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A Post-Deregulation Analysis of Wages in U.S. Freight Transportation

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ABSTRACT

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After a period of regulatory changes in the early 1980s we are faced with "new" freight transportation labor markets in the U.S. Using data from the 1984-1999 Current Population Survey, we examine trends in the wages of workers within freight transportation, with a focus on wage differentials across industries and occupations. Our aim is to provide stylized facts. We find that real wages in rail, truck, and water transport declined over most of the period and have rebounded since 1996. Within industries we find considerable persistence in wage differentials between and within a majority of occupations. We also find evidence of increased competition in a subset of labor markets.

JEL Classification: J31, L92

Keywords: wages, rail, motor carriage, water transport

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1. Introduction

The age of globalization and increased trade has reinforced the status of the transportation sector as an integral part of the U.S. economy. *For-hire* transportation services alone grossed $313.9 billion in 2002 and accounted for 3.2 percent of total GDP. The *for-hire* sector accounts for approximately 53% of all transportation services (trucking 40.1 percent, rail 7.3 percent, domestic water 4.7 percent; U.S. Department of Transportation, 2002).[1] The remaining 47 percent are carried out by private carriers, i.e. firms that ship their own products (Coors, Wal-Mart). Transportation is also a key source of employment. Truck driving represents one of the largest occupations in the U.S. and the number of drivers continues to exhibit extraordinary growth. Between 1975 and 2000 the number of truck drivers more than doubled to over three million.[2]

Transportation industries in the U.S. have historically been regulated, beginning with rail in 1887. The growth of rail, truck, and water transport in the U.S. was largely shaped by this regulation and the subsequent move to deregulation in the late 1970s and early 1980s. The three sectors underwent considerable changes post deregulation, which was reflected in their respective labor markets.

A large body of research focuses on the changes in the labor markets in rail and trucking caused by deregulation. This paper does not seek to add to that literature. The purpose of this paper is to examine wages within and across the three main freight transportation sectors - rail, trucking, and water - in the period following regulatory

[1] These shares have been largely unchanged since 1990.

[2] The number of drivers in trucking is estimated using the May Current Population Survey microdata sets from 1975-1982 as well as the Outgoing Rotation Groups (ORG) Current Population Survey microdata sets from 1983-2000. For more on the CPS data see www.bls.census.gov/cps/cpsmain.htm. Note that the samples in each year are restricted to individuals aged 21 to 65 years, to capture workers who are old enough to legally hold a commercial driver's license. Using the weights along with the random sample allows us to make inferences about the total number of drivers. The total number of drivers is then decomposed by industry segment (for-hire versus private carriage).

changes. Deregulation has certainly transformed labor markets in transportation. However, our motivation in this paper is to examine the "new" labor market rather than focusing on the differences pre and post deregulation within freight movement in the U.S.[3]

Trucking, rail and water transportation lend themselves to joint analysis because they have many commonalities: they are key to domestic and international trade, they have segments of the workforce with strong union representation (especially rail), and all underwent significant regulatory changes at approximately the same time. This paper provides an initial analysis of wage trends across and within each of these transportation sectors, with the aim of providing key stylized facts using descriptive statistics and basic regression analysis. The paper proceeds as follows. Section 2 reviews the major regulatory changes in the transportation industries. Section 3 cites evidence of the effect of deregulation on transportation labor markets. Section 4 discusses the data used in this study. Section 5 presents descriptive statistics. Section 6 uses basic regression analysis to test descriptive outcomes and solidify the findings of the paper. Finally, section 7 concludes and summarizes.

2. The Regulatory Climate in Transportation

A brief examination of the history of regulation and deregulation in transportation is helpful for understanding contemporary trends in transportation labor markets post deregulation. The Interstate Commerce Act of 1887 (ICA) served a dual purpose: to establish the Interstate Commerce Commission (ICC) and regulate rail. The provisions of rail regulation were important since they were also used as the guideposts for regulating

[3] Though some freight is moved by airline, this represents a very small proportion of revenue and it is impossible to distinguish freight movement and passenger movement in the data set we use.

other modes of transportation and public utilities. The ICA required the railroads to publish tariffs, prohibited price discrimination based on geographic location or length of haul, and prohibited "unreasonable" rates.

By the 1920s and 1930s the profitability of railroads was being threatened not by price wars, but by the emergence of motor carriage as a viable mode of freight transportation (especially for short and medium hauls). There was pressure on the federal government to protect the railroads by rendering trucking subject to similar regulations.[4] The Motor Carrier Act of 1935 brought regulation of motor carriage under the supervision of the ICC. The Act served to reduce intermodal competition by limiting certificates of operating authority in the trucking industry. In addition, rate bureaus were established to set trucking tariffs and firms were required to charge the publicized tariff, a move clearly designed to eliminate discounting in trucking and make the pricing in this industry similar to that of rail.[5]

The Kennedy Administration began to consider the potential of reforming the regulatory environment in U.S. transportation in the early 1960s. The Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act) contained a provision to allow railroads to change their fee structures by expanding the range of rates that were considered "reasonable." In 1978 railroads were given the latitude to enter into long-term contracts with shippers (expressly prohibited under the ICA). The Staggers Act of 1980 gave railroads more flexibility to adjust rates and abandon unprofitable lines.

[4] Regulating motor carriage to protect rail was not a concept unique to the U.S. Most European countries used the same reasoning (Moore 1986).
[5] The Reed-Bulwinkle Act of 1948 exempted rail, truck, and water carriers from anti-trust laws when setting rates through bureaus (Moore 1986).

