2	3.3	3.2	3.4	
Food and kindred products	39.4	39.5	39.6	39.4	39.8	39.4	39.6	39.9	39.7	39.5	39.6	39.6	39.8	39.7	40.2	
Textile mill products	37.5	40.4	40.6	40.4	40.7	40.7	40.9	41.3	40.7	40.7	40.7	41.1	40.9	40.5	41.3	
Apparel and other textile products	34.7	36.2	36.2	36.1	36.1	35.8	36.2	36.8	36.5	36.4	36.5	37.3	37.1	36.6	37.2	
Paper and allied products	41.8	42.6	42.4	42.7	42.8	42.9	42.9	43.3	43.2	43.0	43.0	43.2	43.3	42.8	43.2	
Printing and publishing	37.1	37.6	37.7	37.4	37.6	37.7	37.5	37.8	38.0	37.9	37.6	37.9	37.9	37.8	38.4	
Chemicals and allied products	40.9	41.6	41.5	41.6	41.9	41.8	41.6	41.7	41.7	41.8	41.9	42.2	42.2	41.8	41.9	
Petroleum and coal products	43.9	43.9	43.5	43.6	43.8	43.7	43.5	43.2	43.5	43.6	44.5	45.1	44.6	44.3	42.8	
Leather and leather products	35.6	36.8	37.0	36.8	36.8	37.4	37.2	37.7	37.5	37.2	37.0	37.3	37.1	36.5	37.6	
TRANSPORTATION AND PUBLIC UTILITIES	39.0	39.0	38.8	38.9	38.9	38.9	39.3	39.4	39.4	39.2	39.4	39.5	39.2	39.1	39.3	
WHOLESALE AND RETAIL TRADE	31.9	31.9	31.7	31.9	32.0	31.9	31.8	31.8	32.1	32.0	32.4	32.2	32.1	32.0	32.2	
WHOLESALE TRADE	38.4	38.6	38.5	38.6	38.7	38.6	38.5	38.7	38.7	38.7	38.7	38.8	38.7	38.6	39.0	
RETAIL TRADE	29.9	29.8	29.6	29.9	29.9	29.8	29.7	29.7	30.0	30.0	30.4	30.1	30.0	29.9	30.1	
SERVICES	32.6	32.7	32.7	32.9	32.7	32.6	32.7	32.8	32.9	32.7	32.6	32.8	32.7	32.7	32.9	

p = preliminary.

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

PRICE DATA

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

Definitions

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

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

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

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

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

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

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

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

Notes on the data

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

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

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

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

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

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

[1967 = 100 unless otherwise specified]

