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*Industrial and Labor Relations Review*, Volume 48, Issue 4 (Jul., 1995), 636-655.

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*Industrial and Labor Relations Review*

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# COLLECTIVE BARGAINING AFTER DEREGULATION: DO THE TEAMSTERS STILL COUNT?

MICHAEL H. BELZER\*

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Using data from the American Trucking Associations and a 1991 telephone survey of 223 major firms in the general freight segment of the trucking industry (SIC 4213), the author describes the restructuring of the trucking industry that occurred following economic deregulation that began in 1977 and examines how that restructuring affected industrial relations outcomes such as wages and union strength. He finds that both market concentration and competition increased after 1977. He also concludes that regulatory restructuring led the general freight industry to divide into two sectors, one handling full truckload shipments (shipments of 10,000 pounds or more) and one handling less-than-truckload shipments. The Teamsters Union lost bargaining power in the truckload sector, but it retained much of its bargaining power within the less-than-truckload sector.

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**E**conomic deregulation, designed to subject the trucking industry to free market forces, has transformed that industry in three ways since 1977. First, the trucking industry before 1977 was a utility, regulated and tied to the public trust. The Interstate

Commerce Commission (ICC) authorized carriers to haul specific commodities over specific routes and, through rate bureaus, supervised pricing structures. Regulatory restructuring has forced carriers to repack-age themselves as niche producers. Compelled by the market to redesign business strategies forged over decades, successful carriers found markets that fit their expertise and capital structures, while unsuccessful carriers went out of business.

Second, economic deregulation has accelerated the deunionization of the trucking industry. Although the Teamsters continue to represent the majority of workers

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\*The author is Senior Research Associate in the New York State School of Industrial and Labor Relations at Cornell University. This research was supported by a grant from the Institute of Collective Bargaining. Motor Carrier Annual Report data were generously provided by Thomas Corsi of the University of Maryland, who obtained the data from the American Trucking Associations. The author thanks Norman Weintraub, recently retired Chief Economist of the International Brotherhood of Teamsters, for unionization information; Harry Katz for valuable comments on this paper; and Susan Christopherson, Jack Fiorito, and David Wazeter for comments on earlier related research.

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Because the survey from which this paper draws depended on a promise of confidentiality, the author cannot provide the data set to other researchers. Survey wage data are sensitive and proprietary.

in some sections of the industry, they have lost representation in others. In particular, the general freight sector—comprising motor carriers that carry non-specialized freight requiring no special handling or equipment—has fragmented broadly into truckload and less-than-truckload operations, and the Teamsters have lost most of their ability to represent truckload workers.

Third, bargaining within the general freight sector of the trucking industry has become more decentralized since economic deregulation. Bargaining between the Teamsters and general freight motor carriers has taken place at the national level since bargaining was consolidated under the National Master Freight Agreement (NMFA) in 1965. Centralized bargaining brought remarkably uniform wage levels and working conditions across industry sectors and regions. With the decentralization of bargaining that occurred after 1977, the coverage of the NMFA has declined by two-thirds and variation in wages and conditions has increased.

Previous studies of the effects of economic deregulation on industrial relations outcomes have shown a similar pattern of industry segmentation and wage dispersion. Among airlines, the most similar example, an initial period of new competition was followed by increased industry concentration (a smaller number of firms), development of a similar hub-and-spoke system, and development of a system of national and regional carriers. Industrial relations patterns also are similar in airlines, as union density declined, union settlements declined, and wage patterns differentiated among markets.

The goal of this study is to determine, more precisely than previous studies, the union effect on wages and conditions in trucking after economic deregulation. This study examines emerging industry segmentation and distinguishes between the effects of the union and segmentation on industrial relations outcomes.

This study improves on previous studies of trucking deregulation by examining outcomes at the level of the firm. Firm-level

data allow an examination of wages and conditions in different market segments, avoiding the tendency to aggregate data across the entire industry. Data I collected in 1991 from 223 major freight carriers show the differences in outcomes between segments and between union and nonunion carriers. Finally, I use multiple regression to examine the relationship between industrial organization and industrial relations.

### Industry Restructuring

After the passage of the Motor Carrier Act of 1935, the ICC structured the trucking industry according to the commodity hauled, the type and frequency of service, the regularity of scheduling and routing, the degree of availability to the public, and the extent of liability for the value of freight. The ICC granted certificates of operating authority to existing carriers over existing routes, and expanded that authority very cautiously. Rate bureaus set common carrier prices and the ICC limited entry. Common carriers had to serve the public indiscriminately, accepting all freight, regardless of volume, for which they had commodity, route, and destination authority. The law essentially treated trucking as a utility, regulating both price and availability, and explicitly structured the competitive environment.<sup>1</sup>

<sup>1</sup>The ICC divides the intercity trucking industry (Standard Industrial Code 4213) into seventeen commodity divisions, including general freight (50.0% of all ICC-regulated carriers, of which 40.2% are TL and 9.8% are LTL), tank truck (9.4%), bulk commodities (7.8%), refrigerated commodities (6.6%), household goods (6.0%), motor vehicles (1.7%), and other specialized commodities or other commodities not elsewhere classified (18.5%) (American Trucking Associations 1993). The ICC defines shipments of general freight that weigh less than 10,000 pounds as less-than-truckload (LTL), and it defines general freight shipments that weigh more than 10,000 pounds as truckload (TL). The average LTL general freight shipment in 1992 was 947 pounds and the average TL general freight shipment (reported by LTL carriers; information unavailable for TL carriers) was 19,229 pounds (American Trucking Associations 1993:7).

In 1992, LTL carriers earned 29.1% of all motor carrier revenue and TL carriers earned 21.7% of all revenue (American Trucking Associations 1993:xii). The ICC requires Instruction 27 (I-27) carriers, which

Economists and manufacturing interests pushed hard for economic deregulation. Economists claimed that regulation created a cartel from which the industry and its employees earned rents, and some explicitly sought the reduction of Teamster bargaining power (Moore 1978; Rose 1985, 1987; Hirsch 1988, 1993; Pustay 1989:251–52). Policy-makers expected economic deregulation to increase competition and reduce rates charged by carriers.

Administrative deregulation began in 1977, as the ICC began to rewrite the rule book. The agency abandoned its standards for certification, opened up entry, broke down the distinction between common and contract carriage, allowed private carriers to haul goods commercially, legalized discriminatory pricing, and began to take away the rate bureaus' authority to set rates. The Motor Carrier Act of 1980 gave legislative permanence to the ICC's administrative deregulation.

Economic deregulation restructured the trucking industry. It abruptly replaced the agency's rules with market rules, compelling carriers to redesign their business strategies quickly. New entry carriers almost exclusively hauled truckload (TL) freight, refusing to accept less-than-truckload (LTL) shipments. These carriers were not obligated contractually to maintain union-scale

wages, health insurance, or pensions, and were not burdened by the extensive capital investment in terminals implicitly required by earlier ICC regulations. In short, the allocative efficiency caused by specialization, prompted by regulatory change, allowed new entry carriers to cream truckload freight from the general freight market while removing the effects of collective bargaining as well (Belzer 1994a:8–15, 22–25).<sup>2</sup>

Industry restructuring drove revenues and earnings down. The cost of ICC-regulated intercity truck transportation declined 14% per ton-mile from 1980 to 1990. Overall, trucking costs declined from 5.7% to 5.0% of GNP (Smith 1992:8, 10).

Part of this reduction can be attributed to more efficient use of resources, and part can be attributed to reduced wages and profits. Both carriers and their employees lost as a result of deregulation: Class I general freight carriers' average return on equity declined 22% between 1977 and 1990, inclusive (Belzer 1994a:36–40), and average hourly wages dropped 26.8% over the same period (U.S. Department of Labor 1991; Belzer 1994a:46–50).

