Unionization, Compensation, and Voice Effects on Quits and Retention

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This study explores the relationships among unionization, compensation prac-tices, and employee attachment (quit rates and tenure) among trucking companies to assess the applicability of Freeman and Medoff's exit/voice argument. Union-ization was associated with lower quit rates, higher tenure, a better compensation package, and stronger voice mechanisms. The relationship of unionization to quit rates and tenure becomes nonsignificant after accounting for compensation (pay and benefits), and voice mechanisms do not add explanatory variance.

THERE IS STRONG evidence that turnover is lower in heavily unionized industries and among unionized workers than in nonunionized settings. Many researchers argue that this is largely due to union monop-oly bargaining power that increases wages. Freeman (1980) and Freeman and Medoff (1984), on the other hand, propose that unionization reduces voluntary turnover not only through monopoly bargaining power but also by providing workers greater voice in decisions that affect their work life. This article examines these propositions empirically, assessing the extent to which unionization effects on employee turnover and retention are

attributable to unionization per se, to wages and compensation policies, and to the existence of voice mechanisms. It represents a rare evaluation of the issues at the organizational rather than the individual level of analysis, providing a complement to the extensive union literature focusing exclusively on individual workers.

Unionization and Exit/Voice Tradeoffs

Turnover is an expensive organizational outcome, and companies expend considerable time and resources in attempts to reduce turnover, particularly dysfunctional turnover (Dalton and Todor, 1993). Ostensibly, one benefit of unionization is a reduction in the quit rate. Empirical research consistently shows lower quit rates in unionized than in nonunionized organizations (e.g., Blau and Kahn, 1981; Brown and Medoff, 1978; Freeman, 1980; Leigh, 1979; Long and Link, 1983; Wilson et al., 1990; Wooden and Baker, 1994).

Many arguments are offered about why quit rates are lower when employees are unionized. The first of these concerns union effects on wages, the monopoly bargaining power of unions leading to higher wages in unionized settings. Following efficiency wage theory, higher wage rates in unionized organizations "lock" employees in, making them unwilling to risk less money and worse benefits with a different employer (Katz, 1986; Stiglitz, 1984).

This argument has intuitive appeal. But in a comprehensive review of empirical work, Freeman and Medoff (1984) posited that it is not simply unions' monopoly bargaining power but their ability to establish "voice" mechanisms that accounts for the relationship of unions and quits. This position is based on Hirschman's (1970) theoretical framework proposing that people express dissatisfaction with work relationships through one of two mechanisms—exit and voice. Freeman and Medoff's (1984) application of this idea to unionized settings proposes that unionized employees are better able, and thus more likely, to use voice mechanisms; nonunionized employees are more constrained to rely on exit mechanisms. Two union-related policies account for this effect, the "development of grievance-arbitration systems, which enable workers to appeal managerial decisions, and seniority-based personnel policies" (Freeman and Medoff, 1984:104). Nonunionized employees are less likely than unionized employees to have access to grievance mechanisms.

Empirical evidence sheds light on these arguments. Based on a series of analyses, Freeman (1980) reported that unionization and wage levels were strong predictors of quit rates. Because the effects of unionization

on quit rates persisted after controlling for wage rates, he inferred further that the remaining effects were due to unmeasured voice effects of unionization. Similar results were reported in a study conducted in the United Kingdom—unionization had a strong and significant effect on quits after controlling for wages (Wilson and Peel, 1991). It is noteworthy that in this sample, contrary to most U.S. samples, wage rates were not related to quit rates. Likewise, in a study using the Australian Longitudinal Survey data, Miller and Mulvey (1991) found that unionization reduced quits over and above any effect of wages and that there was no relationship between wage rates and quit rates. Within the United States, in a study of unionized teachers, Rees (1991) reported that the strength of the grievance procedure was significantly negatively related to quits.

Taken together, these studies offer relatively unambiguous support for Freeman and Medoff's (1984) argument that union monopoly bargaining power, in the form of increased wages, does not account exclusively for lower quit rates among unionized firms and that voice mechanisms are also critical in this context. These conclusions can be strengthened by the inclusion of various supplemental elements in the research design. First, as Freeman and Medoff (1984) note, since the monopoly power of unions derives from wages and benefits, it is important to include both in the design. Second, voice effects must be measured directly rather than inferred indirectly from residual effects of unionization. Third, since unionization effects may be temporally dynamic, it is useful to replicate earlier research with more current data. Fourth, measurement problems with turnover and quit-rate variables (e.g., Gupta and Jenkins, 1991; Mobley, 1982) often lead to the recommended use of tenure (rather than quits), and it is important to assess the applicability of conclusions about unionization effects to tenure as well as quit rates. Fifth, it is useful to supplement the frequent individual-level studies of unionization effects with parallel organizational-level studies (see, e.g., Arthur, 1992; MacDuffie, 1995).