Area ¹	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1983				1984			1983				1984		
	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
U.S. city average ²	293.4	302.6	303.1	303.5	305.2	306.6	307.3	293.0	301.3	301.4	301.5	302.7	303.3	303.3
Anchorage, Alaska (10/67 = 100)	261.0	...	270.4	...	271.5	...	274.4	253.9	...	264.0	...	264.0	...	265.9
Atlanta, Ga.	...	304.4	...	307.3	...	309.3	...	...	306.3	...	309.7	...	309.6	...
Baltimore, Md.	292.8	...	304.7	...	307.6	...	310.4	295.0	...	302.4	...	303.8	...	307.2
Boston, Mass.	286.6	...	294.0	...	296.6	...	302.0	285.1	...	292.5	...	294.4	...	298.2
Buffalo, N.Y.	...	288.5	...	288.2	...	290.5	...	...	286.8	...	285.6	...	285.9	...
Chicago, Ill.-Northwestern Ind.	293.7	302.3	303.9	303.9	305.2	305.0	305.4	291.4	294.5	295.7	294.2	298.3	296.9	296.0
Cincinnati, Ohio-Ky.-Ind.	307.6	...	316.8	...	318.4	...	320.0	307.6	...	316.0	...	313.4	...	313.8
Cleveland, Ohio	...	332.5	...	330.7	...	331.1	...	...	317.6	...	314.9	...	318.2	...
Dallas-Ft. Worth, Tex.	...	318.5	...	317.6	...	322.7	...	...	314.7	...	313.5	...	317.7	...
Denver-Boulder, Colo.	329.6	...	339.8	...	343.0	...	344.7	326.8	...	338.4	...	336.0	...	341.7
Detroit, Mich.	292.4	298.2	299.9	300.1	301.3	303.1	304.1	289.8	298.9	301.8	301.3	307.9	304.7	302.9
Honolulu, Hawaii	...	276.4	...	278.4	...	280.7	...	...	285.9	...	288.2	...	284.3	...
Houston, Tex.	...	324.3	...	320.7	...	323.6	...	...	322.4	...	317.9	...	323.5	...
Kansas City, Mo.-Kansas	...	303.3	...	303.0	...	306.4	...	...	303.9	...	300.0	...	296.6	...
Los Angeles-Long Beach, Anaheim, Calif.	287.1	297.0	296.5	297.7	299.1	300.2	300.7	289.6	299.0	297.8	299.9	297.9	299.0	297.9
Miami, Fla. (11/77 = 100)	159.0	...	164.0	...	165.0	...	165.6	159.7	...	164.9	...	165.9	...	166.3
Milwaukee, Wis.	305.0	...	312.5	...	314.0	...	316.8	311.0	...	328.9	...	327.5	...	335.3
Minneapolis-St. Paul, Minn.-Wis.	...	316.8	...	317.5	...	319.6	...	...	312.7	...	312.5	...	318.6	...
New York, N.Y.-Northeastern N.J.	283.5	292.9	293.9	294.3	297.3	299.0	299.9	280.3	286.7	287.3	288.2	290.2	290.5	289.9
Northeast, Pa. (Scranton)	278.9	...	288.5	...	291.0	...	293.0	280.6	...	290.9	...	293.2	...	294.0
Philadelphia, Pa.-N.J.	283.0	291.2	291.7	291.8	294.4	296.4	296.7	285.5	294.2	294.8	294.3	296.7	298.5	298.8
Pittsburgh, Pa.	...	313.7	...	314.3	...	315.5	...	...	304.7	...	302.6	...	299.6	...
Portland, Oreg.-Wash.	284.7	...	293.9	...	295.1	...	298.0	283.0	...	289.6	...	289.5	...	292.2
St. Louis, Mo.-Ill.	293.2	...	299.6	...	300.9	...	302.7	293.2	...	299.3	...	296.8	...	297.3
San Diego, Calif.	327.5	...	342.3	...	346.6	...	349.8	315.4	...	323.7	...	329.6	...	326.6
San Francisco-Oakland, Calif.	...	305.7	...	307.3	...	311.7	...	...	301.4	...	306.1	...	308.7	...
Seattle-Everett, Wash.	297.8	...	309.5	...	311.1	...	310.2	290.8	...	299.0	...	299.4	...	299.9
Washington, D.C.-Md.-Va.	289.3	...	298.6	...	303.4	...	305.1	294.6	...	302.7	...	308.1	...	308.2

¹The areas listed include not only the central city but the entire portion of the Standard Metropolitan Statistical Area, as defined for the 1970 Census of Population, except that the Standard Consolidated Area is

used for New York and Chicago.
²Average of 85 cities.

PRODUCTIVITY DATA

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

Definitions

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

Multifactor productivity measures the output per unit of combined labor and capital input. The traditional measure of output per hour reflects changes in capital per hour and a combination of other factors—such as, changes in technology, shifts in the composition of the labor force, changes in capacity utilization, research and development, skill and efforts of the work force, management, and so forth. The multifactor productivity measure differs from the familiar BLS measure of output per hour of all persons in that it excludes the effects of the substitution of capital for labor.

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

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

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

Hours of all persons measures the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all employee**

hour describes labor productivity in nonfinancial corporations where there are no self-employed. The **capital services** input index used in the multifactor productivity computation is developed by BLS from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset. **Combined units of labor and capital input** are computed by combining changes in labor and capital inputs with weights which represent each component's share of total output. The indexes for capital services and combined units of labor and capital are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

Notes on the data

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

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

The productivity and associated cost measures in the tables describe the relationship between output in real terms and the labor time and capital services involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input. Although these measures relate output to hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; capital investment; level of output; utilization of capacity, energy, and materials; the organization of production; managerial skill; and the characteristics and efforts of the work force. For a more complete description of the methodology underlying the multifactor productivity measures, see Bulletin 2178, "Trends in Multifactor Productivity, 1948–81" (September 1983).

