

**Transportation Research at the Surface
Transportation Board**

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**Surface Transportation Board Acting Chairman,
Dr. Francis P. Mulvey**

For many years, the need to understand the economic behavior of transportation suppliers and demanders played a critical role in developing economic theory, especially microeconomic theory. From the days of Jules Dupuis, through Ripley and his formula, to recent Nobel Laureates Bill Vickrey and Dan McFadden, transportation related

issues were the linchpin for academic investigations of the nature and role of costs in determining price and how industry structure affected the general welfare.

Transportation Economics was a popular field of study at many major American Universities. In fact, when I taught at Northeastern University, we had transportation specialties in the economics department in the Liberal Arts College, in the Business School and in the Engineering College.

Part of the ongoing interest of many economists, no doubt, was rooted in the fact that, until the late 1970s and early 1980s, transportation was largely a regulated sector of the American economy. This somewhat atypical situation continued to foster

interest in the sector, especially among those who saw regulation as largely unnecessary and even harmful to the American economy. The works of Ann Friedlander, Alfred Kahn, T.G. Moore and J.C. Nelson come to mind. Academicians played a leading role in the regulatory reform movement.

In recent decades, interest in the study of transportation economics has waned—at least in part as a result of the deregulation of the modes of transportation. Of course, some studied effects of deregulation and tried to gauge the impacts on overall economic welfare. Others analyzed how the carriers responded to the changed environment. I think it is safe to say that there is widespread agreement, at least among economists, that

deregulation (or regulatory reform) has worked. To be sure, there have been “losers” from deregulation, but most of these were expected by the proponents of deregulation. Today, transportation research by academics tends to focus on airline, transit, and road pricing issues. Transportation economics departments morphed into Logistics Studies and then into Supply Chain Management programs. The study of railroad economics, especially those of the freight railroads, has clearly diminished. But, this may be changing. As there has been a renaissance in freight railroads, there appears to be a simultaneous renewed interest in the economics of the industry. The current downturn has not reduced

the calls for more rail and less highway movement of both freight and passengers.

I would like to focus today on recent activities at the STB that I believe might help reinvigorate academic interest in the freight railroad industry.

The STB is the successor agency to the ICC and focuses today, almost exclusively, on freight railroad issues. The Board adjudicates rate complaints from “captive shippers”, oversees railroad mergers and acquisitions, and undertakes public interest and environmental reviews of new rail construction and abandonments. Much rail traffic is exempt from either STB jurisdiction or active regulation because it moves under contract or

has been deemed to be modally competitive. Rate cases before the agency are those where the railroad is considered to be market dominant. The Board measures market dominance quantitatively by comparing a railroad's revenue to the variable cost of carrying the traffic. If the ratio of revenue to variable cost is less than 180 percent, the traffic is considered to be competitive and by statute the Board cannot hear the case. Many question the utility of this measure. Rate cases historically have taken years to adjudicate and cost both parties several million dollars.

In October 2006, GAO issued a report on competition in the freight railroad industry. Among its principal findings was that while regulatory reform had led to improved industry health and

to lower rates for shippers as a whole, some pockets of captivity remain and that some shippers or groups of shippers are experiencing higher rates. GAO found that, although the overall amount of captivity (as measured by it) was decreasing and that the percentage of revenues moving at rates above the regulatory threshold had declined from 41% to 29%, the percentage of shippers paying over 300% R/VC had increased between 1985 and 2004 (from 4 to 6 percent). Captive grain traffic seemed particularly vulnerable to higher rates. GAO recommended that the STB study the competitiveness of the freight railroad industry.

In response to the GAO report, the Board engaged a respected economic consulting firm—Christensen Associates-- primarily composed of academics at the Universities of Wisconsin and Oregon to produce independent studies, on behalf of the Board, examining both rail competition and rail capacity issues. The STB took an arms length approach to the research in order to ensure an unbiased product. The competition study found that the recent increases in nominal rail rates (following years of decline) traced more to cost factors than to an exercise of monopoly power. Christensen Associates calculated the Lerner Index for the railroad industry $(RPTM-MC)/RPTM$ (a measure of market power), and found that while it increased significantly

between 1987 and 1994, this was a period when the railroads were revenue inadequate. The index declined between 1994 and 1999 and remained relatively constant afterwards (esp. after 2003) through 2006, as rates and costs increased together. The Christensen study did not find that railroads lacked monopoly power in certain markets, but that exercise of that power was tempered by the threat of regulatory action and that overall the railroads were not earning monopoly rents. The study also found that the Board's reliance on the 180 percent revenue to variable cost measure was not a good proxy for market dominance. The Christensen study was remarkable in the level of detail provided with respect to the econometric modeling underlying the analysis.