This specialization created two broadly distinct markets in TL and LTL freight. Before deregulation, most carriers hauled a mix of truckload and less-than-truckload freight. After deregulation, the freight industry segmented into TL and LTL niches. Figures 1 and 2 show the extent of the shift.

The general freight industry further fragmented into national, regional, and local markets, as well as particular commodity markets. Before economic deregulation, regional carriers regularly picked up freight destined for other regions and transferred it to other carriers that delivered it; this process is called interlining. Rate bureaus set the rates and the basis for revenue- and liability-sharing between carriers. Economic deregulation discouraged interlin-

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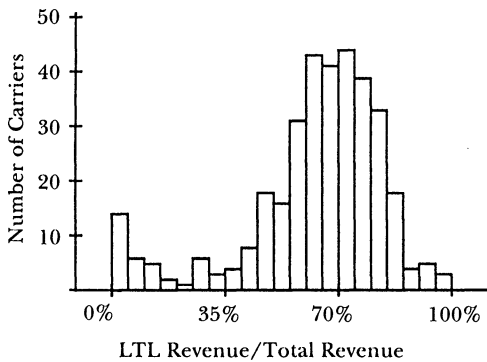
earn 75% or more of their revenue from intercity (rather than local) shipments of freight, to report the number, tons, and revenues of shipments of both truckload and less-than-truckload freight. Further, from 1974 to 1979, inclusive, the ICC defined Class II carriers as ones with \$500,000 or more in annual revenue and Class I carriers as those earning \$3 million or more. Between 1980 and 1992, inclusive, the ICC defined Class I carriers as those earning \$5 million or more, Class II carriers as those earning between \$1 million to \$5 million, and Class III carriers as those earning less than \$1 million (American Trucking Associations 1977, 1993).

The quality of these data has declined since 1977, and the ICC destroyed most of the remainder of the data collection process in 1994. Most analysis of the industry for years after 1994 will be conjectural. This study, following the lead of previous studies, covers the general freight section of the trucking industry for reasons of clarity and parsimony. I believe lessons drawn from this study of general freight can inform an understanding of the rest of the industry.

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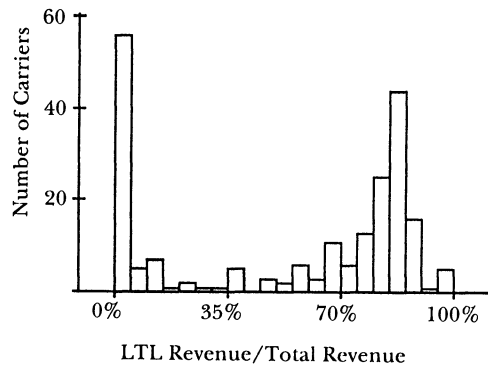
<sup>2</sup>For a thorough analysis of trucking and trucking wage patterns prior to 1980, see Levinson (1971, 1980). See Belzer (1994a, 1994b) for recent, detailed analysis of the trucking industry and changes in trucking industrial relations since deregulation.

Figure 1. Proportion of Carriers' General Freight Shipments That Were LTL Shipments in 1977.



Source: American Trucking Associations (1978).

Figure 2. Proportion of Carriers' General Freight Shipments That Were LTL Shipments in 1987.



Source: American Trucking Associations (1988).

ing by virtually eliminating the institutional framework for shared revenue and liability. With the rate bureaus radically weakened, carriers structured agreements to share revenue and liability either on a contract-by-contract basis or by creating ongoing partnerships. Both of these private contracting frameworks impose high transactions costs and risks, and can run afoul of antitrust legislation.

Conventional market share estimates understate the concentration of competition because they do not account for niche specification. The market of a less-than-truckload specialist such as Yellow Freight System is entirely different from that of a truckload specialist such as J. B. Hunt; they do not compete directly. In 1992, Yellow Freight's average shipment weighed 1,153 pounds (89.1% of all shipments were LTL) while J. B. Hunt's average shipment weighed 25,993 pounds (100% of all shipments were TL) (American Trucking Associations 1993:55, 107). Yellow's business requires a complex operation of hub-and-spoke routes between city terminals and regional docks throughout the country, while Hunt's drivers pick up from shippers and deliver directly to consignees.

Economists expected economic deregulation to cause the industry to break down into small, competitive firms (Spady and

Friedlaender 1978) in the absence of scale economies (Snow 1977:37; Klem 1977). In practice, economic deregulation brought higher levels of concentration (Roberts 1992), especially among LTL carriers (Corsi and Stowers 1991:5-9). Roberts argued that separating carriers by the markets in which they compete reveals even higher concentration. For example, if we define transcontinental carriers as carriers with average hauls<sup>3</sup> over 1,000 miles, only six transcontinental LTL carriers compete with one another, giving the market a four-firm concentration ratio of 80% and a Hirschman-Hirschman index of 2357 (Roberts 1992:6).<sup>4</sup> While the number of certificated carriers nearly tripled between 1977 and 1992, the number of Class I and II carriers declined by 53% over that period (American Trucking Associations 1978, 1993:1). Table 1, which presents a general market share analysis of all Class I general freight carriers, suggests the magnitude of the shift.

<sup>3</sup>A ton-mile represents the transportation of one ton of freight one mile. Average haul is a measure of ton-miles per ton.

<sup>4</sup>The Hirschman-Hirschman Index of market concentration is the sum of the squared market shares of all firms in the market (Shepherd 1979:188-90; ICC 1992:26-34).

Table 1. Class I General Freight Industry Market Share.

Carrier	1977	1982	1987	1990
Three Largest Carriers				
Roadway Express	4.9%	5.6%	6.5%	5.4%
Consolidated Freightways	4.0%	5.0%	6.4%	5.7%
Yellow Freight System	3.7%	4.4%	7.1%	6.2%
Total "Big 3"	12.6%	15.0%	20.0%	17.3%
United Parcel Service	15.1%	23.7%	33.0%	31.9%
4-Firm Concentration Ratio	27.7%	38.8%	53.0%	49.2%
Herfindahl-Hirschman Index	231.6	471.3	823.3	1,147.5
Total Number of Carriers	396	291	266	501

*Note:* The ATA redefined these carriers in 1990, causing the jump in the number of carriers used for analysis in 1990. The ICC classified 191 carriers as Class I general freight carriers in 1990 (see Belzer 1994a, note 43, p. 73).

Class I General Freight defined in footnote 1 as the largest category of ICC-regulated carriers hauling other-than-specialized freight (approximately half of all revenue earned by all ICC-regulated motor carriers).

The Herfindahl-Hirschman Index, an accepted measure of market concentration, is the sum of the squared market shares of all firms in the market (Shepherd 1979:188-90; ICC 1992:26-34; Roberts 1992). This index depends on how one constructs the market. The Herfindahl-Hirschman Index for carriers earning 95% of all revenue from LTL shipments was 1,954.3 in 1990.

*Source:* American Trucking Associations 1978, 1983, 1988, 1991.

However, the LTL industry has competition at the margins. Fully unionized United Parcel Service (UPS), with its Hundred-weight Service, provides a somewhat competitive alternative to conventional LTL trucking for shipments that can be broken into packages less than 150 pounds. For large LTL shipments, freight consolidators use small, frequently nonunion, local carriers to pick up freight and deliver it to a local terminal. They then consolidate these shipments into a single truckload shipment and arrange for intercity transportation with a TL carrier. While these freight brokers' operations may be much less efficient than those of large LTL carriers, the very low wages paid by the carriers they use may make them price-competitive.

