

Union Concessions in the 1980s

Collective bargaining in the United States in the 1980s has been concession prone, with union givebacks occurring across diverse industries and eroding traditional compensation premiums in the unionized sector. Although the majority of concessions in the early 1980s occurred in the troubled sectors, by the mid-1980s the statistical link between concessions and economic performance was less clear. The most striking illustration of this point is that after six years of economic expansion and rapid jobs creation, a dominant share of 1988 labor contracts either lowered wages, weakened benefits, or altered standard methods of pay to workers in cost-reducing ways. An implication of the persistence of concessionary activity is that standard macroeconomic models, which link wages to aggregate variables like unemployment and prices, cannot fully characterize the wage determination process in the 1980s, at least in the union sector.

This article explores in detail the role of aggregate economic and industry-specific factors in explaining wage developments and concessions in the union sector. Using contract-level data on union settlements, it describes the content of major collective bargaining settlements over the period 1975-88, documenting the upward trend in concessionary activity. The article's key conclusion is that concessionary contracts in the mid-1980s exceeded "normal" levels—that is, the levels predicted by standard economic criteria alone. Specifically, although industry concessions were influenced by aggregate factors such as the rate of unemployment and the behavior of prices and by industry factors such as employment growth, these factors are not able to account fully for the rising trend in conces-

sions described in this article. A possible interpretation of these results is that the continuation of union concessions into the late stages of the economy's expansion reflects a weakening of union influence in the face of longer term changes in the bargaining environment.¹

The facts about union concessions

The contract data used in this analysis are compiled from Bureau of Labor Statistics contract reports, published monthly in *Current Wage Developments*. This source lists all major collective bargaining settlements covered by the Labor Department² and includes data on bargaining pairs (establishment and union), industry, region, dates of contract negotiation and settlement, number of workers covered, and settlement terms (including information about wages, cost-of-living adjustments [COLAs], benefits, and work rules). In total, the data set compiles information from 5,443 contracts negotiated in 1,241 establishments between 1975 and May of 1988 in private industry excluding construction. The collective bargaining data set is also merged with financial data from Standard and Poor's Compustat database and with earnings data from the Bureau of Labor Statistics in order to analyze the spe-

¹This article draws on an earlier paper written jointly with Elizabeth Hall and Daniel Hayes. See "The Incidence of Union Concessions in the 1980s: What, Where, and Why?" Federal Reserve Bank of New York, Research Paper no. 8819, August 1988.

²To be included in the Labor Department data base, a contract must have initially involved greater than 1,000 workers. Future fluctuations in employment may, however, drive total worker coverage to below 1,000 workers.

cific characteristics of concessionary and nonconcessionary firms. A detailed account of the data is contained in the Appendix.

A contract is defined to be "concessionary" (except where otherwise stated) if any of the following outcomes occur—a nominal wage reduction or zero wage increase in any year of the contract, a reduction in the generosity of the COLA provision, including diversions, deferrals, and unfavorable adjustments to COLA ceilings or floors, a net reduction in the benefit package offered to workers,³ a stated relaxation of existing union work rules, including worker per machine requirements and restrictions on outside contracting, as well as stated reduction in job classification or union progressions; the adoption of a "two-tier" wage structure, and the payment of a "lump-sum" or profit-sharing bonus in lieu of the more standard wage increase.⁴ Because concessions may vary in the severity of their impact, the concessions group is separated in subsequent statistical analysis into "hard" concessions—settlements directly involving a reduction in compensation such as wages, benefits, or COLA provisions—and "soft" concessions—settlements involving institutional contracting changes such as lump-sum payment plans, two-tier plans, and work rule changes.

Industry concession trends

The concessions in the early 1980s were largely a response to slack demand brought on by a general recession. It was in troubled industries such as rubber, transportation equipment, and utilities that concessionary activity was most prominent. By the middle of the decade, however, despite economic recovery, concessions were more widespread across industry.

Table 1 lists for each industry in the years 1975-88 the share of workers in contracts involving concessions. In all but the most troubled sectors of the economy, concessionary bargaining outcomes were relatively infrequent before 1983. By 1985 concessionary settlements had spread from a few troubled industries to virtually all industries. In 1987, the last full year of data, more than two-thirds of workers in major agreements in manufacturing and one-half of workers

³A subjective evaluation of the terms of the benefit package is made for all contracts to assess whether the overall value of benefits to workers has increased or decreased in the contract as stated. In the majority of cases, this decision was clear-cut. In instances in which the mix of benefits changed in such a way as to leave the overall value of the package ambiguous, the contract was interpreted as a "mixed change in benefits" and was not coded as a concessionary contract.

⁴This definition of concession is derived loosely from the concept and motivation in Daniel Mitchell, "Recent Union Contract Concessions," *Brookings Papers on Economic Activity*, 1982 1, and "Union Wage Determination Policy Implications and "Outlook," *Brookings Papers on Economic Activity*, 1978 4, by the same author.

in agreements in nonmanufacturing were involved in a union concession. The 1988 figures, complete through May, show that concessions remained important in 1988 contracts and continued to be widespread in incidence across industry.

A similar spreading in concessionary outcomes occurred across unions through the 1980s. For example, while concessions in the early 1980s were largely confined to the big rank and file settlements like the 1981 United Auto Workers contract and the 1982 Steelworkers pact, by 1987, the 10 unions with the largest membership were involved in concessionary settlements in a majority of contracts, with the exception of the Service Workers and the Carpenters and Joiners (Table 2).

Hard concessions

Contract terms that unambiguously reduce the nominal compensation of workers are a greater hardship to workers, at least initially, than contracts that specify innovative payment schedules. Clearly, the most direct and painful form of reducing labor costs is cutting wages, and with increasing frequency throughout the 1980s, workers have agreed to terms that have frozen or reduced their nominal wages and thereby reduced their real wages (Table 3).⁵ Although the cost of such nominal wage cuts in terms of forgone real income has dropped substantially over the decade, the share of workers experiencing nominal wage cuts has grown. In 1982, 45 percent of all manufacturing workers and 36 percent of all nonmanufacturing workers who negotiated contracts agreed to terms that reduced their real wages by at least 6 percent in the first year of the agreement. By comparison, nearly 70 percent of workers in the manufacturing sector in 1986 agreed to terms that reduced first-year wages, although the expected loss associated with these settlements was closer to 2 percent.⁶

⁵Likewise, the same calculations could be carried out for contracts in which second- or third-year wages were frozen or reduced. The share of contracts in which first-year wages were reduced or frozen and either second- or third-year wages were reduced or frozen peaked at 75 percent in manufacturing in 1987 and 37 percent in nonmanufacturing industries in 1982, the current first-half 1988 figures for manufacturing and nonmanufacturing are 16 percent and 20 percent, respectively. The share of contracts in which first year wages were reduced or frozen and both second- and third-year wages were reduced or frozen peaked at 36 percent in manufacturing in 1982 and 34 percent in nonmanufacturing in 1982, the current first-half 1988 figures for manufacturing and nonmanufacturing are 11 percent and 18 percent, respectively.

