Measuring union-nonunion earnings differences

Although wages and salaries have risen faster for nonunion workers than for union workers in recent years, three BLS statistical series suggest that the union edge persists; estimates of its magnitude depend on the data analyzed

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Union workers historically have earned more than nonunion workers. Recently, however, wages and salaries of nonunion workers have been rising faster than those of union workers. What has this trend done to the union-nonunion earnings differential? And, what happens to the union advantage when total compensation (wages and benefit costs) is taken into account?

This article discusses recent data from three Bureau of Labor Statistics programs that provide employee compensation and earnings information for union and nonunion workers. These programs are the Current Population Survey, Industry Wage Surveys, and the Employment Cost Index. After summarizing earlier research in this area, the article describes the three BLS programs and examines what the data show about union-nonunion pay differences—how large they are now, how they have changed during recent years, and how both the size of the difference and the amount it changes have varied. The discussion demonstrates how different types of published data can be used to gain a variety of perspectives on the complex issue of union-nonunion compensation and earnings differentials.

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Background

Many economists have conducted research in efforts to estimate how much of the difference between union earnings and nonunion earnings is due to union membership status and how much is due to other worker characteristics. (Union workers, for example, tend to be concentrated in large firms, which are often higher paying than small ones; they typically are employed in urban areas, which have higher pay levels than rural areas; and a larger proportion of union than of nonunion workers is employed in the higher paying manufacturing and public utilities industries.) The results of the research have varied, depending on the data used and the method by which they were analyzed.

One of the more prominent works on this topic is H. Gregg Lewis' *Unionism and Relative Wages in the United States*, published in 1963. In this book, Lewis reviewed 20 empirical studies conducted between 1945 and 1961, deriving a set of estimates of relative wage differentials traceable to unionization. Although his estimates varied by worker category and period, one of his most notable findings was that, in 1957–58, the average union wage advantage was between 10 and 15 percent.[1]

In 1980, Daniel Mitchell suggested that, by the mid-1970's, the union-nonunion wage gap had widened to between 20 and 30 percent for production and nonsupervisory workers. This estimate was supported by results from other studies, which indicated that earnings had grown more rapidly in the union sector than in the nonunion sector over the preceding two decades.[2]

Richard B. Freeman and James L. Medoff concurred with this new estimate, referring to it as the standard estimate of the union wage

effect during the 1970's in their 1984 book, *What Do Unions Do?* In this look at the effects of unions on wages, Freeman and Medoff estimated union-nonunion wage differentials using different data sets, controlling for wage-determining factors other than unionism. Their estimates of the wage advantage attributable to unionization included 21 percent using the Current Population Survey for May 1979, 26 percent using the University of Michigan Panel Study of Income Dynamics for 1970–79, and 27 percent using the BLS Expenditures for Employee Compensation Survey for 1972–76.[3]

Freeman and Medoff noted that analyses were becoming more detailed and sophisticated with the advent of computerized data processing. In addition to enjoying access to mass quantities of data, researchers could now compare the wages of union and nonunion workers while controlling for their demographic characteristics, industry, occupation, and location. Establishment data also were available in which establishment size, location, and industry could be controlled. The authors added, however, that the use of more data in analyses did not eliminate the errors that arose from the inability to conduct controlled laboratory experiments, varying one factor (unionism) while holding all others fixed.

Lewis discussed the differences in estimates that arise from data imperfections in *Union Relative Wage Effects: A Survey*, which appeared in 1986. He pointed out that many surveys, particularly household surveys, do not include employer-paid benefits in their wage measures, thereby excluding such benefits as independent factors in wage determination.[4] This omission is important to remember when considering the union wage effect, because benefits make up a larger percentage of total compensation for union than for nonunion workers.[5]

Lewis also noted that estimation differences arise from differing definitions of union status. In some surveys, a worker must be a union member to be classified as "union." In others, the worker is classified as "union" if the job is covered by a collective bargaining agreement, regardless of the worker's actual union membership status.

Lewis reviewed nearly 200 post-1963 studies for this follow-up to his earlier survey. From the results of these studies, he derived a set of estimates of the union wage effect and found that the differential between union and nonunion wages had not changed much from his earlier estimates. For the period 1967–79, his yearly estimates ranged from 12 to 20 percent, with a mean of 15 percent for the 13-year period.

Unlike these and similar studies, this article does not attempt to measure the effect of union status on earnings. However, it does describe BLS programs that provide data used in research to measure the effect.

CPS data examined

One program that produces estimates for union and nonunion workers is the monthly Current Population Survey (CPS), conducted by the Bureau of the Census for BLS. The CPS is a major source of data on the Nation's labor force. Because it is a household-based survey, the CPS can obtain data on employee demographic characteristics—sex, race, and ethnicity, for example—that are not readily obtained through an establishment survey. However, CPS data on union and nonunion earnings are published for broad industry and occupational groups, and thus do not allow for the level of comparison between union and nonunion earnings that would be possible with more detailed categories. With broad categories, the earnings differentials between union and nonunion workers will also be affected by differences in occupation and industry among the workers in each group. It should be noted, however, that most of the studies discussed in the background section of this article were based on unpublished CPS data, which offer greater detail than published data.

BLS publishes CPS average annual data on median usual weekly earnings of full-time wage and salary employees by demographic and employment characteristics according to union membership status. Usual weekly earnings are what the household respondent reports as the employed person's usual earnings per week before deductions and including overtime pay, commissions, or tips usually received. Median earnings are the midpoint of the frequency distribution of workers by earnings: one-half the workers have earnings above the median, the other half have earnings below the median. Data are published for wage and salary employees (except the incorporated self-employed) who usually work full time (at least 35 hours per week) at their sole or primary job.[6]

Analyses have become more sophisticated with the advent of computerized data processing.