By the late 1970s the ICC loosened their entry restrictions in trucking. *Interstate* trucking was largely deregulated with the Motor Carrier Act of 1980 which eliminated barriers to entry into motor carriage and permitted carriers to deviate from the rates set by the bureaus, ultimately eliminating the entry and price restrictions.

The story of ocean shipping regulation differs somewhat from rail and motor carriage since it was regulated with an eye on international competition. The international aspect of water transport results in a complex system of regulation, most of which is outside of the jurisdiction of the U.S, even for U.S. carriers. There are three main regulating bodies: classification societies, who regulate the physical and operational aspects of ships; flag states, the country in which the ship is registered; and coastal states, the country in whose waters the ship is operating (Stopford, 1997).

Since this paper focuses on the labor market for freight transportion in the U.S., we will focus on the flag state component of regulation, specifically the regulations of the U.S. with respect to ships operating under its flag. It is important to note, however, that U.S. regulations affect the decision of a company of what country to operate under.

The Shipping Act of 1916 which regulated water transport in the U.S. provided antitrust immunity to ocean carriers who formed conferences to collude on prices and levels of service provided to shippers. This is not unlike the antitrust immunity provided to motor carriers and railroads during their regulatory periods. The Shipping Act of 1984 loosened the power of conferences somewhat by providing for free entry into conferences by ocean carriers, reduced the leverage of conferences over railroads by allowing railroads to contract with individual firms rather than the entire conference, and by allowing shippers to form alliances (Lewis and Vallenga 2000). The power of the

conferences was not entirely eliminated. Tariffs were still required to be posted publicly and ocean carriers could still work together without violating antitrust laws.

The Ocean Shipping and Reform Act of 1998 continued the trend toward deregulation by allowing ocean carriers to contract with shippers confidentially and to enter into contracts separately from carriers in their conference. Conferences have largely lost their bargaining power post-deregulation and largely exist today in the form of strategic alliances. Figure 1 presents a timeline of the major regulatory changes for all sectors.

3. Deregulation's Impact on Labor

Though all three freight transport modes went through very similar forms of regulation and deregulation, their labor markets were impacted in quite different ways. In trucking, there was an initial decline in employment which rebounded a few years after deregulation (Monaco and Brooks 2001). Wages, however, declined considerably, between 10 and 30 percent depending on union status and data set used (Rose 1987, Hirsch 1988, Hirsch and MacPherson 1998, Belzer 1995). The post-regulation adjustment process in the railroad industry was almost the opposite. Wages remained relatively constant but employment contracted substantially (Talley 2001).

One of the major reasons for the differential impact on labor can be found in the change in collective bargaining power and union strategy post-deregulation. Trucking deregulation was accompanied by considerable financial upheaval with several large carriers leaving the market and considerable entry by small firms. In addition, during regulation many firms provided both truckload (a full trailer transported for one customer, TL) and less-than-truckload (several small shipments consolidated into a full

trailer, LTL) services. After deregulation there was a split in the industry with firms specializing in either TL or LTL services. The Teamsters, unable to effectively obtain above average wages in the very competitive TL segment, retreated into the higher value LTL segment where the union premium remains strong, albeit smaller than during regulation. In rail the union accepted concessions on the size of the crew in order to retain high wages for those remaining in the industry.

The labor market in water transport is largely unionized, consisting primarily of freight handlers who are represented by the International Longshoreman's Association (ILA) on the East and Gulf Coasts and the International Longshore and Warehouse Union (ILWU) on the West Coast.[6] It is not immediately clear how deregulation of ocean shipping affected this labor market. The main paper on the impact of deregulation on earnings, by Talley (2002), finds limited evidence of an increase in dockworker earnings after the Shipping Act of 1984. Talley does not test for the impact of the Ocean Shipping and Reform Act of 1998. His results suggest, however, that the increase in shipping volume, some of which was certainly driven by the improved efficiency in water transport post-deregulation, lead to an increase in the demand for labor, increasing jobs and wages. Talley notes that the main driver of increased productivity at the ports was the technological changes caused by containerization in the 1950s and the on going increase in size of container ships which takes advantage of economies of density resulting from containerization. Untangling the impact of regulatory reform from that of concurrent technological change seems impossible given current data limitations.

[6] There are, however, some gulf ports which use nonunion labor for unloading break-bulk and who also use Teamsters for some of the loading and unloading duties.

4. Data

The data source for our analysis is the Outgoing Rotations Group (ORG) files of the Current Population Survey (CPS) from 1984-1999. As explained above, the post-deregulation period for each freight transport mode is chosen to focus on wage and employment dynamics since deregulation.

To accurately capture the labor market characteristics of each transportation sector, we first identify occupations and industries of interest for each sector. We include all observations with Census Industry Code 400 in the rail sector. Doing the same for trucking is less straightforward since one-half of trucking services are provided outside of the trucking industry (Census Industry Code 410). Private carriers, firms that haul their own freight, would not be classified in the trucking industry. They are nonetheless important for assessing one large segment of the transportation labor force – truck drivers. In order to incorporate this group, we include in our "trucking sector" all observations that report employment in the trucking industry as well as all those outside of trucking who report the occupation of truck driver (Census Occupation Code 804). Finally, we construct a group for those employed in water transportation. This includes all those who report employment in Census Industry Code 420 (water) as well as all individuals who report employment as longshoremen and stevedores, regardless of their industry code.