These issues are addressed in previous research but rarely integrated within a single study. The present study is designed to do so. It provides a very different approach to addressing the relationship of unionization and tenure. It is conducted in the United States with data obtained in the 1990s. It includes measures of both wages and benefits, as well as voice mechanisms. It examines the impact of wages, benefits, and voice on both aspects of employee attachment, i.e., quit rates and tenure. It is conducted at the organizational level, with a sample of companies in a single industry. Limiting the analysis to a single industry enables control over extraneous sources of variance and a more streamlined examination of union effects. The specific setting, the trucking industry, is particularly suited

to this investigation. The industry and its unionization dynamics are described below.

Industry Context

As noted, we report an organizational-level analysis of unionization and quits among a sample of trucking companies. The trucking industry may be particularly suited to this investigation for several reasons. One, quit rates in the industry are traditionally well above the national average, with driver turnover estimated to range from 38 to 200 percent (Corsi and Fanara, 1988). There is thus sufficient variance in quit rates in the industry for meaningful analyses to be possible. Two, unionization rates are comparatively high among truck drivers, yielding reasonable numbers of both unionized and nonunionized firms. Three, the job of truck driver, although affording some interfirm variations, is relatively similar throughout the industry. Thus job-related and occupational sources of extraneous variance are minimized, an issue of some concern (Delaney et al., 1989). Four, single-industry research at the organizational level is vitally needed in the field (e.g., Baysinger and Mobley, 1983) because it controls against extraorganizational sources of contamination. Given the independent nature of drivers' jobs, voice issues may not be relevant in this industry. This concern is alleviated by the presence of sufficient variance on voice variables within the industry (see descriptive information below), but nonetheless, the issue should be explored further in other industrial settings.

The trucking industry has gone through significant changes over the past 20 years, primarily due to deregulation of the industry through the Motor Carrier Act of 1980. During regulation, motor freight was transported either by "for hire" carriers or by private company fleets. Deregulation fostered severe competition in the "for hire" sector, and firms with private fleets often outsourced the freight function to "for hire" carriers as a result.

Within the "for hire" segment, carriers can be classified into one of two categories—those providing less-than-truckload (LTL) service and those providing full-truckload (TL) service. Some carriers also specialize in the transportation of specialized commodities (e.g., hazardous materials), but these carriers typically resemble TL carriers more than they do LTL carriers.

For decades prior to deregulation, the industry was dominated by the Teamsters Union. Estimates placed the percentage of the industry under union contract to be near 100 percent at that time (Belzer, 1995). After

deregulation, however, union density in the industry dropped significantly and is now estimated to be about 24 percent in the TL segment and 65 percent in the LTL segment (Belzer, 1995; Hirsch, 1993). The drop in density is largely due to growth in the "for hire" TL segment. Entry barriers are relatively low in this segment, and a large number of nonunion firms emerged in the 1980s. These carriers often offer lower wages and benefits but have remained nonunionized.

This drop in union density raises two questions: Do unions still have significant bargaining power? Is the trucking industry an appropriate context for the examination of union effects? Several factors suggest a positive answer. Although union-related wage differentials are smaller since deregulation, they are still sizable (Belzer, 1995; Hirsch, 1988, 1993; Rose, 1985, 1987). Unions have been unwilling to make wage concessions to maintain or increase union density (Hirsch, 1993). Union wages are still higher than nonunion wages in both the TL and LTL segments, but LTL drivers generally fare better than their TL counterparts (Belzer, 1995).

In fact, these factors constitute strengths of the present study. Since unions still have significant bargaining power in the industry (particularly in the LTL segment), they can secure better compensation packages (including wages and benefits) for their members. Compensation-related differences should thus account, at least in part, for differences in employee attachment within the industry. At the same time, since union bargaining power has declined in the past two decades, monopoly bargaining effects should not completely overshadow voice effects. If voice effects truly explain a substantial portion of the variation in employee attachment, then employees should be less likely to quit even though the union has not been able to provide dramatically above-market wages. In other words, the setting enables the detection of both compensation and voice effects.

Summary

This study examines compensation and voice effects of unionization on employee attachment. To supplement prior individual-level research, this study analyzes these effects at the firm level. We expect quit rates to be higher and tenure to be lower in nonunionized than in unionized firms. We expect these effects to be attributable partly to the higher wages and benefits in unionized settings and partly to voice effects (as represented in the presence of grievance procedures and in seniority-based personnel policies). To the extent that a nonunionized firm resembles a unionized firm along these dimensions (i.e., it offers similar wages, benefits, grievance mechanisms, and seniority-based policies), then no differences in

attachment should be evident. We examine these issues in the trucking industry and focus on a job (i.e., truck driver) that is universal and relatively similar throughout the industry.