CPS data show that the union-nonunion earnings differential ranged between 34 and 39 percent during the period from 1983 (when annual median weekly earnings data by union affiliation were first published) to 1989. When data were grouped by various employee characteristics (race, sex, occupation, and industry), the union-nonunion differential varied among the groups. The differential tended to be greater for women than for men. It was also higher for

minorities than for whites. In each of these cases, differences in the occupational and industrial characteristics of these workers contributed to the differential. [7]

Estimates from industry surveys

A second source of estimates of earnings by union membership status is the Industry Wage Survey (IWS) program. This program surveys establishments in 25 manufacturing and 15 nonmanufacturing industries, accounting for about 22 million workers. Individual industries typically are surveyed every 2 to 6 years. Data on straight-time hourly earnings are collected during the survey reference period for narrowly defined occupations selected as representative of the range of activities performed by workers in the industry.[8]

The IWS produces data on wages only, but among the three BLS programs discussed in this article, it provides them for the most narrowly defined groups of workers, by occupation. These data are often disaggregated geographically as well. With this narrow focus, the union-nonunion wage differentials computed from IWS data are less affected by workers' occupation and industry than are differentials computed from more aggregate data. Although they cover a smaller part of the work force than the Current

Table 1. Average straight-time earnings of production workers in union establishments[1] as a percent of those in nonunion establishments, selected Industry Wage Survey manufacturing industries

[Average earnings in nonunion establishments = 100]

Industry	1984–88 surveys					1979–83 surveys				
	Survey year	Number of production workers (in thousands)	Percent union-ized[2]	Union pay relative[3]		Survey year	Number of production workers (in thousands)	Percent union-ized[2]	Union pay relative[3]	
				U.S. average	Regional average[4]				U.S. average	Regional average
Food and kindred products:										
Meatpacking	1984	83.0	71	124	123	1979	104.3	80	143	139
Prepared meat products	1984	50.9	57	149	135	1979	48.8	71	159	148
Flour and other grain mill products	1987	8.3	81	138	—	1982	8.1	79	148	145
Textile mill products:										
Cotton and manmade fiber textile mills	1985	199.7	12	107	112	1980	251.8	11	105	111
Textile dyeing and finishing	1985	36.3	26	119	121	1980	48.9	24	110	108
Apparel:										
Men's and boys' suits and coats	1984	46.7	78	132	—	1979	61.4	81	132	—
Men's and boys' shirts and nightwear	1987	59.4	21	117	114	1981	65.0	30	112	111
Lumber and wood products:										
Millwork	1984	50.4	32	125	120	1979	43.9	46	123	110
Furniture and fixtures:										
Nonupholstered wood household furniture	1986	79.2	14	115	113	1979	137.2	30	122	113
Upholstered wood household furniture	1986	59.6	14	115	115	1979	61.9	25	120	114
Paper and allied products:										
Corrugated and solid fiber boxes	1987	67.8	70	119	118	1981	57.3	82	126	119
Chemicals and allied products:										
Industrial chemicals	1986	89.2	61	102	102	1981	115.2	75	100	102
Stone, clay, glass, and concrete products:										
Structural clay products	1986	23.5	52	127	120	1980	26.3	69	131	121
Primary metals industries:										
Basic iron and steel	1988	178.9	89	110	107	1983	184.1	92	124	—
Iron and steel foundries	1986	84.1	66	129	116	1979	177.4	83	132	114

[1] Excludes premium pay for overtime and for work on weekends, holidays, and late shifts; union establishments are those with a majority of their production workers covered by a labor-management agreement.

[2] Percent of workers employed by establishments reporting labor-management agreements covering a majority of their production workers.

[3] Average hourly earnings in unionized establishments divided by hourly earnings in nonunion establishments.

[4] Unweighted average of relative differences of individual regions.

NOTE: Dashes indicate that data did not meet publication criteria.

Population Survey and the Employment Cost Index (ECI), the IWS data allow a more detailed examination of the relationship between wage differences and unionization.

Fifteen industry surveys were chosen for this analysis because they include nationwide estimates of earnings of all production workers combined and report a sufficient mix of union and nonunion establishments to make valid comparisons possible.[9] The industries cover a cross-section of the manufacturing sector, including food processors and garment makers, as well as such durable goods producers as steel mills and furniture factories.

Pay comparisons by industry. Among the industries, the union wage advantage ranged from 2 percent for industrial chemicals producers and 7 percent for textile mills to 49 percent for prepared-meat-products plants. (See table 1.) In nine industries, however, the differences ran between 15 and 30 percent. Basic iron and steel mills, the largest industry surveyed, reported that wages for unionized workers exceeded those of nonunion counterparts by 10 percent in October 1988.

Pay differentials for the six durable goods-producing industries studied (basic iron and steel, iron and steel foundries, millwork, structural clay products, upholstered furniture, and nonupholstered furniture) ranged from 10 percent to 29 percent. However, nondurable goods producers reported much more dispersed results, as differentials ranged from 2 percent for industrial chemicals to 49 percent for prepared meat products.

In terms of straight-time earnings, differentials exceeded $1 an hour in 10 of the 15 industries and topped $2 in 3 surveys. The smallest differentials were reported in the chemicals industry (29 cents per hour) and in textile mills (43 cents). The food and kindred products industries accounted for some of the largest differentials: earnings of production workers in unionized prepared-meat-products plants exceeded those of their nonunion counterparts by $2.90 an hour; in flour mills, the union advantage was $2.85 an hour.

Extent of union coverage. The proportion of workers in unionized plants ranged from 12 percent in textile mills to 89 percent in steel mills. In nine of the industries, more than half of the production workers were in establishments reporting union contracts covering at least a majority of their production work force.

The union-nonunion differential was typically higher in those industries reporting a greater proportion of union workers. In six of the nine industries in which a majority of the workers were covered by labor-management agreements, the union pay advantage exceeded 20 percent, compared with only one of the six industries in which unions covered a minority.[10] Significant exceptions, however, were noted. For example, although 61 percent of the production workers in industrial chemicals plants were unionized, the industry's differential was the smallest reported—2 percent. Similarly, the steel industry reported the highest level of unionization among the 15 industries (89 percent), but the third smallest differential (10 percent).

Earnings of production workers in the industries studied tended to be somewhat lower than those reported for all manufacturing industries combined in the BLS Current Employment Statistics series. Industry pay levels ranged from 50 percent of the overall average in the men's shirt industry to 98 percent in foundries and flour mills. Pay rates in two industries, basic iron and steel and industrial chemicals, exceeded the manufacturing average by 18 and 32 percent, respectively.