Many advocates of deregulation claimed that few or no scale economies existed in the trucking industry under regulation (Kahn 1989, Vol. 2, p. 182). The experience of deregulation, however, suggests otherwise. Economies of scale, evidenced by decreasing average costs over a long range of output, may take different forms in a network industry. For example, the curve may slope downward gradually, giving the illusion in the short run that the curve is flat. Economies of scale may result from the density of routes or origin and

destination points within the carrier's market; from the overall scope or coverage of the transportation market; or from coverage of multiple markets, a development that is today giving rise to massive logistical enterprises of the kind foreseen by Friedlaender (1969:155-59, 166-68).

Some analysts think significant scale and scope economies have emerged in the trucking industry, causing the substantial growth of large freight carriers and increasing industry concentration (Keeler 1989; Kling 1990; Roberts 1992). Some claim size economies seem especially important in the LTL sector (Enis and Morash 1987), and others claim TL also exhibits this tendency (Roberts 1992:4-5). Others have argued that "there is no evidence of scale economies in any of the industry segments" (Corsi and Stowers 1991:26; see also Grimm, Corsi, and Jarrell 1989).

Winston, Corsi, Grimm, and Evans (1990) suggested a mechanism that may clear up this apparent disagreement: while there are no scale economies, there may be economies of density. High route density in LTL freight operations would allow carriers to gain more efficient use of their terminals and vehicles, and the same principle may apply in TL.

Recent research confirms that larger

firms have a strategic advantage over smaller firms, outperforming them in the deregulated environment. With the right business strategy,<sup>5</sup> a large firm may have great competitive advantages over a small firm (Corsi, Grimm, K. Smith, and R. Smith 1992). Keaton (1994) provides strong empirical evidence that network scope provides modest but persistent economic advantages, explaining the growth of larger carrier networks. In short, although regulatory entry barriers<sup>6</sup> have disappeared, economies of scale, scope, density, or size may have created new and perhaps more resistant barriers in particular sectors of the industry. Since deregulation, virtually no new carriers have entered the LTL freight industry and survived (Interstate Commerce Commission 1992:36–40; Roberts 1992:6).<sup>7</sup>

Finally, while economists claim that consumers have benefited from deregulation, they admit that this benefit has come at the expense of the trucking industry and its employees (Winston, Corsi, Grimm, and Evans 1990:33–41). Between 1978 and 1990, average annual earnings (in 1982–84 dollars) of all trucking employees dropped 28.6% from \$23,666 to \$18,276 (SIC 42, trucking and warehousing). Summed across all years, the aggregate loss is \$54,279 per employee (U.S. Department of Labor, Bureau of Labor Statistics, March 1991:701–4; U.S. Department of Labor, Bureau of Labor Statistics, July 1991:114–15).

<sup>5</sup>Using ANOVA, both size and market niche have independent effects on performance, operationalized as operating ratio, the ratio of operating expenses to revenues.

<sup>6</sup>As discussed above, the Motor Carrier Act of 1935 required the ICC to certify carriers based on the convenience and necessity standard, which strictly limited entry (see Belzer 1994a for detail).

<sup>7</sup>The ICC and Roberts agree that the only strictly new entrants are freight consolidators that aggregate multiple LTL shipments into TL shipments by arranging to have nonunion local carriers (or private carriers) pick up and deliver the freight locally, and nonunion TL carriers haul the freight intercity. In addition, the ICC supports its argument of widespread market entry by including existing carriers that directly enter new markets, as well as existing carriers that form new subsidiaries (generally double-breasted) to enter new markets.

## Literature

If labor's bargaining power has declined, we should find that unionized employee wages and working conditions deteriorated between 1977 and 1987. Rose (1985, 1987) provided evidence of reduced truck driver wages and a reduced union premium, which she attributed to a reduction in labor rent sharing caused by deregulation. Using ICC Motor Carrier Annual Report data, Belzer (1990:74–77) found a 16.8% decline in average annual wages among Class I common carriers and a 27.8% decline in intercity drivers' mileage-based wages between 1977 and 1987. Using the American Trucking Associations' Financial and Operating Statistics, derived from the same ICC data over the same years, Corsi and Stowers (1991) found a 44% average decline in total compensation per mile among all truck drivers in all ICC-regulated segments. However, they showed that compensation decline varied by segment. Whereas LTL compensation declined by 37.7%, TL driver compensation dropped by 69.5%. Moreover, 60.4% of the reduction in TL operating expenses came from reduced wages, while wage cuts caused 78.9% of reductions in LTL operating expenses (Corsi and Stowers 1991:13–16).<sup>8</sup>

Although these studies provide vital new information, they all suffer from some data aggregation problems. Rose relied on the Current Population Survey (CPS), which reports individual drivers' wages and union membership but does not control for firm characteristics, such as firm size and market. If there is a queue for union jobs paying higher wages, employee characteristics probably differ between union and nonunion firms. Rose also used rates specified by the National Master Freight Agreement (NMFA), but acknowledged that widespread divergences from this contract (such as company and regional addenda) limit its value as a data source (Rose 1986:5–10; Rose 1987). Finally, since the NMFA represents a very small fraction of the drivers in

<sup>8</sup>The remainder of the savings presumably results from a more efficient use of resources.



the CPS sample, the decline in centralized bargaining throughout the period biases the results, as only the largest unionized LTL carriers remain covered by the NMFA.

Other studies, such as that by Corsi and Stowers, have used Motor Carrier Annual Report data transcribed, checked for accuracy, and published by the American Trucking Associations (ATA). These firm-level data provide more detail than do the other commonly used sources, but the studies that use them suffer from several problems. First, the data are self-reported, and errors occur due to carriers' varying interpretations of exactly what they should report in each category. Although the ICC asks carriers to provide earned and worked hours and wages by occupation, any incorrect categorization and reporting of this information may make the analysis of wages by occupation inaccurate. Second, during the period examined in these studies, the ATA did not include occupational wage data on its tapes, so the studies used average salaries or total compensation for all employees. Such measures aggregate all employees, from dock workers to executives, and thus offer imprecise driver wage measurements. For example, firms with higher management-to-driver ratios or lower ratios of platform personnel to drivers may, by virtue of those structural characteristics, appear to have high average wages; in either case, the measurement may show differences in the occupational mix rather than different wage levels within occupations. Hence, a lower per-mile cost over time may indicate a changed firm structure caused by a change in market strategy, rather than a lower wage.<sup>9</sup> Therefore, although Corsi and Stowers' study and other studies that use the ATA's Motor Carrier Annual Report data are useful for tracking firms' changing cost structures over time, they do not accurately measure driver wages.

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<sup>9</sup>As noted by Corsi and Stowers, the segmentation of the industry, which allowed TL companies to refrain from handling LTL shipments, systematically reduced per-mile costs. Thus, the reduced costs came partly from reduced wages and partly from structural change (Corsi and Stowers 1991:15).

### Data

In this study I use two data sources to try to avoid the shortcomings of previous studies. First, I use Financial and Operating Statistics tapes from the ATA to evaluate the restructuring of the industry, provide control variables, and present a heuristic framework. Second, in the summer of 1991 I conducted a telephone survey of 223 of the approximately 250 remaining Class I general freight carriers.<sup>10</sup> This survey used structured interviews with safety managers, recruiters, industrial relations and human resource management executives, terminal managers, and operating executives (presidents, vice presidents, and others). Survey interviews lasted from a few minutes to an hour or more, and sometimes involved repeated conversations. I asked carrier executives about the type and region of operation, cross-linkages with other subsidiaries, the proportion of employees unionized, the basis of pay for road and local drivers, the basis for any difference, the amount of pay for each category of driver in each operation, and loading and unloading pay and practices at the home terminal, at foreign terminals, and at shippers and consignees. I asked if carriers bargained as part of an employer association; for this and all preceding questions, I tried to get data on the preceding decade and a feel for the nature of the change that might have led to qualitatively different data across years. I asked executives to rate the quality of job applicants and the quality of new hires, and whether their hiring standards had changed. Finally, I asked if turnover rates had changed (many guessed at the level of turnover but few could provide accurate information) and I asked if they experienced a driver shortage.

