

# Labor Market Outcomes of Deregulation in Telecommunications Services

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This paper examines the labor market outcomes of deregulation in the telecommunications industry, focusing specifically on changes in union density, real wages, wage inequality, and employment levels. Deregulation of telecommunications long distance and equipment markets began in 1984 with the dismantling of the highly unionized Bell System into AT&T (the long distance and equipment provider) and seven Regional Bell Operating Companies (RBOCs, the local service providers). Deregulation of local service has proceeded fitfully: while Congress intended to increase local competition with the passage of the 1996 Telecommunications Act, the RBOCs continue largely as monopoly providers. Despite only partial deregulation, however, former Bell System companies have fundamentally restructured their operations to compete with a growing number of new nonunion entrants; and they have focused heavily on cutting labor costs. Labor-management relations, cooperative under the prior regulated regime, have deteriorated substantially; and unions have had minimal influence on managerial strategies in the deregulated era (Keefe and Batt 1997).

In this paper, we focus on three questions. First, what are the overall trends in unionization, real wages, and wage inequality since deregulation began? Second, what is the effect of deunionization on wage inequality in the industry as a whole and within occupational groups? Third, to what extent has inequality increased within both the union and nonunion segments of the industry? To answer these questions, we analyze the Current Population Survey (CPS) annual earnings files (1983 to 1996). We interpret these data in the context of field research on managerial and union strategies in response to deregulation.

## **Previous Research**

Prior research on wage inequality shows that unions play a key role in limiting wage dispersion by raising the relative wages of lower-skilled workers and by reducing the wage gap between blue-collar and white-collar

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employees (Freeman and Medoff 1984). Cross-national research shows that higher levels of union density are associated with lower levels of wage inequality (Card and Freeman 1993; Fortin and Lemieux 1997). Also, the decline in union density in recent decades is associated with greater wage inequality because employment shifts to the nonunion sector where wages are more market-driven (Asher and DeFina 1997). Dinardo and Lemieux (1997) find that a more severe drop in unionization in the U.S. compared to Canada accounts for two-thirds of the differential growth in wage inequality between the two countries.

This paper contributes to the literature on wage inequality by examining the relationship between deregulation, deunionization, and wage inequality among detailed occupational groups within one industry. Most research on deunionization has taken a more aggregate approach; and while researchers have found increased wage inequality within age and education cohorts (e.g., Levy and Murname 1992; Freeman and Katz 1996), few studies have focused on these outcomes within occupation/industry groups.

In addition, while there is evidence that wage inequality has increased within both the union and nonunion segments of the labor market (e.g., Freeman 1996), few analyses compare the changes in wage distribution within each segment (an exception is Chaykowski and Slotsve 1996). Finally, this paper compares the extent of change in the 1990s versus the 1980s. Prior work on the relationship between deregulation and deunionization has focused primarily on the 1970s and 1980s (e.g., Fortin and Lemieux 1997).

## **Industry Context**

To understand how deregulation has affected the structure of employment and wages in the last decade, it is important to review the stylized facts of the Bell System, pre- and post-deregulation in 1984 (see Keefe and Batt 1997 for a detailed review). Prior to 1984, the Bell System consisted of over 1 million employees who represented over 90% of the work force in the entire industry. Sixty-five percent of the work force was unionized, represented either by the Communications Workers of America (CWA, the dominant union), the International Brotherhood of Electrical Workers (IBEW), or an independent union.

The Bell System provided "universal service" to the public through a highly standardized and nationally integrated system of equipment and operating procedures. The companies and union developed a national system of internal labor market rules governing the structure of jobs, training and advancement, compensation, and employment security. Given the

undifferentiated nature of the product and customer, the structure of jobs was relatively simple, with two core nonmanagement occupations: a primarily female work force of office workers (operators, clericals, service and sales workers) who handled customer transactions, and a primarily male work force of network technicians who maintained the switching and transmission infrastructure.

The unions helped reduce wage dispersion through several collective bargaining agreements beginning in the 1960s. In 1968, AT&T and the CWA established six national wage zones to deal with the effects of variation in the cost of living. In the 1971, 1974, and 1980 contracts, AT&T agreed to special wage adjustments in lower-paid, traditionally female jobs. The CWA also negotiated reductions in the amount of time it takes a worker to reach top pay in any wage grade from 8-10 years to 4-5 years (Keefe 1989). Keefe found that the major source of reductions in wage dispersion was across departmental average wages.