The relationship of a particular industry to the all-manufacturing-industries pay level, how-

Table 2. **Union pay as a percent of nonunion pay, numerically important occupations, selected Industry Wage Survey manufacturing industries, 1984–1988**

Industry and occupation	Percent
Meatpacking:	
Boners (boxed beef)	99
Prepared meat products:	
Ham boners	142
Flour and other grain mill products:	
Processors	121
Textile dyeing and finishing:	
Dyeing machine tenders (cloth)	135
Men's and boys' suits and coats:	
Sewing machine operators (coats)	131
Men's and boys' shirts:	
Sewing machine operators	113
Millwork:	
Assemblers	107
Nonupholstered furniture:	
Assemblers (except chairs)	113
Upholstered furniture:	
Upholsterers	109
Corrugated and solid fiber boxes:	
Flexographic printer operators	106
Industrial chemicals:	
Chemical operators	99
Structural clay products:	
Tunnel kiln firers	122

ever, appeared to have little effect on the union-nonunion differential. The two industries reporting pay higher than the all-manufacturing-industries level had some of the smallest differentials, as did such relatively low-paying industries as textile mills. Conversely, in both the relatively low-paying suit industry and high-paying foundries, unionized workers enjoyed a comparatively large pay advantage.

The Industry Wage Survey program also permits an examination of union-nonunion pay differences for specific occupations. Most of the surveys obtained detailed earnings data for two types of occupations—intraindustry jobs, such as sewing machine operators in garment plants; and interindustry jobs, such as maintenance and custodial occupations.

To compare union and nonunion pay for industry-specific occupations, the most numerous occupation in an industry was studied. (See table 2.) Among the 12 industries permitting such comparisons, differentials ranged from a 42-percent advantage for unionized ham boners in prepared-meat-products plants to a 1-percent nonunion edge for boxed beef boners in meatpacking and chemical operators in the industrial chemicals survey. In general, the union-nonunion pay gap for the numerically important occupations was slightly smaller than the industry's all-production-worker differential.

Table 3. **Union pay as a percent of nonunion pay for selected occupations, selected Industry Wage Survey manufacturing industries, 1984–1988**

Industry	Janitors	Maintenance electricians
Meatpacking	128	118
Prepared meat products	171	119
Flour and other grain mill products	141	—
Textile dyeing and finishing	131	106
Men's and boys' suits and coats	130	—
Men's and boys' shirts	130	—
Millwork	130	—
Nonupholstered furniture	118	99
Upholstered furniture	119	109
Corrugated and solid fiber boxes	108	99
Industrial chemicals	126	105
Structural clay products	130	104

NOTE: Dash indicates insufficient number of observations for comparisons.

An analysis of the impact of varying skill levels on pay differentials within and among industries was possible for eight industries. Maintenance electricians were selected to represent a high-skilled occupation, while janitors represented lower skilled, often entry level, jobs. (See table 3.) In each industry, janitors in unionized plants enjoyed a substantially larger pay differential than did electricians. In fact, the janitor differential was often 4 or 5 times that reported for electricians. These findings echo those of an analysis of Industry Wage Survey data from the 1960's.[11]

Changes in unionization and pay. Data from the Industry Wage Survey program permit an examination of changes during the 1980's in the degree of unionization and relative pay levels among union and nonunion firms. In each of the industries chosen for analysis, a similar survey had been conducted between 1979 and 1983, approximately 5 to 7 years before the "current" round of surveys.

Changes in the relative wage advantage of unionized workers between survey rounds present a varied picture. The union-nonunion pay gap increased in 6 of the 15 industries, sometimes by a substantial amount. (See table 4.) For example, in textile dyeing and finishing plants, the pay of unionized workers was 19 percent higher than that of nonunion workers in June 1985, nearly double the 10-percent differential reported in August 1980. In men's shirt manufacturing, the difference increased from 12 percent in June 1981 to 17 percent in June 1987.

Among the nine industries reporting declines in the union wage advantage, changes also were often substantial. The largest decrease was reported in steel mills, where pay in unionized plants was 10 percent higher than that in nonunion plants in October 1988, compared with a difference of 24 percent in August 1983. Among meatpackers, the pay differential fell from 43 percent in May 1979 to 24 percent in June 1984.

The narrowing of steel pay differentials resulted from a 14-percent increase in the wages of nonunion workers between August 1983 and October 1988, while unionized workers' earnings were virtually unchanged. In the union sector, contract negotiations in 1983 and again in 1986–87 led to wage rate reductions aimed at helping the industry meet foreign and domestic competition. The decreases were partly offset by payouts from profit-sharing, stock ownership, and nonwage payment plans.[12] In addition, during the life of each agreement, deferred wage adjustments typically raised wage rates to about the level in effect prior to the initial cuts.

Negotiated wage reductions also contributed to the narrowing of the union-nonunion pay gap in the meatpacking industry. To help compete with newer facilities, unions representing employees of long-established meatpacking firms agreed to reductions of $2 an hour in base pay between 1979 and 1984.[13] The effect of these concessions was to dampen the rate of wage increase for all unionized meatpackers: over the 5-year span, the pay of unionized workers rose by 11 percent, compared with a 28-percent gain at nonunion plants.

A clearer pattern emerges when the industries are arrayed by the level of the relative wage advantage reported during the earlier round of surveys. Among the eight industries reporting union wage differentials of less than 25 percent during the 1979–83 period, five reported increases in this measure during the 1984–88 survey round. Conversely, of the seven industries with the largest union pay advantages in the earlier period, six reported decreases in the later round.

Since the earlier round of surveys, each of the industries reported relatively small increases in average wage rates, ranging from less than 1 percent a year in the steel industry to about 5 percent a year in textiles, furniture, millwork, and chemical plants. (See table 4.) (By comparison, the Bureau's Employment Cost Index for manufacturing industries showed an average increase in wages and salaries of 5.4 percent a year from December 1978 to December 1988.) The overall rate of wage change in an industry, however, was somewhat correlated with changes in the union-nonunion pay gap: those industries that reported an increase in pay differential typically also reported some of the faster rates of wage increase. The converse—slow growth in earnings accompanied by a decrease in the pay gap—also generally held true.

Table 4. **Percent change in selected characteristics between "earlier round" and "later round" surveys, selected Industry Wage Survey manufacturing industries**

Industry	Production worker employment	Average hourly earnings[1]	Unionization[2]	Union pay differential[3]
Meatpacking	-21	2.2	-11	-44
Prepared meat products	4	3.1	-19	-17
Flour and other grain mill products	2	2.7	2	-21
Textile mills	-21	4.7	9	45
Textile dyeing and finishing	-26	5.2	9	92
Men's and boys' suits and coats	-24	4.8	-3	1
Men's and boys' shirts	-9	2.5	-29	36
Millwork	15	5.6	-30	7
Nonupholstered furniture	-42	4.8	-54	-33
Upholstered furniture	-4	5.0	-45	-24
Corrugated and solid fiber boxes	18	3.5	-15	-26
Industrial chemicals	-23	5.3	-18	(4)
Structural clay products	-10	3.9	-24	-12
Basic iron and steel	-3	0.4	-3	-57
Iron and steel foundries	-53	4.1	-21	-10

[1] Annualized rate.