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

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	III 1982 to IV 1982	IV 1982 to I 1983	I 1983 to II 1983	II 1983 to III 1983	III 1982 to IV 1983	IV 1983 to I 1984 ^P	IV 1981 to IV 1982	I 1982 to I 1983	II 1982 to II 1983	III 1982 to III 1983	IV 1982 to IV 1983	I 1983 to I 1984 ^P
Business sector:												
Output per hour of all persons	³3.2	¹1.9	5.9	1.2	²4.2	2.9	0.7	1.3	³3.1	³3.0	³3.3	3.5
Compensation per hour	⁵5.6	⁵5.2	3.5	3.6	⁶6.9	6.0	⁷7.0	⁶6.0	⁵5.2	4.5	4.8	5.0
Real compensation per hour	⁴4.0	⁴4.9	-0.8	0.6	²2.3	1.0	²2.4	²2.3	1.9	¹1.8	¹1.4	0.5
Unit labor costs	2.3	3.3	-2.2	2.3	²2.5	3.0	6.3	4.7	2.1	1.4	¹1.5	1.4
Unit nonlabor payments	3.2	¹10.6	14.4	5.4	⁶6.2	4.6	-2.0	2.8	⁶6.4	8.3	⁹9.1	7.6
Implicit price deflator	2.6	5.5	2.8	3.3	³3.7	3.5	3.5	4.1	3.4	3.6	³3.8	3.3
Nonfarm business sector:												
Output per hour of all persons	¹1.2	³3.5	7.1	2.3	²2.7	2.6	0.8	1.7	³3.5	³3.5	³3.9	3.7
Compensation per hour	⁵5.6	⁶6.6	⁴4.4	3.8	⁴4.3	6.1	⁷7.1	⁶6.3	⁵5.9	⁵5.1	4.8	4.6
Real compensation per hour	⁴4.0	⁶6.3	0.0	-0.3	¹-0.1	1.0	²2.5	²2.6	²2.5	2.5	¹1.4	0.2
Unit labor costs	4.4	3.0	-2.6	1.5	¹1.6	3.4	6.3	4.6	2.3	1.5	⁰0.8	1.0
Unit nonlabor payments	²2.1	10.6	¹15.1	7.3	⁸8.3	0.7	-1.6	3.1	5.9	⁸8.7	¹10.3	2.7
Implicit price deflator	3.7	5.3	2.7	3.3	3.7	2.5	3.7	4.1	3.4	3.7	3.7	3.0
Nonfinancial corporations:												
Output per hour of all employees	⁴0.4	³3.2	⁶6.6	4.2	P3.4	(¹)	¹1.1	¹1.7	³3.5	³3.6	P4.3	(¹)
Compensation per hour	⁵5.2	⁵5.7	2.9	3.0	P4.6	(¹)	⁶6.9	⁵5.7	⁵5.0	⁴4.2	P4.1	(¹)
Real compensation per hour	³3.6	⁵5.4	-1.4	-1.1	P0.2	(¹)	2.4	²2.0	¹1.7	¹1.6	P0.7	(¹)
Total units costs	6.7	1.0	-3.5	-2.1	P0.2	(¹)	5.8	3.8	1.4	0.4	P-1.2	(¹)
Unit labor costs	4.8	2.5	-3.4	-1.1	P1.2	(¹)	5.7	3.9	1.5	0.6	P-0.2	(¹)
Unit nonlabor costs	11.9	-2.8	-3.8	-4.7	P4.0	(¹)	6.0	3.7	1.2	-0.1	P-3.8	(¹)
Unit profits	-31.4	79.9	104.7	71.0	P42.4	(¹)	-20.3	5.8	27.3	44.2	P73.1	(¹)
Implicit price deflator	3.6	5.1	2.5	3.1	P3.5	(¹)	3.6	4.0	3.3	3.6	P3.6	(¹)
Manufacturing:												
Output per hour of all persons	⁴0.7	⁷7.4	⁹9.1	12.2	⁴4.0	2.5	3.5	⁴4.6	⁶6.6	⁷7.2	⁸8.1	6.9
Compensation per hour	⁴4.0	¹10.0	2.1	-2.7	4.0	6.3	7.3	⁶6.4	⁵5.6	⁴4.7	⁴4.7	3.8
Real compensation per hour	²2.4	⁹9.7	-2.2	1.4	-0.4	1.3	2.7	²2.7	²2.2	²2.0	¹1.3	-0.7
Unit labor costs	3.3	2.5	-6.4	-8.4	-0.2	3.7	-3.6	1.8	-0.9	-2.4	-3.2	-2.9

¹Not available.

r = revised.
p = preliminary.