Method

Sample. The population for this study consisted of 3104 trucking companies listed in the 1993–1994 *TTS Blue Book of Trucking Companies (Blue Book),* which contains information reported by motor carriers to the Interstate Commerce Commission (ICC). To examine compensation and voice effects systematically at the firm level, it was necessary to limit the sample to those companies with sufficient employees to have developed human resources management practices. Thus we included only those firms with at least 30 total employees in either the 1991–1992, 1992–1993, or 1993–1994 *Blue Book* data. This resulted in a revised sample of 1169 companies. Of these, 97 were excluded because they employed no permanent drivers, using "owner-operators" exclusively, or because they had ceased trucking operations in the interim. The final sample included the remaining 1072 companies. A 24-page questionnaire was mailed to the highest human resources manager in each company. Completed responses were returned by 379 respondents, yielding a response rate of 36 percent (379/1072).

Measures. The focus of all human resources management questions was the driver. That is, pay, voice, etc. information was obtained not about employees in general but about truck drivers in particular. The questionnaire supplied information on most variables, although supplementary data from the *Blue Book* are also used. Unless noted otherwise, the measures reported below are drawn from the questionnaire.

Unionization. Unionization was measured as the percentage of drivers covered under a collective-bargaining agreement. Among the 56 LTL carriers in the sample, 24 were 100 percent unionized, 31 had no union representation, and 1 had a few (less than 50 percent) unionized drivers. Among TL carriers, 244 had no unionized drivers, 13 had a few (less than 50 percent) unionized drivers, 14 had mostly (more than 50 percent) unionized drivers, and 58 were 100 percent unionized.

Employee attachment. Two aspects of attachment were measured, quit rates and tenure. *Quit rates* were measured as a percentage for the year 1994. This variable has a lower bound of 0 percent but no upper bound

because quit rates can exceed 100 percent. The quit-rate variable used in the analyses was calculated by adding 1 to remove zeros and then taking the natural logarithm. One hundred seventy-eight respondents provided data on quit rates. Analyses involving quit rates are based on this subsample. *Driver tenure* was assessed as the percentage of drivers who had worked for the firm for more than 24 months. This cutoff was used in the questionnaire because, during the pilot phase of the project, it was determined that the majority of turnover in the industry occurred during the first 2 years of a driver's employment. Traditionally, in individual-level research, an average tenure measure is used. Since industry experts advocated a 2-year tenure measure instead, we used that measure here. Still, the two measures—average tenure and 2-year tenure—are likely to be correlated, particularly given the lower turnover rates for drivers with greater tenure. Information on driver tenure was provided by 290 respondents, and analyses involving this variable are based on this subsample.

Pay and benefits practices. Two sets of variables were of interest: pay and benefits. *Log pay* was the natural logarithm of average annual pay for a typical driver. Information on three kinds of benefits was obtained. *Paid days off* was the sum of the total number of paid vacation, sick leave, and holiday days a driver received in a year. *Health insurance* and *disability insurance* were each measured as the percentage of the premiums for these benefits paid by the company.

A negotiable factor in the trucking industry is the amount of time drivers spend at home, which can affect quit rates significantly (Shaw et al., 1998), since drivers frequently can spend many days or even weeks on the road away from home, particularly in the long-haul segment. This factor was therefore included in the study as a compensation/benefits dimension. *Times home* is the number of times per month that drivers were typically routed home.

Voice mechanisms. Information was obtained on two direct voice mechanisms, the use of formal grievance procedures and participation in decision making. Information on *formal grievance procedures* was obtained with a single item, measuring the proportion of employees covered by such procedures. Respondents were instructed as follows: *Below is a list of programs sometimes found in trucking and other companies. Please indicate what percent of your drivers are currently involved in each program or innovation—formal grievance procedures.* The question had seven response options: "none" (0 percent), "almost none" (1–20 percent), "some" (21–40 percent), "about half" (41–60 percent),

"most" (61–80 percent), "almost all" (81–99 percent), and "all" (100 percent). The question and response format were taken directly from Lawler et al. (1992). *Participation in decision making* was measured with a five-item scale using seven-point Likert-type response options ranging from "strongly disagree" (1) to "strongly agree" (7). Sample items are "Our drivers can make important work-related decisions," "Our drivers make decisions that affect their work," and "Our drivers have a lot of freedom in how they do their jobs."

Two indirect measures of employee voice were also used. As noted, seniority-based personnel policies are sometimes considered voice mechanisms, and information on two such policies was obtained. *Seniority-based layoffs* was coded 1 if the company had a formal policy of basing layoffs on seniority and 0 if it did not. The use of *seniority-based pay raises* was measured by a single item asking the extent to which differences in pay rates across drivers were based on seniority. Responses were obtained on a five-point Likert-type scale from "not at all" (1) to "to a very large extent" (5).