I then cross-checked wage and unionization data against other industry sources

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<sup>10</sup>I attempted to locate all currently operating Class I general freight carriers that appeared on the 1977, 1982, and 1987 Financial and Operating Statistics tapes, available from the American Trucking Associations, and any carriers that appeared on the ICC tapes but not on the ATA tapes.

(including union officials and other experts) to ensure accuracy. I created a coding instrument and coded the data into a numerical data set that I could analyze by computer. I derived composite variables from the original coded variables to provide coherent measures of markets, unionization, union density, region of operation, bargaining structure, wage rates, and contingent compensation. This paper reports the results from a limited subset of this data set.

I undertook the telephone survey because I could find no other accurate data on actual driver wages. For example, Corsi and Stowers estimated average 1987 LTL driver compensation at \$1.42 per mile. In contrast, my survey shows average 1991 LTL road-drivers' wages to be \$0.335 per mile. Although Corsi and Stowers' figure includes wages, fringe benefits, and miscellaneous paid time off, the systematic errors introduced by the measurement problems discussed above probably cause most of the difference between the two estimates. Thus, while Corsi and Stowers' analysis may be useful when examining individual firms over time (assuming they have not changed structurally, as many have), it provides imprecise comparisons among companies and imprecise estimates of driver earnings within companies.

In addition, my data set is the only one that includes key measures of contingent compensation (payment for revenue-producing time only). In the trucking industry, contingent compensation takes the form of pay by the mile, pay by the load, flat rates of pay (or no pay at all) for loading and unloading, or payment as a percentage of the freight rate; truckload carriers frequently do not pay drivers for delays occasioned by equipment problems, loading/unloading, or breakdown. Before deregulation, union contracts guaranteed that covered workers (including most workers in interstate trucking) were paid for all time spent working for their employer (Fritsch 1981:151-86). Contingent compensation proliferated within the trucking industry in the intensely competitive and deunionized market that resulted from eco-

nomic deregulation, as carriers, especially in the truckload segment, sought to limit their exposure to variable costs they could not foresee or control. They also sought more simply to reduce wages as much as possible to gain competitive advantage. Since employees of interstate carriers are not protected by the overtime provision of the Fair Labor Standards Act, employers have no obligation to pay them for all time spent working, no compulsion to recognize an effective minimum wage, and no maximum hours rule that subjects them to liability for overtime pay (Belzer 1995). Contingent compensation shifts the cost of the burden of inefficient operations from the carriers to the drivers. This data set allows me to examine the risk-shifting effect by industry segment and unionization.

### Results

Industrial relations patterns have changed to fit a shifting industry structure. Whereas Teamster wages in the years after World War II converged to a narrow range (Levinson 1980:111-19), driver wages after 1980 stratified to follow a segmented industry organization. In addition, risk-shifting compensation schemes (with pay limited to revenue-producing activity) have proliferated, also following the lines of market specialization.<sup>11</sup> Unionization patterns also have shifted along with industry patterns, reducing union density in the trucking industry.

Despite these changes, collective bargaining continues to have a strong effect on industrial relations outcomes across jurisdictions. Unionization remains a powerful determinant of wages and working condi-

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<sup>11</sup>When pay systems limit compensation to revenue-producing activity, they shift the risk for mechanical or system breakdown to the employee. In such a system, if workers' pay stops when an assembly line shuts down due to a temporary shortage of components, or due to a mechanical breakdown on the line, the company shifts the risk of system failure to the employee. Similarly, if a driver waits off the clock for a shipment to be ready or for a truck to be repaired, the company has shifted risk to the employee.

Table 2. Unionization in 1991  
of TL and LTL Carriers.

Trucking Industry Segment	TL	LTL
Nonunion Carriers	75 carriers 75.8%	36 carriers 31.0%
Union Carriers	24 carriers 24.2%	80 carriers 69.0%
Total Carriers	99 carriers	116 carriers
Total Percent	100%	100%

Source: Belzer (1991) survey data.

tions. Even though centralized bargaining has declined, the Teamsters' influence extends throughout the industry.

### Unionization

The trucking industry was formerly one of the most heavily unionized industries in the United States. At the beginning of the 1970s, the Labor Department claimed "local and intercity" trucking was 80–100% organized, and scholars considered general freight to be "very close to 100%" unionized in local and long-haul freight (Levinson 1971:19). However, unionization began to decline during the 1970s, and practitioners reported the Teamsters' share of freight dropped by 20–25% between 1967 and 1977, as private carriers, owner operators, and special commodity carriers grew (Levinson 1980:135).

Economic deregulation caused a change in the structure of the industry, creating many new truckload carriers. Before deregulation, unions represented most TL and LTL general freight; the industry segmentation resulting from deregulation led to changed union representation patterns. Table 2, presenting data from the survey, shows a sizable difference in 1991 between union representation of TL and LTL companies. The survey shows that sometimes the union represents the individual only and does not have bargaining authority (the carrier pays union drivers' health and welfare benefits through the union rather than to a company plan). Carriers may use two different schedules for payment of

union and nonunion drivers, although the two groups coexist within the company. Some union carriers have opened up new, nonunion terminals, reducing the level of union representation within the firm without disturbing representation patterns at old terminals.

Union avoidance strategies are widespread. Common industry experience suggests that some TL carriers hire employees from paper domiciles in widespread locations, defying the union to find them. The survey revealed that at least one carrier employs a labor leasing firm that has this process of dispersion and obfuscation as one of its primary purposes. In these cases, the carrier (or driver-leasing firm) hires out of an arbitrary location, such as a motel, and may or may not establish an office in the region. A truckload carrier requires nothing more than a central office and a phone, neither of which need physically exist at the domicile.

I asked representatives of 223 carriers surveyed in 1991 to indicate the extent of unionization of their firms in the years 1977, 1982, 1987, and 1991. I coded responses in six categories, ranging from "no union" to "100% union." Table 3 shows declining union density (the proportion of a carrier's employees who are union members) within the carriers that survived the deregulation shakeout. However, Table 3 does not show carriers that went out of business during the period, many of them union shops. T-tests comparing mean wages and conditions consistently found no significant wage differences attributable to union density within carriers paying drivers by the mile.

Some scholars claim the trucking industry has become deunionized (Perry 1986; Hirsch 1993). Hirsch concluded from CPS data that unionization in the trucking industry had declined from 60% in 1978 to less than 25% in 1990. Perry provided only sketchy information on unionization levels, limited to a count of union and nonunion firms during a limited number of years, and citations of secondary sources (Perry 1986:62, 103). These two approaches have important drawbacks. The CPS data

Table 3. Declining Union Density Within Carriers That Survived the Shakeout Following Economic Deregulation.

Percent of Unionization	1977		1982		1987		1991	
	Count	%	Count	%	Count	%	Count	%
0%	96	44.0	102	46.4	108	48.6	112	51.1
0%–12.5%	5	2.3	8	3.6	8	3.6	9	4.1
12.5%–25%	3	1.4	1	0.5	4	1.8	5	2.3
25%–50%	6	2.8	9	4.1	9	4.1	9	4.1
50%–75%	6	2.8	5	2.3	8	3.6	5	2.3
75%–100%	102	46.8	95	43.2	85	38.3	79	36.1
N	218	100%	220	100%	222	100%	219	100%

Notes: Union density is defined as the proportion of the carrier's employees who are union members. Percentage columns may not sum to 100% due to rounding. N varies due to data limitation caused by firm creation and mortality.