We omit all observations in agricultural, fishing, or forestry occupations. We further limit our data set to individuals who work full-time (more than 30 hours per week) and are employed in the private sector. Finally, as individuals are sampled in the ORGs twice, we omit the second observation for all individuals (with the exception of the

first year). This leaves us with 43,431 observations; 4828 in rail, 36,705 in trucking, and 1898 in water for the time period 1984-99. This data set is unique since no other paper examines freight transport workers exclusively and, apart from authors addressing the effect of deregulation on wages, there is only limited research which investigates the wages of management and other non-operative occupations in freight transport.[7]

5. Descriptive Statistics

Figure 2 presents trends in the real hourly wage (in 1999 dollars) for each of the three transportation groups over the sample period. After reaching their highs in 1986 (Rail: $20.90, Water: $17.90 Trucking: $13.21,), all three series experienced a downward trend from the mid-1980s, reached a minimum in 1996 (Rail: $16.04, Water: $15.04 Truck: $12.27,) and rebounded thereafter. Rail displays a premium over water ($2.34 in 1984) which diminished over the sample period ($1.26 in 1999). Although lagging in absolute terms over the entire period, trucking wages posted relative gains compared to water and especially rail. They were also the only group able to surpass 1984 real hourly wage levels.

Weekly wages exhibit a pattern similar to hourly wages (Figure 3) but the substantial premium of rail and water over trucking remains. The relative gain of trucking, however, is more pronounced. As weekly wages are also a function of the number of hours worked, we look at differences in weekly hours across groups (Figure 4). Given that the sample is constrained to full time workers, it is not surprising that the mean weekly hours for all three groups are significantly more than 40 hours per week.

[7] Talley's 2001 article on the impact of deregulation on wages in transport omits water transport and includes rail, trucking, and bus.

Trucking hours remain relatively stable over the period, however rail increased slightly between 1984 and 1999. Hours in water transport decreased considerably after 1995, dropping from approximately 50 between 1984 and 1994 to 45.5 in 1999.

Disaggregating each transportation sector by occupation leads to a more nuanced view of wage changes over time. We divide all workers into 5 occupational categories: managerial and professional; technical and sales; precision, production and craft; service; and operatives (including transportation operatives). We focus on two of these occupational groups: managers and professionals (the highest paid group) and operatives and handlers (the lowest paid group).[8] In all three sectors, managerial and professional workers earn a substantial premium over other occupational groups. Managerial and professional workers in the rail industry earned a premium of approximately 20 percent over the other occupations, whose wages were relatively similar over the period. The managerial premium was significantly higher for trucking; 44 percent in 1984 and 62 percent in 1999.

Figure 5 compares the wage series for managers and professionals for the three transportation sectors. The graph clearly shows the convergence of real hourly wages of managers and professionals across the three industry groups in the period under study. The premium of rail managers over those in trucking was 26 percent in 1984 and decreased to 6 percent in 1999. This can be taken as evidence that the regulatory changes were successful in increasing labor market competition (at least for occupations with a relatively low degree of unionization).

Figure 6 presents a similar wage series for operatives and handlers. Unlike in the case of managers, the graph for operatives shows no convergence of wages. The gap

[8] Other tables and statistics are available from the authors upon request.

between hourly real wages of trucking operatives and those in the other two sectors does not diminish over time. This is most likely explained by the persisting union bargaining power in the rail and water industries. Rail operatives earn a premium compared to water operatives but this gap does diminish over the 1990s.

6. Model and Estimation

Though descriptive statistics give useful information on wage trends there are obvious limits to performing inference on them. We next estimate a series of wage equations on the sample of transportation workers. In all models, the dependent variable is the natural log of the real hourly wage rate.[9] The explanatory variables include the standard human capital controls along with a series of year dummy variables (with 1984 as the base year). Education is measured with dummy variables for high school, some college and college or higher, with less than a high school diploma as the omitted group. Years of experience are measured as age minus education minus six. The square of this experience measure is also included to allow for a concave age-earnings profile.

Dummy variables for union, female, and veteran status are included. The controls for marital status include two dummies, married and separated/divorced/widowed, with single (never married) as the reference group. Racial and ethnic differences are included with dummy variables for Black, Hispanic, and other race, with White (non Hispanic) as the omitted group. Location of the individual is controlled through dummy variables for region (Northeast, West, Midwest, South omitted) as well as a dummy variable for living in a metropolitan area. Descriptive statistics are presented in Column 1, Table 1.

[9] Given the log-lin specification, the coefficients on non-continuous variables can be transformed by raising e to the beta and substracting 1 to give the percentage change in the real hourly wage for a discrete one unit change in the explanatory variable. The tables report (untransformed) regression coefficients.

To provide an overview of the transportation labor market all individuals in the data set are included in the first model (Column 1 Table 2) with dummies included for rail and water sectors (trucking as the omitted category) and for all occupational categories (operatives as the omitted category). The size of the sectoral coefficients gives an average of the wage premia in rail and water from 1984 to 1999. Individuals employed in rail earned 15.6 percent more than those in trucking. The size of the premium for water transportation is 11.3 percent. Both premiums are most likely explained by differences of skill requirements in the different sectors. The magnitude of the occupational coefficients confirms the patterns seen in the previous section. Managers and professionals enjoy a 42.4 percent wage premium over operatives. The size of the premium for technical and sales is 14.8 percent and is 10.6 percent for precision, production and craft workers. Service workers are the lowest paid, with earnings of 12.8 percent less than the reference group. The size of the union premium, 32.4 percent, indicates significant returns to union membership, even in an era of increased competition in each of the industries.