Control variables. In intraindustry organizational-level analyses, it is important to control for the effects of variables that are either unique to an industry or that affect observed organizational-level relationships. Several such control variables were used. *Carrier type* is the primary business type for the motor carrier. Respondents reported the percentage of truckload (TL), less-than-truckload (LTL), and specialized commodity (SC) hauling done by the company. Research consistently shows LTL carriers to have remarkably different turnover patterns than TL and SC carriers (Lemay et al., 1993). In our data, characteristics of TL and SC carriers were very similar across all study variables. For ease of interpretation, LTL carriers were given a score of 0 on this variable and TL and SC carriers a score of 1. Organizational *size* is the total number of employees in the company. Organizational *age* was measured as 1994 minus the founding year for the company. Founding year was obtained from the *Blue Book.* Both size and age are important controls in organizational-level research in general (Delery and Doty, 1996; Huselid, 1995; MacDuffie, 1995). The natural logarithm of age and size were used in all analyses.

Results

Unionization effects. Descriptive statistics for all variables for unionized, nonunionized, and all companies are reported in Table 1, and zero-order intercorrelations are reported in Table 2. Since control variables

TABLE 1
DESCRIPTIVE INFORMATION FOR UNION, NONUNION, AND ALL FIRMS*

	Union		Nonunion		Total Sample	
	Mean	SD	Mean	SD	Mean	SD
Log quit rate	1.58	1.18	2.86	1.26	2.54	1.35
Driver tenure	73.75	22.71	56.32	25.47	60.20	25.84
Log pay	10.51	.20	10.44	.17	10.45	.18
Paid days off	24.70	6.74	15.06	7.41	17.13	8.28
Health insurance	87.08	28.19	75.38	30.65	75.61	32.75
Disability insurance	64.74	46.07	35.94	45.60	40.40	46.90
Times home	20.31	10.82	12.50	10.97	14.22	11.40
Formal grievance procedures	4.59	2.34	2.07	1.87	2.59	2.22
Participation in decision making	4.91	.97	4.81	.85	4.83	.88
Seniority-based layoffs	.68	.47	.13	.34	.23	.42
Seniority-based pay	2.72	1.67	3.02	1.56	2.97	1.58

*Firms with 50 percent or more of their drivers represented by a union are in represented in the "Union" column. Firms with fewer than 50 percent of their drivers represented by a union are in the "Nonunion" column.

could contaminate observed zero-order correlations, partial correlations of the independent variables with quit rates, driver tenure, and unionization (removing the effects of controls) are shown in Table 3.

The first substantive issue of interest was the relationship between unionization and employee attachment. The zero-order correlation between quit rates and unionization was −0.43 ($p < 0.001$), and the partial correlation was −0.29 ($p < 0.001$). In addition, the zero-order correlation between unionization and tenure was 0.29 ($p < 0.001$), and the corresponding partial correlation was 0.15 ($p < 0.01$). Thus, consistent with previous research, unionization is strongly related to employee attachment, with unionized firms exhibiting greater attachment levels.

The second substantive issue of interest was the relationship between unionization on the one hand and compensation practices and voice mechanisms on the other hand. Zero-order and partial correlations reflecting these relationships are also contained in Tables 2 and 3. The relationship of pay to unionization is of particular interest here. Log pay had a significant zero-order correlation with unionization ($r = 0.18$, $p < 0.001$). In this sample, the average annual wage was \$34,509 for drivers in nonunionized firms and \$37,277 for drivers in firms where at least 50 percent of drivers were unionized. This represents approximately an 8 percent union wage differential between unionized and nonunionized firms. Since

TABLE 2

ZERO-ORDER CORRELATIONS FOR ALL VARIABLES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Unionization															
1. Percent unionized															
Dependent variables															
2. Log quit rate	–0.43**														
3. Driver tenure	0.29**	–0.65**													
Control variables															
4. Log size	–0.10	0.22**	–0.26												
5. Log age	0.26**	–0.34**	0.23	0.04											
6. Carrier type	–0.26**	0.31**	–0.20	–0.30**	–0.15**										
Pay and benefits															
7. Log pay	0.16**	–0.25**	0.16**	0.27**	0.06	–0.20**									
8. Paid days off	0.49**	–0.46**	0.34**	0.00	0.23**	–0.35**	0.30**								
9. Health insurance	0.17**	–0.14*	0.10	–0.02	0.04	–0.12*	–0.01	0.21**							
10. Disability insurance	0.24**	–0.28**	0.13*	0.01	0.04	–0.09	0.09	0.23**	0.35**						
11. Times home	0.30**	–0.48**	0.36	–0.22**	0.16**	–0.27**	–0.02	0.34**	0.16**	0.08					
Voice mechanisms															
12. Formal grievance procedures	0.47**	–0.28**	0.15**	0.04	0.15**	–0.14**	0.14	0.31**	0.06	0.13*	0.15**				
13. Participation in decision making	0.05	–0.14	0.07	–0.05	–0.01	–0.10	0.06	0.12	0.09	0.09	0.10	0.05	(0.60)		
14. Seniority-based layoffs	0.53**	–0.33**	0.27**	0.02	0.16**	–0.34**	0.09	0.36**	0.17**	0.16**	0.32**	0.29**	0.12*		
15. Seniority-based pay	–0.08	0.21**	–0.30**	0.19**	–0.17**	–0.08	–0.01	–0.06	–0.07	–0.09	–0.13*	–0.02	–0.01	–0.02	

