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RAILROAD COMPETITIVENESS

Federal Laws and Policies Affect Railroad Competitiveness



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The Honorable Ernest F. Hollings
Chairman, Committee on Commerce,
Science, and Transportation
United States Senate

The Honorable John C. Danforth
Ranking Minority Member,
Committee on Commerce,
Science, and Transportation
United States Senate

In response to your request and subsequent agreements with your offices, this report presents our examination of the principal factors affecting the railroads' ability to compete with other transportation modes for intercity freight. We examined the federal laws that affect railroad labor costs and the federal user fee policies that affect the costs of trucks and barges. However, we did not assess how changing these laws and policies could affect the economic welfare of railroad workers or the overall financial health of other freight transportation modes. Therefore, this report does not make any recommendations.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to the appropriate congressional committees, the Chairman of the Interstate Commerce Commission, and the Secretary of Transportation. We will also make copies available to others upon request. If you have any questions about this report, please contact me on (202) 275-1000. Major contributors to this report are listed in appendix III.

Kenneth M. Mead
Director, Transportation Issues

Executive Summary

Purpose

Regulatory reform in the late 1970s and in 1980 permitted railroads to better compete with trucks and barges for freight. As a result, the rail industry stemmed the decline in its share of the intercity freight market. However, significant competitive challenges still face the industry.

Concerned about the economic outlook for the nation's railroads, the Chairman and Ranking Minority Member, Senate Committee on Commerce, Science, and Transportation, asked GAO to examine the principal factors affecting the railroads' ability to compete with other transportation modes for intercity freight. This report focuses on the federal laws that affect railroad labor costs and on the federal user fee policies that affect the costs of trucks and barges. However, it does not focus on factors internal to the railroads, such as railroad management.

Background

The railroad share of the U.S. freight transportation market began to decline in the 1920s. In 1925, the railroads hauled almost 80 percent of the ton-miles of intercity freight transported. By 1990, that figure had dropped to about 38 percent. As the railroad's market share decreased, the industry reduced its labor force from about 1.7 million in 1929 to fewer than 300,000 employees in 1990, and took steps to improve productivity. The railroad industry, however, still faces significant costs from employee benefit and labor relations laws that were passed during an era in which the railroads were the largest nonfarm employers.

Results in Brief

A variety of factors influence railroad competitiveness, and hence, rates. These factors include broad economic developments that influence the railroads' competitive environment, federal laws governing railroad labor, and public policies that help finance highways and waterways—the rights-of-way of the railroads' principal competitors. The Railroad Retirement Act of 1937, the Federal Employers' Liability Act (FELA), the Railway Labor Act of 1926, and subsequent amendments to these acts are the principal laws governing railroad employee benefits and labor relations. These laws result in overall labor costs that are higher than those of other industries. Railroad officials told GAO that they would be in a better position to competitively price their services and compete for intercity freight if they could reduce their labor costs.

Publicly financed interstate highways and waterways tend to give the trucking and barge industries a competitive price advantage over railroads because the user fees that rail-competitive trucks and barge operators pay generally do not cover the costs they impose on the highways

and waterways. If all modes operated under the same labor laws and were equally responsible for their rights-of-way, relative costs would change and rail rates could become increasingly attractive compared with truck or barge rates.

GAO's Analysis

Federal Laws Governing Rail Labor Benefits and Collective Bargaining Influence Railroad Costs

The Railroad Retirement Act of 1937 replaced private railroad pension plans, some of which were bankrupt, and established a federally administered national plan for all railroad employees. The plan uses a pay-as-you-go funding mechanism similar to Social Security. Under pay-as-you-go financing, the current year's retirement taxes are set at a level designed to meet current benefits only, rather than at a level to fund benefits in advance of retirement. Excluding Social Security, railroad retirement costs now equal about 15 percent of payroll compared with 5 percent for most other private industries, also excluding Social Security. When the Congress created this system, costs were low. In 1945, there was 1 beneficiary for every 10 active railroad workers. By 1990, there were about three beneficiaries for every worker. A railroad representative to the Commission on Railroad Retirement Reform estimated that the railroad industry could save about \$1 billion annually if rail pension costs better reflected the national average. A railroad industry economic model indicates that if these savings were reflected in lower rail rates, as much as 11.5 billion additional ton-miles of freight could be attracted from trucks.¹ However, it is not clear how retirement costs could be reduced without adversely affecting worker benefits or U.S. taxpayers in general. Over the years, the railroad retirement system has accrued an unfunded liability of \$33.5 billion.

FELA established a system for railroad employees and/or their survivors to recover damages for on-the-job injuries and fatalities. FELA settlements can be expensive. In 1989, the railroad industry paid about \$800 million in FELA settlements. In constant dollars, this was about 47 percent higher than in 1980 even though railroad employment, on-the-job injuries, and claims all declined during the 1980s. Under FELA's injury compensation system, rail industry costs for compensating injured or

¹This and subsequent estimates of traffic shifts assume that the savings are all passed on to shippers of commodities that could be carried by truck. However, to the extent that these overhead costs are not currently covered by rail rates, they may be assigned to captive traffic, such as coal. Thus, reduced overhead may not affect either rail rates or traffic patterns.

killed workers is higher than comparable costs for most other private industries under state workers' compensation plans. In part, this is because FELA awards include compensation for pain and suffering. Recent legislative proposals to place railroad employees under workers' compensation could lower railroad liability costs by limiting liability to lost wages. Railroad labor, however, opposes such proposals because of concerns about the adequacy of state workers' compensation benefits.

The Railway Labor Act of 1926, as amended, mandates a lengthy contract negotiation process to reduce labor strikes. It also makes it difficult for railroad management to reduce costs or increase efficiency by unilaterally implementing work rule changes. Under the Railway Labor Act, work rules do not automatically expire at the end of a contract period but continue until renegotiated. In addition, unlike most other private industry employees, who are covered by the National Labor Relations Act (NLRA), railroad workers are not prohibited from picketing parties not related to the original dispute, should a strike occur. By picketing secondary parties, including other railroads, organized labor can exert economic pressure on the railroad industry. In contrast, NLRA allows labor contracts to automatically expire and prohibits secondary picketing.² If the railroads were under NLRA, the industry likely would have more flexibility to make work rule and other changes. However, adopting NLRA could also make it easier for rail labor to strike, which would increase labor's bargaining power and could also seriously affect the overall economy.

Federal Highway and Waterway Policies Affect Railroad Competitiveness

Trucks and barges operate over publicly financed systems, while railroads maintain their own rights-of-way with minimal federal assistance. According to the Department of Transportation (DOT), heavy trucks pay only 66 to 84 percent of the costs associated with their use of the interstate highways. While the trucking industry disputes DOT's findings, the Department's conclusions are comparable to those of numerous state studies. As a matter of federal policy, barges pay only part of the costs of developing and maintaining inland waterways. The U.S. Army Corps of Engineers pays the full cost of maintaining the waterways, while the federal government and the user-fee-financed Inland Waterways Trust Fund equally share the cost of new construction and waterway rehabilitation. Right-of-way financing methods such as these give trucks and barges a cost advantage over railroads.

²One significant difference, however, is that rail-competitive truck and barge companies are largely non-union, while railroads are highly unionized.

GAO's analysis (which is based on the same economic model used to estimate retirement cost impacts) suggests that gross railroad revenues could increase by between \$438 million and \$1.4 billion if rail-competitive truck companies paid fully compensatory highway user fees and such costs were reflected in higher truck rates. Barge industry analysts agreed that if barges bore all costs associated with inland waterways, the railroads could stand to gain a substantial amount of traffic because of more attractive rail rates. Although user fee increases could benefit the railroads, they could also significantly raise shipping costs for time-sensitive products and companies that are not located close to railroad lines.

Recommendations

This report makes no recommendations.

Agency Comments

GAO met with DOT and the Interstate Commerce Commission (ICC) to discuss the contents of this report. Both DOT and ICC generally agreed with GAO's findings and conclusions. However, as requested, GAO did not obtain written agency comments on a draft of this report.