WAGE AND COMPENSATION DATA

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

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

Definitions

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

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

Data on negotiated wage changes apply to private nonfarm industry collective bargaining agreements covering 1,000 workers or more. Data on compensation changes apply only to those agreements covering 5,000 workers or more. *First-year* wage or compensation changes refer to average negotiated changes for workers covered by settlements reached in the period

and implemented within the first 12 months after the effective date of the agreement. *Changes over the life of the agreement* refer to all adjustments specified in the contract, expressed as an average annual rate. These measures exclude wage changes that may occur under cost-of-living adjustment clauses, that are triggered by movements in the Consumer Price Index. *Wage-rate changes* are expressed as a percent of straight-time hourly earnings; *compensation changes* are expressed as a percent of total wages and benefits.

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

Notes on the data

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

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

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

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

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

33. Employment Cost Index, by occupation and industry group

[June 1981 = 100]

Series	1982				1983				1984	Percent change	
	March	June	Sept.	Dec.	March	June	Sept.	Dec.	March	3 months ended	12 months ended
										March 1984	March 1984
Civilian workers¹	106.3	107.5	110.1	111.4	113.2	114.5	116.5	117.8	119.8	1.7	5.8
Workers, by occupational group											
White-collar workers	106.5	107.7	110.7	111.9	113.7	114.9	117.6	118.9	120.9	1.7	6.3
Blue-collar workers	105.7	107.1	109.2	110.5	112.3	113.6	114.8	115.8	117.7	1.6	4.8
Service workers	107.2	108.3	110.8	112.4	114.3	115.1	116.7	119.1	122.0	2.4	6.7
Workers, by industry division											
Manufacturing	106.0	107.2	109.3	110.4	112.5	113.5	115.0	116.0	117.9	1.6	4.8
Nonmanufacturing	106.4	107.7	110.5	111.8	113.5	114.9	117.2	118.6	120.7	1.8	6.3
Services	108.2	109.2	113.5	115.0	116.6	117.1	121.1	122.6	125.0	2.0	7.2
Public administration ²	108.1	109.1	112.8	113.6	116.2	117.0	119.8	121.4	122.9	1.2	5.8
Private industry workers	105.8	107.2	109.3	110.7	112.6	113.9	115.6	117.0	119.0	1.7	5.7
Workers, by occupational group											
White-collar workers	105.8	107.2	109.5	110.8	112.8	114.2	116.5	117.9	119.9	1.7	6.3
Blue-collar workers	105.6	107.0	109.0	110.3	112.1	113.5	114.6	115.7	117.5	1.6	4.8
Service workers	106.7	107.9	109.6	111.8	113.8	114.6	115.1	117.9	121.5	3.1	6.8
Workers, by industry division											
Manufacturing	106.0	107.2	109.3	110.4	112.5	113.5	115.0	116.0	117.9	1.6	4.8
Nonmanufacturing	105.7	107.1	109.3	110.8	112.6	114.2	116.0	117.5	119.6	1.8	6.2
State and local government workers	108.8	109.3	114.3	115.1	116.5	117.1	120.8	122.0	123.9	1.6	6.4
Workers, by occupational group											
White-collar workers	109.1	109.5	114.9	115.8	117.0	117.5	121.5	122.6	124.5	1.5	6.4
Blue-collar workers	108.2	108.9	112.7	113.0	114.9	115.8	118.0	119.2	121.9	2.3	6.1
Workers, by industry division											
Services	109.0	109.4	114.9	115.9	116.8	117.4	121.7	122.6	124.5	1.5	6.6
Schools	108.9	109.1	114.8	115.8	116.6	116.9	121.9	122.6	124.5	1.5	6.8
Elementary and secondary	109.3	109.5	115.6	116.6	117.2	117.4	123.3	123.9	125.4	1.2	7.0
Hospitals and other services ³	109.5	110.3	115.3	116.0	117.5	118.8	121.1	122.6	124.4	1.5	5.9
Public administration ²	108.1	109.1	112.8	113.6	116.2	117.0	119.8	121.4	122.9	1.2	5.8

¹Excludes farm, household, and Federal workers.