*$p < 0.05$.
** $p < 0.01$.
NOTE: $N = 178$–375. Coefficient α reliabilities in parentheses in the diagonal where appropriate.

many studies report a counterpart differential at the *individual* level (Hirsch, 1993), we also approximated this statistic. We multiplied the average driver pay for a firm by the total number of drivers in unionized firms and in nonunionized firms and divided these two figures by the total number of unionized and nonunionized drivers, respectively, in the sample. This analysis produced a 21 percent wage differential, a figure similar to that obtained in individual-level studies.

Unionization also was positively related to benefits. Unionized workers received an average of almost 25 paid days off per year, whereas their nonunionized counterparts received only 15. Unionized firms paid an average of 87 percent of health insurance premiums and 65 percent of disability insurance premiums, whereas nonunionized firms paid an average of 75 and 36 percent of these premiums, respectively. Despite these overall differences, several nonunionized firms in the sample paid drivers more and offered better benefits than some of the unionized firms. In other words, wages and benefits cannot be considered proxy measures for unionization per se and must be viewed as substantively different constructs.

A strong positive relationship was detected between unionization and the existence of a formal seniority-based layoff policy ($r = 0.53, p < 0.001$) and unionization and grievance procedures ($r = 0.47, p < 0.001$), but not

TABLE 3

PARTIAL CORRELATIONS OF STUDY VARIABLES WITH UNIONIZATION
AND ATTACHMENT

	Unionization	Log Quit Rate	Driver Tenure
Log quit rate	−0.29**		
Driver tenure	0.15**	−0.55**	
Log pay	0.16**	−0.31**	0.21**
Paid days off	0.41**	−0.34**	0.24**
Health insurance	0.13*	−0.10	0.06
Disability insurance	0.23**	−0.28**	0.12*
Times home	0.17**	−0.34**	0.22**
Formal grievance procedures	0.44**	−0.24**	0.11
Participation in decision making	0.01	−0.10	0.03
Seniority-based layoffs	0.47**	−0.20**	0.18*
Seniority-based pay	−0.03	0.15	−0.26**

*$p < 0.05$.
**$p < 0.01$.
NOTE: $N = 162$–330. Partial correlations controlling for log size, log age, and carrier type.

the other two voice measures. These results provide mixed support for the argument that voice mechanisms are stronger in unionized settings.

The relationship between unionization and how often drivers are routed home was significant and in the predicted direction. On average, unionized drivers were routed home 20 times per month, whereas their non-union counterparts were routed home only 12.5 times. This is at least partly attributable to the higher unionization rates among LTL carriers, where by the design of the job drivers are usually home much more often. Beyond this, among both TL and LTL carriers, times home is a negotiable matter, and unionization most probably affects company policies about the amount of time drivers are away from home.

In short, pay and benefits, the existence of formalized grievance procedures, and the use of formal seniority-based layoff policies were related to unionization. Participation in decision making and seniority-based pay raises were not significantly more prevalent in unionized settings. Compensation practices display predicted zero-order and partial relationships with attachment. The same is true of the relationships between voice mechanisms and attachment, except for the negative relationship of seniority-based pay and tenure.

Tests of the exit/voice hypothesis. The third, and the central, focus of the study was the extent to which the relationship between unionization and attachment was a function of compensation and/or voice mechanisms. A series of hierarchical multiple regressions was used to address this issue. The first step of the regressions included the control variables, the second step added unionization, the third step added the five compensation practices, and the fourth and last step added all four voice mechanisms. That is, voice effects on employee attachment were assessed after controlling for compensation practices. The results of these analyses using quit rates as the dependent variable are shown in Table 4.

Quit rates. In all, 157 firms were included in the equations predicting quit rates (the lower *N* reflects missing data on independent and control variables). Of these, 27 percent had at least some drivers represented by a union. For the trucking industry, this is a lower union density than reported for previous decades. Nonetheless, it is not atypical for U.S. firms in general. Unionization was more prevalent among the 18 LTL firms included in the analysis (61 percent reported having unionized drivers) than among the 139 TL firms (only 23 percent reported having unionized drivers).