Contents

Executive Summary		2
Chapter 1		8
Introduction	Changing Production Techniques and Business Practices Affect the Demand for Rail Transport	8
	Competition Between Transport Modes Increased During the 1980s	10
	Objectives, Scope, and Methodology	12
Chapter 2		15
Employee Benefit and Labor Relations Laws Influence Railroad Competitiveness	Retirement Costs Are Lower in Other Industries	15
	FELA Settlements Are Higher Than Workers' Compensation Costs	18
	Railway Labor Act of 1926 Continues to Govern Labor- Management Relations	20
	Impacts of Rate Reductions on Rail Traffic and Revenues	25
	Recent Proposals on Changing Federal Laws Affecting Railroad Labor-Management Relations	26
	Conclusions	27
Chapter 3		29
Federal Highway and Waterway Policies Affect Railroad Competitiveness	Public Construction and Maintenance of Truck and Barge Infrastructures Can Lower Rail Competitors' Operating Costs	29
	Conclusions	34
Appendixes	Appendix I: List of Organizations Contacted by GAO	36
	Appendix II: Overview of Association of American Railroads' Market-Share Model	37
	Appendix III: Major Contributors to This Report	38
Table	Table 3.1: State Cost Allocation Studies in Percent of Cost Responsibility	32
Figures	Figure 1.1: Market Share of Selected Transportation Modes	11

Figure 2.1: Railroad Work Force—Ratio of Workers to Beneficiaries	17
Figure 3.1: Comparison of Cost Responsibility and User Charges Paid	31

Abbreviations

AAR	Association of American Railroads
ATA	American Trucking Associations
DOT	Department of Transportation
FELA	Federal Employers' Liability Act
GAO	General Accounting Office
ICC	Interstate Commerce Commission
NLRA	National Labor Relations Act
NMB	National Mediation Board
NRAB	National Railroad Adjustment Board
RLA	Railway Labor Act

Introduction

Reduced federal regulation has intensified competition within the freight transportation industry. As we reported in May 1990, the Staggers Rail Act of 1980 substantially reduced the federal regulation of rail freight rates and gave the railroads greater freedom to competitively price their services.¹ However, as the railroads became more competitive, so did their competitors in the trucking and barge industries. In 1980, the Congress gave established trucking firms greater flexibility to expand their operations into new markets and reduced the barriers preventing new trucking firms from entering the industry. In 1982, legislation was enacted that allowed truckers to use larger vehicles. Overinvestment in barges and decreased grain shipments caused barge companies to lower their rates, making barge transport even more financially attractive for bulk commodities, such as coal and grain.

This report discusses the broad economic factors and developments which largely influence the railroads' competitive environment, the federal laws that affect railroads' labor costs, and the impact of federal policies affecting truck and barge costs on railroad traffic and revenue. The report does not address the value of continuing the existing laws nor the impact that changing them might have on the economic welfare of railroad labor or the overall financial health of other freight transportation modes.

Changing Production Techniques and Business Practices Affect the Demand for Rail Transport

The shift to a more service-oriented economy, increased consumption of imported goods, and other long-term economic trends have affected the demand for railroad service. Modern inventory management systems that emphasize little or minimal on-hand supplies and smaller, lightweight finished goods are increasingly common. These developments influence the volume and type of goods needing transport and, in most instances, made trucking more attractive because trucks can provide faster door-to-door delivery than railroads.

Global Economic Events Affect Demand for Rail Transport

Historically, railroads have been most efficient in transporting bulk commodities and the finished products of heavy industry. But as the United States has shifted from a goods-producing to a service-oriented economy, a number of heavy industries have declined. From 1969 to 1989, 9 of the 11 largest industrial sources of railroad revenue grew at slower rates than U.S. industrial production overall. For this and other

¹Railroad Regulation: Economic and Financial Impacts of the Staggers Rail Act of 1980 (GAO/RCED-90-80, May 16, 1990).

reasons, total railroad tonnage (tons of goods transported) has changed little in the post-World War II period. Since 1947, total tonnage originating on U.S. railroads has fluctuated between 1.24 billion and 1.54 billion tons annually. Total railroad ton-miles² reached record levels in 1989 because bulk commodities, such as coal, were being shipped longer distances.

Growth in imports—relative to total domestic output—limits the demand for all types of domestic transport, including rail transportation. Since 1947, imports have increased from 5.4 to 29.6 percent of total personal goods expenditures. This affects the demand for rail transportation because domestically produced goods generally require the transportation of raw materials to processing, numerous movements in the intermediate stages of production, and the transportation of finished products to points of sale. In contrast, imported goods generally require transportation only between ports and final points of sale. As a result, the nation's growing reliance on imported goods has resulted in fewer rail movements.

The demand for rail transportation is also sensitive to global economic events. For example, coal shipments fell during the recession of the early 1980s. However, following the recession, coal shipments increased because of increased exports to Taiwan, South Korea, and Europe. The latter was caused by several factors, including a relatively weak dollar and lower foreign coal production. Similarly, the size of worldwide grain harvests, and the relative strength of the dollar, combine to influence world demand for American grain, much of which is shipped to port by the railroads.

Changes in Business Practices Have Also Reduced Rail Demand

Just-in-time inventory control systems, which emphasize minimal on-hand supplies and delivery of components just before they are needed in the manufacturing process, tend to favor truck over rail transport. Just-in-time systems minimize inventory costs by keeping inventory levels low and replacing stocks right when they are needed. This system generally calls for relatively smaller and more frequent shipments and requires the transportation flexibility that is more characteristic of trucks than railroads. According to a survey published in 1988 of the 500 largest U.S. manufacturing firms, 58 percent of the respondents had

²A ton-mile is a standard transportation output measure. It is 1 ton of freight moved 1 mile. Thus, 1,000 ton-miles could be 1 ton moved 1,000 miles, 100 tons moved 10 miles, or any other possible combination.

implemented or were considering just-in-time inventory management systems.³ As this method hinges on frequent deliveries, 75 percent of the firms using just-in-time inventory systems had switched transportation modes—mostly from railroads to trucks. About 50 percent of the respondents previously using railroads discontinued their inbound rail shipments entirely.⁴

The downsizing of products has reduced the volume of raw materials moving to processing plants, including those moving by rail. Between 1978 and 1985, U.S. car manufacturers reduced the weight of the average passenger car from 3,627 to 2,866 pounds. This was accomplished by building smaller vehicles and by substituting light-weight materials, such as plastic and aluminum, for heavier materials. Similar substitutions have occurred in construction and other industries. The railroad industry is particularly affected by this trend for two reasons. First, downsizing results in less bulk movement of raw material, in which railroads specialize. Second, as goods become smaller and lighter, their average value per ton increases. As a result, shippers are more sensitive to the amount of time that goods are in transit and are more likely to ship by truck.⁵

Competition Between Transport Modes Increased During the 1980s

Despite trends that reduced the demand for rail services or that favored other transport modes, the railroads' financial condition improved during the 1980s. The prolonged economic recovery of the 1980s combined with regulatory reforms helped the railroads rebound. Regulatory reforms, especially those resulting from the Staggers Rail Act of 1980, gave the railroads greater freedom to price their services and to compete more effectively with other transport modes. In particular, railroads used greater rate-making freedom and the ability to enter into service contracts to retain business and exploit new market opportunities. As a result, railroads stemmed the decline in their share of the intercity freight transportation market.⁶

³Robert C. Lieb and Robert A. Miller, "JIT and Corporate Transportation Requirements," *Transportation Journal*, spring 1988.

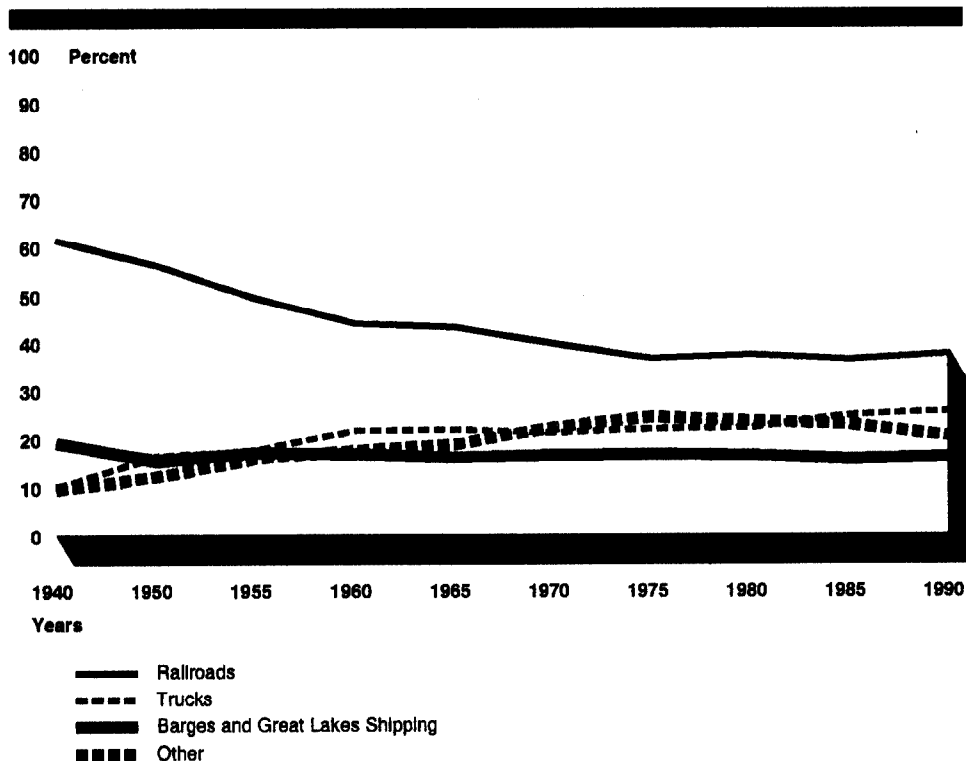
⁴Railroads are now providing some just-in-time services, especially to automobile manufacturers.