⁶It has been suggested that in previous periods in which workers negotiated contracts involving the freezing or reduction of wages, inflationary expectations were lagging and workers did not correctly anticipate real wage losses as a consequence of their contract. Of course, this logic cannot easily be applied to the low inflationary environment of the mid-1980s. In fact, to the extent that expectations were lagging, we should expect to see workers absorbing real wage

Table 1

Union-Covered Workers Affected by Concessions

(As a Percentage of All Workers Negotiating Contracts in Year, 1975-88)

Industry	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988†
Manufacturing	6.1	4.5	25.7	50.7	52.2	79.3	84.4	76.0	86.4	91.4
Food and kindred products	8.0	2.5	5.2	65.2	49.9	39.2	78.8	58.0	42.0	87.3
Tobacco	0	0	nc‡	0	58.4	nc	0	100.0	nc	nc
Textile mill products	25.5	0	nc	0	62.2	15.5	42.7	50.0	0	nc
Apparel	0	0	0	0.3	51.3	0	96.7	40.0	7.3	nc
Lumber	nc	0	0	0	94.9	0	100.0	96.4	0	100.0
Furniture	0	0	0	10.6	61.9	nc	39.8	52.6	0	nc
Paper	0	0	7.7	0	21.9	23.3	65.7	89.7	85.8	100.0
Printing	17.9	0	20.4	53.8	50.1	10.9	0	0	43.4	100.0
Chemicals	0	0	21.4	16.7	28.0	28.1	69.1	56.8	42.3	0
Petroleum and coal	0	nc	nc	14.2	0	0	0	100.0	100.0	100.0
Rubber	0	46.5	100.0	91.1	nc	0	7.1	100.0	68.4	100.0
Leather	37.0	0	0	0	0	33.2	100.0	100.0	100.0	nc
Stone, clay, and glass	9.1	0	66.3	83.4	39.8	100.0	100.0	39.3	0	0
Primary metals	0	7.9	13.2	77.8	100.0	85.3	94.3	100.0	100.0	70.2
Fabricated metals	0	9.6	15.6	20.7	71.7	92.7	32.7	84.2	100.0	nc
Nonelectric machinery	7.3	3.4	15.8	66.6	93.0	57.0	85.5	90.8	100.0	nc
Electric equipment	0	17.3	48.0	9.2	23.3	69.5	93.3	51.3	72.3	0
Transportation equipment	15.3	100.0§	41.8	92.7	39.3	97.4	95.3	45.2	100.0	100.0
Instruments	nc	10.2	0	9.1	45.7	40.0	0	87.6	nc	100.0
Miscellaneous manufacture	0	0	0	0	68.4	0	74.6	68.0	0	100.0
Nonmanufacturing	5.2	2.0	13.3	49.7	43.2	51.2	60.6	75.9	60.6	47.7
Transportation and utilities	4.4	3.9	20.2	66.0	39.3	43.5	80.4	80.7	76.2	72.4
Wholesale and retail trade	7.5	0.4	6.7	15.5	58.2	76.8	54.5	71.6	75.7	64.1
Finance, insurance, real estate	0	0	31.1	20.1	0	47.5	9.8	8.5	45.4	100.0
Services	0.4	0	0	6.3	33.6	42.0	29.4	68.3	24.6	0
All	5.6	3.3	15.4	50.2	47.8	60.5	71.2	75.9	73.5	47.7

†Data through May

‡nc no contract negotiated in year

§1979 negotiated agreements

Table 2

Prevalence of Concessionary Settlements by Union

(Workers Accepting Concessionary Settlements as a Share of Workers Negotiating in Year, 1975-88)

Union	Membership†	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988‡
AFSCME	997,000	0	0	0	0	nc	22.1	22.5	46.9	nc	nc
UFCW	989,000	nc§	0	6.4	27.9	60.2	79.3	46.3	82.0	76.9	72.6
UAW	974,000	6.2	12.3	75.1	96.8	53.8	98.9	96.6	90.9	99.7	100.0
IBEW	791,000	0	0	14.5	15.2	4.3	12.8	39.5	31.8	53.9	60.1
Service employees	688,000	12.8	0	0	12.0	5.8	40.8	26.5	34.8	32.6	17.6
Carpenters and joiners	609,000	0	0	0	0	83.1	0	77.0	52.6	0	nc
Steelworkers	572,000	0	4.8	27.3	81.4	70.9	48.7	90.7	95.6	98.1	nc
CWA	524,000	0	0	0	48.5	37.3	31.6	27.0	88.5	47.2	nc
Machinists	520,000	7.1	16.7	4.0	44.9	68.8	82.8	78.8	41.9	72.3	0
AFT	470,000	nc	nc	nc	nc	nc	0	33.6	nc	nc	nc

Note Union abbreviations are as follows: AFSCME — Association of Federal, State, County and Municipal Employees, UFCW — United Food and Commercial Workers, UAW — United Automobile Workers, IBEW — International Brotherhood of Electrical Workers, CWA — Communications Workers of America, AFT — American Federation of Teachers

†Membership figures 1985

‡Data through May

§nc no contract negotiated in year

The differential between compensation in union and nonunion establishments was large in the 1970s and exceeded the differential in wages alone. The reason is that fringe benefits have traditionally been larger in union contracts. To some extent, this differential was eroded in the 1980s. Table 4 shows the extent to which benefit and COLA provisions were reduced or eliminated in union contracts over this period. Largely as a consequence of low inflation in the mid-1980s, a growing share of contracts involved the deferral or elimination of previously established COLA provisions. Both COLA and benefit reductions appear to have peaked in their incidence in contracts by the mid-1980s.⁷

Footnote 6 (continued)
gains as a consequence of lower than expected inflation. See Daniel Mitchell, "Shifting Norms in Wage Determination," *Brookings Papers on Economic Activity*, 1985 2

⁷Because the contract data used in this analysis contain crude information about the type of change in the COLA provision and not the actual change in the value of the COLA, COLAs are treated as

Soft concessions

Collective bargaining agreements in the 1980s increasingly involved the use of new and innovative pay plans for workers, such as two-tier contracts and lump-sum and bonus payment plans. These methods of paying workers, in addition to reducing costs to the employer, have implications for the flexibility of wages within the union workplace and for the distribution of earnings within the firm.

Two-tiered contracts—contracts in which newly hired workers are paid at a lower rate than existing workers—have been strongly opposed by unions because they disrupt established union pay scales and violate the principle of pay uniformity across workers. Two-tier arrangements may specify a "permanent" tier—with newly hired workers paid at permanently lower wages

Footnote 7 (continued)
benefits whose terms have been eroded or improved. Eliminations, deferrals, reductions, or changes in terms of COLAs are all treated symmetrically as a reduction in benefits

Table 3

Workers Affected by First-Year Wage Reduction

(As a Percentage of All Workers Negotiating Contracts in Year, 1975-88)