[2] Change in proportion of workers employed by establishments reporting labor-management agreements covering a majority of their production workers.

[3] Change in the percent differential in average hourly earnings between unionized establishments and nonunion establishments.

[4] The 2-percent union advantage reported in 1986 compares with a nonunion advantage of less than 1 percent in 1981.

Employment declines. Employment of production workers in 11 of the 15 industries decreased between the two survey rounds, typically by about 10 to 25 percent. Four industries (prepared meat products, flour, millwork, and boxes) reported employment gains of 2 to 18 percent. In four of the seven industries reporting employment declines of more than 20 percent, the union-nonunion pay gap widened. Conversely, an increase in the differential was noted in only one of four industries in which employment grew.

The proportion of workers covered by a union contract increased between the two survey rounds in only three industries. These increases were 1 or 2 percentage points in flour mills, textile mills, and dyeing and finishing plants. The union pay advantage increased in the two textile industries, while flour mills reported a substantial decrease. Eight of the twelve industries reporting a decline in the proportion of production workers covered by union agreements also reported a decrease in the union pay advantage. However, there appeared to be little correlation between the magnitudes of the changes of these two measures. For example, manufacturers of men's suits and of steel both recorded a small decrease in unionization, but the suit industry pay advantage grew slightly, while that of steel mills declined by more than half.

Factors influencing pay levels. There are, of course, a number of factors that influence pay levels besides the presence or absence of a labor-management agreement. The Bureau's occupational wage surveys typically report higher pay rates for workers employed in larger establishments than for those in smaller plants; for those working in metropolitan areas than for those in rural settings; and so on. Often, these factors are also associated with varying levels of unionization, making it difficult to isolate the effect of each factor.

Published data from the Industry Wage Survey program, however, make it possible to estimate the influence of one important determinant of wage levels—region. For a variety of reasons, including differences in living costs and the mix

of urban and rural work sites, Industry Wage Surveys typically report regional variations in pay levels. Therefore, some of the difference between union and nonunion pay levels may be traced to the varying proportions of workers in geographic regions with differing pay rates and degrees of unionization.

For example, wage rates for both union and nonunion workers tend to be lower in the South than in the Northeast. In addition, workers in the South generally are less likely to be covered by a union agreement. Therefore, lower paid workers in the South may significantly affect the nationwide estimate of nonunion earnings, while their higher paid counterparts in the Northeast may dominate the union averages.

Union-nonunion pay differentials were computed for each of the regions for which data met publication criteria. The regional pay gap was smaller than the corresponding nationwide differential in 47 of 74 comparisons. Among individual regions, however, wide variations were reported. For example, in the prepared-meat-products industry, pay of unionized workers exceeded that of nonunion employees by as little as 19 percent in the Mountain region and by as much as 53 percent in the Southwest.

By computing a simple average of the regional results, a nationwide pay differential can be prepared in which the impact of varying geographic employment patterns is minimized. Nationwide pay differences measured in this manner were slightly smaller than those produced by comparing national pay averages. The narrowing of the pay gap, however, typically amounted to less than 4 percentage points.

In the late 1970's, multiple regression analysis techniques were applied to data from a limited number of Industry Wage Surveys in an attempt to isolate the independent effect on wages of various establishment and worker characteristics. Use of this technique permitted the impact of each of a variety of factors influencing wage levels to be measured separately.

Results of these analyses typically confirmed that the union status of the production work force was a significant determinant of wage levels. For example, simple comparison of union and nonunion averages from a May 1978 survey of men's and boys' shirts producers showed that earnings of union workers exceeded those of nonunion workers by 51 cents per hour.[14] When other factors, such as plant size, region, and city size, were held constant by use of multiple regression techniques, the pay gap narrowed to 42 cents per hour. Unionization, however, remained the largest influence on pay levels in this industry.

Table 5. **Cumulative percent changes in the Employment Cost Index of wages and salaries for union and nonunion workers, selected periods, 1975–89**

Period and worker group	Union	Nonunion
September 1975–December 1983:		
All private industry	89.5	76.7
Goods-producing	87.3	75.2
Service-producing	93.5	77.1
Manufacturing	90.1	75.7
Nonmanufacturing	89.0	76.8
December 1983–September 1989:		
All private industry	16.5	27.0
Goods-producing	16.7	24.1
Service-producing	16.1	28.7
Manufacturing	17.7	25.0
Nonmanufacturing	15.3	27.8
September 1975–September 1989:		
All private industry	120.7	124.4
Goods-producing	118.6	117.4
Service-producing	124.7	127.9
Manufacturing	123.7	119.7
Nonmanufacturing	118.0	125.8

The Employment Cost Index

A third program that yields data on earnings by union membership status is the Employment Cost Index (ECI) survey, providing two types of information on union-nonunion differences—indexes of change and compensation cost levels. The ECI is an employment-weighted measure of change over time in the cost of employing a fixed set of labor inputs.[15] It is a quarterly series that relates to payroll periods including the 12th of March, June, September, and December. The survey covers all nonfarm establishments (except private households and the Federal Government), regardless of size, and provides detail by industry, occupation, region, union status, and occupational group within industry category.[16]

A special advantage of the ECI program is that it publishes data on cost levels[17] and changes for total compensation as well as for its components, wages and salaries and benefit costs. The ECI thus addresses Lewis' concern, noted earlier, that both wages and benefits should be considered to get a more complete estimate of union-nonunion differentials.