The report makes it relatively easy for other analysts to replicate the results. Because the study only had data through 2006 and because many believe that there were relatively large increases in rail rates in the 2007-2008 period, STB is considering contracting for an update.

The second study commissioned by the STB from Christensen addressed an estimate of rail infrastructure investments needed over the next quarter century to meet projected demand and the ability of the railroad industry to finance them. Projections developed by Global Insights form the basis for DoT's Freight Analysis Forecast. These projections, in turn, form the basis for the Cambridge Systematics' report for the

AAR that supplied the projections for the recent studies of national infrastructure needs. And most recently, the Rand Report on Surface Transportation information needs. Christensen Associates was critical of the prior work because those earlier studies (1) generated point estimates of demand far into the future rather than a range of estimates, (2) did not take into account the recent severe economic downturn, and (3) did not correspond with projections of the components of demand, i.e. commodity forecasts. The prior studies had suggested that the demand for freight rail transportation by 2035 would far outstrip the ability of the nation's freight railroads to accommodate it.

The Christensen study had the advantage of being able to incorporate the recent economic contraction. The study also generated a range of rail traffic forecasts depending on the overall level of economic activity as opposed to the point estimates of the prior work. The Christensen study examined projections of economic activity by OASDI and others that posit more conservative macroeconomic growth rates.

Christensen also examined the fundamental components of rail traffic, coal, grain, and intermodal movements. The FAF and CS forecasts of aggregate rail traffic growth are not supported by the projections for the component parts. For example, FAF projects a 78 percent increase in coal traffic through 2030, but

DOE now estimates that output will only rise 24% over this period and the DOE projection assumes that current tax credits for solar and wind power expire and that no new restrictions will be placed on GHG emissions. These are truly heroic assumptions. Similarly, FAF predicts 80% in grain rail tonnage by 2035 vs. 30% by USDA.

The prior studies also assume that the rail market share overall remains unchanged and take no account of changes in relative prices. It is also true that less traffic will also mean lower revenues, so it is still hard to tell whether the nation's private railroads can finance future capacity. The willingness of the

Board to underwrite analyses that challenged the conventional wisdom constitutes a radical departure from the status quo.

Another area where the STB will likely involve the academic community is in its reevaluation of the Uniform Rail Costing System or URCS. URCS is used to determine Board jurisdiction over the rates charged by railroads, to adjudicate rail line abandonments and “feeder line” applications, and to regulate other matters where rail movement costs must be estimated.

This review is much needed, as URCS was adopted 20 years ago. In fact, some of the relationships that underpin the URCS database are based on engineering studies done back in the 1930s.

The Board must determine whether, or what, modifications to URCS are required to reflect changes in railroad operations over the intervening years. The goal of reform would be to ensure that the costing relationships employed by URCS are as accurate, current, and effective as possible to enable the agency to perform its statutory duties fairly and expeditiously. It is particularly important to review URCS because of the key role it plays in the Board's adjudication of rail rate cases.

The STB has recently undertaken several changes to our rate resolution processes that place increasing reliance on URCS. We introduced a number of changes in how we handle large rate cases that were designed to lower their cost and accelerate their

adjudication. One of these was to eliminate specific adjustments that parties could make to URCS costs. In addition, the Maximum Markup Methodology for setting the maximum lawful rate also depends on URCS as does the Average Total Cost calculation used for allocating revenues from crossover traffic. Therefore, the costs generated by the URCS program are those that must be used in the calculations to determine whether rates are reasonable. After many years of trying, the Board finally developed procedures to handle small rate cases—those that do not justify bringing a full blown SAC rate case. In both the Simplified SAC approach for small rate cases and the full SAC approach for large rate cases, the Board uses unadjusted URCS data to dramatically reduce the expense and

complexity of these cases. Both of these changes to handling rate cases require a greater reliance on URCS and make its accuracy more critical.