Industry	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988†
Manufacturing	0.9	0.2	2.6	44.8	40.1	14.8	67.0	67.2	20.5	19.6
Food and kindred products	0	0	5.2	63.0	41.0	25.3	47.1	49.0	18.3	0
Tobacco	0	0	nc‡	0	0	nc	0	0	nc	nc
Textile mill products	25.5	0	nc	0	62.2	15.5	42.7	50.0	0	nc
Apparel	0	0	0	0	51.3	0	96.7	40.0	7.3	nc
Lumber	nc	0	0	0	94.9	0	61.4	96.4	0	0
Furniture	0	0	0	10.6	61.9	nc	39.8	0	0	nc
Paper	0	0	7.7	0	7.3	23.3	31.9	85.0	76.6	100.0
Printing	0	0	20.4	9.0	50.1	10.9	0	0	11.7	100.0
Chemicals	0	0	0	16.7	5.0	28.1	37.7	30.6	18.0	0
Petroleum and coal	0	nc	nc	0	0	0	0	94.0	0	0
Rubber	0	0	100.0	91.1	nc	0	4.8	0	0	100.0
Leather	0	0	0	0	0	33.2	100.0	100.0	0	nc
Stone, clay, and glass	0	0	0	83.4	30.7	0	0	31.2	0	0
Primary metals	0	1.8	0	72.9	93.8	85.3	94.3	97.5	100.0	0
Fabricated metals	0	0	10.3	1.9	13.3	60.4	32.7	64.1	33.8	nc
Nonelectric machinery	7.3	0	0	60.8	77.6	11.4	18.9	88.7	82.5	nc
Electric equipment	0	0	0	7.0	6.3	7.4	87.3	34.9	72.3	0
Transportation equipment	0.8	0§	0	81.1	33.2	11.5	39.0	37.2	13.9	37.5
Instruments	nc	0	0	0	45.7	40.0	0	87.6	nc	0
Miscellaneous manufacture	0	0	0	0	68.4	0	0	68.0	0	0
Nonmanufacturing	0.7	0	6.5	35.9	12.9	14.1	17.2	13.6	24.4	31.3
Transportation and utilities	1.2	0	13.3	50.5	12.3	11.6	8.9	2.9	13.3	63.3
Wholesale and retail trade	0.4	0	1.1	3.9	21.4	33.1	47.5	45.3	50.2	17.4
Finance, insurance, real estate	0	0	0	0	0	11.9	0	0	8.3	0
Services	0	0	0	1.3	1.0	3.0	6.8	27.3	11.8	0
All	0.8	0.1	4.7	40.6	25.9	13.7	39.3	30.7	22.5	17.7
Consumer Price Index (percent change)	9.1	13.5	10.4	6.2	3.2	4.4	3.6	1.9	3.7	4.1

†Data through May

‡nc no contract negotiated in year

§1979 negotiated agreements

through their full tenure—or a “temporary” tier—with an arranged schedule for the catch-up of wages through time. Both permanent and temporary two-tier systems reduce the effective wage bill by lowering the average wage paid to workers at the firm. Although these plans have been most publicized in the transportation sector, two-tier contracts can be found in diverse industries ranging from services to electrical equipment to lumber (Table 5). Two-tier plans are less prevalent in more recent settlements since they have been viewed increasingly as unsuccessful by both management and labor.⁸ In addition, the impact of such plans has been minimized because they are increasingly of the temporary type. While a majority of plans in 1983 and 1984 specified a permanent arrangement (51 percent and 64 percent, respectively), by 1988 the vast majority

were temporary (with only 20 percent specifying the creation of a permanently lower tier in two-tier arrangements in 1987 and 1988).

Lump-sum and bonus payments are considered concessionary because they have typically been substitutes for standard pay increases, and as such, have been generally opposed by unions in collective bargaining. Concessions of this kind are of interest because unlike wage/compensation reduction they show no evidence of being on the decline in union settlements (Table 6).⁹ Indeed, data for the last three years show that in nearly all industries, contracts specifying lump-sum arrangements are in place. These pay systems reduce costs because base wages may remain at existing levels and because lump-sums do not enter into the calculation of worker overtime, fringe benefits, or pensions. In addition, lump-sum contracts

⁸Unions have opposed the adoption of the two-tier plan because it disregards the tradition of pay uniformity in collective bargaining agreements. Although management initially sought two-tier agreements as a mechanism for lowering average labor costs, such plans have increasingly been abandoned owing to the perception that they may harm industrial harmony and productivity.

⁹It has been suggested that lump-sum payments may be easier to pass on to workers. The reasoning is that workers take a short-sighted view, welcoming a lump-sum payment as a “bonus check” and disregarding the long-term reduction in average compensation that may have occurred.

Table 4

Workers Affected by Nonwage Benefit and COLA Provision Reductions

(As a Percentage of All Workers Negotiating Contracts in Year, 1975-88)

Industry	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988†
Manufacturing	1.7	3.2	21.2	37.6	18.6	64.8	43.6	43.5	10.3	16.8
Food and kindred products	4.4	2.5	5.2	11.2	15.1	2.7	46.1	3.3	4.2	0
Tobacco	0	0	nc‡	0	0	nc	0	100.0	nc	nc
Textile mill products	0	0	nc	0	0	0	0	0	0	nc
Apparel	0	0	0	0	0	0	62.0	0	0	nc
Lumber	nc	0	0	0	0	0	59.6	94.4	0	0
Furniture	0	0	0	10.6	0	nc	0	0	0	nc
Paper	0	0	0	0	14.6	7.0	0	13.2	0	0
Printing	17.9	0	1.5	9.0	0	0	0	0	0	36.8
Chemicals	0	0	21.4	0	11.9	28.1	29.3	14.2	24.3	0
Petroleum and coal	0	nc	nc	0	0	0	0	0	0	0
Rubber	0	46.5	100.0	17.9	nc	0	7.1	0	15.8	100.0
Leather	0	0	0	0	0	8.2	0	0	0	nc
Stone, clay, and glass	0	0	0	30.7	9.2	44.4	100.0	4.5	0	0
Primary metals	6.7	2.1	0	77.8	88.3	74.6	82.7	91.8	96.6	70.2
Fabricated metals	0	9.6	5.3	18.8	57.2	9.8	23.2	34.2	66.2	nc
Nonelectric machinery	0	0	0	63.7	9.6	14.2	57.0	56.8	73.8	nc
Electric equipment	0	7.3	48.0	3.8	19.2	69.5	12.6	23.1	21.3	0
Transportation equipment	1.9	15.0§	41.8	82.9	11.6	86.5	59.5	11.1	4.1	12.5
Instruments	nc	10.2	0	0	0	40.0	0	87.6	nc	0
Miscellaneous manufacture	0	0	0	0	68.4	0	17.5	68.0	0	100.0
Nonmanufacturing	1.6	1.9	3.5	43.8	27.1	14.2	26.7	35.0	20.8	7.5
Transportation and utilities	0	3.9	5.4	58.7	27.0	4.5	39.8	49.1	41.7	0
Wholesale and retail trade	3.8	0	3.2	11.6	31.3	10.8	15.5	10.4	12.0	24.0
Finance, insurance, real estate	0	0	0	20.1	0	33.3	9.8	0	5.9	100.0
Services	0	0	0	5.0	23.5	26.6	11.4	5.8	8.3	0
All	1.7	2.6	8.2	40.5	23.5	35.2	34.2	37.6	15.6	8.3

†Data through May

‡nc: no contract negotiated in year

§1979 negotiated agreements

reduce regular pay increases to workers. Since 1984, lump-sum contracts paid increments to workers that were 61 percent of those received by workers in contracts without lump-sum provisions. The calculations for 1988 contracts (through May) show that while lump-sum agreements started from a higher base wage (with hourly wages of \$12.99 in lump-sum agreements as opposed to \$9.97 in non-lump-sum pacts), they averaged just 62 percent of the base wage increases of non-lump-sum agreements.¹⁰

In addition, lump-sums may be important innovations in contracting because they may ultimately affect the flexibility of wages and the distribution of earnings within the firm. Because lump-sums do not alter base wages, they are more easily eliminated in subsequent

contracts and may be more readily denied in adverse circumstances. In agreements with lump-sum provisions, the implication is that labor costs will be more sensitive to the business cycle. The reason is that some lump-sum provisions may contain an implicit profit-sharing component enhancing the flexibility of the compensation plan.¹¹