The next three columns of Table 2 present coefficients on regressions run separately for each of the sectors (descriptive statistics on these groups are presented in Columns 2-4 of Table 1). These provide a more detailed picture of the returns to attributes for each of the sectors. Though the aggregate estimation exhibits large returns to unionization, it is clear that these returns are not uniform across sectors. Trucking exhibits the largest union premium (35.5 percent), followed by water (23.6 percent), and rail, (6.9 percent). The coefficients on the occupational dummies reinforce the substantial degree of wage inequality evident in the descriptive statistics. The managerial premium

in trucking is 47.7 percent, roughly twice the premium of water (27.1 percent) and rail (22.1 percent).

Females earn 19.7 percent less than males in trucking, 10.8 percent less in rail and 11.5 percent less in water transportation. The black-white wage gap is largest in rail(10.9 percent) which is surprising given the high degree of unionization in Rail.[10] It drops to 6.9 percent in trucking and is not statistically different from zero for workers in water transportation. The wage differentials for Hispanics and other minorities follow a similar pattern.

The final estimations are separated by occupation (Table 3). The sectoral wage premium varies substantially by occupation. Managers and professionals within rail have the largest premium over their counterparts in trucking (base group), 23.9 percent. Technical and sales workers employed in rail earn 21.8 percent more than those in trucking, followed closely by operatives who earn 19.1 percent more. The premium for rail service workers over other service workers is 20.7 percent, and that of production and craft workers employed in rail is 5.2 percent. The substantial premium for service and operatives is surprising given the relatively low skill level required for these occupations. Workers in rail seem to fare better across the board. Therefore, it is most likely that skills specific to the rail sector raise wages of workers in every occupation, including those usually described as low-skill.

The wage differential between operatives in water and trucking is also large, 15.1 percent. The wage premium for precision, production, and craft workers is similar to that of rail, 6.9 percent. The premiums for managers and professionals and technical and sales

[10] On average approx. 80 percent of the labor force in Rail was unionized over the period under study.

workers in water transport are substantially smaller than rail, 6.6 percent and 12.7 percent respectively.

The union premium is largest in the less skilled occupations. Union members employed as operatives earn 36.6 percent more than their nonunion counterparts. Precision, production, and craft union employees earn a 27.0 percent premium and service workers earn a 25.2 percent premium. The union wage premium for technical and sales workers is 12.1 percent and there is no statistically significant union premium for managers and professionals.

The black-white wage gap also varies substantially by occupation. There is no significant wage differential between blacks and whites in managerial or service occupations. Black operatives earn 6.2 percent less than whites. The black-white wage gap for technical and sales workers and precision, production, and craft workers is approximately 10 percent.

Finally, the coefficients on education are positive and significant across all estimations, indicating substantial returns to education even in low-skill occupations. The returns to experience (approximately 2.5 to 3 percent) are robust across industries and occupations.

7. Summary and Conclusion

It is clear from the evidence presented in this paper that U.S. labor markets in freight transportation remain in a constant state of upheaval – even long after the main period of regulatory change. There is no doubt that direct and indirect effects of deregulation provided us with labor markets whose (institutional) structure is

permanently changed. This paper adds to the literature by documenting these changes and providing stylized facts about wages and employment in those "new" labor markets.

A common finding is that across sectors average hourly wages decreased through the mid-1990s and rebounded thereafter. While trucking remained the lowest paid sector it was able to gain in relative terms and was the only sector that showed a net gain in real hourly wages between 1984 and 1999. Managers and professionals in trucking gained the most, virtually eliminating the earning gap between sectors within this occupational category. This can be interpreted as a clear sign of increased competition following regulatory change.

Operatives and handlers in trucking (which includes truck drivers) continue to earn significantly less than their counterparts in rail and water transport. The largest union premium accrues to workers in trucking. This suggests, not surprisingly, that a substantial part of the wage premium in water and rail is not due to union representation, but due to sector- and occupation-specific skills. Less skilled workers within occupations also receive larger union premiums than more skilled workers in the same transport mode, again suggesting that unobserved skill differentials are a driving force behind the inter-occupational wage differentials.

Even though the upheaval in the trucking labor markets due to deregulation was unparalleled in the other sectors, it is somewhat surprising that it took until 1996 for trucking wages to end their decline. One possible explanation is that low skill requirements resulted in such a large elasticity of supply of truck drivers that it took an extraordinary performance of the macroeconomy (increasing labor demand) to substantially increase wages. Given the current high demand for truck drivers, wages in

trucking should continue to increase, absent any substantial increase in labor supply, such as the much-debated move to allow Mexican truck drivers to operate throughout the U.S. Further research on this topic is necessary and has the potential to yield important clues to guide future policy in the trucking sector.

Holding all other factors constant wages in water transport appear to be relatively stable – an expected outcome given the high demand for ocean transport services (due to unprecedented levels of international trade) as well as the considerable strength of the ILWU and ILA who have considerable hold-up power that improves their negotiating position. Finally, rail wages appear to be declining. This is in contrast to rail deregulation studies which find relatively little wage declines. The consolidation of rail lines throughout the 1980s and 1990s as the industry restructured after deregulation clearly decreased both employment and wages.

References

Belzer, M. H. (1995): Collective Bargaining After Deregulation: Do the Teamsters Still Count?, Industrial and Labor Relations Review, 48(4), 636-655.

Hirsch, B. and D. MacPherson (1998): Earnings and Employment in Trucking: Deregulating a Naturally Competitive Industry, In J. Peoples, ed. Regulatory Reform and Labor Markets, Norwell, MA: Kluwer Academic Publishers.