⁵National Transportation Strategic Planning Study, U.S. Department of Transportation (Washington: Mar. 1990).

⁶For more information on the effect of the Staggers Rail Act on the railroad industry, see *Railroad Regulation: Economic and Financial Impacts of the Staggers Rail Act of 1980* (GAO/RCED-90-80, May 16, 1990).

As figure 1.1 shows, railroads' market share fell between 1940 and the mid-1970s but has remained relatively constant since.

Figure 1.1: Market Share of Selected Transportation Modes



Source: Eno Foundation for Transportation.

The railroads' chief competitor—the trucking industry—also was largely deregulated in the 1980s and became more competitive with railroads. The Motor Carrier Act of 1980 and the Surface Transportation Assistance Act of 1982 gave trucking firms greater operating flexibility. The Motor Carrier Act of 1980 eased entry restrictions on new firms and allowed established firms to expand into other markets, encouraging greater price competition between trucking firms. The Surface Transportation Assistance Act of 1982 improved operating efficiency by raising the trailer size and weight limits that trucks could carry over Interstate highways.

Barge companies also became more competitive in the early 1980s. Because of their low unit costs, barges are significant competitors for

bulk traffic. According to Eno Foundation statistics, only about 8 percent of the freight shipments on rivers and waterways are subject to federal economic regulations, compared with 32 and 33 percent for rail and truck shipments, respectively.⁷ Moreover, an over-investment in barges combined with a decrease in grain shipments resulting from the 1980 embargo on trade with the Soviet Union forced many barge companies to lower rates. The embargo was lifted in 1981, and barge overcapacity eased toward the end of the decade. However, barges and railroads still compete vigorously for bulk commodities such as coal and grain.

Objectives, Scope, and Methodology

Concerned about the economic outlook for the railroad industry, the Senate Committee on Commerce, Science, and Transportation, asked us to identify the factors affecting the railroad industry's ability to compete with other transportation modes for intercity freight. We focused our review on how these factors may have affected railroad costs and influenced the competitive position of the nation's railroads. However, we did not focus on factors internal to the railroads, such as railroad management. We also did not assess how changes in the federal laws could affect the overall financial health of other freight transportation modes or the economic welfare of railroad workers. It was not our intent to address these issues, and the report takes no position on them. We paid particular attention to the railroad industry's ability to compete with trucks because truck traffic is probably more sensitive to changes in relative rates and because models measuring overall traffic sensitivity exist for rail-truck competition, but not for rail-barge competition.

To identify the factors affecting railroad competitiveness, we reviewed books and articles in professional journals and interviewed Interstate Commerce Commission (ICC), U.S. Army Corps of Engineers, and Department of Transportation (DOT) officials, as well as officials representing industry trade organizations. We interviewed officials at eight Class I railroads, those with revenues of at least \$93.5 million in 1989. These railroads hauled about 72 percent of the Class I revenue ton-miles, accounting for about 67 percent of the industry's revenues in 1989. We also interviewed railroad industry analysts and officials representing

⁷Transportation in America: A Statistical Analysis of Transportation in the United States, Eno Foundation for Transportation, Inc. (May 1989). These statistics represent the percentage of each mode's total ton-miles subject to federal regulation.

four major labor organizations representing about 70 percent of the railroad labor force. (The nongovernmental organizations we contacted are identified in app. I.)

We examined how three federal laws regarding railroad labor—the Railroad Retirement Act, the Federal Employers’ Liability Act (FELA), and the Railway Labor Act (RLA)—affect railroad costs and compared those costs with similar costs incurred by trucks, barges, and other private industries. For railroad retirement, we compared railroad contributions to the Railroad Retirement Account and the Supplemental Benefit Account with employer costs for pensions in other private industries. We did not compare the railroads’ costs with similarly unionized industries’ costs because the railroads’ primary competitors are largely not unionized. For FELA, the law governing compensation to railroad workers injured on the job, we reviewed the results of four studies which projected what railroad costs might be under workers’ compensation systems. For labor relations issues, including railroad work rules, we reviewed railroad labor and management estimates presented before the Presidential Emergency Board Number 219 in 1990 on the cost of work rules protected by RLA.

We also examined the competitive implications of using public funds to develop and maintain highways and waterways. We relied on DOT’s National Transportation Strategic Planning Study (1990), Heavy Vehicle Cost Responsibility Study (1988), Alternatives to the Tax on the Use of Heavy Trucks (1984), and Final Report on the Highway Cost Allocation Study (1982) to estimate the benefits the trucking and barge industries receive from paying user fees that do not fully compensate for the burdens their activities place on their infrastructures. We also reviewed the American Association of State and Highway Transportation Officials’ Highway Cost Allocation Study Activity Report (1989), as well as various state studies analyzing their highway costs and anticipated revenues for corroborating information. We did not independently validate these studies; however, transportation industry analysts generally consider these studies to be authoritative.

To estimate the possible impact on rail traffic and revenue of reduced rail labor costs and increased truck overhead costs, we used a railroad industry market share economic model that projects the responsiveness of rail traffic to changes in relative rates. The model has several methodological limitations. Perhaps the most significant is that it is based on 1986 cost and market share data. However, we analyzed the model’s underlying assumptions and found that we could use it to estimate

potential traffic and revenue shifts if changes in rail or truck operating costs are translated into rate changes. We also asked trucking industry representatives about potential biases or weaknesses in the model. They told us that the model is the only one available in the field and that they, themselves, have used its predecessor to gauge rail-to-truck traffic shifts. (App. II describes the market-share economic model and how we applied it.)

Because we assume that all cost savings and increases will be reflected in reduced rail rates or higher truck rates, the model's results are optimistic. The railroads could choose to keep some or all of the savings as retained earnings and trucking firms could choose to absorb some or all cost increases. As a result, the extent to which shippers might benefit from reduced rail labor costs or be charged higher trucking freight rates will largely depend on the immediate competitive environment.

We conducted our review between January 1990 and July 1991, in accordance with generally accepted government auditing standards except that we did not independently validate the results of studies cited in the report.

Employee Benefit and Labor Relations Laws Influence Railroad Competitiveness

The railroads are subject to a set of federal employee benefit and labor relations laws that generally predate comparable laws that govern almost all other private industries. When the Congress passed the Railroad Retirement Act, FELA, and RLA, the railroad industry was the nation's dominant transportation mode and the largest nonfarm employer, with over 1 million employees. Although the nation's economy and the competitive position of the railroads have changed significantly since the Congress enacted these laws, they still have the unequivocal support of organized labor. Trucking and barge companies—which operate under different employee benefit and labor relations laws—have significantly lower retirement and on-the-job injury costs, as well as more flexibility in how they use their work force. When freight rates and operations were highly regulated, and railroads monopolized many freight markets, the railroads could pass their labor costs on to shippers with little loss of traffic. In today's competitive environment, however, higher rates can cause shippers to switch freight transportation modes.

Retirement Costs Are Lower in Other Industries

The Railroad Retirement Act of 1937 replaced the railroads' individual pension plans—many of which were bankrupt—with a federally administered, uniform national plan. The national plan was initially designed to encourage senior employees to retire, making jobs available for others, and to create a safety-net for those retired employees whose pension plans were bankrupt. Generating jobs was vital because the nation was suffering through the Great Depression. At President Roosevelt's request, a joint railroad management and labor committee drafted a memorandum of agreement which led to the Railroad Retirement Act of 1937 and the Carriers Taxing Act of 1937. The retirement act essentially authorized the federal government to pay benefits to railroad retirees, while the taxing act empowered the federal government to collect taxes from the railroads and their employees to pay for the benefits. The 1937 acts continue to affect railroad costs.

Our analysis showed that other private industries have substantially lower retirement costs than the railroads. In 1989, the railroads paid about 15 percent of their taxable payroll in retirement taxes.¹ According to U.S. Chamber of Commerce statistics issued in 1989, other private firms paid an average of only about 5 percent of their payrolls for

¹We did not compare railroad retirement costs with those of similarly unionized industries because the railroads' principal competitors in the truckload sector of the trucking industry generally are not unionized.

retirement and retirement-related savings. Both of these figures exclude Social Security taxes.² Retirement costs in the truckload sector of the trucking industry³ averaged about 1.5 percent of payroll in 1987, according to ICC's most recent data.