Bonus plans, such as profit-sharing or employee stock ownership plans (ESOPs), differ from lump-sum payments and are related explicitly to the performance of the firm. Whereas standard profit-sharing plans link workers' bonus payments to profits at the firm (with the size of these payments often varying to reflect wage

¹⁰The differences in the increments to base wages in lump-sum and non-lump-sum contracts varied from year to year. More detailed calculations of differences, which include total compensation calculations, can be found in Chris Erickson and Andrea Inchino, "Lumpsum Bonuses in Union Contracts: Semantic Change or Step Toward a New Wage Determination System?" Massachusetts Institute of Technology, April 1989, mimeographed

¹¹A great deal may be learned from comparing U.S. lump-sum plans with bonus payments in Japan. Japanese bonus plans are more widespread in use and far greater in magnitude than lump-sum plans in the United States. However, as in the Japanese system, U.S. lump-sum plans may contain a hidden profit-sharing component, where the scale of payments is set according to expectations of current and future profits. On the Japanese plans, see Richard Freeman and Martin Weitzman, "Bonuses and Employment in Japan," National Bureau of Economic Research, Working Paper no. 1878, April 1986

Table 5

Workers Affected by Two-Tiered Contracts

(As a Percentage of All Workers Negotiating Contracts in Year, 1975-88)

Industry	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988†
Manufacturing	0.5	0.4	3.2	30.4	9.6	6.0	26.3	10.1	5.0	2.8
Food and kindred products	1.3	0	5.2	2.8	7.3	11.3	28.1	19.3	5.9	0
Tobacco	0	0	nc‡	0	0	nc	0	0	nc	nc
Textile mill products	0	0	nc	0	0	0	0	0	0	nc
Apparel	0	0	0	0	0	0	0	0	0	nc
Lumber	nc	0	0	0	0	0	38.6	76.5	0	0
Furniture	0	0	0	0	0	nc	0	0	0	nc
Paper	0	0	0	0	0	0	0	0	0	0
Printing	0	0	0	0	0	0	0	0	0	0
Chemicals	0	0	0	0	11.9	28.1	44.0	0	0	0
Petroleum and coal	0	nc	nc	0	0	0	0	0	0	0
Rubber	0	0	0	8.5	nc	0	0	0	0	0
Leather	0	0	0	0	0	8.2	0	0	0	nc
Stone, clay, and glass	0	0	66.3	0	0	55.6	0	4.5	0	0
Primary metals	0	3.7	0	0	7.8	13.0	5.3	1.6	12.7	0
Fabricated metals	0	0	0	0	17.3	0	0	5.4	42.7	nc
Nonelectric machinery	7.3	0	0	0	11.7	0	0	3.0	0	nc
Electric equipment	0	0	0	0	1.4	0	64.4	0	0	0
Transportation equipment	0	95.5§	0	78.5	23.5	5.9	62.3	6.0	4.9	25.0
Instruments	nc	0	0	0	0	40.0	0	0	nc	0
Miscellaneous manufacture	0	0	0	0	0	0	31.7	0	0	0
Nonmanufacturing	0	0	1.1	32.2	7.2	24.8	39.0	24.6	17.3	21.7
Transportation and utilities	0	0	0	46.4	7.5	10.8	67.8	29.2	47.9	38.4
Wholesale and retail trade	0	0	3.5	0	6.2	46.1	3.8	20.1	1.3	22.8
Finance, insurance, real estate	0	0	0	0	0	2.2	0	8.5	0	0
Services	0	0	0	0	9.1	31.3	15.7	12.4	1.0	0
All	0.3	0.2	1.6	31.2	8.4	15.3	33.3	20.0	11.1	8.7

†Data through May

‡nc no contract negotiated in year

§1979 negotiated agreements

differences among workers), ESOPs grant stock ownership shares to individual employees. Both these plans act as a hedge against economic risk since labor costs are necessarily reduced when profits are down. As Table 7 shows, bonus payments linked to profits are less common than lump-sum payments. In all but the most organized sectors of the economy, profit sharing has been rare. In an adversarial bargaining environment, where profits may be hidden or misreported, profit sharing is viewed with suspicion by both workers and management. A strong and centralized union may have speedier and more complete access to company files than other unions and may therefore be better able to provide information to workers about company profits, indeed, profit sharing has been more common in such industries as automobiles and primary metals, which have a record of aggressive centralized collective bargaining.

In sum, although concessions remain dominant in many industries in the U.S. economy, the form of these concessions has changed. While hard concessions

such as wage reduction, COLA revision, and benefit cuts are less common in the most recent negotiated agreements, more institutionally innovative soft concessions such as lump-sum payments are important in current contracts. In light of differences in trend, some distinction between the two forms of worker concessions may be warranted.

Concessionary outcomes and economic performance

The fact that union concessions continued to occur with reasonable frequency through the middle and later part of the 1980s brings into question the degree to which aggregate economic variables such as real growth, prices, and unemployment can fully explain compensation settlement patterns. Even if allowance is made for lags in the effect of the economy on bargaining outcomes—lags due to long-term contracts, backward-looking expectations, or the role of relative wages—the frequency of concessionary settlements since 1983 suggests that more than cyclical factors

Table 6

Workers Affected by Lump-Sum Payments

(As a Percentage of All Workers Negotiating Contracts in Year, 1975-88)

Industry	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988†
Manufacturing	1.4	0.1	16.6	1.7	5.9	69.5	56.5	34.1	75.4	67.1
Food and kindred products	2.3	0	5.2	9.8	3.3	3.4	17.2	26.5	29.0	87.3
Tobacco	0	0	nc‡	0	0	nc	0	84.0	nc	nc
Textile mill products	0	0	nc	0	0	0	0	0	0	nc
Apparel	0	0	0	0	0	0	55.7	40.0	0	nc
Lumber	nc	0	0	0	0	0	40.4	19.8	0	100.0
Furniture	0	0	0	0	0	nc	19.7	0	0	nc
Paper	0	0	6.9	0	0	18.6	65.7	80.8	65.3	100.0
Printing	0	0	0	0	0	0	0	0	0	63.2
Chemicals	0	0	0	0	0	28.1	0	30.6	18.0	0
Petroleum and coal	0	nc	nc	0	0	0	0	9.0	0	100.0
Rubber	0	0	0	0	nc	0	0	100.0	52.6	0
Leather	37.0	0	0	0	0	0	0	0	100.0	nc
Stone, clay, and glass	0	0	0	0	0	0	0	16.6	0	0
Primary metals	0	1.0	0	0	0	0	0	32.8	20.4	0
Fabricated metals	0	0	0	0	0	58.0	32.7	26.6	59.8	nc
Nonelectric machinery	0	0	0	0	6.1	0	28.5	40.9	78.6	nc
Electric equipment	0	0	0	4.1	0	66.7	90.3	46.0	40.4	0
Transportation equipment	4.1	15.0§	38.6	1.1	19.5	94.1	91.2	37.8	94.6	100.0
Instruments	nc	0	0	0	0	0	0	87.6	nc	0
Miscellaneous manufacture	0	0	0	0	0	0	0	68.0	0	0
Nonmanufacturing	1.4	0	1.8	0	0.7	15.1	22.7	57.7	49.8	25.8
Transportation and utilities	1.3	0	0	0	0.6	24.3	25.2	64.6	61.8	38.4
Wholesale and retail trade	1.8	0	0	0	1.2	17.7	33.9	53.5	65.6	41.3
Finance, insurance, real estate	0	0	31.1	0	0	9.3	9.8	0	37.3	0
Services	0	0	0	0	0	1.6	7.7	40.3	17.0	0
All	1.4	0.1	5.9	0.9	3.0	37.7	37.8	50.2	62.6	31.7

†Data through May

‡nc no contract negotiated in year

§1979 negotiated agreements

may underlie their pattern.