Hirsch, B. (1988): Trucking Regulation, Unionization and Labor Earnings: 1973-1985, Journal of Human Resources (3), 23, 296-319.

Lewis, I. and D.B. Vellenga (2000): The Ocean Shipping Reform Act of 1998, Transportation Journal, 27-34.

Monaco, K. and T.J. Brooks (2001): Deregulation and Trucking Wages: A Time Series Phenomenon, A Time Series Approach, In B. Starr McMullen, ed. Research In Transportation Economics, volume 6, Amsterdam, JAI Press.

Moore, T. (1986): Rail and Trucking Deregulation, In L. Weiss and M. Klass, Regulatory Reform: What Actually Happened. Boston, MA: Little, Brown and Company.

Rose, N. L. (1987): "Labor Rent Sharing and Regulation: Evidence from the Trucking Industry," *Journal of Political Economy* 95, 1146-1178.

Stopford, M. (1997): Maritime Economics, 2ed, NewYork: Routledge.

Talley, W. (2001): Wage Differentials of Transportation Industries:Deregulation Versus Regulation, Economic Inquiry, 39(3), 406-429.

Talley, W. (2002): Dockworker Earnings, Containerisation, and Shipping Deregulation, Journal of Transportation Economics and Policy, 36(3), 447-467.

U.S. Department of Transportation, Bureau of Transportation Statistics (2002): National Transportation Statistics.