Railroad employers and employees finance the system on a pay-as-you-go basis, which means that retirement taxes cover only the current year's pension costs, which leaves limited reserves for future obligations.⁴ Railroad retirement costs were low when there were more railroad workers relative to the number of retirees. However, as the work force matured, the pool of retirees and other beneficiaries grew, and as railroad employment shrunk, retirement taxes increased.⁵ In 1945, there was 1 beneficiary for every 10 active workers. But in 1990, there were about three beneficiaries for every active worker. As a result, railroad retirement taxes steadily increased and might increase further to finance a growing pool of retirees and beneficiaries, even though current rates include projected reductions in the rail labor force.⁶ According to recent Railroad Retirement Board projections, the ratio of beneficiaries

²In 1989, Social Security taxes were 7.51 percent of taxable earnings.

³Truckload carriers typically transport freight in full trailerloads from a single shipper to a single receiver. Many truckload companies contract with owner-operators to haul freight. As a result, most owner-operators are not considered truckload company employees.

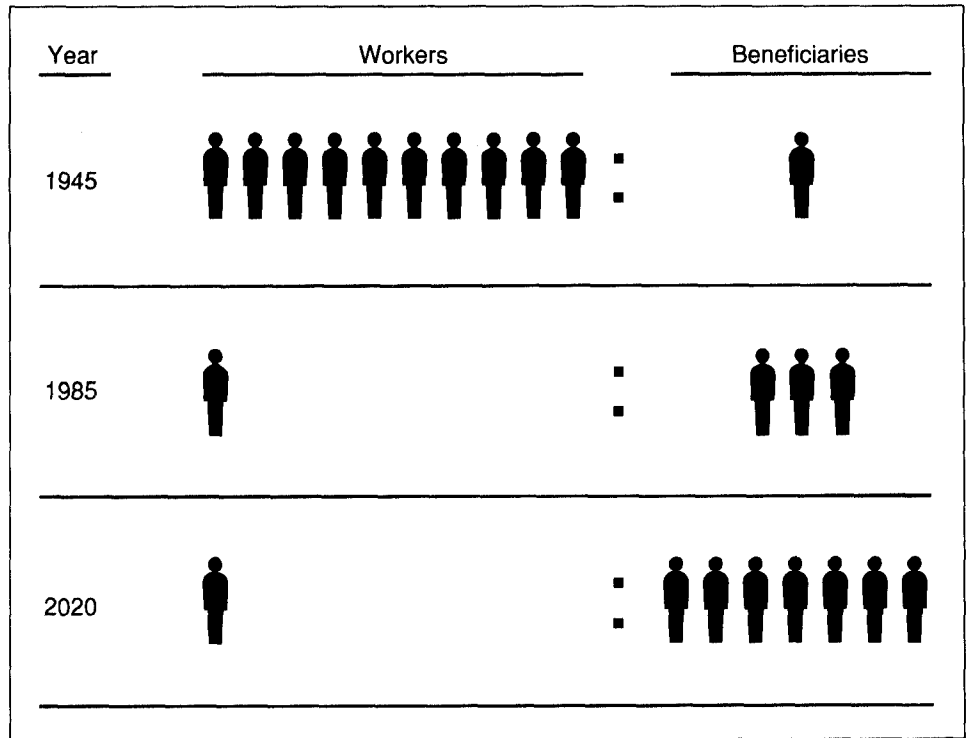
⁴The U.S. Railroad Retirement Board pays retirement benefits out of four separate trust funds: (1) the Social Security Equivalent Benefit Account; (2) the Railroad Retirement Account; (3) the Dual Benefit Payment Account, which pays a benefit to retirees who worked for both rail and nonrail employers and earned enough service credits before Jan. 1975 to be entitled to both railroad and Social Security benefits; and (4) the Supplemental Benefit Account, which pays a benefit to employees who have 25 or more years of service and who began their rail service before Oct. 1981. For more information on the funding sources for the trust funds, see *Railroad Retirement: Future Rail Employment and Trust Fund Solvency* (GAO/HRD-89-30, Apr. 5, 1989).

⁵Because of pay-as-you-go financing, the railroad retirement account has been accruing an unfunded liability since its inception. Railroad Retirement Account benefits, unlike other private pension-type funds, are not negotiated at the bargaining table. The Railroad Retirement Board alerts the Congress when tax increases are needed. The Congress generally holds hearings before setting new rates. Because these tax increases have generally not been sufficient to cover costs, the unfunded liability continues to grow. In August 1991, the Railroad Retirement Board calculated the liability at \$33.5 billion, using the federal funding criteria generally applied to other private industry multi-employer pension plans. As a federally administered plan, railroad retirement is exempt from such criteria.

⁶In 1945, employer-paid railroad retirement taxes were 3.25 percent of an employee's earnings, and rail employees were not taxed. By 1990, employer taxes were 16.1 percent of an employee's earnings, up to a maximum tax of \$6,134, and employee taxes were 4.9 percent of their earnings, up to a maximum tax of \$1,867.

to employees will increase from 3 to 1, today, to 3.5 to 1 by 1992 and rise to 6.9 to 1 by the year 2020.⁷ (See fig. 2.1.).

Figure 2.1: Railroad Work Force—Ratio of Workers to Beneficiaries



Source: GAO analysis of U.S. Railroad Retirement Board data.

In 1987, the Congress established the Commission on Railroad Retirement Reform—a commission representing railroad management, labor, mass transit, academics, and pension program specialists—to study the railroad retirement system and recommend needed revisions or alternatives. The commission concluded that the railroad retirement system would be financially stable for at least the next 25 years. However, the commission recommended that the system be gradually privatized by substituting new private pension plans for employees hired after a certain date.⁸ The management representative to the commission concurred with the report's recommendation and estimated that Class I railroads' operating costs could have been about \$1 billion—or 5 percent—lower

⁷ Although the Railroad Retirement Board projects a steadily decreasing pool of beneficiaries, reflecting the industry's labor force reductions, the ratio of beneficiaries to active workers will increase as the rail industry continues to cut its labor force.

⁸ Commission on Railroad Retirement Reform: Final Report, Railroad Retirement Commission (Washington: Sept. 1990).

in 1988, if the railroads' retirement contributions equaled the national average of 5 percent of payroll.⁹

In a dissenting opinion to the report, the labor member recommended that the system be essentially left intact because of its financial stability. However, because the retirement system's financial condition is closely tied to the size of the work force, the labor member recommended that employers pay fixed, minimum taxes instead of taxes based on a percentage of an employee's earnings and hours worked, as is currently required. The railroads reduced employment by 42 percent between 1980 and 1989 and began contracting out for maintenance work. These two factors led to significant increases in the retirement system's tax rate. Thus, with fixed minimum retirement taxes, railroads cutting their work force more rapidly than other railroads would not be able to reduce their share of payments into the system.

FELA Settlements Are Higher Than Workers' Compensation Costs

FELA established a system for railroad employees and their survivors to recover damages for on-the-job injuries and fatalities. FELA predates the no-fault compensation systems that cover employees in most other industries.¹⁰ Although railroad employment, on-the-job injuries, and claims all declined during the 1980s, FELA settlement costs increased 47 percent in constant dollars from \$535 million in 1981 to \$789 million in 1989. By contrast, as the costs of state workers' compensation plans rose, so did the pool of covered employees, benefit levels, and health care costs. In 1989, railroads paid about \$1.51 in FELA costs per employee hour worked.¹¹ At the same time, 1989 workers' compensation costs in other industries were much lower, averaging \$0.27 per hour worked.¹² Thus, railroads' FELA costs could be nearly six times higher than the workers' compensation costs their competitors pay.

FELA's fault-based claims process makes it more difficult to predict and control injury compensation costs than predicting and controlling such costs in no-fault systems such as state workers' compensation systems.

⁹Without shifting the responsibility for the \$33.5 billion unfunded liability to the federal government, it is unlikely the railroads would save as much as \$1 billion in annual retirement costs.

¹⁰For example, barge employees operating in ocean waters and classified as seamen use FELA's rules to obtain compensation for on-the-job injuries and fatalities under the Jones Act, as amended.

¹¹1989 Report of Claim and Litigation Experience: Personal Injury and Death, Association of American Railroads (Washington: n.d.).

¹²Employer Costs for Employee Compensation—March 1989, U.S. Department of Labor, Bureau of Labor Statistics (Washington: June 1989).

Under FELA, injured employees must prove that their employer was at least partly negligent to recover damages for lost wages, pain, and suffering. Damage amounts are decided on a claim-by-claim basis through either direct railroad/employee negotiation or by court decision. To the extent that workers fail to establish that employers are at fault, a tort-based system could, in theory, lead to lower costs than a no-fault system. In practice, however, FELA has become more expensive because awards can and do include payment for pain and suffering. In contrast, workers' compensation systems pay benefits on the basis of the type of injury, length of disability, and employee earnings. Unlike FELA, the cause of accidents and/or illnesses does not affect benefit amounts, and injured employees do not receive payment for pain and suffering.