Source: Belzer (1991) survey data.

aggregate truck drivers of all kinds, creating an overbroad definition that ignores important industry and market differences. Unionization by carrier also provides a crude estimate. Although Perry correctly limited his analysis to a single relevant market (similar to mine), he failed to distinguish between large and small carriers. Giving large and small carriers equal weight will understate union density if some carriers have grown much faster than others.

Like Perry, I limited my analysis to Class I general freight carriers. Then, using ATA 1990 data files that indicate the number of drivers in each firm paid on a mileage basis, and using my survey as the basis for establishing the proportion of workers unionized, I calculated industry unionization levels (Table 4). I concluded that unionization remains relatively high among truck drivers in the general freight segment of the trucking industry.<sup>12</sup>

<sup>12</sup>In 1990 the ATA re-evaluated and reclassified carriers, causing the number of general freight carriers in the data set to double. The ATA reclassification put hundreds of TL carriers, formerly classified as specialized freight haulers, in the general freight classification. Since the 1990 estimate in Table 4 is based on a larger population of carriers than that reported by the ICC (the ICC reports 191 Class I general freight carriers), and since the ATA reclassification added TL carriers that formerly were classified as specialized carriers, on which I do not have unionization data, the proportion of unionized drivers appears relatively low. If these carriers had been included in earlier years, earlier union density esti-

Union density estimates cited in Table 4 vary depending on the data used to produce them. Hirsch used CPS data to estimate the degree of unionization among truck drivers. Belzer A, more narrowly based on Class I general freight carriers, shows much higher unionization levels. Belzer B, which includes UPS in the population of general freight carriers, shows yet a higher level of representation.

#### Assumption of Risk: Driving Pay

The method of paying intercity drivers' wages defines the extent to which the driver assumes the risk for operational delays and the vagaries of the market. From the driver's point of view, payment by the hour is the surest way to ensure a direct link between the number of hours worked and total compensation. Whereas most production workers earn an hourly pay rate, pay structures in trucking vary widely.

Mileage pay is the most common compensation scheme. Under this system, drivers earn a mileage rate for driving labor plus an hourly rate for other duties.<sup>13</sup> Car-

mates also would have been lower. Therefore, since the population definition changed between 1987 and 1990, the data may exaggerate the decline in union density. Also, my lack of unionization data on many of these carriers may understate union density for 1990. See Belzer (1994a), endnote 43.

<sup>13</sup>Some operations, especially in LTL, pay either by the number of miles actually driven or by an agreed standard mileage that has been verified as the actual

Table 4. Union Density in Trucking: Four Studies.

Year	Study							
	Hirsch A	(N)	Hirsch B	(N)	Belzer A	(N)	Belzer B	(N)
1973-1978	0.599	(1,533)						
1977					0.847	(380)	0.878	(382)
1978								
1979	0.566	(175)						
1980	0.564	(94)						
1981	0.607	(84)						
1982					0.804	(278)	0.861	(280)
1983	0.504	(127)	0.432	(1,034)				
1984	0.304	(79)	0.375	(1,158)				
1985	0.288	(111)	0.341	(1,154)				
1986			0.319	(1,093)				
1987			0.276	(1,136)	0.727	(256)	0.846	(256)
1988			0.300	(1,161)				
1989			0.269	(1,166)				
1990			0.241	(1,264)	0.476	(189)	0.651	(190)

*Notes:* In both measures, union density is the proportion of drivers who are union members. Hirsch A uses only May public use CPS samples; N = number of drivers sampled in the for-hire sector. Hirsch B uses all 12 monthly CPS samples for each year; N is the same as Hirsch A. Belzer A excludes United Parcel Service; N is the number of carriers analyzed. Belzer B includes United Parcel Service; N is the number of carriers analyzed. Analysts of the LTL market historically have excluded UPS, but arguably changing markets makes inclusion necessary. Both figures cited here allow alternative interpretations.

*Source:* Hirsch (1993:284); American Trucking Associations (1977, 1982, 1987, 1990); Belzer (1991) survey.

riers pay for driving labor according to distance traveled and the driver usually assumes responsibility for traffic and weather delays.

Drivers who are paid "percentage" earn a percentage of the rate charged to deliver the freight by the company for which they work. For example, these drivers might earn 24%, which would give them \$240 on a load paying the carrier \$1,000. In this scheme, drivers assume the risk of bad weather, traffic problems, loading and unloading delays, breakdowns, and waits between jobs (which usually happen away from home). Also, since driver pay depends on the freight rate the employer can secure, drivers also assume a market risk.

mileage between two points according to an agreed routing. Other operations, especially irregular route TL carriers, pay drivers according to some standard, such as *Rand McNally* or *Household Movers Guide*. These systems calculate mileage according to the absolute shortest distance, regardless of highway, which usually is much shorter than the true mileage driven.

Table 5, which presents information on carriers paying a uniform rate of pay, shows that most unionized carriers pay by the hour or by the mile, rather than by a percentage.<sup>14</sup> Although most nonunion carriers pay by the mile, they are significantly more likely than union firms to pay percentage. Among carriers paying variable rates there are no significant differences between cells, although relatively few of them are union. The union does not make a difference among carriers that do not pay a uniform rate.<sup>15</sup>

#### Assumption of Risk: Labor Time

Intercity carriers use three basic schemes to pay for non-driving labor time. This

<sup>14</sup>Some carriers pay all drivers at one rate and others pay varying rates for different operations, seniority, experience, commodities, location, and other factors. Since all Master Freight carriers pay a reduced rate for new employees with an 18-month catch-up, I treat them as single-rate payers.

<sup>15</sup>Only 22% of carriers paying variable rates are unionized, compared to 61% of carriers paying a uniform rate.

Table 5. Contingency Table Showing the Basis of Driver Pay in 1991.

Description	Basis of Pay			Total
	Hourly	Mileage	Percentage	
Nonunion				
Count	0	29	16	45
Expected Values	2.763	33.947	8.289	45
Union				
Count	7	57	5	69
Expected Values	4.237	52.053	12.711	69
Total	7	86	21	114

$\chi^2 = 17.61$  with 2 df;  $p = 0.0002$ .

Source: Belzer (1991) survey data.

non-driving time includes time spent inspecting equipment, loading and unloading, waiting for equipment, waiting to load or unload, waiting for repairs, waiting out or detouring in response to road closure due to disaster or severe weather, and waiting out excessive layovers.<sup>16</sup> Except for time actually spent loading and unloading, carriers call non-driving labor "non-productive time" (NPT) because it does not produce revenue. Carriers that pay for loading and unloading or for NPT focus great energy on reducing it through more efficient operations. Carriers that do not pay for NPT have less incentive to increase efficiency.

The most comprehensive method is to pay drivers for all time spent in service to the employer. Other carriers pay drivers a flat rate by the stop, or by mandated pickup or delivery. This method is less comprehensive, but compensates drivers somewhat for their labor time. Frequently companies

that pay by the stop pay drivers only for intermediate stops; drivers must donate time for the original pickup and final delivery. Carriers sometimes pay the driver by the ton to load or unload the freight by hand. Time spent inspecting equipment, waiting for equipment or loads, waiting for maintenance or repairs, taking layovers, and waiting out or making adjustments for road closure due to severe weather is the responsibility of the driver. These carriers only have an indirect incentive to reduce NPT, as it ties up the equipment but entails no labor cost.