Figure 1: Timeline of Regulation and Deregulation

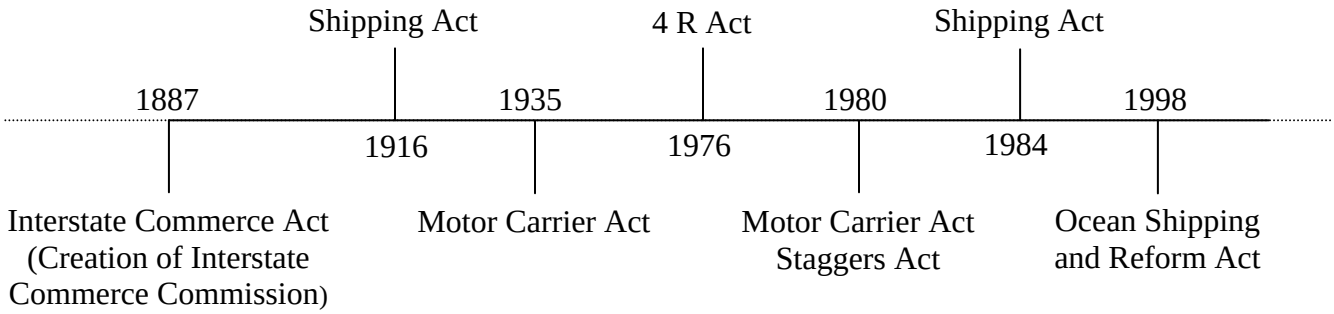

Figure 2: Real Hourly Wages by Sector

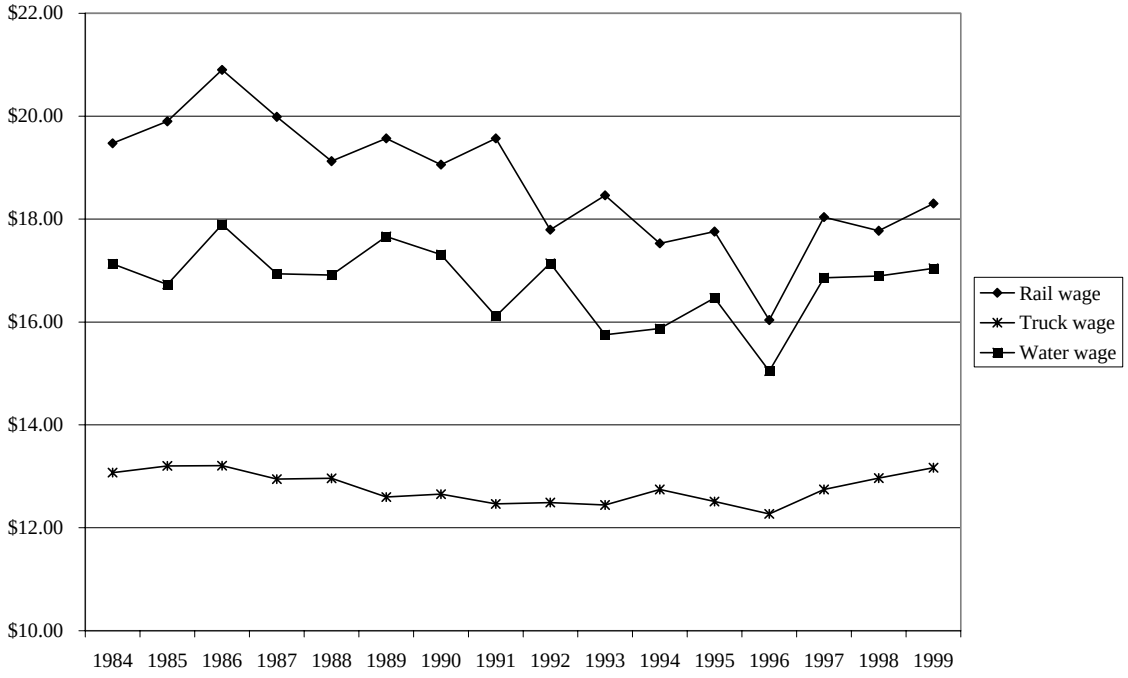

Figure 3: Real Weekly Wages by Sector

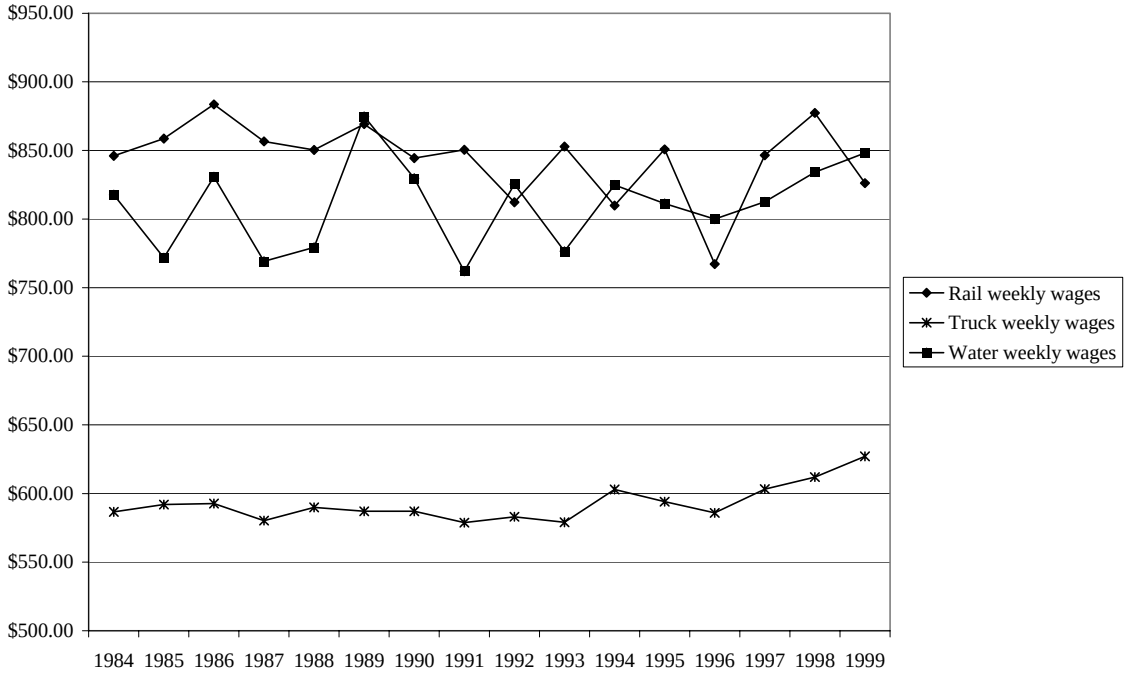

Figure 4: Average Hours by Sector

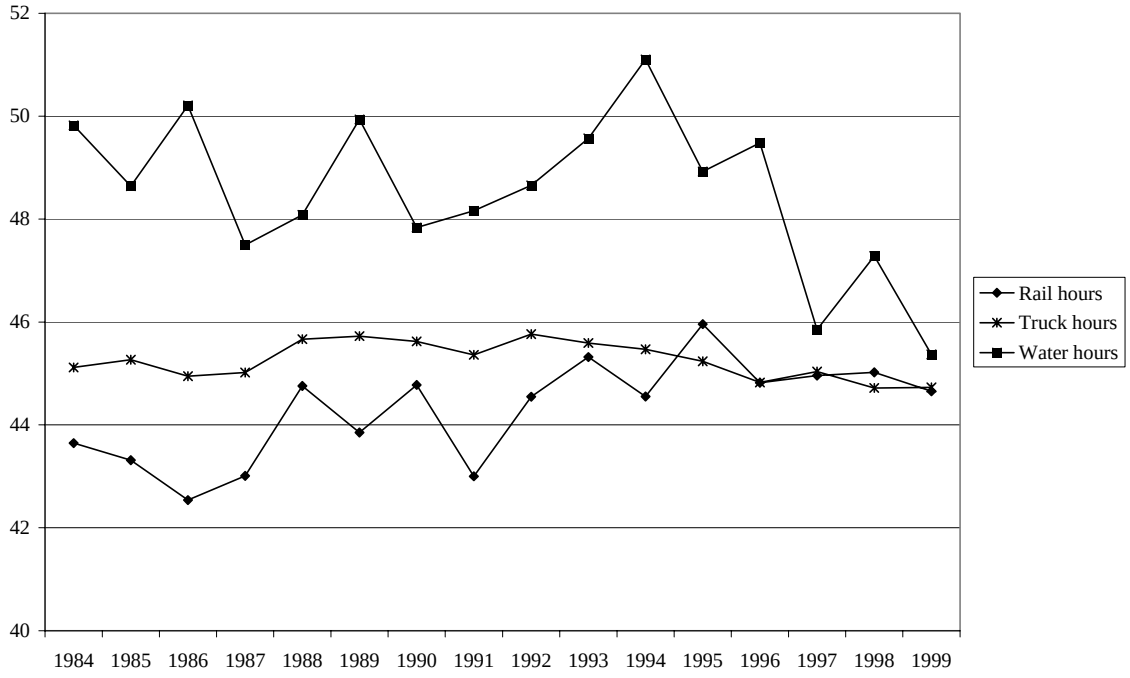

Figure 5: Real Hourly Wages for Managers and Professionals by Sector

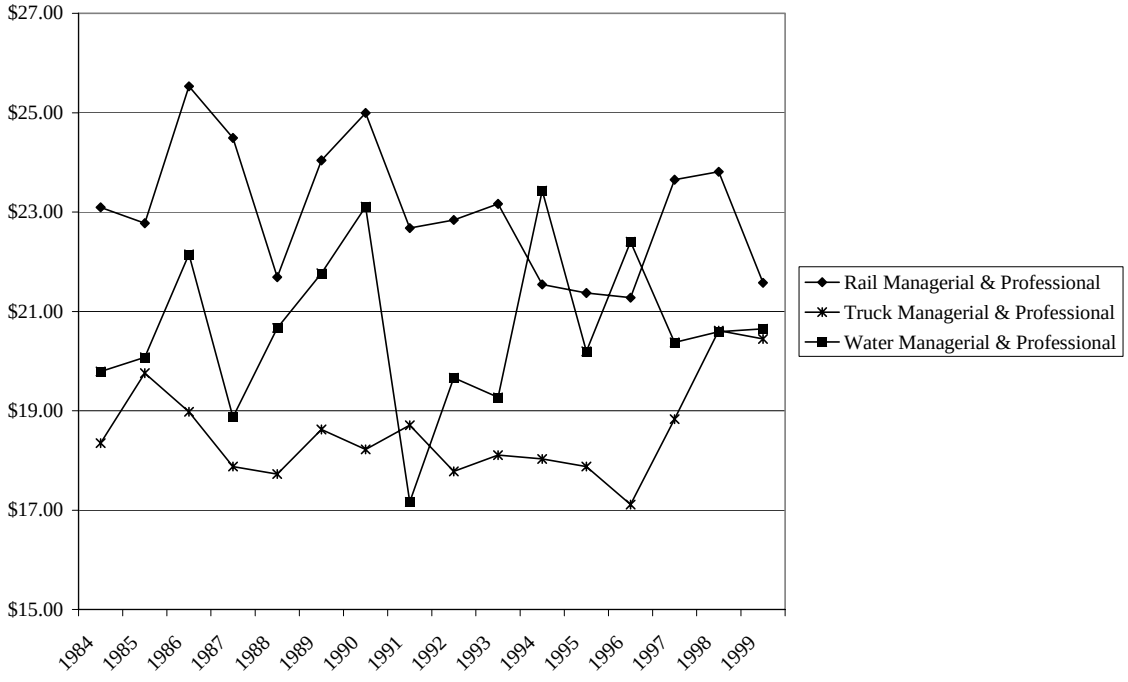

Figure 6: Real Hourly Wages for Operatives by Sector

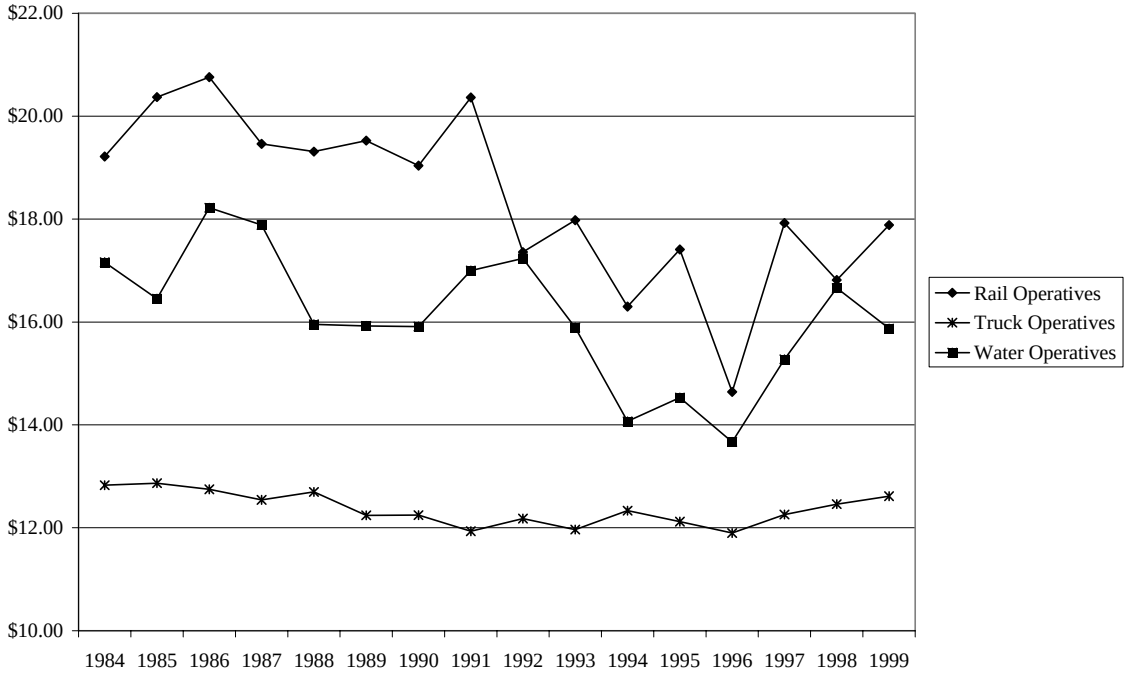

Table 1: Descriptive Statistics

	ALL		Rail		Trucking		Water	
Variable	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.
Real Hourly Wage	$13.66	6.55	$19.00	6.72	$12.79	6.01	$16.81	8.59
Water	0.04	0.20						
Trucking	0.85	0.36						
Rail	0.11	0.31						
Managerial/Professional	0.06	0.24	0.12	0.33	0.04	0.20	0.23	0.42
Technical	0.10	0.30	0.13	0.34	0.09	0.28	0.20	0.40
Service	0.01	0.08	0.02	0.14	0.00	0.05	0.05	0.22
Precision/Production/Craft	0.06	0.23	0.21	0.41	0.04	0.18	0.08	0.27
Operatives/Handlers	0.78	0.41	0.51	0.50	0.83	0.37	0.44	0.50
High School	0.50	0.50	0.51	0.50	0.51	0.50	0.41	0.49
Some College	0.22	0.41	0.27	0.45	0.21	0.41	0.25	0.43
Bachelor’s Degree/more	0.07	0.25	0.10	0.30	0.06	0.23	0.18	0.39
Experience	21.38	12.10	24.73	10.81	20.89	12.14	22.38	12.85
Union	0.29	0.46	0.81	0.39	0.23	0.42	0.33	0.47
Female	0.09	0.29	0.08	0.27	0.09	0.29	0.19	0.39
Black	0.10	0.30	0.09	0.29	0.10	0.30	0.08	0.27
Other race	0.02	0.15	0.01	0.11	0.02	0.15	0.07	0.25
Hispanic	0.07	0.25	0.05	0.22	0.07	0.25	0.07	0.26