To evaluate this point, consider first the behavior of aggregate wage equations estimated for the private nonfarm business sector and for the union and non-union sectors from the mid-1970s to 1989 (Table 8). The first thing to note is that such models (estimated for wages and salaries) continue to predict aggregate wage patterns fairly precisely through the 1980s, with coefficients of reasonable magnitude and quarterly prediction errors that indicate, on average, a close fit. But in the most recent period, while the aggregate and nonunion wage equations have overpredicted wage growth to a modest degree, the deterioration in the union equation has been more pronounced. Moreover, the possible spillover of weak wage growth from the union sector to the nonunion sector may account for some of the relatively good performance of the non-union wage equations (columns 2 and 8). While lagged union wage growth matters for nonunion wage growth, nonunion wage patterns do not influence union wage patterns and are therefore omitted from the union

regressions. Two points are worth stressing from this exercise: (1) prediction errors from wage equations are somewhat larger since 1986, and (2) union equations have a growing tendency to overpredict the actual level of wage growth relative to nonunion equations.

Explanations have been offered and tested for the somewhat weaker performance of these equations since the mid-1980s.¹² Chief among them are "structural" theories, suggesting that either factor or product market changes have influenced the fit of such equations. Many analysts have argued for the inclusion of labor force growth, trend productivity growth, a unionization variable, and import penetration variables in the aggregate equation to capture the types of structural changes that may have taken place. In general, the

¹²For example, David Neumark, "Declining Union Strength and Wage Inflation in the 1980s," Board of Governors of the Federal Reserve System, Working Paper no 96, April 1989, Robert Gordon, "U S Inflation, Labor's Share, and the Natural Rate of Unemployment," National Bureau of Economic Research, Working Paper no 2585, September 1988, and Mitchell, "Shifting Norms in Wage Determination"

Table 7

Workers Affected by Profit Sharing†

(As a Percentage of All Workers Negotiating Contracts in Year, 1975-88)

Industry	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988†
Manufacturing	0	0.7	16.7	36.5	11.5	61.4	12.1	17.1	58.0	12.2
Food and kindred products	0	0	0	0	5.7	0	9.2	0	0	60.0
Tobacco	0	0	nc‡	0	58.4	nc	0	0	nc	nc
Textile mill products	0	0	nc	0	0	0	0	0	0	nc
Apparel	0	0	0	0	0	0	0	0	0	nc
Lumber	nc	0	0	0	0	0	0	17.9	0	100.0
Furniture	0	0	0	0	0	nc	0	0	0	nc
Paper	0	0	6.9	0	0	0	0	0	0	0
Printing	0	0	8.9	0	0	0	0	0	11.7	0
Chemicals	0	0	21.4	0	6.9	0	12.6	12.0	0	0
Petroleum and coal	0	nc	nc	0	0	0	0	0	0	0
Rubber	0	0	0	20.0	nc	0	0	0	0	0
Leather	0	0	0	0	0	0	0	0	0	nc
Stone, clay, and glass	0	0	0	0	0	0	0	0	0	0
Primary metals	0	1.0	0	59.1	18.7	0	34.3	65.3	79.6	0
Fabricated metals	0	0	0	0	7.5	33.2	9.5	0	0	nc
Nonelectric machinery	0	1.5	15.8	47.0	68.3	31.3	51.1	3.0	52.4	nc
Electric equipment	0	10.1	0	0	0	59.3	1.0	0	0	0
Transportation equipment	97.0§	0	37.9	87.6	2.9	84.4	47.8	0	75.9	0
Instruments	nc	0	0	0	0	0	0	0	nc	0
Miscellaneous manufacture	0	0	0	0	0	0	0	0	0	0
Nonmanufacturing	0	0	0	0.4	7.9	2.2	1.8	2.6	2.1	0
Transportation and utilities	0	0	0	0.6	15.8	5.5	2.2	3.9	0	0
Wholesale and retail trade	0	0	0	0	0	0	2.9	0	5.8	0
Finance, insurance, real estate	0	0	0	0	0	0	0	0	2.3	0
Services	0	0	0	0	0	0	0	0	0	0
All	0	0.4	4.8	19.5	9.4	27.6	6.4	7.2	30.1	4.1

†Data through May

‡nc no contract negotiated in year

§1979 negotiated agreements

inclusion of variables intended to control for these factors does not change qualitatively the relative trend towards somewhat weaker prediction since the mid-1980s

Collective bargaining and microeconomic factors

There are many reasons to suspect that firm and industry factors figured more heavily in collective bargaining in the 1980s¹³ Through the 1980s, union goals such as employment security became increasingly important in certain firms and industries, implying that the aggregate union wage equations of Table 8 may be misspecified. Similarly, demographic factors such as

the influx of younger workers and a greater share of female workers potentially changed the profile of the "average" union worker and therefore the bargaining demands of the representative union. In addition, recent evidence suggests that union "pattern bargaining" (linking various settlements within an industry, for example) has eroded somewhat in the 1980s. A notable example is the dissolution of the formal Steelworkers' bargaining coalition in 1986.

The standard bargaining model relies on joint maximization by the firm and the union in the bargaining agreement. In the most common model the firm minimizes the cost of producing a quantity of output given both labor and nonlabor inputs, while the union is set in charge of maximizing the utility of its workers. In maximizing the welfare of its workers, the representative union would presumably include wages, the level of employment, and employment security in its objective function. Assuming that the union sets the wage and

¹³While earlier researchers stressed the role of institutional and firm-specific factors in influencing the outcomes of collective bargaining, there has been little empirical work on compensation determination at the firm level, presumably because firm-specific data are so difficult to obtain. For a discussion of firm-specific factors influential in wage determination, see John T. Dunlop, *Wage Determination Under Trade Unions* (New York: A. M. Kelley, 1944).

Table 8

Aggregate and Union/Nonunion Wage Equations

Dependent Variable	Growth in Wages and Salaries 1976-I to 1989-I†								
	Private Nonfarm Business Sector			Union Sector			Nonunion Sector		
Independent Variables	(1)††	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PCE _t ‡	84 (.06)	67 (.09)	82 (0.06)	1.22 (.15)	1.27 (.15)	1.18 (.15)	.69 (.09)	.40 (.13)	.67 (.09)
UR 25,§	-36 (.10)	-35 (.10)	-36 (0.11)	-29 (.26)		-44 (.29)	-37 (.16)	-35 (.15)	-37 (.18)
Union UR _t					-21 (0.24)				
Change in LF _t *			.07 (.13)			-29 (.34)			.08 (.20)
Change in Union (-1) _t *		.14 (.05)						.23 (.08)	
UE Ben††			1.97 (1.23)			4.68 (3.27)			1.50 (1.97)
R ²	.82	.85	.84	.58	.58	.60	.58	.64	.58
N	53	53	53	53	53	53	53	53	53
DW	2.17	2.24	2.36	2.51	2.49	2.59	2.38	2.32	2.46
Average Quarterly Prediction Errors									
1980-I to 1989-I	-14	-11	-04	-27	-32	-07	-09	-03	-00
1986-I to 1989-I	-45	-36	-25	-66	-66	-33	-43	-27	-27