In the post-1984 period, the former Bell companies focused on cost reduction in order to face new nonunion entrants who enjoyed lower cost (younger and nonunion) labor; lower overhead; and new, more maintenance-free technologies. The former Bells downsized nonmanagement positions by between 30% and 60%, depending on the company. They reorganized into market-driven business units that target particular customer segments—large business, small business, and residential. Digital technologies provided the opportunity to offer customized bundles of services to different customer segments. The customer segmentation strategy translated into a labor segmentation strategy for each occupation. On the sales and service side, companies redesigned jobs and wages to fit the demands of differentiated customer segments. This redesign entailed an increase in the work force dedicated to sales and a functionalization of jobs into sales, service, and support functions. For the technical work force, the change from analog to digital systems shifted the demand for skill from those trained in analog systems to those with digital skills. As the companies created new job titles, the unions were left with negotiating appropriate wage rates. Despite the break-up of the Bell System, however, analysis of union contracts since deregulation shows that the companies and unions have maintained a fairly consistent national pattern of bargaining (Keefe and Boroff 1994).

## **Data**

Data for this paper come from the merged annual earnings file of the CPS for the telecommunications services industry (SIC code 481) between 1983 and 1996 (prior years do not include union status). The data are compiled from the monthly outgoing rotation group. Our sample includes persons

over 16 years of age who were employed for at least 35 hours per week and who reported earnings above the minimum wage. The sample, therefore, excludes part-time workers, thereby providing a relatively conservative estimate of wage inequality. The sample includes 2,073 observations in 1983, declining to 1,477 in 1996. We identify two broad occupational groups: clerical/sales and technical. Clerical includes computer operators, secretaries, typists, telephone operators, and order clerks. We combine clerical and sales groups for purposes of analysis because the content of work in these two categories overlaps. "Customer service representatives" for example, often primarily do sales. Technical workers include computer programmers, electrical and electronic technicians, telephone installers and repairmen, linemen and splicers, electronic repairers, and other technicians. Wages are adjusted according to the CPI-U, where 1983 equals 99.6.

## Findings

Two overall findings are noteworthy. First, union density fell dramatically and wage inequality rose significantly between 1983 and 1996—more than for the economy as a whole. As a result, by 1996 the level of wage inequality in telecommunications was converging on that of the U.S. population as a whole. The extent of change in such a short time is striking because deregulation in most of the industry has largely failed to materialize. That is, because regional Bell operating companies—which employ the majority of the industry's work force—still operate as regulated monopolies, the most significant effects of deregulation are yet to be felt.

Second, the most dramatic changes occurred in the 1990s, rather than in the 1980s. This finding is consistent with what we know from qualitative research, but it contradicts what other researchers have found. That is, we know that while deregulation began in the late 1970s and early 1980s, it initially only affected long distance markets, where only a small percentage of the work force is employed. Local telephone service only began to be affected by deregulation in the late 1980s and early 1990s. Other researchers have argued that the most important deregulatory changes in this and other service industries occurred from 1978 to 1982 and that the most dramatic changes in wage inequality occurred during the 1980s (Fortin and Lemieux 1997).

Table 1 shows changes in wage inequality in telecommunications compared to the economy as a whole. Among clerical workers, wage inequality rose by 25.6%, compared to only 7.5% for clericals in the U.S. as a whole. By 1996, the 90/10 ratio for clericals in telecommunications was 2.75, close to the 2.95 ratio for all clericals. For sales workers in telecommunications, wage inequality increased by 44%; by 1996, the 90/10 wage ratio for sales

workers in telecommunications was 5.58, *higher* than the 5.54 ratio for sales workers in the U.S. as a whole. A similar, though less pronounced trend occurred among technical workers.

TABLE 1  
Real Wages and Wage Inequality, by Occupational Group, 1983-1996  
Telecommunications Industry and U.S. Compared

	1983	1996	% Change 1983-90	% Change 1990-96	% Change 1983-96
<i>Clerical Workers</i>					
Median real wkly earnings (telecom)*	\$361	\$319	-0.5	-11.3	-11.8
Median real wkly earnings (US)*	\$255	\$255	5.0	-5.0	0.0
Ratio: Telecom/US median earnings	1.42	1.25	-5.3	-6.6	-11.8
Ratio: All telecom 90/10th earnings	2.19	2.75	18.1	7.6	25.6
Ratio: All US 90/10th earnings	2.74	2.95	1.7	5.8	7.5
<i>Sales Workers</i>					
Median real wkly earnings (telecom)*	\$479	\$382	-16.1	-4.0	-20.2
Median real wkly earnings (US)*	\$301	\$294	1.6	-4.1	-2.5
Ratio: Telecom/US median earnings	1.59	1.30	-17.5	-0.7	-18.1
Ratio: All telecom 90/10th earnings	3.88	5.58	-0.7	44.7	44.0
Ratio: All US 90/10th earnings	4.67	5.54	13.7	4.9	18.6
<i>Technical Workers</i>					
Median real wkly earnings (telecom)*	\$498	\$473	-1.7	-3.4	-5.0
Median real wkly earnings (US)*	\$373	\$351	-1.7	-4.5	-6.1
Ratio: Telecom/US median earnings	1.33	1.35	0.0	1.2	1.2
Ratio: All telecom 90/10th earnings	2.11	2.75	9.8	20.6	30.4
Ratio: All US 90/10th earnings	3.07	3.37	5.1	4.6	9.7