TABLE 4
REGRESSION RESULTS WITH LOG QUIT RATES AS THE DEPENDENT VARIABLE

	Model 1			Model 2			Model 3			Model 4		
	B	(SE)	β	B	(SE)	β	B	(SE)	β	B	(SE)	β
Constant	1.567	0.817		1.683	0.797		22.135	5.754		5.223	1.086	
1. *Control variables*												
Log size	0.353**	(0.082)	0.314**	0.333**	(0.080)	0.296**	0.357**	(0.078)	0.318**	0.338**	(0.079)	0.301**
Log age	−0.535**	(0.154)	−0.253**	−0.416**	(0.155)	−0.196**	−0.340*	(0.141)	−0.160*	−0.336*	(0.146)	−0.159*
Carrier type	1.273**	(0.317)	0.303**	0.990**	(0.323)	0.236**	0.426	(0.304)	0.101	0.389	(0.312)	0.093
2. *Unionization*				−0.007**	(0.003)	−0.227**	−0.003	(0.002)	−0.108	−0.003	(0.003)	−0.104
3. *Pay and benefits*												
Log pay							−1.857**	(0.558)	−0.239**	−1.844**	(0.564)	−0.237**
Paid days off							−0.020	(0.013)	−0.119	−0.018	(0.014)	−0.104
Health insurance							−0.001	(0.003)	−0.020	−0.002	(0.003)	−0.003
Disability insurance							−0.003	(0.002)	−0.102	−0.003	(0.002)	−0.104
Times home							−0.031**	(0.008)	−0.258**	−0.030**	(0.008)	−0.251*
4. *Voice mechanisms*												
Formal grievance procedures										0.003	(0.046)	0.005
Participation in decision making										−0.157	(0.099)	−0.102
Seniority-based layoffs										−0.124	(0.233)	0.040
Seniority-based pay										0.031	(0.054)	0.038
R^2		0.240**			0.282**			0.444**			0.457**	
(Adjusted R^2)		(0.225)			(0.263)			(0.410)			(0.408)	
ΔR^2					0.042*			0.162**			0.013	

*$p < 0.05$.
**$p < 0.01$.
NOTE: $N = 157$.

As can be seen from Table 4, the control variables accounted for 24 percent of the variance in quit rates. Unionization explained an additional 4.2 percent of the variance ($\beta = -0.23$, $p < 0.01$). The five pay and benefits measures explained an additional 4.1 percent of the variance. Of these, two are significant. Log pay ($\beta = -0.24$, $p < 0.001$) and times home ($\beta = -0.26$, $p < 0.001$) were both strongly negatively related to quit rates. Interestingly, the unionization variable became nonsignificant in this step ($\beta = -0.11$, ns), suggesting that unionization affects quit rates largely through its effects on compensation systems.

The final equation contained all independent and control variables, including the voice measures. This model did not explain significant additional variance ($\Delta R^2 = 0.015$, ns). Furthermore, none of the voice variables reached significance. These results suggest that unionized firms have lower quit rates primarily due to union compensation effects and that voice mechanisms are not salient in this context.

Driver tenure. Overall, 290 firms were included in the driver tenure analyses. Nearly 26 percent of these firms reported having unionized drivers. As with quit rates, the percentage of unionized firms is much higher in the LTL segment of the industry ($N = 42$; 50 percent of these were unionized) than in the TL segment ($N = 248$; 21 percent of these were unionized). The results of the hierarchical regressions with driver tenure as the dependent variable are presented in Table 5.

These results are nearly identical to those for quit rates. Unionization has a significant positive effect on tenure ($\beta = 0.14$, $p < 0.05$), but the introduction of pay and benefits practices into the equation reduces the unionization coefficient to near zero ($\beta = 0.01$, ns). Thus the results again support the compensation argument, with log pay, paid days off, and times home constituting significant predictors ($\beta = 0.155$, $p < 0.01$; $\beta = 0.141$, $p < 0.05$; and $\beta = 0.168$, $p < 0.01$, respectively).

The final equation, incorporating the voice variables, shows a significant negative correlation between seniority-based pay and tenure ($\beta = -0.205$, $p < 0.01$). That is, this voice mechanism does not increase employee tenure —it reduces it. None of the other voice mechanisms was significant in the equation. As with quit rates, the tenure analyses do not support the unionization voice hypothesis.

Taken together, these results offer strong support for the compensation argument and no support for the voice argument. Only one of eight voice coefficients (four for each dependent variable) was significant, and this coefficient had a sign in the direction opposite from that expected.