†Compounded quarterly growth in the Employment Cost Index for wages and salaries, for relevant categories as indicated

‡Twelve-quarter polynomial distributed lag of inflation in the personal consumption expenditures deflator

§Prime age male unemployment rate

||Unemployment rate for major sector weighted by sectoral unionization coverage rates in each year

*Compounded quarterly growth in civilian noninstitutional labor force

*One period lag of union wage and salary growth

††Share of unemployment benefits paid by federal government received by those unemployed for greater than 26 weeks

allows the firm to choose the level of employment, the condition for equilibrium is satisfied where the marginal rate of substitution of wages for employment in the union's utility function equals the slope of the firm's labor demand function — a solution which in this example implies that both the equilibrium level of wages and the equilibrium level of employment will depend on the employment security variable.¹⁴ The point is that any observed deterioration in the employment-wage trade-off may reflect an improvement in employment security, and for this reason, bargaining outcomes will not be independent of this (unobserved) factor. Because many such factors may affect bargaining outcomes, and because these factors are more likely to be correlated with firm- and industry-specific variables than with aggregate variables, the firm and industry detail of the data is used in the following sections to assess the causes of collective bargaining outcomes in the 1980s.

Firm characteristics

Union concessions should occur in the troubled firms, where the fear of shutdown threatens the jobs of the most senior workers, who then agree to a concession.¹⁵ In this setting, concessions occur to save jobs, and thereby involve a change in union preferences from higher wages to higher employment rather than any fundamental change in the opportunities available

¹⁴As in the standard model, the firm minimizes the cost of producing a quantity of output X , given K_n nonlabor inputs priced r_n and labor input L priced w

$$(1) C = C(w, r_1, \dots, r_n, X) \text{ or } C(w, r, X)$$

with the cost-minimizing level of employment L^* given by

$$(2) L^*(w, r, X) = \partial C(w, r, X) / \partial w = C_w$$

The union, in this example, places value not only on wages and the level of employment, but also on employment security, S , which is at least partially exogenous to the union

$$(3) U = g(w, L, S)$$

If we assume that the union sets the wage and allows the firm to choose employment according to equation 2, the first order condition is

$$(4) MRS_{L,w} = \partial C_w(w, r, X) / \partial w,$$

yielding the standard result that the marginal rate of substitution in the union's objective function is equal to the slope of the firm's demand function. The reduced form equations for wages and employment, as derived from equations 2 and 3, will be given by

$$(5) w = f(S, r, X),$$

$$(6) L = f(S, r, X)$$

From equations 5 and 6 it is clear that both wages and employment will depend on the employment security variable S , moreover, it is apparent that the signs of $\partial w / \partial S$ and $\partial L / \partial S$ will be opposite (an increase in S will change the position of the union's objective function without changing the condition for cost minimization, so that an increase in wages must be accompanied by a fall in employment)

¹⁵See Richard Freeman and James Medoff, *What Do Unions Do?* (New York: Basic Books, 1984)

to the union in bargaining for its workers.

The union voting model summarized above has testable implications for firm performance. Specifically, concessionary firms should be firms that are "worse off" based on a set of standard criteria for judging performance. If concessionary firms can be differentiated from nonconcessionary firms on the basis of their financial performance, then it is plausible that concessions occurred in reaction to the risk of job loss associated with the plant closings.¹⁶

To test whether this is in fact the case, Table 9 reports the mean values of alternate financial variables for concessionary and nonconcessionary firms by year, using a limited data set that matches collective bargaining firms to their financial data. (See Appendix for details of matching.) Rows 1-7 of Table 9 indicate the level of assets, net income, retained earnings, sales, capital, and employment for the average concessionary and nonconcessionary firm, and thereby provide information about the size of the average firm in each year. Generally, concessions appear to have occurred in firms that were somewhat smaller than average in the early 1980s and in firms that were somewhat larger than average in the later 1980s.

Rows 8-12 of Table 9 provide some information about profitability and labor costs for the representative concessionary and nonconcessionary firms. While labor costs (row 8) appear roughly similar for concessionary and nonconcessionary firms, profits as proxied by net income scaled for assets (row 9) are significantly lower for concessionary firms in every year. Similarly, the sales growth performance of concessionary firms is somewhat weaker than that of nonconcessionary firms in most years (line 10). Finally, employment growth tended to be lower in concessionary firms as well (row 11). Arguing somewhat in an opposite direction is the behavior of stock prices, which have in the majority of cases risen faster for concessionary firms in the year of a concession than for nonconcessionary firms (line 12). Given the poor profitability performance of concessionary firms, however, the positive correlation of concessions and stock values may arise because concessions reduce future cost pressures and therefore lessen the probability of bankruptcy or shutdown.

Taken together, these data are consistent with the view that concessions tended to occur in firms that were relatively weak on average, although the difference in the financial performance of the two types of firms is, on average, not clear in all years.

¹⁶While activity of this sort at the firm level would presumably be correlated with aggregate unemployment trends, the aggregate rate omits specific firm and industry deviations from average unemployment rates

Industry characteristics

The effect of macroeconomic and industry-specific influences on the propensity for concessionary activity can be evaluated statistically by aggregating across firms and linking the share of concessions in each industry to several industry-specific and aggregate variables. Formally we have

$$(6) C_{it} = f(X_t, Y_{it}, T), \text{ where}$$

C_{it} is the share of workers negotiating a contract with a concession in industry i in year t , X_t is a set of macroeconomic variables varying through time and included to capture the influence of the business cycle on concessionary probabilities, Y_{it} is a set of industry-specific variables varying through time and intended to capture the effect of industry characteristics, and T is a linear time trend.

In this exercise, the bargaining data set is merged with aggregate price and unemployment data, with industry data on employment, prices, and output from the National Income and Product Accounts, and for manufacturing industries, with import shares from the Department of Commerce

To the extent that concessionary outcomes are predicted by economic events as captured by the independent right hand side variables, the time trend should be insignificant in an equation with the economic variables included.¹⁷ Alternatively, if at least a portion of the

¹⁷Of course this is only true if union and nonunion firms are sufficiently similar within industry on average

upward drift in the level of concessions by industry is unrelated to industry-specific or aggregate influences, then the time trend may matter for concessions by industry even after the economic variables are included. The share of concessions by industry that are not explained by economic factors and are related to trend can be termed "structural" factors. Structural factors that might explain an erosion in union organizing and bargaining strength and that are at least partially independent of economic developments include: increased efforts at, and greater success of, employer resistance to union organizing, a shift in the interpretation of existing labor laws that is unfavorable to unions, changes in the public perception of unions and changes in the role of government in the bargaining process, and deregulation and changes in market structure that have increased both foreign and domestic nonunion competition.¹⁸

¹⁸For a discussion of employer efforts against union organizing, see Richard Freeman, "Contraction and Expansion: The Divergence of Private Sector and Public Sector Unionism in the United States," *Journal of Economic Perspectives*, vol 2, no 2 (Spring 1988). For information about labor law effects, see Paul Weiler, "Promises to Keep: Securing Workers' Rights to Self-Organization Under the NLRA," *Harvard Law Review*, vol 96, no 8 (June 1983), and "String and New Balance: Freedom of Contract and the Prospects for Union Representation," *Harvard Law Review*, vol 98 (December 1984). A discussion of public perception and the role of government can be found in Freeman and Medoff, *What Do Unions Do?* A discussion of trade factors and deregulation can be found in Henry Farber, "The Decline of Unionization in the United States: What Can Be Learned From Recent Experience?" National Bureau of Economic Research, Working Paper no 2267, May 1987.