Several Studies Contrast FELA With Workers' Compensation Costs

Evidence we reviewed almost uniformly suggests that FELA injury compensation costs are higher than workers' compensation costs. According to a 1989 study performed by an actuarial consulting firm, the railroads' injury compensation costs in 1986, \$678 million, could have been 40 to 70 percent lower under workers' compensation.¹³ On the basis of workers' compensation plans in 28 states for industries with lost workday statistics similar to those of the railroads, the study found that railroad costs in 1986 would have been no more than \$4.60 per \$100 of payroll, compared with the \$7.67 per \$100 that was actually paid. A comparison of workers in other industries with job descriptions similar to those of railroad employees, such as freight handlers, carpenters, and telephone and telegraph signalmen, showed that railroad costs would have been no more than \$5.35 per \$100 of payroll, had railroad workers been covered under state workers' compensation plans.

Other studies reached similar conclusions. In 1986, we reported that the National Railroad Passenger Corporation (Amtrak) could have saved between \$2.7 million and \$17.4 million in payments to injured employees under state workers' compensation rules.¹⁴ These savings equaled between 0.2 and 1.2 percent of Amtrak's 1984 operating expenses. The

¹³Philip O. Presley, Workers' Compensation, Presley and Associates, Inc. (Hudson, New Hampshire: Aug. 25, 1989).

¹⁴Amtrak: Comparison of Employee Injury Claims Under Federal and State Laws (GAO/RCED-86-202, Aug. 11, 1986). For the states in which Amtrak operates, we estimated the cost of employee settlements in the state with the highest (Connecticut) and lowest (Indiana) workers' compensation benefits. Amtrak injury payments would have been \$2.7 million lower if the claim amounts were estimated under the rules established in Connecticut and \$17.4 million lower if the claim amounts were estimated under the rules established in Indiana.

Association of American Railroads (AAR) compared 1987 U.S. and Canadian railroad employee compensation costs and found U.S. costs to be over three times higher than Canadian costs—\$33,120 per claim in the United States compared with only \$10,049 in Canada (U.S. dollars).¹⁵

Only one study did not find FELA to be more expensive. Comparing injured employee liability costs for the railroad and coal-mining industries, the study concluded that as a percentage of operating costs, FELA costs were 0.4 percent lower than the coal-mining industry's workers' compensation costs. As a result, the study projected that railroad costs would likely increase if FELA were replaced by a no-fault system.¹⁶ However, coal mines operate in a different injury compensation environment. The prevalence of black lung disease, an occupational hazard almost exclusively associated with coal mining, makes it very difficult to compare experiences in the two industries.

FELA and Workers' Compensation Can Have Similar Litigation Costs

Our analysis showed that about 17 percent of all 1989 FELA claims involved attorneys and accounted for nearly 70 percent of total payments. On the basis of a range of legal fees used in our 1986 Amtrak report, we estimated that in 1989, plaintiffs' legal fees absorbed between \$133.5 million (17 percent) and \$200.5 million (about 25 percent) of the \$789 million paid in FELA settlements. Workers' compensation systems generally require that the claimant's attorney's fees be approved by the state administrative agency or that a dollar limit be approved. However, at least 15 states permit attorney's fees ranging between 10 percent and 25 percent of the settlement.

Railway Labor Act of 1926 Continues to Govern Labor-Management Relations

The Railway Labor Act of 1926 (RLA) was the nation's first labor relations law to guarantee employees the right to organize and bargain collectively without interference from their employers. Because uninterrupted rail service has long been considered vital to the nation's economic interests, the act, as amended, mandates a lengthy contract negotiation process that is designed to reduce the likelihood of strikes. The negotiation process requires that rail management and labor exert

¹⁵The study, Cost Comparison Between Canadian Railroads Under Canadian Provincial Workers' Compensation Systems and U.S. Railroads Under FELA, AAR Intermodal Policy Division (Washington: n.d.), does not address whether the disparity between U.S. and Canadian railroads is an anomaly or indicative of other industries as well.

¹⁶Michael Oldfather and Michael W. Babcock, The Federal Employers' Liability Act: No Need for Change, prepared for Fred A. Hardin, President of the United Transportation Union (Cleveland: Apr. 1989).

every reasonable effort to voluntarily settle disputes. As a result, it is difficult for railroad management to quickly implement work rule changes. On the other hand, this legislation makes it difficult for labor to strike.

Union craft distinctions, crew size requirements, and mileage-based pay are examples of contract work rules that affect how the railroads deploy their work force. Because these rules cannot be quickly changed, Class I railroads cannot deploy their employees to respond to changing customer demands as quickly as their trucking and barge industry competitors. The National Labor Relations Act of 1935 (NLRA), as amended, which governs most other private industries—including trucking firms and barge operators—offers those industries greater flexibility in deploying their labor force.

RLA and NLRA Have Different Negotiation Processes

RLA encourages management and labor to settle disputes voluntarily, but also established two independent federal agencies, the National Railroad Adjustment Board (NRAB) and the National Mediation Board (NMB), to mediate disputes when voluntary negotiations fail. NRAB is responsible for mediating minor disputes, while NMB is responsible for mediating major ones. Minor disputes are those involving existing contracts and work rules: the board's decisions in these cases are binding on both parties. As a result, labor cannot legally strike over minor disputes. Further, rail contracts and existing work rules remain in force until management and labor renegotiate them.

NMB mediates major disputes—those concerning new contract negotiations. The act allows management to either institute its desired change and await labor's reaction or for labor to strike, if the parties do not accept the mediation board's decision. At this point, either party may request that the President convene an emergency board to propose recommendations for resolving the dispute. Should the parties not agree with the emergency board's recommendations, the act again allows management to implement its change or for labor to strike. If events threaten interstate commerce, the Congress can intervene and impose the emergency board's recommendations on both parties. If a strike occurs, RLA does not prohibit secondary picketing against parties not related to the original dispute. For example, during the April 1991 strike against the freight railroads, the unions could have legally established

picket lines against any other party doing business with the freight railroads, such as passenger and commuter railroads, or mass transit companies. By threatening to picket secondary parties, organized labor can exert economic pressure on the railroad industry.

NLRA governs labor-management relations in other private industries; it requires that parties wishing to change collective bargaining contracts file a 60-day advance notice. If management and labor do not reach agreement on contract changes after 60 days, management may implement its desired change and labor may strike without federal intervention. Management and labor can also ask the National Labor Relations Board to mediate unresolved disputes. NLRA does not provide for an emergency board. Also, if a strike occurs, NLRA prohibits secondary picketing.

Work Rules Affect Safety and Labor Productivity

Under RLA, collective bargaining agreements remain in force even after a contract expires. Therefore, the terms and conditions of work, called "work rules," do not expire at the end of a contract, but must be renegotiated. Among other things, work rules include the size of crews that must be on board to operate trains and the mileage basis of train crew pay. Train crews are paid on a mileage basis, with additional pay for miles traveled beyond the normal workday limits. The "basic day" is the mileage equivalent of 8 hours of work. In 1917, when mileage-based pay became the industry standard, the basic day was set at 100 miles, the distance a train would travel in the then-normal 10-hour work day. A 1985 collective bargaining agreement increased this mile limit in stages to 108 miles. At the request of the railroads and the rail labor unions in May 1990, the President created an emergency board to investigate and report on unresolved contract negotiation issues. Both crew size and mileage-based pay work rules were among the issues presented before the 1990 Presidential Emergency Board.

The National Railway Conference, which represented the Class I railroads before the emergency board, stated that under the existing crew size agreements, Class I railroads had over 22,000 surplus conductors, brakemen, and helpers at an estimated cost of \$1.4 billion annually.¹⁷ The railroads proposed including crew size agreements in their national

¹⁷In their Nov. 1990 presentations to the Presidential Emergency Board, the Class I railroads calculated their estimated savings on a stand-alone basis, assuming no other changes in work rule agreements. Because of the interactive relationship of the proposed changes, adding the savings together would overestimate their cumulative effect. We did not independently validate these estimates, but they were accepted by the board.

negotiations. Until now, these issues have been negotiated locally. In lieu of national bargaining, the railroads proposed cutting the surplus employees' pay by 20 percent. The United Transportation Union, whose members would be most affected, declined to negotiate a national crew size rule because it would force union members to waive the terms of over 140 locally negotiated agreements, violating previously negotiated employee rights. The emergency board agreed with the union and recommended that the parties renegotiate the agreements locally. The board gave them until October 31, 1991, to reach a voluntary agreement or submit to binding arbitration.¹⁸

The National Railway Conference also estimated that mileage-based pay costs the Class I railroads \$289.1 million annually. This pay method raises labor costs because on-board crews can earn a full day's pay after traveling 108 miles regardless of how long it took to travel that distance. Modern freight trains can travel much farther than 108 miles in an 8-hour day. The railroads proposed immediately raising the basic day to 160 miles and reducing the rate paid for miles traveled beyond the normal workday limits by one-third. The labor organizations proposed returning to the 100-mile basic day used before 1985. The 1990 Presidential Emergency Board agreed that the mile-limit should be raised and recommended raising the limit to 130 miles by 1995 and keeping the over-mile pay rate the same.