This past April, the Board held a public hearing on URCS to explore means and areas of possible reform. We received testimony from several academics, as well as representatives of rail and shipper groups. The Board received testimony on the inherent difficulties—for both the agency and its stakeholders—in bringing URCS up-to-date, a project that will take several years and require supplemental funding from the Congress. I believe, however, that building a better regulatory costing system is a sound investment of taxpayer dollars. Presently, a team of

Board staff is working with an expert to draft a possible plan of action for updating our costing methodology.

The Board's economists have also been reassessing how we measure the rail cost of capital—a critical component in our measure of revenue adequacy. The railroad industry, as you all know, is very capital-intensive. Congress directed the Board to regulate in such a way that considers the railroads' need to earn revenues sufficient to maintain the national rail system and to attract new investment capital. The accurate estimation of an appropriate return on capital is a crucial regulatory function performed by the Board. The cost of capital includes the cost of

both debt and equity capital. For years, the STB employed a single stage discounted cash flow model to measure the cost of equity capital. The Western Coal Traffic League argued that our approach was not consistent with modern finance practice and was overstating the railroads' cost of equity capital and thereby understating the industry's revenue adequacy. STB staff reviewed the finance literature, consulted with industry financial analysts, academics, the Federal Reserve Board, other regulatory agencies and even the Board's Canadian counterparts. The Board held hearings on the issue. Based upon the input received from these sources, the agency revised the procedures it uses to estimate the industry's cost of equity capital.

The Board first employed a capital-asset pricing model which divides investment returns into two portions: a risk-free rate and a premium an investor would need to hold railroad shares. The result was a somewhat lower result for the cost of equity capital than provided by the single stage DCF. The railroads noted that the primary problem with the original single stage discounted cash flow model could be corrected with a multi-stage model. The long term growth rate assumed in the single stage model went on forever. The multi-stage model allows for reduced rates in the future. Again, after serious study and consultation, the Board adopted a multi-stage DCF and now averages it with a CAPM estimate. The Board currently is conducting its annual review of

the industry's cost of capital (for 2008) and soon will issue a decision employing the agency's newly developed procedure.

In addition to an increased focus on research at the Board, there have been several other legislative changes that will, or might if enacted, place additional responsibilities on the Board or change how the STB functions.

STB has been tasked with several new responsibilities in the passenger rail area. The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) gave the Board several new responsibilities in the passenger rail area, including the measurement of Amtrak's on-time performance. Amtrak and the

Federal Railroad Administration (FRA), in consultation with the Board and others, were directed by Congress to develop a system of standards for measuring on-time performance and other service metrics. Amtrak and FRA have since developed proposed standards and metrics that were subject to public comment. If final standards cannot be agreed upon by Amtrak and FRA, the Board will, upon request by a party, appoint an arbitrator to assist the parties in resolving the areas of disagreement through binding arbitration.

Under PRIIA, if Amtrak's on-time performance should fail to meet the statutorily prescribed 80 percent level for two consecutive calendar quarters, or should other, agreed-upon measures not be

met, the Board can be called upon to investigate the causes of performance failure. The Board can also prescribe remedies, including damages, if it determines that freight railroads are the cause of delays.

PRIIA also gives the Board certain responsibilities related to commuter rail access to Amtrak's dedicated track on the Northeast Rail Corridor. Amtrak, the northeastern states, or the commuter railroads may petition the Board to establish a system for setting Amtrak's charges for commuter access to Amtrak's facilities if the parties are unable to reach agreement themselves. Congress also gave the Board authority to provide non-binding mediation when a

commuter railroad seeks access to either the trackage or right-of-way of any other rail operator.

In sum, the Board currently has before it a full agenda of matters that will require us to rethink our approaches to rail economic issues. Those challenges could become even greater if some of the proposed changes to STB's regulatory processes are enacted by the Congress.

The Board invites members of the transportation research community to take part in its proceedings and lend expertise to our deliberations. Just as academic researchers in the past helped

shape changes to the regulatory regime, I believe their will be options for them to do so again.

Thank you.