Table 9

Mean Characteristics of Concessionary and Nonconcessionary Firms

	1983		1984		1985		1986		1987	
	No Con†	Con†	No Con	Con						
Financial Variables‡										
1 Current assets	1003 90	1097 17	1384 39	1052 97	763 61	2273 76	1245 37	1449 82	549 37	1482 71
2 Total assets	6459 44	2829 55	5926 63	2955 32	2863 36	5468 43	4750 87	5746 23	2938 26	4249 77
3 Net income (NI)	212 71	26 10	340 28	154 62	131 08	321 09	261 53	142 21	168 00	54 15
4 Retained earnings (RE)	1155 25	776 81	1981 81	890 44	611 76	1806 78	942 52	1420 37	672 13	607 65
5 Sales	4188 04	2882 79	7313 06	4788 00	3498 97	7112 00	5424 59	4906 08	2388 13	6641 35
6 Working capital	211 18	360 43	342 38	327 42	337 80	661 55	510 69	406 18	254 44	359 27
7 Employment§	40 73	28 72	27 32	42 46	26 23	68 62	26 74	31 67	15 57	48 49
8 Labor cost/employment§	32 31	37 23	35 54	32 39	36 77	36 44	38 37	38 34	38 03	39 37
9 NI/total assets	0 056	-0 007	0 058	0 055	0 035	0 026	0 049	0 008	0 056	0 006
10 Percent change in sales	10 03	-3 25	10 25	9 58	4 65	4 04	2 98	5 94	9 74	8 35
11 Percent change in employment	0 81	-4 88	-1 17	1 78	1 70	-5 32	-0 71	-0 71	3 61	-6 69
12 Percent change in stock price	6 28	23 13	-6 64	-8 76	15 62	22 21	1 18	-6 65	-26 03	-8 00
Number of observations	65	56	50	33	31	46	27	84	18	38

†"Con" indicates that the firm experienced concessions. "No con" indicates that no concessions were granted to workers in the firm in the given year.

‡Data are in millions, unless otherwise indicated.

§Data are in thousands.

||Percent changes are percent change from previous period.

The model is estimated in Table 10. Because of the nature of the dependent variable in equation 6, the model is estimated using a nonlinear procedure under which only non-negative observations of the dependent variable are possible.¹⁹ The dependent variable in all equations is the share of concessionary contracts by industry. Included as explanatory variables are the last period's inflation rate, the expected inflation rate,²⁰ the

prime age male unemployment rate, and changes in the natural log (ln) of industry output shares, employment, and prices. Industry import penetration ratios are included as well in the "manufacturing only" regressions in columns 5, 8, and 11.²¹ In order to capture what appears to be an upward trend in concessionary activity through the late 1980s and to evaluate the sig-

¹⁹The dependent variable is truncated at zero, and only positive observations of the dependent variable are possible. A standard linear regression model is not appropriate in this case, and the model is estimated as a tobit via maximum likelihood techniques

²⁰The expected inflation rate is calculated as the annual averages of a 12-quarter lag of inflation in personal consumption expenditure

Footnote 20 (continued)

prices, with geometrically declining weights on past inflation

²¹Industry import penetration ratios were not available for nonmanufacturing industries according to the required breakdown. The model estimated without these variables for both manufacturing and nonmanufacturing industries yielded qualitatively similar conclusions as to the significance of the post-1984 time trend

Table 10

Industry Concessions

Dependent Variable Share of Contracts in Industry with Concessions in Year t

Independent Variables	All Concessions					Hard Concessions†			Soft Concessions‡		
	(1)	(2)	(3)	(4)	(5)‡	(6)	(7)	(8)‡	(9)	(10)	(11)‡
Percent change in PCE_t	-.068 (.019)		-.088 (.017)		-.088 (.021)	-.081 (.018)		-.083 (.026)	-.083 (.019)		-.085 (.022)
PCE_t^e		-.065 (.020)		-.089 (.194)			-.084 (.020)			-.078 (.020)	
$\ln(ur25)_t$.192 (.179)	.416 (.145)	.119 (.165)	.381 (.135)	.0128 (.198)	.173 (.174)	.409 (.142)	.214 (.213)	-.186 (.168)	.079 (.140)	-.264 (.203)
Change in $\ln Q Share_{it}$.386 (.497)	.373 (.503)	.331 (.468)	.347 (.475)	.0502 (.0541)	.300 (.480)	.332 (.486)	.281 (.563)	.061 (.451)	.025 (.461)	.371 (.526)
Change in $\ln FTE_{it}$	-1.052 (.759)	-1.070 (.778)	-1.440 (.757)	-1.615 (.790)	-1.627 (.869)	-1.760 (.773)	-1.963 (.808)	-1.640 (.900)	-.912 (.782)	-.978 (.822)	-1.467 (.912)
Change in $\ln P_{it}$	-.639 (.497)	-.636 (.507)	-.577 (.545)	-.660 (.561)	.0637 (.616)	.270' (.561)	-.379 (.576)	.156 (.646)	1.104 (.583)	1.069 (.546)	1.335 (.668)
Change in $\ln PEN_{it}$					-5.702 (15.943)			-8.180 (16.465)			-902 (14.302)
IND DUM			X	X	X	X	X	X	X	X	X
TREND 84	.072 (.029)	.058 (.030)	.073 (.026)	.058 (.030)	.0076 (.0031)	.060 (.027)	.047 (.031)	.065 (.032)	.077 (.025)	.069 (.030)	.074 (.030)
Number of Observations	207	207	207	207	180	207	207	180	207	207	180
Log likelihood	-102.85	-104.10	-69.57	-71.00	-72.96	-70.55	-71.38	-74.01	-48.56	-51.28	-50.55
Percent of positive§	69	69	69	69	66	66	66	62	49	49	45

†Hard concessions involve direct compensation reduction—nominal wage freezes and reduction, benefit reduction, or an unfavorable alteration to the terms of a COLA provision. Soft concessions involve institutional innovations such as two-tiered contracts, lump-sum provisions, profit-sharing or ESOP plans, or work rule changes favorable to management

‡Manufacturing industries only

§Observations for which there was a concession in industry

nificance of this pattern, the model includes a post-1984 time trend measuring the structural component of concessionary activity by industry. This break is chosen for the time trend in order to capture the upward drift in concessions by industry noted in Tables 1-7 that is independent of the influence of the business cycle on bargaining outcomes.²² Because the data summarized in Tables 1-7 show a different time pattern of behavior in hard and soft concessions, and because the two types of concession differ in severity, the data were estimated separately for the two types, using the definitions developed above.

Row 1 shows that inflation reduced the likelihood of industry concessions over this period.²³ Row 2 controls for expectations of inflation by including a long lag on past inflation, it yields similar results. Row 3 of the table shows that concessions in general were sensitive to aggregate labor market conditions as reflected in the behavior of the unemployment rate, but that innovative soft concessions did not respond to labor market tightness as measured in this way.