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

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

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

[June 1981 = 100]

Series	1982				1983				1984	Percent change	
	March	June	Sept.	Dec.	March	June	Sept.	Dec.	March	3 months ended	12 months ended
										March 1984	
COMPENSATION											
Workers, by bargaining status ¹											
Union	106.5	108.4	110.6	112.3	114.5	116.0	117.8	118.8	120.6	1.5	5.3
Manufacturing	106.3	108.0	110.3	111.8	114.0	114.8	116.3	117.2	119.3	1.8	4.6
Nonmanufacturing	106.8	108.7	111.0	112.8	114.9	117.1	119.2	120.4	121.9	1.2	6.1
Nonunion	105.3	106.5	108.5	109.7	111.5	112.8	114.4	115.9	118.0	1.8	5.8
Manufacturing	105.7	106.6	108.4	109.2	111.2	112.3	113.8	114.9	116.6	1.5	4.9
Nonmanufacturing	105.2	106.4	108.6	109.9	111.6	113.0	114.7	116.4	118.6	1.9	6.3
Workers, by region ¹											
Northeast				111.7	112.6	114.3	116.0	117.5	118.9	1.2	5.6
South				110.6	112.5	113.5	115.6	117.1	119.7	2.2	6.4
North Central				108.6	110.9	112.5	113.9	114.7	117.2	2.2	5.7
West				112.9	115.4	116.6	118.0	120.0	121.0	.8	4.9
Workers, by area size ¹											
Metropolitan areas	105.7	107.2	109.4	110.9	112.9	114.2	116.0	117.4	119.4	1.7	5.8
Other areas	106.2	107.0	108.6	109.1	110.8	112.3	113.4	114.5	116.7	1.9	5.3
WAGES AND SALARIES											
Workers, by bargaining status ¹											
Union	106.5	108.1	110.3	111.8	112.9	114.2	116.0	116.9	118.1	1.0	4.6
Manufacturing	105.9	107.3	109.5	110.8	111.4	112.3	113.7	114.8	116.1	1.1	4.2
Nonmanufacturing	107.0	108.8	111.1	112.7	114.3	116.0	118.3	118.9	120.1	1.0	5.1
Nonunion	105.6	106.5	108.3	109.5	110.9	112.2	113.7	115.2	116.7	1.3	5.2
Manufacturing	105.9	106.7	108.2	109.1	110.7	111.8	113.0	114.2	115.4	1.1	4.2
Nonmanufacturing	105.5	106.4	108.3	109.6	111.0	112.4	114.0	115.6	117.2	1.4	5.6
Workers, by region ¹											
Northeast	106.1	106.7	109.7	111.5	112.0	113.6	115.3	116.6	117.4	.7	4.8
South	105.7	107.4	108.8	109.8	111.4	112.5	114.3	115.7	117.9	1.9	5.8
North Central	104.7	106.1	107.6	108.6	110.1	111.5	112.8	113.6	115.5	1.7	4.9
West	107.9	108.6	110.7	112.0	114.1	114.9	116.5	118.5	118.8	.3	4.1
Workers by area size ¹											
Metropolitan areas	105.9	107.1	109.1	110.5	111.9	113.2	114.9	116.2	117.6	1.2	5.1
Other areas	106.0	106.8	108.3	108.8	110.1	111.4	112.3	113.4	115.1	1.5	4.5

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

36. Wage and compensation change, major collective bargaining settlements, 1979 to date

[In percent]

Measure	Annual average					Quarterly average								
	1979	1980	1981	1982	1983	1982				1983				1984 ^P
						I	II	III	IV	I	II	III	IV	
Total compensation changes, covering 5,000 workers or more, all industries:														
First year of contract	9.0	10.4	10.2	3.2	3.4	1.9	2.6	6.2	3.3	-1.6	4.4	5.0	4.9	5.3
Annual rate over life of contract	6.6	7.1	8.3	2.8	3.0	1.2	2.1	4.7	4.8	1.4	3.6	4.3	3.1	5.0
Wage rate changes covering at least 1,000 workers, all industries:														
First year of contract	7.4	9.5	9.8	3.8	2.6	3.0	3.4	5.4	3.8	-1.2	2.7	3.7	4.2	3.0
Annual rate over life of contract	6.0	7.1	7.9	3.6	2.8	2.8	3.2	4.5	4.8	2.2	2.8	3.6	2.8	3.4
Manufacturing:														
First year of contract	6.9	7.4	7.2	2.8	0.4	2.5	1.8	5.1	4.1	-3.4	1.3	3.4	2.9	3.1
Annual rate over life of contract	5.4	5.4	6.1	2.6	2.1	2.7	1.7	3.9	4.5	.9	1.7	3.5	3.1	2.7
Nonmanufacturing (excluding construction):														
First year of contract	7.6	9.5	9.8	4.3	5.0	2.7	6.6	5.5	3.6	3.3	5.9	5.8	4.8	4.3
Annual rate over life of contract	6.2	6.6	7.3	4.1	3.7	2.1	6.1	4.8	5.2	5.3	5.2	4.3	2.7	4.9
Construction:														
First year of contract	8.8	13.6	13.5	6.5	1.5	8.6	6.2	6.3	3.4	.7	1.7	1.5	1.1	-5.4
Annual rate over life of contract	8.3	11.5	11.3	6.3	2.4	8.2	6.3	5.9	2.9	2.4	2.1	2.9	2.6	-4.2