Finally, many companies do not pay their drivers directly for any non-driving labor. If the carrier uses a mileage scale it figures all loading and unloading are incidental labor, along with other delay time. If the carrier pays by percentage it figures the freight rate includes loading and unloading. Freight rates often include loading and unloading grace periods for which the shipper or consignee does not pay separately. Again, drivers absorb any delays.

This typology describes only general patterns, and a host of variations remain. However, to measure broad differences, I created a risk-shifting index to measure the extent to which carriers assign this operational risk to their drivers. I assigned a value of 1 if the carrier pays all labor time, 2 if the carrier pays by the stop, and 3 if the carrier pays no compensation for non-driving labor. Carriers with a higher index number make compensation more contin-

<sup>16</sup>Layovers are periods of off-duty time required between "shifts." They are normal between shifts of work approaching the maximum allowed by law. They are abnormal when forced mid-shift by circumstances out of the driver's control or when they are much longer than the statutory eight-hour break. Drivers may be forced to lay over waiting for freight, waiting to load or unload, waiting for extended repairs, or otherwise waiting for a dispatch. The union contract defines an excess layover as any layover exceeding some standard length, such as 11 hours, and union carriers pay for excess layovers. Most nonunion carriers do not.

Table 6. 1991 Risk-Shifting Index: A Comparison of Risk-Shifting by Industry Segmentation and Unionization Patterns.

<i>Trucking Industry Segment</i>	<i>Risk-Shift Index</i>	<i>Trucking Industry Segment</i>	<i>Risk-Shift Index</i>	<i>T-Statistic</i>
National	2.333	Regional	1.653	3.144***
LTL	1.387	TL	2.475	7.701***
Union	1.324	Nonunion	2.400	7.661***
Union/LTL	1.127	Nonunion/LTL	2.100	4.840***
Union/TL	2.154	Nonunion/TL	2.630	1.750*
Union/LTL	1.127	Union/TL	2.154	3.990***
Union/LTL/Regional	1.135	Nonunion/LTL/Regional	2.053	4.458***
Union/TL/Regional	2.000	Nonunion/TL/Regional	2.688	2.140*

*Notes:* The risk-shift index measures the extent to which drivers absorb non-driving labor time. National carriers operate within all sections of the country. Regional carriers operate within one or more regions. Definitions are derived from Belzer (1991) industry survey. 1 = drivers earn wages for all non-driving labor time; 2 = drivers earn wages for some non-driving labor time; 3 = drivers earn no wages for non-driving labor time.

\*Statistically significant at the .10 level; \*\*\*at the .01 level (two-tailed tests).

*Source:* Belzer (1991) survey data.

gent on the production of revenue, shifting the burden of risk to the employee.

Table 6 shows the influence of the union over non-driving labor pay. The broad patterns are similar to those for mileage wage scales. The mean risk-shifting index for all surveyed carriers with valid data is 1.88, with a standard deviation of .84 (n = 201). However, not all carriers require the same assumption of risk.

First, national carriers appear to be more likely than regional carriers to shift risk to employees. Second, LTL carriers and union carriers are more likely to pay for all labor time. Third, the gap between union and nonunion in the less-than-truckload segment is large and significant, while the same gap in truckload is much smaller. Fourth, the union makes a significant difference for LTL regional carriers and a marginally significant difference for TL regional carriers. Finally, collective bargaining does not counteract entirely the effect of market segmentation: unionized truckload carriers shift more risk than do unionized less-than-truckload carriers.

### Mileage Wages

I found no evidence to suggest partially unionized carriers pay a significantly lower mileage rate than their fully unionized

counterparts.<sup>17</sup> This evidence fits with established industrial relations theory on bargaining patterns and the threat effect. The presence of a union may establish "union scale" because the threat of further unionization keeps wages relatively high.

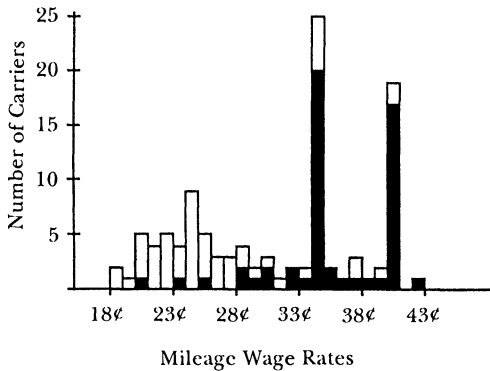
The mean mileage rate for the 132 carriers paying drivers by the mile, including all types of general freight carriers operating within the 48 contiguous states, varies from 18¢ to 40¢ per mile, with a mean of 29.5¢. However, the distribution of wages is not normal. Figures 3 and 4 show two modes at approximately 34¢ and 40¢, with another nearly normal distribution on the lower end. Most of the carriers appearing in the top two modes are both unionized and LTL. Most of the carriers in the bottom distribution are nonunion and TL.

As Table 7 shows, wages vary dramatically by unionization and industry segment. Nonunion carriers pay an average of 24.3¢ per mile, compared to 34.7¢ among union carriers;<sup>18</sup> and LTL carriers pay an average

<sup>17</sup>Carriers that pay their non-unionized drivers less probably do so by paying according to another scheme, such as a percentage of revenue. For this reason among others, it is difficult to compare such drivers with drivers paid a mileage rate.

<sup>18</sup>In this survey, 101 carriers are organized by the Teamsters and 5 by other unions. Teamsters average

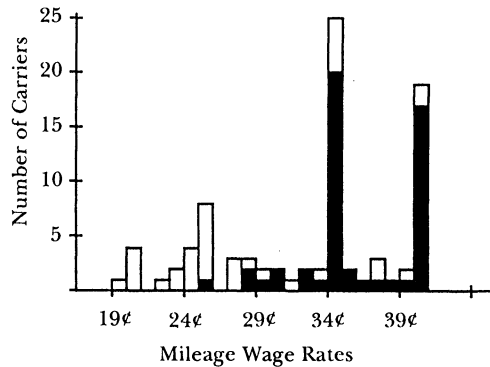
Figure 3. 1991 General Freight Pay Rates per Mile Within the Continental United States, Lower 48 States.



White portions of columns are nonunion carriers; black portions of columns are union carriers.

Source: Belzer Survey, 1991.

Figure 4. 1991 LTL Pay Rates per Mile Within the Continental United States, Lower 48 States.



White portions of columns are nonunion carriers; black portions of columns are union carriers.

Source: Belzer Survey, 1991.

of 33.5¢, compared to 23.8¢ among TL carriers. In both cases, the gap is about 30%. One might speculate, based on these figures, that industry segment is the overriding factor—that is, that unionization is less important than whether drivers work for truckload or less-than-truckload companies. However, the correlation between union and TL is only .373. Other factors must play a significant part in determining wages.

Within both industry segments, union workers earn substantially higher wages than nonunion workers. Within the LTL segment, the mean nonunion carrier pays just 74.9% as much as does the mean union carrier (26.8¢, versus 35.8¢), and within

the TL segment nonunion drivers earn only 80% of the average union rate. Thus, even within market segments, the union premium remains between 25% and 34%.

The scope of the carrier may confound the effect. The average national carrier pays 25.1¢ per mile, the average regional carrier pays 31.0¢, and the average local carrier pays 36.2¢. However, the scope effect in the TL segment is exactly the opposite of that in LTL. National LTL carriers pay an average of 38.9¢ per mile, and national TL carriers pay only 22.6¢. Regional LTL carriers pay less than their national counterparts and regional TL carriers pay more. Ironically, both the highest-paid drivers and the lowest-paid drivers in the general freight industry work for national carriers. National LTL drivers earn 72% per mile more than do national TL drivers.