In the ECI, the basic unit of observation is the occupation within an establishment.[18] An occupation in an establishment is considered to be union if the workers are covered by a union contract; otherwise, it is nonunion.[19] Because both establishments and occupations are selected on a probability-proportionate-to-size basis, the sample reflects the distribution of

Chart 1. **Percent wage and salary changes from the Employment Cost Index for 12-month periods ending March, June, September, and December, private industry workers by union status, 1976-89**

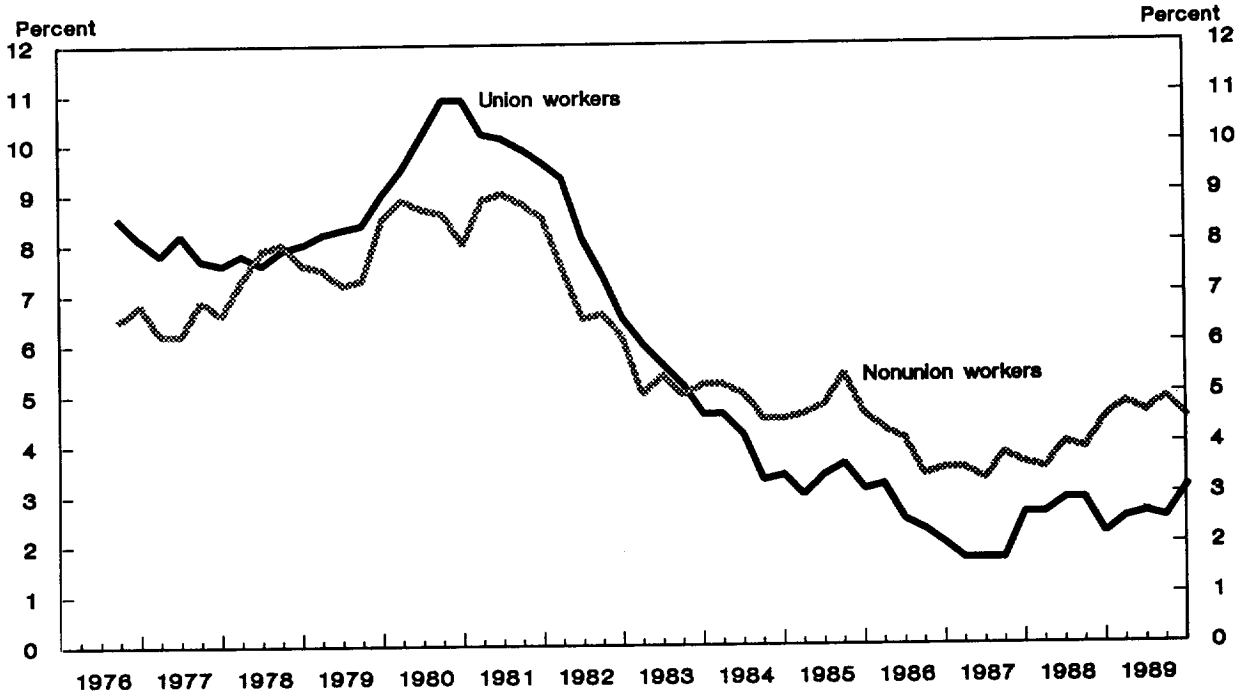
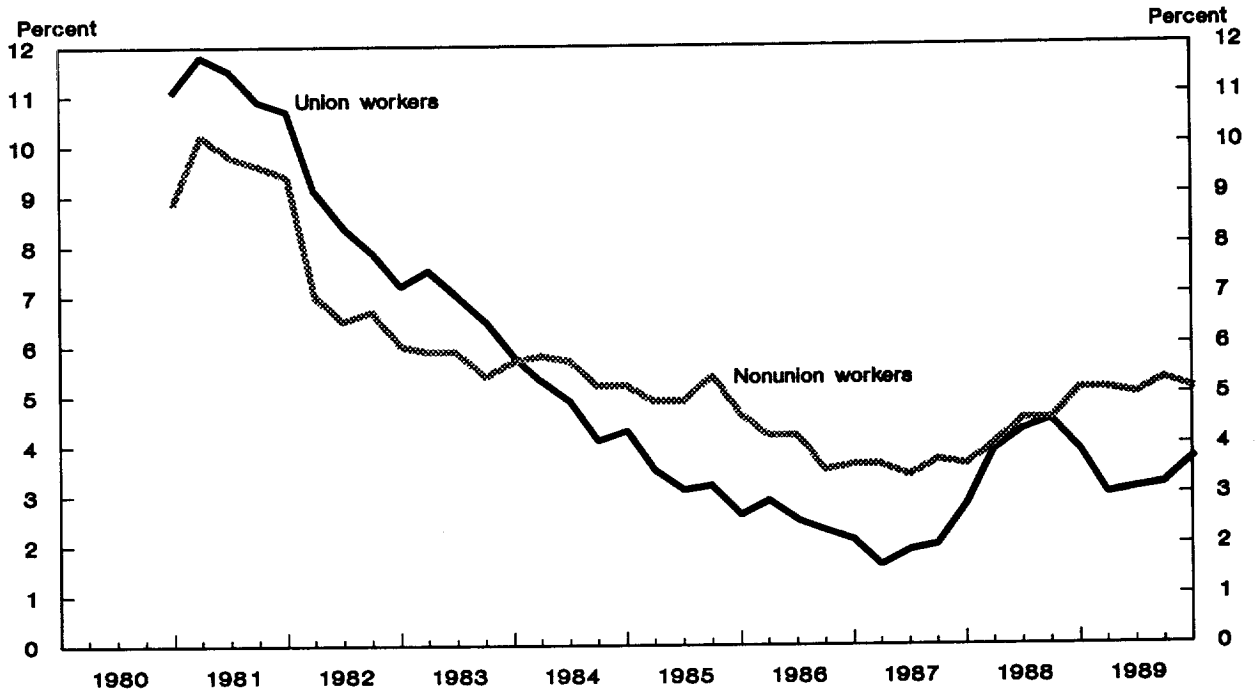


Chart 2. **Percent changes in compensation from the Employment Cost Index for 12-month periods ending March, June, September, and December, private industry workers by union status, 1980-89**



union and nonunion workers in the private economy.

Trends in wages and salaries. From 1975, when wage change data from the ECI were first available, until the early 1980's, the union-nonunion wage differential grew steadily as wage increases for union workers almost always exceeded those for their nonunion counterparts. (See chart 1.) Other BLS data suggest that, in manufacturing at least, the long string of years with relatively large union pay gains began in 1969 and that, by 1983, the union-nonunion differential was at a historic high.[20]

During the early 1980's, pay increases for both union and nonunion workers dropped sharply. Factors contributing to the decline were the 1981–82 recession, which led to wage freezes and pay cuts, and the lower rate of price increase. Pay gains in the union sector continued to exceed those in the nonunion sector through the end of 1982, but the drop in the rate of pay increase was sharper for union workers, due in part to the growing importance of lump-sum payments offered in lieu of wage increases in union contracts.