We reported in 1980 that job craft divisions can be narrow and can lead to circumstances whereby rules prohibit anyone but a union electrician from replacing a burned-out light bulb on a locomotive, for example.¹⁹ This circumstance could require an electrician to travel from a site many miles away. Although timeliness and reliability are key competitive issues in today's freight transportation market, rules delineating job craft distinctions largely have not changed. The National Railway Conference estimated that work rules limiting the tasks employees can perform outside of their own craft affiliations cost the industry almost \$67 million annually. The Presidential Emergency Board did not agree with this savings estimate, but noted that the existing restrictions can impede the railroads from operating efficiently and limit their ability to compete with trucks.

¹⁸Report to the President, Emergency Board No. 219 (Washington: Jan. 15, 1991). The subsequent Report of the Special Board (102-29): Requests for Modification of Emergency Board No. 219, issued on July 18, 1991, only modified the original board's recommendations regarding their applicability to the Southern Pacific Transportation Company.

¹⁹Conrail's Attempts to Control Labor Costs and Improve Its Labor Productivity (CED-80-61, June 20, 1980).

The National Railway Conference also estimated that restrictions distinguishing between the tasks that road and yard service crews can perform cost the industry \$37 million annually.²⁰ For example, road crews are restricted in the number of times they can move a train in the yards at the origin and destination terminals. According to railroad officials, these limitations on road crews slow down the movement of rail cars and leave road crews idle while waiting for yard crews to perform work that the road crews could do. The Brotherhood of Locomotive Engineers agreed that easing the rules would reduce labor costs, but said that the changes give more work to the remaining employees without added compensation. The Presidential Emergency Board recommended that employees be allowed to work for up to 2 hours on incidental tasks, rather than the current 1 hour, and that road crews be allowed to perform additional tasks within the terminals. These changes would give the railroads increased flexibility in how they use their work force. Rail labor, on the other hand, believes that such changes add work with no added compensation and should result from the collective bargaining process.

Secondary Picketing Provisions Can Influence Contract Negotiations

In 1987, the U.S. Supreme Court ruled that RLA permits secondary picketing against railroads.²¹ Railroad representatives, however, have argued that secondary picketing is as unfair to the rail industry as it is to the industries covered by NLRA. They told us that the threat of secondary picketing, when combined with the possibility of congressional intervention, makes it difficult for the railroads to negotiate more favorable contracts and improve overall efficiency.

Labor representatives told us that secondary picketing is an important device for bringing economic pressure to bear on the primary disputant when collective bargaining fails. They believe that depriving labor of the right to picket secondary parties would reduce their economic power during a strike, thereby altering the balance of power between railroad management and labor. Further, organized labor believes it has exercised its right of secondary picketing judiciously, and does not believe that RLA should be amended to prohibit it. Organized labor has engaged in secondary picketing only three times: (1) during the Florida East

²⁰Road service crews are the employees that operate trains between terminal points. Yard service crews make up or disassemble the trains that the road crews operate.

²¹Burlington Northern Railroad v. Brotherhood of Maintenance of Way Employees, 481 U.S. 429 (1987).

Coast Railroad dispute—the Brotherhood of Railroad Trainmen v. Jacksonville Terminal Co., 394 U.S. 369 (1969); (2) during a Norfolk and Western Railroad labor dispute in 1978; and (3) as a result of a dispute with the Maine Central Railroad in 1986.

Impacts of Rate Reductions on Rail Traffic and Revenues

Few models exist that can gauge the impact of relative rail rate reductions or increases on intercity freight market share. One economic model that academics and federal research organizations, as well as trucking industry analysts, have widely used is the AAR-developed Intermodal Competition Model, which gauges rail-to-truck traffic shifts. The Cross Elasticity Model, which is a newer application of the Intermodal Competition Model logic, estimates truck-to-rail traffic shifts. (A detailed description of the Cross Elasticity Model appears in app. II.) We reviewed the Cross Elasticity Model's underlying assumptions and found that we could use it to estimate the possible impact that reduced rail labor costs might have on the distribution of freight between rail and trucks. Because we assume that all the cost savings are passed on to shippers in the form of lower rates, the impact on traffic and revenue shifts may be a maximum estimate.²² Alternatively, some railroads could choose to retain some or all of the savings for reinvestment or for distribution to shareholders. Some savings, especially those from changes in railroad retirement, would take many years to achieve. Therefore, these revenue and traffic shift estimates are more indicative of what the railroads' situation would have been had they been under the same rules as other industries have been under.²³ We also discussed the model with representatives of the trucking industry, and they concurred that it was the only one available to gauge truck-to-rail traffic shifts and that they had also used the original Intermodal Competition Model.

The results of analyses conducted using this model indicated that if the railroads saved \$1 billion annually in railroad retirement costs, they could capture 11.5 billion ton-miles of truck traffic and earn \$390 million in additional revenue if they passed the savings on to shippers by lowering freight rates. Similarly, a \$549 million annual savings in FELA costs could shift 6.6 billion ton-miles of traffic now moving by trucks and generate \$223 million in additional rail revenue, if lower FELA costs

²²In May 1991, ICC reported that since passage of the Staggers Rail Act of 1980 most rail rates have declined nearly 25 percent, when adjusted for inflation. ICC's analysis indicates that railroads tend to pass their savings on to shippers to attract rail-truck competitive freight.

²³It is also likely that had these laws not existed, organized labor might have negotiated some of the benefits independently of the laws.

led to reduced freight rates. Moreover, if the railroads passed on the potential \$1.4 billion savings from work rule changes, the industry could gain 16.2 billion ton-miles of freight and \$548 million in added revenue. Taken together, the model suggests that if the railroads passed on the \$3 billion they might save from changes in employee benefit laws and from proposed work rule changes, they could gain as much as 34.3 billion ton-miles and \$1.2 billion in revenues as traffic shifted from trucks to railroads, assuming the savings were reflected in reduced freight rates.

Our focus is on the possible response of shippers to lower rail freight rates brought about through lowering labor costs. We recognize that all shippers may not benefit from reduced railroad costs because the railroads might choose to keep the savings as retained earnings or only reduce rates on highly competitive routes or on selective commodities. However, possible traffic shifts paint only part of the picture. Reduced railroad labor benefits or changed working conditions could lead to lower employee morale and offset the productivity gains somewhat. These are not issues addressed in this study, but are issues the Congress will need to consider as it evaluates changes in the legislation governing rail labor-management relations.

Recent Proposals on Changing Federal Laws Affecting Railroad Labor-Management Relations

With respect to railroad retirement, two recent proposals, one by the Commission on Railroad Retirement Reform and the other by the Office of Management and Budget, call for restructuring the railroad retirement system and converting it to a privately managed system. Research we reviewed indicates that over time, either proposal could lower retirement costs without putting railroad employees any more at risk than are many other Americans covered by privately managed pension plans. Nevertheless, the extent of risk and whether or not employees could transfer service credits when changing railroads, as well as how the system's \$33.5 billion unfunded liability would be covered, are important considerations which must be addressed before changing the existing retirement system.

Several proposals have been made in recent years to change FELA, but most do not consider the impacts on injured employees, the states, or the federal government. These impacts must be assessed and weighed prior to implementing major changes in the railroad employees' injury compensation system. One proposal, introduced in both houses of the 101st Congress, called for repealing FELA and placing railroad employees

under state workers' compensation.²⁴ In 1986, we noted that Amtrak costs could have been lower if it operated under state compensation rules.²⁵ In 1989, Amtrak's President proposed that the Congress temporarily place Amtrak employees under state workers' compensation as a demonstration program and then evaluate the costs and benefits of extending this to all the railroads. Although this option addresses the railroads' concerns about FELA's rising costs, it does not consider the adequacy of state benefit schedules or the impact that the added number of covered employees would have on some states' financially overburdened systems.

The AAR has proposed replacing FELA with a federal no-fault workers' compensation law. While this action could alleviate organized labor's concerns that some states do not have adequate compensation benefits, the federal government could potentially become further involved in railroad industry matters. This would seemingly contradict the intent of recent railroad deregulation laws, such as the Staggers Rail Act. If this proposal is to be pursued, the Congress would have to carefully consider whether there would be a federal government obligation to railroad employees.