A comparison of unionization within the most narrowly defined segments therefore suggests that a significant union premium remains in general freight. To determine the size of the premium, however, one must control for several factors. Variables chosen for purposes of control must reflect the

slightly higher pay. An examination of 1990 ATA Financial and Operating Statistics indicates: average annual mileage driver earnings: \$28,976; average annual TL mileage driver earnings: \$24,326; average annual LTL mileage driver earnings: \$35,922; average annual union mileage driver earnings: \$41,206; average annual nonunion mileage driver earnings: \$26,912. These figures, from ICC annual reports, reflect similar patterns, substantiating the survey results.



Table 7. Average General Freight Mileage Rates, in Cents per Mile, by Industry Segmentation and Unionization Patterns.

Trucking Industry Segment	Pay Rate	$\delta$	Category	Pay Rate	$\delta$	T-Statistic	Significance
Union	34.7	5.3	Nonunion	24.3	3.9	12.947	.01
LTL	33.5	5.8	TL	23.8	4.2	10.960	.01
National	25.1	6.6	Regional	31.0	6.6	-4.478	.01
Union/LTL	35.8	4.1	Nonunion/LTL	26.8	4.8	7.520	.01
Union/LTL	35.8	4.1	Union/TL	28.4	7.4	2.763	.05
Union/TL	28.4	7.4	Nonunion/TL	23.1	2.8	2.008	.10[.01] <sup>a</sup>
Nonunion/LTL	26.8	4.8	Union/TL	28.4	7.4	-0.571	
Nonunion/LTL	26.8	4.8	Nonunion/TL	23.1	2.8	3.147	.01
Union/National	34.7	8.3	Nonunion/National	23.1	3.7	3.353	.05
Union/National	34.7	8.3	Union/Regional	34.7	5.0	0.001	
Union/Regional	34.7	5.0	Nonunion/Regional	25.0	3.9	10.764	.01
Nonunion/National	23.1	3.7	Nonunion/Regional	25.0	3.9	-2.033	.05
LTL/National	38.9	2.7	TL/National	22.6	3.0	12.105	.01
LTL/National	38.9	2.7	LTL/Regional	33.1	5.8	4.147	.01
LTL/Regional	33.1	5.8	TL/Regional	25.1	5.0	6.693	.01
TL/National	22.6	3.0	TL/Regional	25.1	5.0	-2.272	.05
Union/LTL/National	40.1	0.2	Nonunion/LTL/National	34.0	n/a		<sup>b</sup>
Union/LTL/Regional	35.5	4.0	Nonunion/LTL/Regional	26.4	4.6	7.617	.01
Union/TL/National	24.0	n/a	Nonunion/TL/National	22.7	3.0		<sup>c</sup>
Union/TL/Regional	29.0	7.8	Nonunion/TL/Regional	23.7	2.5	1.757	[.01] <sup>d</sup>

Notes: Significance based on critical values of t in two-tailed tests. Union is defined as more than 12.5% representational density.

<sup>a</sup>There are only 8 union TL carriers and 7 degrees of freedom. ANOVA on union/TL compares TL with and without union: F-ratio = 13.363 (p = .0006).

<sup>b</sup>There is only 1 national LTL nonunion carrier; no t-test can be conducted.

<sup>c</sup>There is only 1 national TL union carrier; no t-test can be conducted.

<sup>d</sup>There are only 7 union/TL/regional carriers and 6 degrees of freedom. ANOVA on union/TL/regional compares TL/regional with and without union: F-ratio = 7.1682 (p = 0.0132).

Source: Belzer survey data, 1991.

three dimensions presented in this research: industrial relations (unionization), market segment (in this case, LTL and TL), and localism (represented by I-27, the classification of carriers earning at least 75% of their revenue from intercity shipments).<sup>19</sup> In addition, carriers with greater profits should be capable of paying higher wages, as profitable carriers can share some of their profits with employees. Finally, I expect carriers with a greater market share to pay higher wages, as their relative market power insulates them somewhat from price competition (Weiss 1966).

The following equations test these effects. Average annual wages are modeled as a function of the sum of economic, industry, and industrial relations effects:

average wage = f(industrial characteristics  
+ industrial relations  
+ firm-level economic  
factors).

Algebraically, this model can be represented as

$$(1) \quad w_{ikt} = \alpha_{ik} + \beta_1 IC_{ikt} + \beta_2 IR_{ikt} + \beta_3 E_{ikt} + \varepsilon_{ikt}$$

where  $w_{ikt}$  is the average annual wage  $w$  for individual trucking employees  $i$  at motor carrier  $k$  at time  $t$ ;  $IC_{ikt}$  represents firm-specific industrial characteristics  $IC$  indicating industry segment and regionalism;  $IR_{ikt}$  represents a firm-specific industrial relations variable indicating unionization;  $E_{ikt}$  represents firm-specific economic environmental variables  $E$  indicating market share and profitability;  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  represent parameters of these predictors; and  $\varepsilon_{ikt}$  is the error term.

In Equation 2, the same model tests the extent of risk shifting. I hypothesize that the same factors determining wages will also determine the extent to which carriers shift operational risk to their drivers.

$$(2) \quad R_{ikt} = \alpha_{ik} + \beta_1 IC_{ikt} + \beta_2 IR_{ikt} + \beta_3 E_{ikt} + \varepsilon_{ikt}$$

The dependent variable is the risk-shift index and the independent variables are as specified above.

These prediction equations disentangle the union and segment effects suggested in Tables 6 and 7. Unionization is an overwhelmingly positive predictor of wage levels and a negative predictor of risk-shifting. Union drivers likely earn a higher rate of pay than nonunion drivers, and unlike nonunion drivers, most of whom earn no pay for much of their labor time, union drivers are likely to be paid for all of their work. Industry segment is also an important predictor: truckload drivers tend to earn less per mile than less-than-truckload drivers and to give away labor time.

Profits, market share, and intercity operations also correspond to higher pay levels. Truck drivers working for large, profitable, unionized intercity LTL carriers make significantly more money than those working for small, unprofitable, nonunion, primarily local or regional TL firms. However, this equation does not show these factors associated with risk-shifting. Risk-shifting compensation regimes center in nonunion, truckload carriers.

I suggest two explanations for the strong association of unionization with better wages and conditions. First, the Teamsters Union retains considerable bargaining leverage within the general freight industry, as Table 4 suggests. Although the labor market arguably includes drivers whose experience lies outside general freight, employers in the union LTL sector I surveyed in 1991 indicated they primarily hire drivers laid off from other LTL carriers that have downsized or closed. The recently concluded contract between United Parcel Service and the Teamsters, which provided sizable increases in wages (to \$19.95 per hour in 1997 for full-time employees) and improvements in conditions, suggests even the most powerful carrier in the industry needs to respect the Teamsters' ability to disrupt production. Moreover, while the Teamsters' 24-day strike in April 1994 cost the union and its members mightily in lost wages and union funds, employers also paid a high cost, at least in the short term, as

<sup>19</sup>I am not satisfied with this proxy for local scope, as it does not distinguish between national and inter-regional carriers, but no better proxy has been developed.

Table 8. Determinants of 1991 General Freight Truck Driver Wages and Risk Shifting Index: Ordinary Least Squares Regression.