In 1983, there was a dramatic break in the pattern of larger pay gains for union workers. Since that time, nonunion wage increases have consistently exceeded those for union workers. By September 1989, the union-nonunion differential in wage rates was smaller than it had been in 1975.[21] (See table 5.)

This same pattern of a widening of the union-nonunion wage differential during 1975–83 and of a narrowing of the differential since 1983 is evident in data for the major industrial sectors within private industry. As shown in table 5, over the September 1975–December 1983 period, wage increases for union workers exceeded those for nonunion workers in both goods-producing and service-producing industries and in both manufacturing and nonmanufacturing. Over the December 1983–September 1989 period, in contrast, nonunion pay increases exceeded those for union workers by roughly the same proportion in all four of those industry categories. Over the entire September 1975–89 period, union pay increases exceeded nonunion gains in manufacturing, but trailed them in nonmanufacturing, although the differences were not great.

Union-nonunion comparisons of wage change for major industry groups, such as construction, cannot be made from the ECI because of insufficient sample sizes. However, it is possible to make rough comparisons for those industry groups by using data on effective wage adjustments from the Bureau's major bargaining settlements program[22] in conjunction with ECI data. For example, if the effective wage adjustments for union workers are lower than the ECI change for all workers in the industry group, this would suggest that nonunion increases are larger than union gains. (See table 6.)

Effective wage adjustments are not strictly comparable to ECI wage and salary changes for union workers. A major difference is that effective wage changes are based on data for all bargaining agreements covering 1,000 workers or more, whereas ECI union data are based on a sample of all bargaining situations, regardless of number of workers covered.[23]

Despite differences in the two series, the sizes of effective wage adjustments are very similar to ECI union wage changes where comparison is possible—for all private industry workers and for manufacturing and nonmanufacturing. This similarity provides support for using the effective wage adjustments as an in-

Table 6. **Cumulative percent changes in wages and salaries from the Employment Cost Index (ECI) and effective wage adjustments from major bargaining agreements, selected periods, 1975–88**

Series	December 1975–83	December 1983–88	December 1975–88
Total private industry:			
ECI, total	77.6	20.3	113.7
ECI, union	85.3	14.1	111.4
Effective wage adjustments	84.5	15.9	113.9
Manufacturing:			
ECI, total	78.3	19.0	112.1
ECI, union	85.8	15.1	113.8
Effective wage adjustments	83.0	15.9	111.7
Nonmanufacturing:			
ECI, total	77.3	20.9	114.3
ECI, union	84.9	13.2	109.3
Effective wage adjustments	85.3	16.1	115.2
Construction:			
ECI, total	68.8	14.6	93.4
Effective wage adjustments	82.1	15.8	110.9
Transportation and public utilities:			
ECI, total	89.6	14.2	116.6
Effective wage adjustments	88.8	14.9	117.0
Trade:			
ECI, total	70.2	21.9	107.4
Effective wage adjustments	77.8	14.7	103.9
Services:			
ECI, total	77.7	26.7	125.1
Effective wage adjustments	77.2	22.8	117.7

dicator of union wage changes to compare with changes for all workers from the ECI in industries for which ECI measures of union wage changes are not available.

Comparisons of overall ECI wage changes with effective wage adjustments by industry sector outside manufacturing generally support the finding of relatively large union pay gains during 1975–83 and relatively small gains during 1983–88. The exceptions are services during 1975–83, construction during 1983–88, and transportation and public utilities over the entire period. For transportation and public utilities, the effective wage changes for all periods are very similar to ECI changes; this pattern may be due to the fact that the industry has a far higher proportion of workers covered by union contracts than any other.[24]

Compensation cost changes. Data on wage and salary changes, the focus of discussion to this point, tell only part of the story. Comprehensive analysis of labor cost trends requires data on compensation costs, which include benefit costs as well as wages and salaries. Compensation cost changes by union status for the major industry sectors are available from the ECI, beginning with data for June 1981. (See chart 2.)

In addition to wages and salaries, compensation costs as measured by the ECI include paid leave, employer outlays for private insurance and retirement plans, costs of legally required programs, supplemental pay, and other benefits. The supplemental pay category includes premium pay for work on weekends and holidays, shift pay, and nonproduction bonuses, including lump-sum payments made in lieu of wage adjustments.

Benefits differ widely in the degree to which they are related to wages. The cost of some benefits, such as paid vacations or holidays, is directly related to wages because the benefits are paid for at the wage rate. Costs of other benefits, such as Social Security, are related to wages but also can be affected by factors outside the control of parties in negotiations, such as legislated changes in tax rates or ceilings on taxable earnings.

Still other benefits, such as health insurance and pensions, show cost changes that are almost totally unrelated to wage movements.[25] Consider, for example, insurance costs. During 1980–84, employer insurance costs rose much more rapidly than wages and salaries. During 1985–87, insurance cost increases dampened dramatically, due to lower rates of increase in medical costs and cost containment efforts by employers. Over the past 2 years, insurance costs have once again been increasing more rapidly than wages and salaries.

Table 7. **Cumulative percent changes in the Employment Cost Index of compensation costs for union and nonunion workers, selected periods, 1981–89**

Category	Compensation costs		Wages and salaries	
	Union	Nonunion	Union	Nonunion
June 1981–December 1983:				
All private industry	18.8	15.9	16.9	15.2
Goods-producing	17.3	14.6	15.0	13.7
Service-producing	21.3	16.7	20.0	16.0
Manufacturing	17.2	14.9	14.8	14.2
Nonmanufacturing	20.4	16.4	18.9	15.6
December 1983–September 1989:				
All private industry	19.8	29.2	16.5	27.0
Goods-producing	19.9	26.5	16.7	24.1
Service-producing	19.6	30.8	16.1	28.7
Manufacturing	21.6	27.5	17.7	25.0
Nonmanufacturing	18.0	29.9	15.3	27.8
June 1981–September 1989:				
All private industry	42.3	49.8	36.2	46.3
Goods-producing	40.6	45.0	34.2	41.1
Service-producing	45.1	52.7	39.3	49.3
Manufacturing	42.5	46.5	35.1	42.8
Nonmanufacturing	42.1	51.2	37.1	47.7

Another benefit for which cost does not rise at the same rate as wages and salaries is lump-sum payments, which often are provided in lieu of wage increases. Lump sums are popular among employers because they do not alter base wages and may more easily be discontinued in future contract negotiations than wage changes.[26]

The relative importance of benefits differs substantially between union and nonunion workers. In March 1989, for example, benefits made up 27.3 percent of total compensation for all private industry workers, 33.6 percent for union workers, and 25.6 percent for nonunion workers. Furthermore, the union advantage in terms of benefit costs as a percentage of compensation costs was greatest for those benefits whose costs were least closely related to wages—insurance, supplemental pay, and pension and retirement costs. This pattern suggests that the union-nonunion relationship will be different for compensation cost changes than for wage and salary changes.