Several options are available for changing provisions of RLA; however, the costs and benefits to labor, the industry, and the economy of making such changes must be weighed. Recent RLA proposals call for the Congress to prohibit secondary picketing. For example, DOT, in its 1990 national transportation policy, saw no economic or public interest justification for treating railroad workers differently from those in industries covered by NLRA. Prohibiting secondary picketing could somewhat mitigate the need for congressional intervention when railroad management and labor cannot agree on new contract issues. However, the financial benefits of prohibiting secondary picketing will depend largely on the outcome of labor-management agreements. Further, railroad labor could lose what it believes is one of its few tools for leverage in management-labor disputes.

Conclusions

The available evidence suggests that rail costs are higher than they would be if railroads were treated like other industries. The laws governing employee benefits and labor-management relations in the railroad

²⁴H.R. 5853 and S.3214, Railroad Workers' Injury Compensation Act of 1990.

²⁵Amtrak: Comparison of Employee Injury Claims Under Federal and State Laws (GAO/RCED-86-202, Aug. 11, 1986).

industry were enacted at a time when the railroads were virtual monopolists and when higher labor costs could be used to justify higher rates with little loss of traffic to nonrail competitors. The competitive environment has changed and a number of recent proposals have called for the Congress to modify the railroad retirement system, FELA, and RLA. We take no position on these proposals.

Federal Highway and Waterway Policies Affect Railroad Competitiveness

Highway and waterway user fees affect trucking and barge industry overhead costs. When user fees, such as fuel taxes and licenses, are not sufficient to cover the costs associated with using the highways and waterways, they result in de-facto subsidies to trucks and barges. De-facto subsidies to trucks and barges may limit the railroads' ability to compete for intercity freight because they can affect relative freight rates. Lower overhead costs allow trucks and barges to charge lower rates and capture freight that in the absence of public subsidies, otherwise might have been moved by rail.

Public Construction and Maintenance of Truck and Barge Infrastructures Can Lower Rail Competitors' Operating Costs

Freight railroads maintain their own rights-of-way with minimal federal assistance, while trucks and barges use rights-of-way that the public helps pay for out of general revenues, fuel taxes, and other vehicle fees.¹ In 1989, Class I railroads spent \$2.5 billion, or 68 percent of their capital expenditures, on track and structures.² In contrast, trucks and barges use highways and waterways, which public authorities build and maintain. DOT and state cost-allocation studies show that the fuel and other vehicle taxes that rail-competitive trucks and barges pay cover generally only part of their allocable costs.

Highway Subsidies Lower Truck Operating Costs

In 1988, federal, state, and local governments spent about \$68.6 billion to build and maintain the nation's highways. Trucks and other highway users contributed to federal and state highway construction and maintenance programs through the taxes and fees they paid. Federal highway construction and maintenance revenues primarily come from federal taxes on motor fuel, vehicle sales, and tires, while state funds largely come from motor fuel taxes and vehicle license and registration fees. States also supplement their user fees with general state revenues.

According to DOT cost allocation studies in 1982 and 1984, heavy combination trucks—those weighing more than 70,000 pounds—do not pay

¹ According to the Study of Federal Aid to Rail Transportation, Department of Transportation (Washington: Jan. 1977), between 1824 and 1945, the federal government provided over \$500 million, in constant dollars, in financial assistance, land grants, and other assistance to the railroads. It concluded, however, that the federal government had received about \$1 billion in rail rate reductions pursuant to the Land Grant Acts. A more recent study, the National Transportation Strategic Planning Study, Department of Transportation (Washington: Mar. 1990), notes that Class I railroads currently receive a federal subsidy of about 0.01 cent per ton-mile, while railroad out-of-pocket costs are about 2.73 cents per ton-mile.

² Roadway and structure costs include those attributable to rights-of-way, as well as yards and port terminals.

their allocable share of highway user costs.³ A 1982 DOT study that compared federal highway user fees with highway construction and maintenance costs attributable to various vehicle classes found that all weight categories of combination trucks paid less than the federal highway costs attributable to those vehicles.⁴ Combination trucks weighing between 70,000 pounds and 75,000 pounds paid about 60 percent of their attributable costs, while those weighing over 75,000 pounds paid only 45 percent of their attributable costs.

A 1984 update of the 1982 DOT study found that the gap between attributable costs and user fees paid had narrowed; however, the heaviest combination vehicles continued to pay less than their share of highway construction and maintenance costs.⁵ According to the 1984 study, combination trucks weighing between 70,000 and 75,000 pounds paid 84 percent of their attributable costs, while trucks weighing over 75,000 pounds paid 66 percent of their attributable costs. Figure 3.1 shows the results of this study. A 1988 DOT study of heavy vehicle cost responsibility concluded that although trucks weighing over 80,000 pounds generally pay less than the costs attributable to their use of the interstate system, the greater the number of axles, the higher the ratio of revenues to costs.⁶ Thus, 5-axle trucks carrying the same weight as 4-axle trucks pay a greater share of their allocable costs than 4-axle trucks. DOT officials told us that there was no reason to believe that there have been any substantive changes since their 1984 study gauging the gap between federal user fees and attributable costs or their study of heavy vehicles relative to lesser weight trucks.

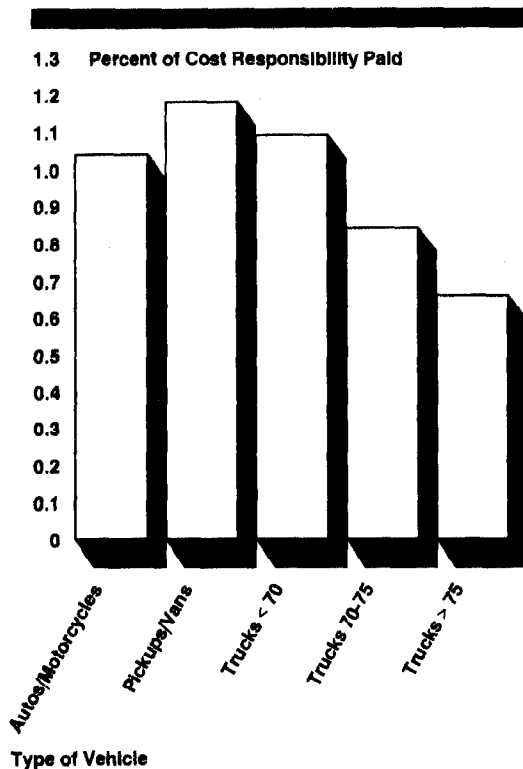
³A combination truck is any vehicle consisting of a tractor with a power unit pulling at least one trailer that does not have a power unit.

⁴Final Report on the Federal Highway Cost Allocation Study, Department of Transportation, Federal Highway Administration (1982).

⁵Alternatives to Tax on the Use of Heavy Trucks, Department of Transportation, Federal Highway Administration (Washington: Jan. 1984).

⁶Heavy Vehicle Cost Responsibility: Report of the Secretary of Transportation to the United States Congress, Department of Transportation (Washington: Nov. 1988).

Figure 3.1: Comparison of Cost Responsibility and User Charges Paid



Note: Numeric values for vehicle type refer to weights of combination trucks in thousands of pounds.

Source: Federal Highway Administration, DOT.

Over the past decade, a number of states have undertaken similar analyses, and these state cost-allocation studies show similar disparities. According to an American Association of State Highway and Transportation Officials summary of state studies published in October 1989 and various other state studies, the user fees that 5-axle combination trucks pay are generally less than the cost of damage they inflict on the highway system. The state studies showed that the fuel taxes and other fees paid by 5-axle combination trucks covered between 49 percent of allocable costs in Colorado and Maryland and 108 percent in Oregon, with a median of 81.5 percent. (See table 3.1.) As with the DOT estimates, the state studies show that passenger cars and single-unit trucks generally pay more of their share of highway costs than the heavier combination vehicles. However, as an indicator, the state studies may not be as reliable as the DOT estimates because they do not use a uniform methodology to calculate revenues and costs. Also, overpayments and underpayments may indicate a state's failure to alter its user fee structure to

reflect changed program emphasis on activities such as interstate maintenance, road expansion, bridge rehabilitation, or new construction.