Independent Variable	1: General Freight Truck Driver Wage		2: Risk Shifting Index	
	Regression	Partial Regression	Regression	Partial Regression
Intercept	0.214*** (0.013) [16.00]		2.328*** (0.231) [10.10]	
Union	0.090*** (0.009) [10.20]	0.089*** (0.009) [10.1] <b>48.3%</b>	-0.669*** (0.155) [-4.31]	-0.655*** (0.152) [-4.30] <b>13.6%</b>
Truckload	-0.030*** (0.011) [-2.76]	-0.030*** (0.011) [-2.81] <b>5.9%</b>	0.404*** (0.176) [2.30]	0.403*** (0.172) [2.35] <b>3.9%</b>
Net Profit Margin	0.101* (0.060) [1.90]	0.101* (0.055) [1.94] <b>2.5%</b>	0.449 (1.309) [0.34]	0.444 (1.280) [0.35] <b>-0.8%</b>
Market Share	0.818*** (0.266) [3.07]	0.814*** (0.261) [3.12] <b>7.4%</b>	-5.883 (5.683) [-1.04]	-5.877 (5.575) [-1.05] <b>-1.05%</b>
I-27 <sup>a</sup>	0.046*** (0.013) [3.55]	0.056*** (0.013) [3.61] <b>9.9%</b>	-0.315 (0.226) [-1.39]	-0.314 (0.221) [-1.42] <b>0.9%</b>
Adjusted R <sup>2</sup>	69.1%		28.8%	
Number of Carriers	110	110	112	112

Notes: Adjusted R<sup>2</sup> for individual partial regression equations in bold. Partial regression coefficients measure the effects of each independent variable on the dependent variable, with the linear effects of all other independent variables removed.

The number of carriers in this analysis reflects only those carriers in the population that pay by the mile and for which information is available on all variables. The analysis excludes carriers that pay by the hour or by a percentage of the revenue.

<sup>a</sup>Carriers that earn at least 75% of revenue from intercity shipments.

\*Statistically significant at the .10 level; \*\*at the .05 level; \*\*\*at the .01 level (two-tailed tests).

Sources: Belzer survey data, 1991; ATA Financial and Operating Statistics 1990.

freight volume declined 23% in April and the ATA estimates a long-term loss of 5% (Arendes 1994).

Second, the union indicator variable may be a proxy for other unmeasured characteristics. Hirsch (1993) used CPS data to try to assess the union premium, controlling for years of schooling, years of potential experience, race, marital status, veteran status, and region. He found these factors explained very little of the union premium (Hirsch 1993:285-86). In longitudinal analysis he again found control vari-

ables did not influence the outcome. Interestingly, he did find that those who entered the period as nonunion drivers and later became union members earned more in their first year than did the drivers who never joined the union. In other words, some union drivers presented unmeasured characteristics that caused them to earn a higher wage even before they joined the union. This finding suggests that union carriers hire drivers superior to those hired by nonunion carriers.

My research also suggests union carriers

hire superior employees. When asked if they perceived a change in human resource quality since deregulation, LTL managers and TL managers gave widely divergent answers. In general, LTL carriers reported a somewhat improved labor pool, and considered their post-deregulation hires to be better-educated than pre-deregulation hires, more experienced, safer, and of generally superior character. In contrast, TL carriers reported poorer-quality applicants and less qualified new hires. Whether deregulation caused this difference in employee quality, of course, is unclear.

As Hirsch pointed out, no clear method exists to determine to what extent higher labor quality explains the union premium. Hirsch guessed that quality differences accounted for half of the union-nonunion difference, but such an estimate remains speculative. Quality differences probably existed before deregulation, so the effect due to the new competitive environment is uncertain. The above regression analysis, however, establishes with some certainty that union drivers earn significantly more than their nonunion counterparts, controlling for other important factors. Although this differential likely has declined, it remains a robust effect.

### Conclusions

The results of this study suggest that following deregulation of the trucking industry in 1977, union bargaining power declined in the sector of the industry specializing in truckload shipments but held relatively firm in the sector specializing in less-than-truckload shipments. This detailed study provides a somewhat more nuanced interpretation of declining union power than interpretations presented by Hirsch (1993) and Perry (1986). In trucking, as in other deregulated industries such as airlines and telecommunications, the market dynamics stemming from industry restructuring strongly affect union bargaining power.

The union's failure (or inability) to organize any new, exclusively truckload carriers since economic deregulation made

"union scale" for truckload freight movements uncompetitive. Any union productivity effect, if it exists, probably could not outweigh the large difference in wages. Established general freight carriers seeking to specialize in TL freight jettisoned LTL freight, established low-wage special commodity divisions to haul truckload freight, or re-formed as low-wage (union or nonunion) truckload carriers. Truckload carriers that remain unionized pay higher wages than their nonunion counterparts.

In companies that specialize in less-than-truckload freight, the union retained considerable bargaining power. The high union density within the LTL sector of general freight allows the Teamsters to continue to try to take wages out of competition. These higher wages allow carriers to maintain the skilled and reliable work force needed to provide the level of service demanded by carriers paying a premium price compared to that paid for truckload freight. The firms' commitment to a good working relationship with the Teamsters remains high: LTL firms do not usually risk confrontation to reduce unit labor costs. Large LTL carriers' creation of large networks of regional carriers through double-breasting, however, threatens union bargaining power in the medium to long term.

This study also provides evidence that the Teamsters are still influential in the truckload segment, although less so than before economic deregulation. Whether due to custom, to drivers' unwillingness to accept lower wages, to the threat effect, or to actual bargaining power, union wages and conditions in the truckload industry remain somewhat better than nonunion wages and conditions, controlling for other factors. Although truckload drivers will not do as well as their less-than-truckload counterparts, they clearly are better off with a union than without one.

The evidence confirms the assessment that virtually all workers and most motor carriers have been big losers from economic deregulation. Average wages dropped 26.8% between 1978 and 1990, inclusive, and for nonunion truckload drivers the decline was closer to 50%. Less-

than-truckload driver wages have remained relatively stable, although the evidence suggests they are weaker in regional markets than in national markets.

Truckload drivers earn extremely low wages, however, compared to either LTL drivers' wages or general manufacturing wages. According to ATA data and data from my research, in 1990 the average TL road driver earned \$24,796. Assuming truckload drivers average 60 hours per week (an underestimate according to this and other research; see Braver et al. 1992), the average TL driver earned about \$7.91 per hour. Furthermore, if the Fair Labor Standards Act covered intercity truck drivers so they earned time-and-one-half for overtime, we would calculate a \$6.78 hourly wage. If we assume a more realistic 80-hour work week, the hourly rate drops to \$5.58, and it drops to \$4.75 assuming a quite-plausible 90-hour week (Ouellet 1994; Belzer forthcoming) based on this same earnings level in 1990. Bureau of Labor Statistics data show the average manufacturing production worker earned \$10.83 (U.S. Department of Labor, Bureau of Labor Statistics 1993:26), more than twice as much.

A different approach produces a similar result. According to ATA data, the average

I-27 general freight road driver logged 109,322 miles in 1990. My survey shows the typical TL long-distance driver probably did not make much more than \$25,000 in 1991 for about 3000 hours of labor (including 2429 hours of driving at an average of 45 miles per hour), and spent much of his personal time on the road. Again assuming time-and-one-half for overtime (what employees outside interstate trucking earn), this comes to \$7.14 per hour in current dollars, compared with \$11.18 for manufacturing production workers. That may be weak compensation for a job that requires mechanical and driving skill, independent judgment, literacy, and willingness to work around the clock in inclement weather and to be away from home for weeks at a time.

Finally, this study contradicts claims that the bargaining power of the Teamsters has collapsed. Although little union bargaining power exists in the national truckload segment of the industry, the Teamsters retain bargaining power within LTL markets. However, the combination of lower wages and lower profits supports truckers' contentions that bargaining power has shifted to shippers, who lie outside the trucking industry and outside the collective bargaining relationship.

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