Source: CPS merged annual earnings files; \* CPI-U adjusted.

Deunionization has been significant, although the industry continues to be the most highly unionized in the U.S. Deunionization occurred primarily because the traditional unionized companies cut labor costs by reducing employment levels rather than wages. At the same time, employment grew among new, low-wage, nonunion firms (as well as new nonunion operations of the traditional Bell companies). Overall unionization in the industry fell from 55.5% in 1983 to 28.7% in 1996. Within the major occupational groups, union density fell from 63% to 35% among clerical and sales workers and from 68% to 52% among technical workers. That is, the female-dominated, semiskilled occupations have been more negatively affected by deunionization than have male-dominated technical occupations. Again, the decline in union density after 1990 accounts for half to three-quarters of the change for the total period, depending upon the occupational group (Table 2).

TABLE 2  
Deunionization and Union/Nonunion Wage Inequality, by Occupational Group:  
Telecommunications Industry, 1983-1996

	1983	1996	% Change 1983-90	% Change 1990-96	% Change 1983-96
<i>Clerical &amp; Sales Workers</i>					
Total employment	450,755	388,655	-5.0	-8.7	-13.8
Percent union	62.6	34.5	-14.1	-30.9	-44.9
Union median wkly earnings	\$360	\$553	32.5	21.1	53.6
Nonunion median wkly earnings	\$380	\$480	23.7	2.6	26.3
Union med. real wkly earnings <sup>°</sup>	\$361	\$352	1.0	-3.5	-2.5
Nonunion med. real wkly earnings <sup>°</sup>	\$382	\$306	-5.7	-14.1	-19.8
Ratio: Union/nonunion median wkly earnings	0.95	1.15	7.1	14.5	21.6
<i>Technical Workers</i>					
Total employment	374,400	294,359	-8.9	-12.4	-21.4
Percent union	67.5	51.7	-4.4	-18.9	-23.3
Union median wkly earnings	\$486	\$772	31.7	27.2	58.8
Nonunion median wkly earnings	\$500	\$694	28.0	10.8	38.8
Union real med. wkly earnings <sup>°</sup>	\$488	\$492	0.4	0.5	0.8
Nonunion real med. wkly earnings <sup>°</sup>	\$502	\$442	-2.5	-9.4	-11.9
Ratio: Union/nonunion median wkly earnings	0.97	1.11	2.9	11.6	14.4

Source: CPS merged annual earnings files; ° CPI-U adjusted.

Deunionization has contributed to growing wage inequality primarily through the decline in real wages among nonunion workers. That is, while union workers suffered force reductions, the union succeeded in negotiating high relative wages that closely track the CPI index so that real wages for unionized workers did not fall or fell only slightly. By contrast, real wages for nonmanagement workers in the nonunion segment declined by 15% to 20%, depending on the occupational group. As a result, the union/nonunion wage gap increased by over 15% during the period, with the bulk of the increase occurring after 1990 (Table 2).

Another source of rising wage inequality is the increase in dispersion within both the union and the nonunion segments. Table 3 illustrates these trends. Among unionized sales and clerical workers, the 90/10 wage ratio increased from 2.00 in 1983 to 2.43 in 1996; for the nonunion group, it grew at a somewhat higher rate, from 3.30 to 4.25 over the same period.

The story of the changing wage structure among union and nonunion technical workers is strikingly different than for clerical and sales workers. For nonunion workers, the 90/10 ratio remained unchanged (at 3.13) for

TABLE 3

Growth of Wage Inequality within Union and Non-Union Segments, by Occupation:  
Telecommunications Industry, 1983-1996