**Table 3.1: State Cost Allocation Studies
(in Percent of Cost Responsibility)**

State	Passenger vehicles	Single-unit trucks	5 or more axle combination trucks
California (1984-89) ^a	93	222 ^b	89
Colorado (1987-88)	122	61	49
Delaware (1989)	64	59	96
Georgia (1981)	85	90	52
Indiana (1985-86)	125	124	54
Kansas (1985-88)	114	105	77
Kentucky (1986)	103	^c	82
Maine (1990-91)	107	76	92
Maryland (1979-84)	117	84	49
Minnesota (1991-95) ^d	105	112	64
Nevada (1990-91)	101	^c	98 ^e
North Carolina (1982)	96	214	78 ^e
Ohio (1982-86)	88	97	53
Oregon (1990-91)	93	128	108 ^e
Pennsylvania (1986-87)	93	73	81
Vermont (1991-93) ^d	103	94	94
Virginia (1989-91)	106	80	94 ^e
Wisconsin (1989-91)	101	119	91 ^e

^aYears in parentheses indicate period covered by the study.

^bNumbers smaller than 100 indicate underpayment.

^cData not available.

^dProjected.

^eState data do not distinguish heavy trucks' axle configuration.

Source: GAO analysis.

Trucking Representatives Disagree With the Cost-Allocation Studies

Trucking industry spokespersons told us that they do not agree with DOT's and state studies' conclusions that trucks do not pay their full share of highway construction and maintenance costs. According to American Trucking Associations (ATA) officials, highway cost allocation is an inexact science, and weather-related factors, such as rain, heat, and ice, play a greater role in highway wear than vehicle weights. They note that the relative cost responsibility of heavy trucks can vary considerably under different cost allocation methods, and that the DOT method assigns such vehicles a relatively heavy cost responsibility. We

did not independently verify the DOT approach or the trucking industry's alternatives.

Impact of Increased Highway User Fees on Railroad Revenue

While we did not independently validate the DOT and state cost allocation studies, academics, transportation industry analysts, and independent research organizations, such as the National Academy of Sciences, generally agree that heavy combination trucks do not pay fully compensatory user fees. If trucks paid fully compensatory user fees, their increased operating costs would likely be reflected in higher freight rates. As a result, some traffic would likely shift away from trucks to the railroads. To estimate traffic and revenue shifts to the railroads from increased truck rates, we assumed, however, that all user fee increases would be reflected in higher rates. Therefore, we are presenting a maximum estimate of traffic and revenue shifts to the railroads. According to the railroad industry economic model of rail traffic responsiveness to changes in relative rates, gross railroad revenues could increase from \$438 million (representing 12.5 billion additional ton-miles) to about \$1.4 billion (representing 38.5 billion additional ton-miles) annually if trucks paid fully compensatory user fees.⁷ Alternatively, truckers could elect to absorb some of the increased taxes and earn lower profits.

Waterway Subsidies Can Influence Shipper Transportation Choices for Bulk Commodities

In 1989, the U.S. Army Corps of Engineers spent \$745 million developing and maintaining the inland waterways that barges use. This includes constructing and rehabilitating locks and dams, and dredging channels along the Mississippi River system, the intracoastal waterways, the Atlantic and Gulf coasts, and more limited systems in the Pacific Northwest. Because barges and railroads both transport large shares of bulk commodities such as coal, coke, grain, and chemicals, public support for waterway construction and maintenance can affect relative freight rates and influence shipper choices on which transportation mode to use.

Throughout most of the history of U.S. inland waterway navigation, commercial waterway operators did not help pay for constructing and maintaining the waterways. In 1978, however, the Congress created the Inland Waterway Trust Fund and, in 1980, barges began paying a 4-

⁷The low estimate assumes that truck user fees increase 22 percent, as the DOT cost-allocation studies suggest for heavy combination trucks. The high estimate assumes that user fees increase 70 percent, as AAR's highway cost-allocation analysis suggests for rail-competitive trucks. AAR assumes that rail-competitive trucks are the ones driving the longest distances and underpaying more.

cents-per-gallon diesel fuel tax. The tax is presently 13 cents per gallon and is scheduled to increase to 20 cents per gallon by 1995. Despite these levies, barge operators continue to pay only a fraction of the costs associated with the Corps' inland waterway development and maintenance activities. The Corps pays the full cost of waterway maintenance, while the federal government and the Inland Waterways Trust Fund equally share the cost of new construction and rehabilitation.

Army Corps of Engineers officials estimate that if barges were required to pay all the costs associated with waterway construction and maintenance, their user fees could be as much as 16 times higher than they are today. We did not identify a market-share model that estimates the impact of barge rates on barge freight. However, Corps and Ports and Waterways Institute officials believe a 16-fold user fee increase would seriously undermine the financial health of the barge industry.⁸ Also, barges are not the sole beneficiaries of federal construction and maintenance projects. Municipalities rely on the waterways for their water supply, and many people use the waterways for recreational purposes. As a result, assigning the barge industry the full costs of inland waterway costs would not be equitable.

Conclusions

The trucking and barge industries receive an implicit federal subsidy by operating on federally funded rights-of-way. Economic theory suggests that continuing the de-facto subsidies to trucks could work to the railroads' disadvantage by making rail costs relatively higher than truck costs. According to the research we reviewed, rail-competitive truck rates currently do not reflect their full economic costs because they do not include an amount sufficient to pay for the burden that trucks—especially heavy combination trucks—place on the nation's highways.

Eliminating public subsidies to trucks and barges could increase their costs. This could be particularly disruptive to truckers in tight competitive conditions, for whom raising rates is not a realistic option. Higher rates, in turn, could increase costs for truck and barge users, particularly those who are unable to switch to rail. We have not analyzed all the possibilities or addressed all the potential impacts of changes in public infrastructure policies. Therefore, we are making no recommendations.

⁸The Ports and Waterways Institute is a joint project of Louisiana State University and George Washington University devoted to studying water transportation issues.

List of Organizations Contacted by GAO

Railroad Industry Organizations

Association of American Railroads
American Short Line Railroad Association
Atchison, Topeka and Santa Fe Railway Co.
Burlington Northern Railroad Co.
Chicago and Northwestern Transportation Co.
Consolidated Rail Corporation
Florida East Coast Railway Co.
Illinois Central Railroad Co.
Norfolk Southern Corp.
Railroad Association for Improved Liability Systems
Union Pacific Railroad Co.

Railroad Labor Organizations

Brotherhood of Locomotive Engineers
Brotherhood of Maintenance of Way Employees
Railway Labor Executives' Association
United Transportation Union

Other Transportation Industry Organizations

American Trucking Associations
American Waterways Operators

Shipper Organizations

The National Industrial Transportation League

Other Organizations

The Brookings Institution
The Ports and Waterways Institute
The Transportation Center, Northwestern University
The Transportation Research Board

Overview of Association of American Railroads' Market-Share Model

We estimated railroad revenue and ton-mile gains in chapters 2 and 3 using an Association of American Railroads' (AAR) market-share economic model known as the Cross Elasticity Model. AAR developed this model to predict the potential truck traffic diversions to railroads in the event that rail freight rates are reduced.

Methodology Outline

The model projects truck traffic diversions in a series of steps. First, the model calculates potential rail traffic gains by quantifying truck traffic levels for 18 commodity groups in which trucks and rail compete. The model produces estimates of potential rail ton-mile and revenue gains by converting these truck traffic levels into equivalent rail traffic levels.

Second, the model calculates total shipper costs for rail and trucks for each of the 18 commodity groups. The model does this in two steps. It first calculates "base case" shipper costs using existing industry data. It then calculates shipper costs for the scenario in question, using various lower rail and/or higher truck freight rates. In both cases, shipper costs include freight rates and nonrate costs, such as capital costs of the goods in transit.

Finally, using a logit equation, the model compares base case and scenario (that is, before and after) truck and rail shipper costs to estimate the probability of a shipment's moving by rail or truck. In theory, as the cost of using rail declines, the ratio of rail costs to truck costs tilts the competitive balance in favor of rail, and increases the probability that shippers will ship by rail. The resultant probability estimates are then applied to potential rail traffic calculated in step one to arrive at projected rail ton-mile and revenue gains.

Data Limitations

The Cross Elasticity Model is a fairly new tool in the railroad industry, and has not yet been put to the test of experience. Further, it has several methodological limitations, perhaps the most significant of which is that it is based on 1986 cost and market share data. While noting the model's limitations, representatives of AAR, American Trucking Associations, the Transportation Research Board, and the Federal Highway Administration agreed that it is the best available model of its kind which estimates traffic shifting from trucks to rail transport.

Major Contributors to This Report

Resources,
Community, and
Economic
Development Division,
Washington, D.C.

Francis P. Mulvey, Assistant Director
Richard A. Jorgenson, Advisor
Peter E. Plumeau, Advisor
Earl P. Williams, Jr., Writer/Editor

Chicago/Detroit
Regional Office,
Chicago, Ill.

Enchelle D. Bolden, Evaluator-in-Charge
Michael P. Hartnett, Site Senior
Shazia L. Rafiullah, Evaluator
Pauline Seretakis, Evaluator

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