p = preliminary.

37. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1979 to date

Measure	Year					Year and quarter								
	1979	1980	1981	1982	1983	1982				1983				1984 ^P
						I	II	III	IV	I	II	III	IV	
Average percent adjustment (including no change):														
All industries	9.1	9.9	9.5	6.8	4.0	1.0	2.0	2.4	1.3	0.3	1.3	1.2	1.1	0.9
Manufacturing	9.6	10.2	9.4	5.2	2.7	.9	1.0	1.7	1.5	-.5	1.1	1.2	.9	1.2
Nonmanufacturing	8.8	9.7	9.5	7.9	4.8	1.1	2.7	2.9	1.2	.9	1.5	1.2	1.2	.7
From settlements reached in period	3.0	3.6	2.5	1.7	.8	.2	.4	.5	.6	-.2	.3	.2	.6	.1
Deferred from settlements reached in earlier period	3.0	3.5	3.8	3.6	2.5	.6	1.4	1.3	.4	.4	1.0	.8	.3	.4
From cost-of-living clauses	3.1	2.8	3.2	1.4	.6	.3	.2	.6	.3	.1	.1	.2	.2	.4
Total number of workers receiving wage change (in thousands) ¹	—	—	8,648	7,852	6,530	2,878	3,423	3,760	3,441	2,875	3,061	3,025	2,887	2,926
From settlements reached in period	—	—	2,270	1,907	2,327	204	511	620	825	448	561	599	996	272
Deferred from settlements reached in earlier period	—	—	6,267	4,846	3,260	1,001	1,594	2,400	860	812	1,405	1,317	669	1,049
From cost-of-living clauses	—	—	4,593	3,830	2,327	1,920	1,568	2,251	1,970	1,938	1,299	1,218	1,290	1,640
Number of workers receiving no adjustments (in thousands)	—	—	145	483	1,187	5,457	4,912	4,575	4,895	4,842	4,656	4,693	4,830	4,791

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

p = preliminary.

WORK STOPPAGE DATA

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

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

38. Work stoppages involving 1,000 workers or more, 1947 to date							
Month and year	Number of stoppages		Workers involved		Days idle		
	Beginning in month or year	In effect during month	Beginning in month or year (in thousands)	In effect during month (in thousands)	Number (in thousands)	Percent of estimated working time	
1947	270		1,629		25,720	—	
1948	245		1,435		26,127	.22	
1949	262		2,537		43,420	.38	
1950	424		1,698		30,390	.26	
1951	415		1,462		15,070	.12	
1952	470		2,746		48,820	.38	
1953	437		1,623		18,130	.14	
1954	265		1,075		16,630	.13	
1955	363		2,055		21,180	.16	
1956	287		1,370		26,840	.20	
1957	279		887		10,340	.07	
1958	332		1,587		17,900	.13	
1959	245		1,381		60,850	.43	
1960	222		896		13,260	.09	
1961	195		1,031		10,140	.07	
1962	211		793		11,760	.08	
1963	181		512		10,020	.07	
1964	246		1,183		16,220	.11	
1965	268		999		15,140	.10	
1966	321		1,300		16,000	.10	
1967	381		2,192		31,320	.18	
1968	392		1,855		35,567	.20	
1969	412		1,576		29,397	.16	
1970	381		2,468		52,761	.29	
1971	298		2,516		35,538	.19	
1972	250		975		16,764	.09	
1973	317		1,400		16,260	.08	
1974	424		1,796		31,809	.16	
1975	235		965		17,563	.09	
1976	231		1,519		23,962	.12	
1977	298		1,212		21,258	.10	
1978	219		1,006		23,774	.11	
1979	235		1,021		20,409	.09	
1980	187		795		20,844	.09	
1981	145		729		16,908	.07	
1982	96		656		9,061	.04	
1983	81		909		17,461	.08	
1983	January	1	3	1.6	38.0	794.8	.04
	February	5	7	14.0	50.4	844.4	.05
	March	5	10	10.5	54.9	1,131.5	.05
	April	2	9	2.8	52.4	789.5	.04
1984 ^P	January	5	11	27.8	41.9	506.2	.03
	February	2	12	8.7	37.2	365.5	.02
	March	2	9	3.0	14.6	284.2	.01
	April	5	11	24.9	34.5	641.4	.03