# of observations	43431		4828		36705		1898	

Table 2: Estimation Results for the Entire Sample and by Industry Groups

	All Transport Workers	Rail	Truck	Water
Rail	0.145***	---	---	---
	(0.007)			
Water	0.107***	---	---	---
	(0.009)			
Managerial &Professional	0.353***	0.200***	0.390***	0.240***
	(0.009)	(0.018)	(0.010)	(0.030)
Technical	0.138***	-0.011	0.169***	0.060*
	(0.007)	(0.017)	(0.008)	(0.033)
Service	-0.137***	-0.144***	-0.056	-0.341***
	(0.023)	(0.036)	(0.039)	(0.047)
Precision, Prod., Craft	0.100***	0.002	0.156***	0.082**
	(0.008)	(0.012)	(0.011)	(0.038)
High School	0.086***	0.105***	0.083***	0.080**
	(0.005)	(0.017)	(0.005)	(0.032)
Some College	0.138***	0.158***	0.130***	0.159***
	(0.006)	(0.019)	(0.006)	(0.036)
Bachelor's Degree	0.275***	0.283***	0.255***	0.323***
	(0.009)	(0.024)	(0.010)	(0.039)
Experience	0.025***	0.021***	0.025***	0.026***
	(0.001)	(0.002)	(0.001)	(0.003)
Experience-squared	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Union	0.281***	0.064***	0.304***	0.212***
	(0.005)	(0.014)	(0.005)	(0.025)
Female	-0.199***	-0.115***	-0.219***	-0.122***
	(0.007)	(0.021)	(0.008)	(0.032)
Black	-0.072***	-0.115***	-0.071***	0.009
	(0.006)	(0.018)	(0.007)	(0.039)
Other Race	-0.049***	-0.099**	-0.064***	0.055
	(0.012)	(0.045)	(0.013)	(0.043)
Hispanic	-0.107***	-0.068***	-0.112***	-0.049
	(0.008)	(0.023)	(0.008)	(0.039)
N	43431	4828	36705	1898
R^2	0.3363	0.1745	0.2858	0.3386

Controls for year, region, marital status, and metropolitan area are included in the estimation, but not shown.

* - significant at 10 percent ** - significant at 5 percent *** - significant at 1 percent