Although both wage and salary changes and compensation cost changes show the same general pattern of relatively large union gains until 1983 and relatively small gains thereafter, there are important differences between the two measures. A major difference is that, since 1983, union gains relative to nonunion gains have been larger for compensation costs than for wages and salaries; that is, the union-nonunion differential in compensation costs is narrowing more slowly than is the differential in wages and salaries.[27]

Table 7 summarizes the union-nonunion compensation comparison for the period over which data for all of the categories shown are available. When one compares union and nonunion compensation trends, it is clear that the period prior to 1983 differs from the period since. This pattern holds whether the comparison is made for all private industry or for major industry sectors.

When the union-nonunion comparisons are restricted to blue-collar workers in manufacturing, which is possible only for the short period since 1987, the pattern is not as clear-cut. For the period June 1987–September 1989, the relationships between the cumulative increases for the union and nonunion groups are as shown below:

	Compensation costs		*Wages and salaries*	
	Union	*Nonunion*	*Union*	*Nonunion*
All workers	8.5	11.3	6.2	10.2
Blue-collar	8.9	10.6	6.6	9.2
Manufacturing	10.7	10.0	7.1	8.6
Blue-collar	11.0	10.4	7.2	8.7

For wages and salaries, the pattern of smaller increases for union than for nonunion workers holds for all of the categories. For compensation, however, the pattern holds for all workers and for blue-collar workers, but not for manufacturing overall or for blue-collar workers within manufacturing. The reason for the difference is that health insurance costs, which have been rising rapidly since 1986, make up a higher proportion of compensation for union workers than for nonunion workers in manufacturing. Thus, the table also illustrates the point that compensation cost changes may differ from wage and salary changes.

There are a number of explanations for the more rapid rise in nonunion than in union pay over the past 6 years. Most are related to the characteristics of the industries in which unions are strongest. Highly unionized manufacturing industries, such as automobiles and steel, have been strongly affected by foreign competition. Highly unionized transportation industries, such as trucking and airlines, have been affected by deregulation. However, a recent study of wage settlements found that, by 1985, concessionary wage adjustments had spread from a few troubled industries to nearly all.[28]

Another factor in the decline in the differential is the difference in occupational composition of union and nonunion worker groups. White-collar workers are more likely to be nonunion, and their pay has been rising more rapidly than that of blue-collar workers, who are more likely to be unionized. Yet another factor partly explaining the decline in the union-nonunion differential is the continuing drop in the percent of the work force that is unionized.

Table 8. Employment Cost Indexes of wages and salaries, benefits, and compensation costs of union workers relative to nonunion workers, March 1988–89

[Nonunion = 100]

Series	Wages and salaries	Benefit costs	Compensation costs
Private industry workers:			
1988	125.3	186.0	140.8
1989	120.7	178.0	135.4
Blue-collar:			
1988	150.0	224.9	169.9
1989	148.2	214.4	166.2
Manufacturing:			
1988	98.2	131.1	107.9
1989	100.9	139.0	112.1
Blue-collar:			
1988	134.8	176.7	147.3
1989	136.1	180.0	149.4
Nonmanufacturing:			
1988	134.1	195.4	149.2
1989	127.7	181.8	141.0

Compensation cost levels. Even though the union pay advantage has been narrowing over the past 6 years, a gap remains. This is shown by a review of information available from the ECI on compensation cost levels—employer costs for employee compensation.[29]

As noted in the discussion of compensation change, benefits made up a larger percentage of compensation costs for union than for nonunion workers in March 1989:

	Total benefit costs		*Insurance costs*	
	Union	*Nonunion*	*Union*	*Nonunion*
Private industry workers	33.6	25.6	8.3	5.3
Blue-collar	35.2	27.2	8.7	5.6
Manufacturing	36.4	29.3	10.0	7.2
Blue-collar	36.4	30.2	10.0	7.5
Nonmanufacturing	31.6	24.5	7.1	4.8

A major difference between the two sectors is in employers' costs for insurance, which account for 8.3 percent of compensation cost for union workers, compared with 5.3 percent for nonunion workers. This same pattern is found even when the comparison is restricted to more narrow categories. For blue-collar workers in

manufacturing, for example, insurance costs made up 10 percent of compensation costs for union workers and 7.5 percent for nonunion workers.

Table 8 shows that wage, benefit, and compensation costs typically are higher for union than for nonunion workers, but the difference depends on the measure of compensation and the group of workers examined. For all private industry workers in March 1989, wage and salary costs were one-fifth higher for union than for nonunion workers, whereas compensation costs were more than one-third higher. And in manufacturing, the union compensation cost advantage was 12 percent for all workers and nearly 50 percent for blue-collar workers. Clearly, when making union-nonunion comparisons, it is important to look at total compensation rather than simply wages and salaries, and at narrowly defined occupations rather than all workers combined.

Some final observations

As indicated throughout this article, it is difficult to draw simple conclusions about the size of the pay gap, the rate of change in this measure, or even the direction of the change.

Data from all three BLS programs support the presence of an overall union wage advantage, but estimates of its magnitude vary. As one might expect, the differences in the results stem in large measure from the differences in the data used. The three surveys differ in scope, definition, and method. The CPS, for example, includes farm workers and Federal employees; these groups are not included in the Industry Wage Surveys or the ECI survey. The ECI and Industry Wage Surveys include part-time workers (although the latter exclude them from data on individual jobs), while the CPS data are for full-time workers only.