TABLE 5

REGRESSION RESULTS WITH DRIVER TENURE AS THE DEPENDENT VARIABLE

	Model 1			Model 2			Model 3			Model 4		
	B	(SE)	β	B	(SE)	β	B	(SE)	β	B	(SE)	β
Constant	85.577	10.979		83.451	10.918		−189.328	84.177		−162.602	82.885	
1. *Control variables*												
Log size	−6.916**	(1.139)	−0.334**	−6.441**	(1.146)	−0.311**	−6.376**	(1.184)	−0.308**	−5.655**	(1.180)	−0.273**
Log age	7.341**	(2.202)	0.180**	5.997**	(2.250)	0.147**	5.532**	(2.173)	0.135**	4.370*	(2.146)	0.107*
Carrier type	−19.828**	(3.981)	−0.277**	−16.910**	(4.121)	−0.236**	−11.114**	(4.156)	−0.155**	−10.658*	(4.141)	−0.149*
2. *Unionization*				0.091*	(0.037)	0.142*	0.006	(0.040)	0.010	−0.022	(0.043)	−0.034
3. *Pay and benefits*												
Log pay							24.687**	(8.113)	0.171**	22.846**	(7.944)	0.158**
Paid days off							0.416*	(0.201)	0.135*	0.358	(0.198)	0.116
Health insurance							−0.014	(0.050)	−0.015	−0.028	(0.049)	−0.030
Disability insurance							0.040	(0.029)	0.076	0.027	(0.029)	0.051
Times home							0.371**	(0.128)	0.168**	0.292*	(0.126)	0.132*
4. *Voice mechanisms*												
Formal grievance procedures										0.233	(0.638)	0.020
Participation in decision making										0.854	(1.486)	0.029
Seniority-based layoffs										6.604	(3.556)	0.113
Seniority-based pay										−3.243	(0.817)	−0.205**
R^2		0.188**			0.205**			0.289**			0.335**	
(Adjusted R^2)		(0.180)			(0.194)			(0.266)			(0.304)	
ΔR^2					0.01*			0.084**			0.046**	

*$p < 0.05$.
**$p < 0.01$.
NOTE: $N = 290$.

Response bias check. Our reliance on survey research methodology means that it is possible that response bias affected the results. We used archival measures from the *Blue Book* to address the issue of response bias in a number of ways. We dummy coded the dependent variable 1 if a usable questionnaire was returned and 0 if it was not. The independent variables were obtained from the 1994 *Blue Book,* which contains information reported to the ICC for the 1993 calendar year, i.e., the calendar year for which the sample was derived. The variables used were number of drivers, total fringe benefits cost, total highway miles driven, total wages paid, average haul (in miles), total insurance costs, current assets, company age, tons per mile, and average load (in tons). A series of logistic regressions examined differences between respondents and non-respondents on the independent variables (Osterman, 1994). None of these variables was significant, indicating that respondents were not significantly different from nonrespondents.

It was also important to establish the extent of difference between respondents who provided information on quit rates and tenure levels and those who did not. To address this issue, we conducted two series of logistic regressions. In the first set, the dependent variable was a dummy-coded variable (1 = quit rate information provided, 0 = quit rate information not provided), and the independent variables were the unionization, compensation practices, voice mechanisms, and control variables. None of the variables was significant in this equation. In the second set of regressions, the dependent variable was dummy coded (1 = tenure information provided, 0 = tenure information not provided). In these analyses, only one variable (log employees) was significant. Larger organizations were more likely to have missing tenure information.

Additionally, like Huselid (1995), we used Heckman's (1979) procedure for response bias check. An inverse Mills' ratio was computed and included in all regression equations. The inclusion of this ratio produced nearly identical results; in no case did it change substantive findings. In all, these analyses lead us to conclude that response bias is not of major concern.

Discussion

The results of this study provide interesting insights into the mechanisms through which unionization affects employee attachment to the firm. Higher wages and benefits in unionized trucking settings account for a substantial portion of unionization effects on employee attachment. These compensation levels are partly due to monopoly bargaining power

of unions, although they are probably also partly due to higher employee skill levels in unionized settings (we were unable to measure this aspect directly). This extends previous theory and research—voice mechanisms were at best inconsistently related to the attachment variables of quit rates and driver tenure.

Many researchers posit that unionization affects employee attachment through monopoly bargaining power, raising wages and benefits, and making it difficult for employees to leave. Thus turnover is lower and tenure higher in unionized than nonunionized firms. These arguments received strong support in our study. Unionization had significant coefficients in equations predicting quit rates and tenure *before* compensation variables were introduced; these coefficients were reduced drastically and became nonsignificant with the introduction of compensation variables. This supports the efficiency wage theory argument that unionized organizations lock employees in through higher wages and better benefits (e.g., Katz, 1986; Stiglitz, 1984).

Descriptive information indicated an approximate 8 percent wage differential between unionized and nonunionized *companies* but a 21 percent wage differential between unionized and nonunionized *drivers,* a figure comparable with that obtained in previous individual-level research. This difference between the two numbers is most likely caused by the relationship between wages and other firm-level characteristics. This difference underscores the importance of careful attention to level of analysis issues. It dictates extreme caution in comparing individual-level research with firm-level research.