p = preliminary.

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SALES PUBLICATIONS

BLS Bulletins

BLS Handbook of Methods: The Consumer Price Index, Volume II. Bulletin 2134-2, 38 pp., \$2 (GPO Stock No. 029-001-02795-8). Describes the history and construction of the Consumer Price Index.

Employment, Hours, and Earnings, States and Areas, 1939-82, Volume I: Alabama—Nevada; Volume II: New Hampshire—Wyoming. Bulletin 1370-17, 947 pp., \$11 (GPO Stock No. 029-001-02800-8). The 18th reference volume grouping together establishment data on employment, hours, and earnings for States and areas and the first one released in two volumes. Employment data relate to the nonfarm sector of the economy and exclude the Armed Forces, proprietors, the self-employed, domestic workers in private homes, and unpaid family workers. Hours and earnings for manufacturing and mining relate to production workers; for construction, to construction workers; and for the remaining nonagricultural components, to nonsupervisory workers. This is the first reference volume to contain employment data for Athens, Georgia; Sharon and State College, Pennsylvania; and Brownsville—Harlingen—San Benito, Bryan—College Station, Killeen—Temple, Laredo, McAllen—Pharr—Edinburg, Texarkana, and Tyler, Texas.

Area Wage Survey Bulletins

These bulletins cover office, professional, technical, maintenance, custodial, and material movement occupations in major metropolitan areas. The annual series of 70 is available by subscription for \$88 per year. Individual area bulletins are also available separately. The following were published in April:

Davenport—Rock Island—Moline, Iowa—Illinois, Metropolitan Area, February 1984. Bulletin 3025-7, 28 pp., \$3.25 (GPO Stock No. 029-001-90274-3).

Huntsville, Alabama, Metropolitan Area, February 1984. Bulletin 3025-6, 28 pp. \$3.25 (GPO Stock No. 029-001-90275-5).

Newark, New Jersey, Metropolitan Area, January 1984. Bulletin 3025-5, 40 pp., \$3.75 (GPO Stock No. 029-001-90272-7).

Sacramento, California, Metropolitan Area, December 1983. Bulletin 3020-71, 41 pp., \$3.75 (GPO Stock No. 029-001-90269-7).

Periodicals

CPI Detailed Report. February issue provides a comprehensive report on price movements for the month, information on the changes in the frequency of publication for local area CPI's which is to begin in 1987, plus statistical tables, charts, and technical notes. 107 pp., \$5 (\$28 per year).

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Area Wage Survey Summaries

Bremerton—Shelton, Wash., January 1984. 6 pp.

Clarksville—Hopkinsville, Tenn.—Ky., March 1984. 3 pp.

Columbus, Ga.—Ala., March 1984. 6 pp.

El Paso—Alamogordo—Las Cruces, Tex.—N. Mex., March 1984. 3 pp.

Savannah, Ga., March 1984. 6 pp.

BLS Reports

Jobs and Prices in a Recovering Economy. Report 704. 10 pp. A speech by BLS Commissioner Norwood before the Committee of the Budget, United States Senate, February 28, 1984. Discusses the recession of 1981-82, the recovery, the impact of changes in the economy on families, the inflation slowdown, and experimental Consumer Price Indexes.

Reprints

Robust growth and the strong dollar set pattern for 1983 import and export prices. From the April 1984 *Monthly Labor Review*.

Regional Office Publications

New England Labor and the Economy at the Year-end 1983. Regional Report Number 84-1 (Boston), 39 pp.

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