The Industry Wage Surveys classify a worker as union if a majority of the production workers in the establishment are covered by a collective bargaining agreement; the ECI bases the worker's classification on the contract coverage of the worker's occupation. In both surveys, the worker's actual union membership status is not considered. In the CPS, on the other hand, the worker is classified as union only if the household respondent indicates that the worker is a member of a union on the job. Both the ECI and Industry Wage Surveys collect data from employers' establishments; the CPS is a household-based survey. And finally, the Industry Wage Surveys provide union-nonunion data by detailed occupation and industry; the ECI provides such data for all workers classified by broad occupational and industry groups; and the CPS yields publishable data at only the most aggregate levels. □

Footnotes

[1] H. Gregg Lewis, *Unionism and Relative Wages in the United States* (Chicago, University of Chicago Press, 1963), p. 193.

[2] Daniel Mitchell, *Unions, Wages, and Inflation* (Washington, The Brookings Institution, 1980), p. 99.

[3] Richard B. Freeman and James L. Medoff, *What Do Unions Do?* (New York, Basic Books, Inc., 1984), pp. 44–46.

[4] H. Gregg Lewis, *Union Relative Wage Effects: A Survey* (Chicago, University of Chicago Press, 1986), pp. 9, 174–87.

[5] A discussion of union-nonunion differences from compensation data appears later in this article.

[6] For more information about the Current Population Survey, see *Measures of Compensation*, Bulletin 2239 (Bureau of Labor Statistics, 1986), pp. 34–47; and *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), pp. 3–12.

[7] Annual data on median weekly earnings by union affiliation are published in January issues of *Employment and Earnings*, a BLS monthly periodical. The first data, for 1983 and 1984, were published in the January 1985 issue.

[8] For more information about the Industry Wage Surveys, see *Measures of Compensation*, pp. 7–21; and *BLS Handbook of Methods*, pp. 41–48.

The surveys also commonly provide information on establishment practices such as weekly work schedules and shiftwork provisions and a variety of employee benefits, including holiday and vacation schedules and the incidence of health, insurance, and retirement plans.

[9] In the Industry Wage Survey program, establishments and their workers are classified as "union" if a *majority* of the production work force is covered by terms of a labor-management agreement. Thus, the proportion of workers reported as unionized, as well as estimates of their earnings, may include some employees who were not covered by a contract. For example, if unionized assembly-line employees constituted a majority of a plant's production work force, all production workers in the plant were recorded as unionized, including shipping and maintenance workers who, in fact, were not covered by an agreement. Although no estimates of the number of workers "misclassified" in this way are available, it is believed that the effect on the analysis is small. This is because union agreements tend to be broad-based, limiting the number of nonunion workers in "union" establishments, and because wage levels of these workers are likely to be heavily influenced by those of the predominant (that is, union) group.

[10] As explained in footnote 9, the labor-management agreement coverage status of each establishment is determined by the status of a majority of its production work force. The status of an industry reflects the relative employment of establishments reporting majority coverage and those reporting minority (or no) coverage.

[11] See Sandra L. Mason, "Comparing union and nonunion wages in manufacturing," *Monthly Labor Review*, May 1971, pp. 20–26.

[12] For an analysis of the collective bargaining issues, plus an account of the terms of the final 1986 and 1987 agreements, see the following issues of the BLS periodical *Current Wage Developments*: May 1986, pp. 1–2; July 1986, p. 1; October 1986, p. 2; and March 1987, pp. 1–2.

[13] See *Industry Wage Survey: Meat Products, June 1984*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

[14] See *Industry Wage Survey: Men's Shirts and Separate Trousers, May 1978*, Bulletin 2035 (Bureau of Labor Statistics, 1979).

[15] Although the ECI is designed to be a fixed-weight Laspeyres index, indexes for series related to union status are more like Laspeyres chain indexes. See G. Donald Wood, "Estimation procedures for the Employment Cost Index," *Monthly Labor Review*, May 1982, pp. 40–42.

[16] For more information about the ECI, see *Employment Cost Indexes and Levels, 1975-89*, Bulletin 2339 (Bureau of Labor Statistics, 1989).

Separate data for union and nonunion workers were not available until 1988.

[17] See Felicia Nathan, "Analyzing employers' costs for wages, salaries, and benefits," *Monthly Labor Review*, October 1987, pp. 3–11.

[18] An establishment generally is a single physical location where business is conducted or where services or industrial operations are performed.

[19] If some workers in an occupation in the establishment are covered by a union contract and others are not, the two groups of workers are considered to be in different occupations, and one occupation is selected on a probability-proportionate-to-size basis.

[20] See Robert J. Flanagan, "Wage Concessions and Long-Term Union Wage Flexibility," *Brookings Papers on Economic Activity*, 1984:1, p. 187. The pre-ECI data on union and nonunion wage changes were from the Bureau's Wage Developments in Manufacturing program, which was discontinued in the late 1970's.

[21] In "Wage Concessions," Flanagan observed that "It would take another decade of differences in union and nonunion wage growth of the size observed in 1983 to restore the relative union wage in manufacturing to its 1969 level."

[22] Effective wage adjustment data are obtained from all union contracts covering 1,000 workers or more. They measure all adjustments in the reference year, regardless of the settlement date. For a more complete discussion, see *BLS Handbook of Methods*.

[23] Because ECI data are based on a sample, wage and compensation change estimates from the survey have sampling errors associated with them; because they are based on data for the universe, effective wage adjustments do not have sampling error.

[24] In 1988, about one-third of all employees in transportation and public utilities were covered by union contracts. See *Employment and Earnings*, January 1989, p. 226. Of course, a somewhat smaller proportion of workers would be covered by major bargaining agreements in the industry.

[25] See Bradley R. Braden, "Increases in employer costs for employee benefits dampen dramatically," *Monthly Labor Review*, July 1988, pp. 3–7.

[26] See Linda A. Bell, "Union Concessions in the 1980's," *Quarterly Review* (Federal Reserve Bank of New York), Summer 1989, pp. 44–58.

[27] The chief exception to this pattern is for the year ended December 1985, during which compensation cost increases in the nonunion sector exceeded those in the union sector by 2.0 percentage points, and nonunion wage and salary increases were 1.5 percentage points greater. The apparent reason for this anomaly is that health insurance cost containment was implemented during that period, and health insurance costs are relatively more important for union than for nonunion workers.

[28] Reasons for the relative decline in the rate of wage and benefit increases for union workers are explored in Bell, "Concessions," pp. 44–58.

[29] ECI data on compensation costs by union status are available only for 1988 and 1989. Note that union and nonunion cost levels reflect a variety of influences, including coverage by a collective bargaining agreement and variation in distribution of union and nonunion workers among occupations and industries.