In addition to this wage differential, unionized firms provided more paid days off, got drivers home more often, and covered a greater proportion of health and disability insurance premiums. Simply put, unions had a strong influence on employee benefits. The continued emphasis in Congress on benefits issues (particularly health insurance) further attests to their salience in the American workplace. It is reasonable that wages and benefits accounted for a substantial portion of the variance in quit rates and tenure.

A major thrust of this study was an examination of the role of voice mechanisms in unionization effects on attachment, above and beyond the effects attributable to compensation practices. This is the crux of the Freeman and Medoff (1984) argument—unions affect attachment through both compensation practices and voice mechanisms. We examined four different voice mechanisms. Unionized firms were more likely to have formalized grievance procedures and seniority-based layoffs. Some of the voice mechanisms also had significant zero-order and partial correlations with

attachment variables. But none of these variables predicted quit rates in the final equation, and only one—seniority-based pay—predicted driver tenure, but in the wrong direction. These results are inconsistent with Freeman's (1980) and Freeman and Medoff's (1984) assertions regarding exit/voice mechanisms. Unions typically do provide greater voice mechanisms to employees, but our results suggest that higher wages and better benefits account for much of the union effect on retention in the trucking industry.

Of course, alternative explanations of our findings are possible. We obtained data about a single job in a single industry in a single country at a single point in time. These constraints necessarily limit the potential generalizability of the results. At the same time, these factors also allow a relatively clean and noise-free assessment of union-related dynamics. Extraneous sources of contamination are severely restricted in the design. Additionally, the focus on the trucking industry and the driver job could limit generalizability. It is possible that union voice effects are weaker in this industry given the independent nature of the driving job and given that drivers evince stronger *occupational* than organizational identification. Future studies in other industrial settings where employees are more attached to organizations than to occupations should be useful in addressing this issue.

A further question about the study is our relatively low sample size for quit rates in the LTL segment. This problem is alleviated because higher sample sizes were available for driver tenure analyses. The pattern of results for the two dependent variables was substantively similar, fostering confidence in the robustness and reliability of the findings.

The measures we used in the study also can be questioned. We focused on the proportion of benefits premiums covered by the firm, but other ways of measuring this variable are arguably superior. We measured the existence of formal grievance procedures, not the extent to which such procedures actually were used. Admittedly, these measures can be honed to reflect better the constructs of interest. Nonetheless, they provide useful information. They also enable rare, if not unique, *direct* assessment of benefits and voice effects. Future research should focus on developing better measures of these constructs, but at the same time, the fact that our relatively simple measures of voice were unrelated to attachment, after controlling for wages and benefits, is noteworthy. It is the *pattern* of results—none of the voice variables predicted quit rates, and only one predicted tenure (albeit not in the expected direction)—and not a single relationship by itself that leads to questions about the applicability of the voice hypothesis in the trucking setting.

Another factor that gives our results credence is the fact that the design had a built-in replication. We measured employee attachment using two related but distinct measures: quit rates and employee tenure (Freeman, 1980; Merrilees, 1981; Wilson et al., 1990; Wooden and Baker, 1994). Essentially parallel results were obtained with both attachment variables. To the extent that our observations were chance phenomena, the replication would likely have revealed them as such. That the dynamics among unionization, compensation practices, and voice mechanisms were virtually identical for both quit rates and tenure fosters confidence in the validity and stability of our findings.

Our study was conducted at the firm level, while much of the prior research on this topic has relied on individual-level data (Freeman, 1980; Freeman and Medoff, 1984). Exit/voice effects are theoretically applicable at both the individual and firm levels. Empirically, at least based on our tests, they appear to be stronger at the individual than at the firm level. It is thus essential that further research be conducted at both levels within the same industry. Only then will definitive conclusions about the viability of the hypothesis at both levels be possible.

In short, our study controlled many sources of extraneous variance, measured benefits and voice mechanisms directly, examined two attachment variables, was conducted in a relatively heavily unionized industry, and addressed current economic and union dynamics. It thus offers a unique snapshot of exit/voice tradeoffs in affecting employee behaviors in the trucking industry.

To conclude, our results support the argument that the monopoly bargaining power of unions, as evident in wages and benefits, accounts for the higher employee attachment witnessed in unionized settings. But they do not support Freeman and Medoff's (1984) exit/voice hypothesis. Given the extensive work of Freeman (1980) and his colleagues at the individual level, it is imperative to supplement the database with examinations at the firm level, enabling more authoritative statements. Our results also highlight the importance of economic context and union density in determining observed attachment dynamics. Because of a number of design factors (outlined above), our study represents a significant step in elucidating the exit/voice dynamics of unionization. We hope that the issues we illuminated will be examined in greater depth in future research across different settings and different levels of analysis.

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