Table 3: Estimation Results by Occupation

	Managerial and Professional	Technical	Service	Precision, production, craft	Operatives
Rail	0.215***	0.197***	0.188***	0.051***	0.175***
	(0.022)	(0.020)	(0.067)	(0.017)	(0.009)
Water	0.063***	0.119***	-0.126*	0.067**	0.141***
	(0.022)	(0.020)	(0.066)	(0.026)	(0.013)
High School	0.111***	0.139***	-0.140*	0.116***	0.083***
	(0.041)	(0.025)	(0.072)	(0.018)	(0.005)
Some College	0.216***	0.217***	0.053	0.172***	0.124***
	(0.042)	(0.026)	(0.083)	(0.021)	(0.007)
Bachelor's Degree	0.415***	0.366***	0.147	0.306***	0.186***
	(0.042)	(0.028)	(0.114)	(0.034)	(0.012)
Experience	0.028***	0.022***	0.039***	0.024***	0.025***
	(0.003)	(0.002)	(0.008)	(0.002)	(0.001)
Experience-squared	0.000***	0.000***	-0.001***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Union	-0.032	0.114***	0.224***	0.239***	0.312***
	(0.025)	(0.018)	(0.057)	(0.016)	(0.005)
Female	-0.224***	-0.229***	-0.148**	-0.122**	-0.193***
	(0.021)	(0.013)	(0.073)	(0.056)	(0.011)
Black	-0.024	-0.100***	-0.077	-0.108***	-0.064***
	(0.040)	(0.021)	(0.067)	(0.026)	(0.007)
Other Race	0.057	-0.047	0.234**	-0.012	-0.062***
	(0.049)	(0.035)	(0.117)	(0.046)	(0.014)
Hispanic	-0.081*	-0.079***	-0.194*	-0.041	-0.110***
	(0.041)	(0.026)	(0.099)	(0.028)	(0.008)
n	2554	4190	286	2485	33916
R^2	0.2562	0.3119	0.428	0.3363	0.3058

Controls for year, region, marital status, and metropolitan area are included in the estimation, but not shown.

* - significant at 10 percent ** - significant at 5 percent *** - significant at 1 percent