Rows 4-8 of the table summarize the impact of industry-specific factors on concessionary probabilities by industry. Row 4 shows that changes in industry output share (scaled for total industry output) did not affect industry concessionary probabilities. Changes in industry employment were strongly negatively associated with industry concessions involving direct compensation reduction (hard concessions), but were only weakly associated with industry concessions involving innovative changes in compensation packages (soft concessions). In general, in industries with lower than average employment growth, the incidence of concessions was higher. The change in the industry prices did not matter for concessions in general (row 6) but was positively associated with soft concessions. Finally, industry import penetration did not affect the incidence of concessions in manufacturing industries. Industry dummy variables are included to control for omitted industry-specific factors.

The key finding of this analysis is that even after the aggregate and industry variables most likely to influence bargaining outcomes by industry are included, the post-1984 time trend in row 10 is strongly signifi-

cant in nearly all cases. Both compensation and non-compensation concessions by industry appear to have a secular component that is unrelated to the types of economic factors that have been modeled. An approximation to the impact of the trend variable in explaining the rise in industry concessions from 1979 to 1987 can be obtained by multiplying the coefficient value on the time trend by the mean value of trend in 1979 and 1987 respectively, taking the difference, and then dividing it by the change in the mean of the dependent variable over the same years.²⁴ These calculations produce estimates for the contribution of the trend variable in the range of 40 to 50 percent for all concessions, and about 30 to 40 percent for soft concessions.²⁵

In sum, the data present a strong argument that economic factors do not fully explain the incidence of union concessions at the industry level in the 1980s. The evidence from the aggregate union wage equations and industry-specific bargaining equations indicates that structural factors may have influenced compensation outcomes over the late 1980s. Specifically, the analysis offered above suggests that one-third to one-half of post-recession industry concessions were unrelated to industry and aggregate influences. Instead these concessions appear to reflect longer term changes in the bargaining environment faced by unions and unionized firms.

Conclusion

In summarizing the major collective bargaining settlements in the 1980s, this article charts the pattern of union concessions over this period. Union concessions have been spread across diverse industries in both manufacturing and nonmanufacturing. Through the 1980s concessionary bargaining has increasingly involved the use of innovative contracting, with the adoption of lump-sum provisions, bonus plans, and two-tier contracts. Although in recent years fewer union settlements have involved wage and benefit reductions than in the mid-1980s, the incidence of soft concessions such as lump-sum payment plans has remained strong among agreements to date. Diverse patterns in hard and soft concessions do not appear to be due to differences in the effect of specific industry or aggregate variables on concessionary probabilities.

²²Alternative specifications of the time trend were chosen with qualitatively similar conclusions. The post-1984 linear trend was chosen based on overall fit.

²³Because concessions are defined as *nominal* reductions in this article, inflation unambiguously increases the *real* cost of any giveback to the worker. That concession probabilities decrease as inflation increases presumably indicates that workers fight harder to preserve current compensation levels when inflation threatens to erode compensation even further.

²⁴The formal decomposition accounts for the correlation of the right hand side variables with the Mill's correction of the tobit procedure. Because this factor can be quite large, the approximation to this procedure using the mean values of the trend and dependent variables in the earlier and later periods may produce misleading estimates of total contribution.

²⁵The means of the dependent variable in 1979 and 1987 are, respectively 0.375, 5.386 for all concessions, 0.177, 4.361 for hard concessions, and 0.225, 3.431 for soft concessions.

Standard aggregate wage equations overpredict union wage growth in the 1980s. These results are consistent with the industry-specific results, which indicate that concessions, when aggregated within industry, cannot be explained by economic factors alone. Although aggregate price inflation and unemployment influenced bargaining outcomes in expected ways and although industry performance—captured by import penetration, price movement, output share growth, and employment growth—had significant effects on bar-

gaining outcomes in certain cases, the preponderance of evidence suggests that economic factors by themselves do not fully explain the upward trend in union concessions in industries in the 1980s. On the basis of this evidence, it is likely that at least a portion of concessionary activity in each industry was due to an erosion of union bargaining strength largely independent of economic factors.

Linda A. Bell

Appendix

The contract data used in this article were drawn from Bureau of Labor Statistics contract reports that appeared in *Current Wage Development* from 1975 to 1988. The database compiles information on all major collective bargaining settlements. It provides data on the firm and union negotiating the contract, and it specifies the industry, region, and settlement dates. In addition, information on wages, COLAs, benefits, work rules, and specific compensation plans is given for each contract. The full data set covers 5,443 private industry contracts negotiated in 1,241 establishments but excludes agreements in the construction industry. Each bargaining pair (union and firm) is followed from the date of the initial contract through subsequent contract settlements, thereby forming a panel data set by establishment through time.

The typical firm-union pair appears in the data set for four contracting periods, with each period averaging 36 months. Thirteen percent of the contracts in the sample are national agreements. The agreements are distributed regionally as follows: 26 percent Northeast, 24 percent Northcentral, 15 percent Southeast, and 17 percent West. Transportation and public utilities have a relatively heavy representation in the sample, making up 18 percent of all agreements, 57 percent of the agreements in the sample are in manufacturing industries, 15 percent in wholesale and retail trade, and 9 percent in services. The contract data is weighted according to the bargaining year cycle, whereby 1977, 1980, 1983, and 1986 are the heaviest years of data.

To analyze financial characteristics of concessionary and nonconcessionary firms and thereby explore the determinants of concessionary contracts, the basic contract data are merged by establishment to the company code listings in Standard and Poor's Compustat data, which provide financial information for publicly traded companies. This matching reduces the number of establishments in the merged data set to 304. Although employing the firm level data from Compustat significantly reduces the establishment sample, it preserves

the general characteristics of the full bargaining data set according to location, length of contract, and payment terms. By industry, the subsampled Compustat/collective bargaining data set is more heavily weighted to manufacturing industries, which account for 68 percent of the subsampled data set.

Each of the establishments in the collective bargaining sample was assigned a four-digit standard industrial classification code using Compustat codings and firm-industry matchings.† The establishment-industry matched pair was then assigned an initial level of average hourly earnings corresponding to the level of earnings in the four-digit industry in 1974. A time series of earnings for each establishment was generated by applying the actual settlement terms, as stated in the contract language, to the base 1974 level earnings.‡ This matching restricted the analysis to manufacturing firms.§

In sum, the data are composed of three related samples, each used for different purposes in this article. First, the full collective bargaining data set contains the complete information from the contract data and is used for evaluating concessions by type in Tables 1-7 and for the statistical analysis of concessions by industry in Table 10. Second, the Compustat/collective bargaining data set contains a subsample of the collective bargaining data set according to the availability of company matchings in Compustat and is used for the analysis of means in Table 9. Third, the wage/collective bargaining data set is a manufacturing subsample of the collective

†Firm-union-industry matching provided by Hirtle (1987) was used for this purpose. Additional assignments were made by referring to pairings in IRS Compustat data.

‡The COLA information available in the contract data set specifies a COLA deferral, reduction, or change in terms, without precise information on the magnitude of these changes.

§Problems in matching certain establishments in this manner further limited the size of the final collective bargaining data set in several of the tests on firm-level effects.

Appendix (continued)

bargaining data according to the availability of earnings data and is used to generate information about average wages across concessionary and nonconcessionary firms. This data set is used in this article to define average wages in lump-sum and non-lump-sum agreements, as stated on page 49 of the text.

For the regression analysis found in Table 10, the bargaining data set was merged by two-digit industry with aggregate price and unemployment data, with industry data on employment, prices, and output from the National Income and Product Accounts; and import shares from the Department of Commerce.