	1983	1996	% Change 1983-90	% Change 1990-96	% Change 1983-96
<i>Clerical &amp; Sales Workers</i>					
Union 10%ile real wkly earnings <sup>°</sup>	\$223	\$188	-3.9	-11.8	-15.6
Union 90%ile real wkly earnings <sup>°</sup>	\$446	\$456	3.0	-0.6	2.4
Nonunion 10%ile real wkly earnings <sup>°</sup>	\$221	\$153	-13.4	-17.3	-30.7
Nonunion 90%ile real earnings <sup>°</sup>	\$729	\$650	-16.0	5.2	-10.8
Ratio: Union 90/10th earnings	2.00	2.43	7.1	14.2	21.4
Ratio: Nonunion 90/10th earnings	3.30	4.25	-3.0	31.8	28.8
<i>Technical Workers</i>					
Union 10%ile real wkly earnings <sup>°</sup>	\$351	\$306	-12.9	0.0	-12.9
Union 90%ile real wkly earnings <sup>°</sup>	\$602	\$690	1.6	12.9	14.5
Nonunion 10%ile real wkly earnings <sup>°</sup>	\$241	\$224	1.6	-8.5	-6.9
Nonunion 90%ile real wkly earnings <sup>°</sup>	\$753	\$701	1.6	-8.5	-6.9
Ratio: Union 90/10th earnings	1.71	2.25	16.7	14.8	31.5
Ratio: Nonunion 90/10th earnings	3.13	3.13	0.0	0.0	0.0

Source: CPS merged annual earnings files; <sup>°</sup> CPI-U adjusted.

<sup>ii</sup> This paper is based on a larger project, funded by the Alfred P. Sloan Foundation, which analyzes the relationship between deregulation, management and union strategies, and labor market outcomes.

the period. In the union segment, the opposite occurred: the 90/10 ratio increased 31.5% for union workers (from 1.71 to 2.25). The increased wage dispersion is about equally attributable to a decline in the lower 10th percentile (during the 1980s) and an increase in wages in the upper 90th percentile (in the 1990s).

The increase in wage dispersion in the union segment is most likely due to two sources: (a) management strategies designed to create new job titles and segment labor according to market segments (increases across wage grades); (b) union strategies to negotiate pay raises primarily at the high end of any wage grade—for workers with five years seniority who traditionally comprise the bulk of the work force (within wage grade dispersion). In the 1990s, the companies misjudged the demand for new services, particularly the internet, and downsized more than necessary. As a result, many more employees now receive entry level wages.

Notably, however, for both occupational groups, nonunion workers at the high end (90th percentile) experienced falling real wages: 11% among clerical and sales workers and 7% among technical workers. This finding runs contrary to the idea that the market demand for high technical skills

(whether in office computers or programming skills) would raise wage dispersion. That is, among nonunion workers, the higher-skilled workers found their wages falling despite the common perception that technical skills are in short supply in the industry.

## Conclusions

This review of trend data in the telecommunications industry shows that huge changes in union density and wage inequality have occurred in little over a decade, despite the fact that real deregulation in the industry is only beginning. The union/nonunion wage gap has grown by 15% to 20% because unions succeeded in negotiating wage increases that track the CPI, but nonunion wages fell significantly. Wage inequality within the union segment has also grown, but does not yet meet the levels of the nonunion segment. These findings are dramatic, but they understate the extent of change because the analysis does not include part-time employees or nonwage (benefits) compensation. Because nonunion employers are more likely to use lower-paid part-time workers and are more likely to provide lower benefits, the extent of total wage dispersion between the union and nonunion segments is probably underestimated.

Another important finding is that the effects of deunionization and rising wage inequality are more pronounced for female than for male occupations. Other researchers, by contrast, have found that for the economy as a whole, while deunionization significantly affected the rise in male wage inequality in the U.S., the declining minimum wage had a more significant effect on female wage inequality. The telecommunications industry, however, is unique in its high unionization rates among women. Women in telecommunications historically have earned over twice the average wage of women in other service industries (Spalter-Roth and Hartmann 1995).

On the nonunion side, the dramatic fall in nonunion wages is striking because telecommunications is a high-skilled industry with a high demand for workers with digital technology skills. A commonly held belief in the industry is that the demand for technically skilled workers is high relative to the supply. Yet in the nonunion sector, real wages in both the clerical and sales and the technical occupations are falling, even among those in the 90th percentile—those we would presume to be the most in demand.

Finally, the timing of all of these changes is noteworthy because the most dramatic changes occurred after 1990, despite the fact that deregulation began in 1984. Whereas nonunion wages tracked union levels through the late 1980s, both deunionization and the growth in the union/nonunion wage gap accelerated in the 1990s. In other words, it appears that initially following deregulation, the nonunion entrants copied the dominant union model; but

by 1990, the nonunion firms adopted their own low-wage strategies. Given lower overall costs, new entrants would be well positioned to engage in a high-wage, high-commitment strategy to complement investment in new technology. On average, they do not appear to be pursuing this approach.

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